Note about the content of the abstract book
The organizing and abstract review committees have not made any edits to the content of the abstract. The abstracts are, therefore, presented as they were submitted by the authors.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPONSORS</td>
<td>5</td>
</tr>
<tr>
<td>Silver Sponsors</td>
<td>5</td>
</tr>
<tr>
<td>Bronze Sponsors</td>
<td>6</td>
</tr>
<tr>
<td>WELCOME MESSAGE FROM THE ISBNPA PRESIDENT AND CO-CHAIRS</td>
<td>9</td>
</tr>
<tr>
<td>THANK YOU TO THE ISBNPA 2017 ABSTRACT REVIEWERS</td>
<td>10</td>
</tr>
<tr>
<td>COMMITTEES</td>
<td>11</td>
</tr>
<tr>
<td>Organising Committee</td>
<td>11</td>
</tr>
<tr>
<td>ISBNPA Executive Director</td>
<td>11</td>
</tr>
<tr>
<td>ISBNPA Executive Committee</td>
<td>11</td>
</tr>
<tr>
<td>KEYNOTES</td>
<td>12</td>
</tr>
<tr>
<td>Cliona Ni Mhurchu: ‘Reduce’: The magical potential of new technologies to deliver and evaluate nutrition interventions</td>
<td>12</td>
</tr>
<tr>
<td>Paul Eastabrooks: Dissemination, implementation, knowledge translation, and scale-up of nutrition and physical activity interventions in the pursuit of a public health impact.</td>
<td>13</td>
</tr>
<tr>
<td>Denise de Ridder: Putting the psychology back into nudging</td>
<td>14</td>
</tr>
<tr>
<td>SYMPOSIA</td>
<td>15</td>
</tr>
<tr>
<td>Jun 08, 08:30 - 09:45: Symposia</td>
<td>15</td>
</tr>
<tr>
<td>Jun 08, 17:00 – 18:15: Symposia</td>
<td>27</td>
</tr>
<tr>
<td>Jun 09, 08:00 – 09:15: Symposia</td>
<td>40</td>
</tr>
<tr>
<td>Jun 10, 08:30 - 09:45: Symposia</td>
<td>53</td>
</tr>
<tr>
<td>Jun 10, 12:00 - 13:15: Symposia</td>
<td>67</td>
</tr>
<tr>
<td>Jun 10, 14:15 - 15:30: Symposia</td>
<td>80</td>
</tr>
<tr>
<td>ORALS</td>
<td>89</td>
</tr>
<tr>
<td>Jun 08, 15:15 - 16:30: Oral Presentations</td>
<td>89</td>
</tr>
<tr>
<td>Jun 09, 15:15 - 16:30: Oral Presentation</td>
<td>115</td>
</tr>
<tr>
<td>Jun 09, 17:00 - 18:15: Oral Presentation</td>
<td>140</td>
</tr>
<tr>
<td>Jun 10, 10:00 - 11:00: Oral Presentation</td>
<td>165</td>
</tr>
<tr>
<td>Jun 10, 14:00 - 15:10: Oral Presentation</td>
<td>190</td>
</tr>
<tr>
<td>SHORT ORALS</td>
<td>200</td>
</tr>
<tr>
<td>Jun 08, 12:20 - 13:00: Short-Oral Presentations</td>
<td>200</td>
</tr>
<tr>
<td>Jun 09, 12:20 - 13:00: Short-Oral Presentations</td>
<td>224</td>
</tr>
<tr>
<td>EARLY CAREER RESEARCHER INVITED TALKS</td>
<td>249</td>
</tr>
<tr>
<td>STUDENT INVITED TALKS</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td></td>
</tr>
<tr>
<td>POSTERS</td>
<td></td>
</tr>
<tr>
<td>JUN 08, 11:00 - 12:30: Poster Presentation</td>
<td></td>
</tr>
<tr>
<td>JUN 09, 11:00 - 12:30: Poster Presentation</td>
<td></td>
</tr>
<tr>
<td>JUN 10, 11:00 - 12:00: Poster Presentation</td>
<td></td>
</tr>
<tr>
<td>WORKSHOPS DESCRIPTIONS</td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Half Day #1</strong> - <strong>Making e-/mHealth Work in the Real World: Lessons from Industry and Academia</strong></td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Half Day #2</strong> - <strong>Grasping Physical Activity: Using 3D Printers to Visualize Physical Activity</strong></td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Half Day #4</strong> - <strong>Faking It: Using a Large Food Buffet to Examine Food Choice</strong></td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Half Day #3</strong> - <strong>Mobile Methods for Dietary Assessment: Image-Assisted and Image-Based Dietary Assessment Methods</strong></td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Full Day #2</strong> - <strong>Stepping Into Compositional Analysis of Activity Data; A Practical Step by Step Guide to Analysing Your Activity or Nutritional Data Using Compositional Analysis Techniques</strong></td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Full Day #1</strong> - <strong>ISBNPA Early Career Researcher Workshop</strong></td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Half Day #8</strong> - <strong>Designing and Evaluating Physical Activity Interventions for People with Mental Health Issues</strong></td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Half Day #9</strong> - <strong>Contextually Rich Physical Behaviour Data: The Key to Behaviour Change?</strong></td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Half Day #10</strong> - <strong>Prescribing Walking for Health Benefit</strong></td>
<td></td>
</tr>
<tr>
<td>WORKSHOP: <strong>Half Day #12</strong> - <strong>Health Promotion with Indigenous Communities</strong></td>
<td></td>
</tr>
</tbody>
</table>
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Welcome messages

Welcome message from the ISBNPA President and Co-Chairs

Prof. Jo Salmon
Prof. Ryan Rhodes

Dear members and delegates,

It is with pleasure that we welcome you all to the 16th scientific annual meeting for the International Society of Behavioral Nutrition and Physical Activity. It is the third time our annual meeting has been held in Canada (2003 in Québec; 2008 in Banff), and we are very excited to be hosting you all in the beautiful city of Victoria in British Columbia. Victoria is one of the most active cities in Canada, and is known for its dedication to healthy local cuisine. It is a wonderful place to present research on physical activity and healthy eating because it represents this approach in its culture and policies.

Our Conference Program strongly reflects our by-line of Advancing Behavior Change Science. We have 5 outstanding keynotes in the areas of physical activity and cancer, the psychology of nudging, implementation science, physical activity and nutrition in indigenous communities, and the use of new technologies to deliver and evaluate nutrition interventions. In addition, special panel members will discuss the challenges and opportunities in implementing a sugar tax.

After listening to our delegates and members, we have made some changes to the program this year that we hope will improve the quality of presentations that will result in a better conference experience for everyone. For the first time, we have reduced the number of symposia on the program which resulted in a 70% acceptance rate and has opened up the program to more long and short oral presentations.

In previous years we have also received comments from delegates and members about the program placement of the Special Interest Group meetings. Therefore, for the first time we are holding the meetings consecutively across days, rather than concurrently in the one time slot. This will now allow members who belong to more than one SIG to attend more meetings. It does, however, mean that the SIG meetings will be competing with the oral presentations in the program. So, at the end of the conference, we welcome feedback from members about the placement of the SIG meetings.

Finally, one of the ongoing challenges of holding a conference that ends on a Saturday afternoon is we often have a disappointing attendance for the keynote speaker on that day. So, for the first time we are trialling a panel discussion on the issue of sugar tax which will be open to members of the public. We hope that most of you can stay for this exciting finish to the conference!

As always there will be awards for best presentations and posters as well as 10 scholarships to assist delegates from low and middle income countries to attend the meeting. We congratulate all the award winners and welcome our scholarship recipients.

We would like to acknowledge and thank the conference Organising Committee, our Executive Director António Palmeira, and Kat Duda from Venue West for doing such an outstanding job in creating an exciting meeting that incorporates the breadth of research interests of ISBNPA members and delegates. We would also like to say a huge thank-you to Professor Benedicte Deforche from the University of Ghent who has Chaired the ISBNPA Abstract Committee for an incredible six years and is now stepping down.

We wish you all a wonderful meeting and hope that you learn something new, enjoy catching up with old friends and make some new ones, and most importantly, have a great time.

Best wishes,
Thank you to the ISBNPA 2017 abstract reviewers

The ISBNPA 2017 Abstract Review Committee wishes to acknowledge the abstract reviewers for the ISBNPA 2017 Annual Meeting. Their expertise is central to the quality of the meeting. Thank you for your invaluable contribution to the ISBNPA.

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ISBNPA 2017 | Page 11

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Keynotes


Chair: PJ Naylor

The theories and evidence we use to understand and inform physical activity interventions have been predominately shaped by mainstream scientific approaches. Colonized relations of power and dominant models of research have given us tunnel vision and have served to maintain the status quo of health disparities between Indigenous and mainstream populations. Privileging Western epistemologies when conducting research with Indigenous communities can undermine Indigenous ways of knowing and result in a limited understanding of the most effective approaches to promoting physical activity in an Indigenous context. Excellence and authenticity in physical activity research with Indigenous communities can only be achieved when research includes Indigenous conceptualizations of wholistic health (physical, mental, spiritual and emotional), when the relationship between Indigenous peoples, the land and the interconnectedness of all living things are acknowledged, when there is an understanding of ‘walking softly on the earth’ as a guiding principle, when researchers learn about the history and legacy of colonization, and when the resiliency of Indigenous peoples and communities is celebrated. The imperatives of reconciliation in research require that Indigenous knowledge frameworks and worldviews be valued and embraced alongside or even in lieu of conventional research approaches. To progress towards these imperatives, knowledge seekers must engage in meaningful and relevant research with Indigenous communities. This presentation will explore models of inquiry that resonate with a two-eyed seeing approach, and that have been successfully used to design and investigate physical activity interventions with Indigenous communities. Examples of successful physical activity intervention programs and implementation models in diverse Indigenous communities across Turtle Island (Canada) will be explored.

Cliona Ni Mhurchu: ‘Reducio’: The Magical Potential of New Technologies to Deliver and Evaluate Nutrition Interventions

Chair: Ralph Maddison

Good nutrition is essential for health, equity and prosperity. Dietary risk factors such as high sodium and sugar intakes, overweight/obesity, and low fruit and vegetable intakes, are leading causes of poor health and mortality worldwide. Improving diets is a current global priority and it is accepted that both population and individual approaches are required. However delivering and evaluating new nutrition interventions and policies, particularly those ideologically opposed by food industry or governments, is often challenging. New technologies provide the opportunity to deliver effective nutrition interventions in a way that is also scalable and cost-effective. They also offer almost magical potential to objectively and passively monitor population diets and assess the impact of natural experiments and food policies.

In this presentation, I will describe a range of technologies being used in nutrition research today, including electronic food purchase data; smartphone apps to promote healthier food choices; automated wearable cameras that capture images from the perspective of the wearer; and an experimental virtual supermarket setting. These technologies are being used to deliver and evaluate a range of policy-relevant nutrition questions including: (1) what are the effects of front-of-pack nutrition labelling systems on
consumer food choices and industry reformulation efforts?; (2) can wearable cameras improve the accuracy dietary assessment?; (3) what is the frequency and nature of children’s exposure to unhealthy food and beverage marketing?; and (4) what impact do food taxes and subsidies have on consumer supermarket food purchases?"

**Kerry Courneya: Physical activity behavior change interventions in cancer survivors: What’s cancer got to do with it?**

Chair: Annie Anderson

The field of physical activity (PA) and cancer survivorship—or exercise oncology—studies the role of PA in people who have been diagnosed with cancer (i.e., cancer survivors). Over the past 3 decades, research in this field has demonstrated that PA interventions in cancer survivors improve health-related fitness, physical functioning, symptom management, quality of life, chemotherapy completion rate, and may even lower the risk of cancer recurrence and death. Clearly, efforts are warranted to promote PA in cancer survivors, but do we really need to take cancer into account when developing interventions? In this presentation, I will make the conceptual and empirical case for why we need a body of evidence unique to cancer survivors to inform behavior change interventions in this growing population. I will first present an overview of a conceptual framework in which I proposed that “cancer variables” (i.e., disease- and treatment-related variables such as type of cancer and treatment) are likely important determinants and moderators of PA motivation and behavior change. I then review some empirical examples from my own research program that have tested cancer variables as determinants and moderators of PA behavior change. I conclude that cancer variables affect almost all aspects of PA behavior change interventions including: (a) the type, amount, and intensity of PA promoted, (b) the motives, barriers, and preferences for PA, (c) the social cognitive evaluations of PA, and (d) the who, what, when, and where of PA behavior change interventions. The challenge for this field is to identify which cancer variables are the most important determinants and moderators of PA behavior change to best inform clinical, community, and public health interventions. Ultimately, more targeted PA behavior change interventions based on cancer variables will improve the quality and quantity of life for cancer survivors.”

**Paul Eastabrooks: Dissemination, Implementation, Knowledge Translation, and Scale-up of Nutrition and Physical Activity Interventions in the Pursuit of a Public Health Impact.**

Chair: Adrian Bauman (Invited)

Efficacious interventions to promote healthful eating, physical activity, and weight loss exist for children and adults across many nationalities, races, and ethnicities. Unfortunately, there is a gap between what is known, from a research perspective, to what is done in typical clinics or communities to support healthy eating, physical activity, and weight. This provides an opportunity for scientists interested in behavioral nutrition and physical activity to engage in research that examines how these evidence-based interventions can be moved from the realm of academia to real public health impact. Dissemination and implementation science, knowledge translation, and scale-up are all terms that are used to describe scientific inquiry related to the process that can be used to move efficacious (evidence-based) interventions into community or clinical services with a goal of population health improvement. However, community stakeholders, including organizational decision makers and service providers often do not share the researcher’s value of a hierarchy of evidence and consider multiple types of information, some more than research evidence. Stakeholders may also activity criticize evidence-base as not relevant. Finally, stakeholders in community and clinical settings have unique knowledge, skills, and strategies that are often rolled over with an evidence-based intervention’s roll out or scale up. These challenges
can put a researcher on his/her heels on 3 fronts—defending the hierarchy of research evidence, the need for fidelity, and the minimizing of stakeholder expertise. Co-production models that integrate research and practice professionals using a vertical and horizontal systems approach may help to alleviate some of these issues while speeding the translation of evidence-based principles into practice. Three examples are provided that highlight the value of co-production models in developing sustained, scaled interventions to promote physical activity, weight loss in a community setting, and weight loss in a clinical setting. The presentation will conclude by proposing testable hypotheses to examine the utility of co-production models that have the potential to achieve a public health impact.

**Denise de Ridder: Putting the psychology back into nudging**

Chair: Nanna Lien

Nudges are gentle hints that aim to facilitate people in acting upon their intentions for changing behaviour. In spite of debate about the legitimacy of nudging, research shows consistent support for nudging by nudges insofar the behaviour relates to healthy eating and increased physical activity. Yet, there is paucity of nudges that have long lasting effects on this kind of behaviours. In my talk I will discuss how we can design nudges that take better account of the psychology underlying nudges with a focus on awareness of nudges, alignment to personal goals, and facilitating habitual behaviours. In doing so, I will make a plea for more attention to where and when nudges should be installed in order to be effective.
Symposia

Jun 08, 08:30 - 09:45: Symposia

S.01 Adapting Research-Tested Childhood Obesity Interventions for Community Implementation: Process and Outcomes (Convenor: Dr. Paul Estabrooks) (Salon B)

ADAPTING EVIDENCE-BASED GROUP DYNAMICS PRINCIPLES FOR A COMMUNITY-BASED LIFESTYLE INTERVENTION TARGETING CHILDHOOD OBESITY IN LONDON, ONTARIO, CANADA

Burke S M1. 1Western University, London, Ontario.

Objective: The Children's Health and Activity Modification Program (C.H.A.M.P.) was a 4-week community-based lifestyle intervention, delivered in a unique camp-based format, for children with obesity (aged 8-14) and their families. This presentation will provide an overview of the rationale for and implementation of the intervention, with a focus on the adaptation and use of evidence-based group dynamics strategies to increase cohesion and influence the health behaviors of participants. Methods: The program consisted of several group-based components, including: (1) daily physical activity; (2) behavior modification counseling; (3) dietary counseling; (4) weekly educational sessions for families; and (5) post-program support. A number of evidence-based strategies were adapted and implemented for use with both children and parents/guardians, targeting various group dynamics principles including perceptions of distinctiveness, proximity, group interactions and activities, goal setting, decision making, sacrifice behavior, information sharing, and ongoing communication, feedback, and social support. Various physiological and psychological outcomes were assessed prior to and after the 4-week intervention, and at 3-, 6-, and 12-month follow-up periods. Results: Forty participants completed Year 1 (n = 15; Mage = 10.6; 53% female) and/or Year 2 (n = 25; Mage = 10.6; 56% female) of the program. Generally speaking, our previous work has shown that participation in C.H.A.M.P. was associated with positive outcomes for children, including improvements in cardiovascular indices, body composition, short- and long-term improvements in child- and parent-proxy reported quality of life, and task and barrier self-efficacy. In addition, a number of community partnerships were built and maintained, the intervention was delivered as intended, and the program was viewed and received positively by both parents and children. In short, our data suggest that C.H.A.M.P. represents a promising group-based childhood obesity program. Conclusion: Lessons learned and implications for ongoing and future program development will be discussed with respect to the use of the group as an agent of change in behavioral interventions targeting childhood obesity.

BUILDING HEALTHY FAMILIES: ADAPTATION OF A FAMILY-BASED BEHAVIORAL WEIGHT CONTROL TREATMENT PROGRAM FOR RURAL MIDWEST US FAMILIES

Heelan Kate1, Bartee Todd1. 1University of Nebraska at Kearney, Kearney NE.

The prevalence of obesity among 6-11 year-old youth in the US was 17.5% between 2011-2014. Rural counties in the US have higher rates of obesity, sedentary lifestyles and associated chronic diseases, yet treatment of obesity in rural populations has received little attention. To meet the need for more accessible community-based child obesity treatment interventions, we adapted the components of Epstein's efficacious family- based weight control treatment program and implemented Building Healthy Families (BHF) in rural communities in the Midwestern US. Objective: The BHF program is for 6-11 year-old children (BMI >95th percentile for-age-and-gender) and their parents. This presentation will describe the BHF program, its adaptations, and outcomes. Methods: Key components of Epstein's family- based weight control treatment program were maintained and included nutrition education focusing on identifying and lowering high fat foods (Traffic Light Diet), increasing lifestyle physical
activity, and behavior modification focused on building skills on how to change nutrition and physical activity-related behaviors. Implementing the program in rural communities included technological adaptations while maintaining core principals. For example, online tracking of energy intake and red foods, wearable technology for physical activity and using synchronous video conferencing to engage families from outside of a 50-mile radius of the program. Results: BHF has reached 66 families (78 children and 110 parents) through 9 cohorts between the years 2009 and 2016. Child health outcomes have included a decrease in BMI z-score (-0.27±0.21) at 3 months with a significant loss of fat mass (-2.89±3.90 kg) and increase in fat free mass (0.70±1.36 kg) at 6 months. Parent outcomes included a loss of 6.51±4.30% of body mass at 3 months and 8.10±6.04% body mass loss at 6 months. Conclusion: BHF is an accessible family-based pediatric obesity treatment program that has resulted in positive health outcomes for children and adults. Advances in technology are adaptations that have led to greater reach of the program but several challenges to increasing reach and scalability continue to exist.

S.02 Intensity & Sustainability in Multi-Level Multi Component community programs – insights from 3 continents (Convenor: Dr. Bent Egberg Mikkelsen) (Saanich 2)

SUSTAINED AND EVOLVED CHILDREN’S HEALTHY LIVING (CHL) PROGRAM IMPACTS
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Purpose: To describe the long term impact of the Children’s Healthy Living (CHL) program, including results of the community randomized intervention trial, and an aggregation of anticipated and unanticipated capacity building, and collective impact in the region. Methods: The CHL training program developed and provided a community randomized intervention trial to prevent child obesity and promote health; and developed and provided distance degree training in community obesity prevention in conjunction with established degree programs at the University of Hawaii, the University of Guam and the University of Alaska. Results: The CHL multi-level multi-component community randomized controlled trial demonstrated impact on decreasing screen time, waist circumference, overweight and obesity and acanthosis nigricans prevalence. Community obesity prevention degree training was provided by CHL for 21 students who received a CHL scholarship; and several training grants and program development efforts have evolved from this foundation. Unanticipated impacts included additional degree training and leadership of staff and partners involved with CHL, and sustained coalition efforts. An additional 25 CHL-employed individuals spontaneously sought degrees (undergraduate, graduate, medical school, nursing school, dietetic internship) related to CHL, and 8 staff increased their leadership roles (Deans, Directors of Research and Extension, Dietetic Program, Chair). Eleven other staff had job advancement during the period (faculty position, tenure, promotion, health educator, Extension Agent, Extension Specialist, State Epidemiologist, Instructor). CHL efforts are being sustained with follow on grants at the core institutions, a CHL multistate follow-on coalition, and local community and jurisdiction coalitions in the US Affiliated Pacific Region. Efforts included the establishment of a non-profit organization, choosing child obesity prevention as an early childhood education program aim, NCD coalition focusing on physical activity and food environment, revamping curricula, and building relevant websites. The work standardizing staff for anthropometric measurements has continued to be in demand by early childhood education programs, regional research programs and health department staff. Conclusions: The CHL program demonstrated positive behavior and health effects and has had far reaching and continually evolving impacts on training, leadership and broader collective impact.

DESIGNING ML-MC COMMUNITY PROGRAMS -- FROM PROBLEM BASED TO A PEOPLE & PLACE BASED APPROACHES. INSIGHTS FROM THE SOL, HEALTH & LOCAL COMMUNITY AND CAMPUS & COMMUNITY PROGRAMS
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Objective: Selecting communities, settings and mediators and correctly assess their readiness to change as well as their potentials for benefitting from the programs is crucial. Traditionally ML-MC programs have been taking a
problem based approach looking for risk factors and behaviors. However, designing programs using only this perspective has a number of limitations since rarely people live their lives according only to risk factors. It makes it easier to measure the impact, but tends to result in restrictions and negative lists rather than positive lists. Increasingly planners therefore have realized that programming interventions needs to involve a citizen perspective. In addition, it needs to be able to bridge the gap between the many disciplinarities that are concerned with communities and cities as healthy places. Methods: The paper builds on the insights from the SoL program. Quantitative and qualitative evaluation were carried out baseline as well as follow up. A post program research on refining the design and sampling phase on ML-MC programs was carried out based on expert interviews and testing of the new method. Results: The results from the first round of the SoL intervention showed promising results on proxies of healthy eating: sales of vegetables and carrot snack packs increased, consumption of whole grain components increased, consumption of SBB among children decreased and children spent more time outside. No reduction for anthropometrics among children were found. A summary of the P model (Past, Problems, People & Places) as well findings from the testing of the model in the new Campus & Community Program is outlined. Conclusions: Planning for the sustainability of interventions and that the alignment of interest between stakeholders is crucial in order to build sustainability and ownership: As such the planning and negotiation of what to do is essential and correct assessment of the readiness of the communities to collaborate as well as their readiness to change is essential. This paper suggests a participatory and multi-disciplinary approach to the design of community programs that uses problems, past, places and people (P4) as a guide line to help identify where to intervene and how.

B'MORE HEALTHY COMMUNITIES FOR KIDS: PROGRAM IMPACTS AND SUSTAINABILITY

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Objective: To present the findings of the B'more Healthy Communities for Kids (BHCK) study, a multi-level, multi component (ML-MC) obesity prevention trial that targeted low-income African-American adolescents and their adult caregivers living in Baltimore, USA. Methods: Twenty-eight neighborhoods were randomized to intervention or comparison, with the intervention communities (n=14) receiving a program to increase access to healthier foods in corner stores, carryout restaurants and wholesalers, a recreation center-based mentor-led nutrition education program, social media and text messaging campaign targeting adult caregivers, and a policy-level component to plan for sustainability and engage city stakeholders. We interviewed 534 child-adult caregiver dyads pre and post to assess impact (to date, we have analyzed 93 child-adult dyads). Results: Process evaluation indicated that the program was implemented with moderate to high reach, moderate to high dose delivered, and high fidelity, depending on intervention component. There was an increase of stocking and sales of healthier promoted foods in corner stores and carryouts in the intervention communities. Difference-in-difference analysis using clustered standard error by community zones indicated a statistical trend in 0.68 increased daily vegetable servings intake (p=0.1) and 2.3 grams of fiber (p=0.1) among overweight/obese intervention children compared to control children. We found a trend in decreased BMI z-score among adolescent girls. Work with policymakers and other key city stakeholders have created pathways for sustaining specific components of the intervention. Conclusions: BHCK is one of a very small number of ML-MC interventions in low-income underserved communities ever conducted. Our results and potential sustainability indicate the application of this approach to reduce social disparities in obesity.

S.03 Incentivising healthy eating, physical activity and reduced sitting: Advancing understanding of appeal, acceptability, and costs (Convenor: Prof. Megan Teychenne) (Oak Bay 1 & 2)

VIEWS AND EXPERIENCES OF A PEDOMETER COMPETITION FOR CHANGING PHYSICAL ACTIVITY BEHAVIOUR IN ADOLESCENTS: A LONGITUDINAL QUALITATIVE STUDY

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Objective: Young people (n=142) took part in a 6-month pedometer competition in which they competed for their school, their class or as individuals, for weekly rewards to promote physical activity behaviour and wellbeing. The
aim of this study was to explore the temporal changes of participant’s views and experiences in relation to physical activity in adolescents taking part in a school-based pedometer competition. Methods: Focus groups were conducted with the same groups of 12-14 year old adolescents in each intervention school (n=3; 1 all boys; 1 all girls, and 1 co-educational) at four time points: T0 (baseline), n=19; T1 (end of the team competition), n=18; T2 (end of the individual competition), n=17; T3 (baseline + 52 weeks), n=14. The Framework method was used to thematically analyse the data. Study findings are reported according to The Standards for Reporting Qualitative Research (SRQR) guidelines. Results: Three themes were identified from the qualitative data: competition, incentives, and friendships. Themes around 'competition' indicated that a pedometer competition may help initiate physical activity. Suggested barriers to the competition were participants finding it "boring", and feeling as though they had a remote chance of "winning". "Incentives' were viewed favourably, although there were participants who found not winning "annoying". 'Friendships' were a motivator to be more physically active, particularly with girls who felt encouraged to walk more when with a friend, as "it's better to do it with friends". Conclusions: Competition was viewed favourably and had beneficial effects initially, but this effect may have lessened over time. Preferences for team or individual competitions, and the influence of friends' on physical activity behaviour were highlighted, and moderated by gender. Views on the different aspects of the competition changed from baseline to follow up. The results suggest that physical activity may increase during a competition intervention, and this can be maintained at 12 month follow up for some participants. The use of a qualitative longitudinal design enables investigation of temporal changes in participants' views and experiences, and help us better understand potential mechanisms of behaviour change.

PROCESS AND ECONOMIC EVALUATION OF AN INCENTIVE-BASED STUDY TO INCREASE PHYSICAL ACTIVITY AND REDUCE SITTING AMONG MIDDLE-AGED ADULTS

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Purpose: While incentive-based approaches for promoting active lifestyles are promising, little is known about their perceived appeal to participants, or their cost-effectiveness. The purpose of this presentation is to report on the appeal and perceived effectiveness of an incentive-based study for promoting physical activity and reducing sitting time from the perspective of the participants, and to evaluate the economic credentials of this intervention. Methods: Eighty insufficiently active adults (aged 40-65 years), recruited via a private health insurer database, participated in the study. Fitbits were worn for 16-weeks and points were received for physical activity increase and sitting reduction which were then exchangeable for rewards (cookbooks, clothing, gift-vouchers). Process evaluation data were collected through post-test surveys; these included Likert scale and open-ended questions around participants' beliefs of helpfulness, likability and suitability of intervention design features. Pathway analysis was used to identify the component activities of the intervention to facilitate measurement of the associated resource utilisation and costs. The intervention will be measured against a no intervention comparator and Incremental cost-effectiveness ratios will be reported as cost per unit increase in physical activity and cost per disability-adjusted life year saved. Results: The intervention was well received; Fitbit use in particular was regarded as helpful in motivating individuals to be more active (68% strongly agree, 30% agree) and reduce sitting time (36% strongly agree, 36% agree). Most participants liked the type of incentives offered (20% strongly agree, 49% agree) and reported that incentives motivated them to be more active (24% strongly agree, 34% agree). Preliminary economic results indicate an estimated cost of $325 per person for participation in the intervention. Conclusions: The evaluation results of this incentive-based intervention suggest that study components were liked by participants and motivated them to modify their behaviour for a relatively low intervention cost. This suggests a potentially scalable approach to encourage activity behaviour change among middle aged adults.

ACCEPTABILITY OF FINANCIAL INCENTIVES FOR HEALTH BEHAVIOUR CHANGE AMONGST UK ADULTS – COMBINED RESULTS FROM QUALITATIVE AND QUANTITATIVE STUDIES


Purpose Systematic reviews find financial incentive interventions can be effective in promoting health behaviour change. However, acceptability has been questioned. To achieve the potential of these interventions, they must be acceptable to (amongst others) those receiving them, those paying for them (e.g. through general taxation), and
those organising and delivering services. We conducted a series of studies exploring acceptability of financial incentives for health behaviour change in the UK. Methods We conducted focus group interviews with members of the public (n=74), individual interviews with public health policymakers (n=21), analysed public comments to online news reports of a financial incentive intervention for breastfeeding (n=3373), and conducted an online discrete choice experiment (DCE) with adults (n=356). Apart from the analysis of online new reports, incentives for a range of health behaviours were considered. Qualitative data were analysed using the Framework Approach. Data from the DCE were analysed using a random utility model framework and conditional logistic regression. Results Qualitative data suggested that financial incentives for health behaviours were not acceptable. Key concerns included scepticism about effectiveness, concern about ‘gaming’ (where participants lie to gain incentives), perceptions that incentives were ‘unfair’ to those who undertook healthy behaviours without incentivisation, perceptions that incentives were particularly expensive, and concern that incentives did not address ‘root’ causes of unhealthy behaviours. Policymakers were uniquely concerned about the potential response of politicians and the media to incentive interventions. Non-cash rewards, of lower value, offered only to vulnerable groups, with careful monitoring, and alongside educational support were considered most acceptable. In contrast, the DCE found that respondents preferred cash and shopping voucher incentives as, or more than, no incentives. DCE participants also preferred incentives offered to all, rather than targeted at vulnerable groups. Preferences for educational support alongside incentives varied between behaviours. Conclusions Stated acceptability of financial incentives for health behaviour change amongst UK adults varies depending on the context in which they are asked. It is possible that social desirability bias influences responses in face-to-face research settings more than in on-line settings. We have identified a number of ways to make financial incentive interventions more acceptable.

S.04 Using consumer activity trackers in research – latest evidence regarding validity, feasibility and efficacy for supporting behaviour change (Convenor: Dr. Carol Maher) (Lecture Theatre)

CONSUMER ACTIVITY TRACKERS: VALIDITY AND USERS’ PERCEPTIONS AND EXPERIENCES
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Purpose: The presentation will provide an overview of current evidence regarding the reliability and validity of consumer activity trackers. In addition, it will present survey results regarding users’ experiences and perceptions of activity trackers. Methods: A purpose-designed, cross-sectional survey was used to capture usage patterns, perceived behaviour change and online social interaction of Australian adults who currently or have previously used a consumer activity trackers. The survey was distributed via Facebook, with results analysed descriptively. Results: A total of 237 participants responded, of which 84% were current users, and 16% were past users. The average user had worn their activity tracker for 8 months (range 1-36 months) and intended to continue using their tracker for an average of 38 more months (range 3 to 40 months). A larger proportion of users reported that real-time feedback was useful (84%) than long-term feedback (72%). The most common complaints with activity trackers were low battery life (reported by 20% users), difficulties syncing data (18% users) and perceived inaccuracy of data (18% users). The most common reasons for discontinued use was a perception they had learnt everything from the tracker that they could (30%) or that the tracker had broken (22%) or been lost (11%). Most participants used their tracker to monitor physical activity (95%), while fewer used it to monitor sleep (66%) and food intake (28%). Similarly, approximately half of users felt that they had improved their physical activity as a result of using their activity tracker (48%), while only 11% and 14% felt they had improved their sleeping and eating patterns, respectively. Around one third of participants used the trackers’ social features, predominantly within health-related social platforms (such as the Fitbit online platform or Strava; total 40%) rather than on general online social networking sites (such as Facebook, Instagram and Twitter total 5%). Conclusion: Most participants used their trackers predominantly to obtain real-time feedback on their physical activity, suggesting that basic trackers meet the needs of many users. Social features are underutilised and may be a promising avenue for increasing the effectiveness of activity trackers for supporting health behaviour change.

USING CONSUMER ACTIVITY AND WEIGHT DEVICES IN THE DESIGN OF A THEORY-BASED MHEALTH TOOLS FOR WEIGHT LOSS MAINTENANCE: THE NOHOW TOOLKIT
Introduction: Few comprehensive solutions that integrate consumer activity and weight devices, are available for weight loss maintenance (WLM). The NoHoW is an EU H2020-funded project that will test if theory—and evidence-based behaviour change techniques delivered via a digital Toolkit (TK), which integrates data and use of activity trackers and weight scales from a major commercial brand (fitbit), are effective in helping people maintain previous weight loss. Methods: The NoHow TK is based on (1) state-of-art theories, including techniques associated with self-regulation skills (Self-regulation Theory), building autonomous motivation (Self-Determination Theory), and emotional regulation; (2) integration of consumer activity and weight devices (3) web-design expertise; (4) user-testing; and (5) a survey with representative sample of individuals and in-depth interviews about WLM patterns. Informed by the guidelines for developing complex behavior change interventions (e.g. MRC), we used a systematic approach to the translation of theory and evidence to ICT intervention components. This includes (1) developing theory-driven logic models, (2) identifying theoretical constructs targeted, (3) selecting techniques that impact on target constructs, and (4) translating these techniques into principles and specifications of a digitally-mediated intervention using data collected with consumer activity and weight devices. Regarding this last point, the TK includes visualizations of the devices data (fitbit API fetched data), integrating it with the theoretical approaches to behavior change. For example, action and coping plans, mindfulness techniques and other behavior change techniques were integrated with device data and apps. Results: We identified 8 themes (16 sessions) targeting core theoretical constructs for each intervention arm. Devices usage was recorded and integrated in the user testing phase and later were considered to refine the TK principles and specifications. After a pilot study, a large-scale (N=1500) European 2 x 2 factorial trial (self-regulation/motivation versus emotion-regulation) is being conducted among previous or currently overweight/obese adults that lost ≥5% of their initial body weight in the last year. Conclusions: NoHoW provides an example of a systematic approach to test behavior change principles and theory translated into a digital intervention, integrating consumer activity and weight devices, aiming to contribute to the implementation of sustainable, Europe-wide solutions to WLM.

THE EFFECT OF FITBIT USAGE ON BODY SIZE AND PHYSICAL ACTIVITY AMONG OBESE SEDENTARY WOMEN IN RURAL MONTANA AND NEW YORK

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Objective To examine whether Fitbit usage—in the context of a community randomized trial in medically underserved rural areas—is associated with changes in body size and physical activity in overweight and obese women. Methods We enrolled 194 overweight and obese sedentary women aged 40 years and older in a 24-week community randomized trial that included 16 medically underserved rural towns in Montana and New York. In eight of the towns, participants (N=101) receive the six-month Strong Hearts Healthy Communities (SHHC) program intervention, which included progressive strength training, aerobic exercise, health and nutrition education, and a civic engagement component. They were also given a Fitbit Charge HR. If participants opted in, their Fitbit data were collected for research via the Fitabase platform. The other eight communities (N=93) received the Strong Hearts, Healthy Women program, an education-only minimal intervention; they were not given Fitbits. Anthropometric measures, sociodemographic, and accelerometer (Actigraph wGT3X-BT) data were collected at baseline prior to randomization and at the end of the intervention. Analysis included linear regression conducted using SAS version 9.4. Results Thirty-six percent of participants had low Fitbit usage (> median). 26% of SHHC participants chose not to connect to Fitabase. For those connecting to Fitabase, days of Fitbit use ranged from 8 to
188, with a median of 164. Fitbit usage for those connected to Fitabase did not differ by age or education. However, usage was positively associated with program attendance (p=0.002). Among users (N=75), an increase in the sum of steps and the sum of moderate to vigorous physical activity (MVPA) minutes were each associated (p Conclusions Based upon preliminary evidence from this trial, physical activity captured by Fitbits for those connected to Fitabase is associated with significant improvements in body size and accelerometry-measured physical activity. Fitabase data may help predict individual progress in future interventions for weight loss and physical activity.

**S.05 Is it important to ‘gender-sensitise’ interventions to improve diet and physical activity behaviours in men? Experiences from three continents. (Convenor: Prof. Kate Hunt) (Sidney)**

“IT’S BEEN ABSOLUTELY BRILLIANT, NOT ONLY FOR THE TRAINING BUT THE MEETING LIKE-MINDED FELLAS”: UNDERSTANDING WHAT SUPPORTS MEN TO MAKE LASTING LIFESTYLE CHANGE THROUGH GROUP-BASED BEHAVIOUR CHANGE PROGRAMMES

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Purpose: In many high and middle-income countries, men’s risk of overweight or obesity has increased in recent decades, threatening to reverse trends towards decreasing gender differentials in life expectancy in many countries. There is some evidence that men are reluctant to attend many weight loss/healthy living programmes; too often it is assumed that men are uninterested in their health in general, and group-based behaviour change programmes in particular. This presentation aims to challenge these assumptions and discusses men’s positive response to group-based interventions within particular settings. Methods: We draw on data from randomised controlled trials (RCTs) and process evaluations of three gender-sensitised group-based behaviour change interventions (Football Fans in Training (FFIT), EuroFIT, Move like a Pro) which have been delivered and evaluated in professional football and rugby clubs in the UK and Europe. Results: An RCT of FFIT (primary outcome: weight loss at 12 months) demonstrated effectiveness and cost-effectiveness to 12 months; new data on long term follow-up (to 3.5 years) demonstrate sustained effects in many participants. An RCT of EuroFIT (primary outcomes: changes in physical activity and sedentary behaviour at 12 months) in 15 clubs in 4 countries is ongoing. Data from focus group discussions and semi-structured interviews studies of FFIT, EuroFIT and MLAP will be presented showing how the group physical and relational setting supports men to a) establish long term changes in eating, physical activity and sedentary behaviours; b) renegotiate performances of gender in relation to these behaviours within the group intervention setting and their day-to-day lives. These data will be presented in relation to a conceptual model which looks at the relational, physical and cultural context of the delivery of group-based, gender sensitised interventions, and questions which aspects of gender-sensitisation are really necessary to attract men to weight and lifestyle interventions. Conclusions: This presentation will demonstrate that gender-sensitising interventions in setting, style of delivery and context can not only attract many otherwise ‘hard to reach’ men who are at high risk of future disease, but also support them in behaviour changes that they can integrate into their daily lives and masculine identities.

**PROMOTING PHYSICAL ACTIVITY AND HEALTHY EATING IN MALE-DOMINATED WORKPLACES: RESULTS FROM THE POWERPLAY PROGRAM**


Objective: Achieving a lifestyle that includes recommended levels of physical activity and healthy eating can be elusive for many men, particularly for those living and working outside major urban centres. Based on evidence suggesting that men participate in health promotion programs in settings they are familiar with and consultations with men, we developed and implemented a novel gender-sensitive workplace health promotion program, called POWERPLAY. The objective of this presentation is to describe how men’s preferences informed the development of
POWERPLAY, report program outcomes, and highlight participant and workplace implementation leads' evaluation of the acceptability of POWERPLAY. Methods: A quasi-experimental pre-post design was used to evaluate the POWERPLAY in four worksites in northern British Columbia. Computer-assisted telephone surveys were used to collect baseline and 6-month follow-up participant data. Workplace implementation leads were also interviewed to collect information on program implementation and acceptability. Results: Surveys were completed by 139 men at baseline and 80 (63% response rate) men at follow-up. Significantly more men were meeting recommended levels of moderate to vigorous physical activity (i.e., 150 min) at the 6 month follow-up (72%) compared to baseline (58%; p=.001). Although the men engaged in the program reported higher knowledge regarding healthy eating (p Conclusion: The use of a gender-sensitized approach in POWERPLAY was successful in engaging men in health promotion in workplace settings and provides further support for tailoring health promotion programs to fit men's needs and preferences.

ENGAGING MEN AND FATHERS IN PHYSICAL ACTIVITY AND HEALTHY EATING: THE ROLE OF GENDER-TAILORING IN PROGRAM DESIGN AND DELIVERY

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Objective: Men are at greatly increased risk of chronic disease due to poor adherence to recommended health behaviours. Few Australian men are achieving the national guidelines for physical activity (20%) or fruit and vegetable intake (Methods: This presentation will provide experiential insights from two gender-tailored programs from Australia that successfully engaged men to improve their lifestyle behaviours. Healthy Dads Healthy Kids is a 3-month program designed to help fathers manage their weight and role model healthy behaviours to their children. Alternatively, SHED-IT is a self-administered, e-health program that uses technology to deliver evidence-based health advice and strategies. Both programs were successfully tested in multiple randomized controlled trials with men to establish both clinical efficacy and general effectiveness in community settings. Results: With reference to a conceptual model of program design and delivery, this presentation will highlight how all core program components were gender-tailored (i.e., content, format, facilitator, pedagogy, recruitment) to increase participant engagement and improve study outcomes. In all studies, participant recruitment targets were met, participant satisfaction was high and all retention rates exceeded 80% at the primary endpoint. Across the studies, intention-to-treat linear mixed models revealed significant intervention effects for weight (d = 0.5 – 1.0), waist circumference (d = 0.4 – 0.9), daily step counts (d = 0.5 – 0.9), energy intake (d = 0.4 – 0.7) and other important health indicators (e.g., risky alcohol consumption, fruit and vegetable intake, blood pressure, portion size). Semi-structured interviews and focus groups revealed key insights for future studies targeting men including: the appeal of programs pitched to 'men-only', the appreciation of a strengths-based perspective, and the value of realistic, evidence-based advice provided with frankness, warmth and humour. Conclusions: This presentation will summarise a series of experiential insights from a decade of research targeting men/fathers in gender-tailored weight loss and healthy lifestyle programs. Insights will be supported by qualitative and quantitative evidence to highlight the need for male-only health behaviour programs that are specifically designed to account for men's unique values, preferences, motivators and challenges.

S.06 Changing diet from adolescence to early adulthood: understanding trajectories and exploring effective interventions (Convenor: Dr. Tarra Penney) (Colwood 1 & 2)

THE STATE OF THE EVIDENCE: A SYSTEMATIC REVIEW OF LONGITUDINAL OBSERVATIONAL STUDIES OF DIET FROM ADOLESCENCE TO EARLY ADULTHOOD

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Objective: Late adolescence to early adulthood is a period of individual development and characterised by many lifestyle transitions which may influence dietary behaviour. Understanding dietary trajectories across this age range will be important to target interventions appropriately. In this study, we reviewed papers reporting on all nutrient and food group outcomes to assess how longitudinal change in diet is conceptualised and measured between the ages of 13 to 30. Methods: We searched Medline, SCOPUS, Embase, PsycINFO, ASSIA, Sportdiscus, Web of Science
INTERVENTIONS DURING THE TRANSITION INTO YOUNG ADULTHOOD: LESSONS LEARNED FROM THE CHOICES STUDY

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Objective: Excess weight gain tends to occur in young adulthood. However, research examining effective weight-related interventions for this age group has been limited. As one of seven trials in the EARLY Trials consortium (Early Adult Reduction of weight through LifestYle intervention), the CHOICES Study (Choosing Healthy Options in College Environments and Settings) tested effects of a technology-integrated, young adult weight gain prevention intervention. Methods: CHOICES was a randomized controlled trial with 441 participants (ages 18-35) who were students at three 2-year community colleges in Minnesota (USA). The 24-month intervention included a 1-credit academic course and social networking and support online intervention, with a focus on shifting key weight-related
behaviors, including dietary intake, physical activity, screen time, sleep and stress. Results: Among intervention participants, process evaluation assessments indicate high levels of intervention dose received, intervention retention and participant satisfaction, but engagement results were mixed (for example, with more than half of intervention participants logging onto the CHOICES website during the first month, but then declining to 25-40% during the following 23 months.) Outcomes analyses indicated no statistically significant differences in BMI between conditions at the end of the trial. However, there was a statically significant difference in the prevalence of overweight/obesity between treatment conditions at 24 months. There was also limited evidence of behavioral changes in dietary intake, physical activity/screen time and sleep duration (key targets of the intervention), though this was largely driven by effects observed at 4-months post-intervention initiation that were not sustained through 24 months. Conclusions: Overall, there are numerous valuable "lessons learned" from the process of conducting the CHOICES study and from these results that will be useful in developing and implementing weight gain prevention trials among young adults in the future.

S.07 Global Matrix 2.0: Insights from Report Card Grades on the Physical Activity of Children and Youth from Low-, Middle-, and High-Income Countries (Convenor: Prof. Mark Tremblay) (Salon C)

HIGHLIGHTS OF REPORT CARD GRADES ON THE PHYSICAL ACTIVITY OF CHILDREN AND YOUTH IN LOW-INCOME COUNTRIES

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Purpose: The purpose of this presentation is to consolidate and examine grades from Report Cards on the Physical Activity of Children and Youth from low-income countries and to compare and contrast findings within and between countries in search of insights to improve the grades. Methods: Report Cards on the Physical Activity of Children and Youth from 38 countries were prepared commensurate with harmonized processes orchestrated by the Active Healthy Kids Global Alliance and included grades for nine common indicators (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviour, Family and Peers, School, Community and the Built Environment, and Government Strategies and Investments). The aggregation of findings from all 38 countries resulted in the Global Matrix 2.0. Low-income countries had average grades of C and D across all indicators. In general, the countries performed better on behavioural indicators (Overall Physical Activity, Active Transportation and Organized Sport Participation) than supports and influencers (Family and Peers, School, Community and Built Environment, Government Strategies and Investments). Low-income countries performed best on Active Transportation with grades ranging from C in Ghana and Mozambique, to A+ in Zimbabwe. The Overall Physical Activity (grades D to C+) was the most homogenous grade across the low-income countries. Conclusions: While report card grades for all indicators showed large variation when compared across all countries, the grades from low-income countries were more homogeneous. Targeting active play, active transportation, and the influence of family and peers may be the best and most affordable strategy to improve overall physical activity in low-income countries. Higher-income countries may benefit from the evidence that active behaviours can be achieved in the relative absence of deliberate support mechanisms, but in the presence of opportunity and autonomy.

HIGHLIGHTS OF REPORT CARD GRADES ON THE PHYSICAL ACTIVITY OF CHILDREN AND YOUTH IN MIDDLE-INCOME COUNTRIES

Katapally Tarun1. 1University of Regina, Regina, Saskatchewan.

Purpose: This presentation aims to compare and contrast findings within and between middle-income countries (Human Development Index >0.60 and Methods: As part of the Global Matrix 2.0, Report Cards on the Physical Activity of Children and Youth from 38 countries were prepared commensurate with harmonized processes orchestrated by the Active Healthy Kids Global Alliance and included grades for nine common indicators (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviour, Family and Peers, School, Community and the Built Environment, and Government Strategies and Investments). Participating middle-income countries included: Brazil, Chile, China, Colombia, India, Malaysia, Mexico, South Africa, Thailand,
and Venezuela. Findings were compared and contrasted using qualitative analyses of the assigned grades and narrative information from country-specific Report Cards. Results: Brazil, Mexico, India and South Africa were ranked higher than other middle-income countries for Overall Physical Activity. Except China and Thailand, those countries that received better grades for Active Transportation also received better grades for Overall Physical Activity. India, which received C for Active Transportation, was the only country that obtained a grade better than D for both Overall Physical Activity and Sedentary Behaviour. Another consistent finding was the inadequate evidence to grade Organized Sport Participation, Active Play, and Family and Peers. Conclusions: While there is consistency of grades between some countries, there exists an overall variation of grades between middle-income countries. Apart from developing country-specific policies to improve grades, there is a need for active living research in middle-income countries to address the existing dearth of empirical evidence. Countries that received poorer grades for Active Transportation need to explore ways to provide opportunities for children and youth to move independently because based on the grades, there seems to be a relationship between Active Transportation and Overall Physical Activity. Comparison of findings with low and high-income countries would provide a bigger picture of the state of physical activity among children and youth across the world.

HIGHLIGHTS OF REPORT CARD GRADES ON THE PHYSICAL ACTIVITY OF CHILDREN AND YOUTH IN HIGH-INCOME COUNTRIES

Seghers Jan1. 1KU Leuven, Leuven.

Purpose: The purpose of this presentation is to consolidate and examine grades from Report Cards on the Physical Activity of Children and Youth from high-income countries and to compare and contrast findings within and between countries in search of insights to improve the grades. Methods: Report Cards on the Physical Activity of Children and Youth from 38 countries were prepared commensurate with harmonized processes orchestrated by the Active Healthy Kids Global Alliance and included grades for nine common indicators (Overall Physical Activity, Organized Sport Participation, Active Play, Active Transportation, Sedentary Behaviour, Family and Peers, School, Community and the Built Environment, and Government Strategies and Investments). The aggregation of findings from all 38 countries resulted in the Global Matrix 2.0. From the 38 countries participating in the Global Matrix 2.0, 24 countries (63%) had a Human Development Index (HDI) >0.78 and were consequently identified as high-income countries. Findings from high-income country report cards were compared and contrasted using qualitative analyses of the assigned grades and narrative information provided in each country’s report card. Results: In general, a large variation in reported grades could be observed among high-income countries. However, the majority of high-income countries (21 out of 24) reported low (D) or failing grades (F) for Overall Physical Activity. In contrast, for Organized Sport Participation and Active Transportation, 75% of high-income countries reported a grade of C or higher. For the influencers, about half of the high-income countries reported a grade of B or higher for School as well as Community and the Built Environment. A high proportion of incomplete grades (INC) in high-income countries were reported for the Active Play and Family and Peers indicators. Conclusions: Despite the low grades for Overall Physical Activity in high-income countries, the higher grades for Organized Sport Participation and Active Transportation in these countries offers an opportunity to increase the overall levels of physical activity. The large variation in reported grades among high-income countries offers the opportunity to learn from each other and to exchange evidence-based strategies to ensure that participation in specific physical activity behaviors results in sufficient overall levels of physical activity.

S.08 What do fathers think? The role of fathers in the dietary and activity behaviours of their young children (Convenor: -- Adam Walsh) (Saanich 1)

FATHERS’ PERSPECTIVES ON THE DIETS AND PHYSICAL ACTIVITY BEHAVIOURS OF THEIR YOUNG CHILDREN

Walsh A1, Van Der Pligt P1, Hesketh K1, Cameron A1, Crawford D1, Campbell K1. 1Deakin University, Burwood, Victoria.

Purpose: Parental influence on young children’s diets and activity behaviours is considered pivotal, with research focusing predominantly on maternal influences. Few studies consider the role of fathers, particularly for children
under five years of age. This study aimed to assess fathers' beliefs and describe their perceived roles in the eating and physical activity behaviours of their young children. It also aimed to elucidate fathers' views regarding the ways in which they feel they need support to promote healthy eating and physical activity behaviours in their young children. Methods: Fathers of preschool-aged children (2-5 years old) in metropolitan Melbourne (Australia) were recruited using a combination of purposive and snowball sampling methods. Participants undertook in-depth, semi-structured interviews to explore perceptions of the dietary and physical activity behaviours of their preschool-aged children. All interviews were audio recorded, with recordings transcribed verbatim and thematically analysed using NVivo 10. Demographic data were also collected. Results: Twenty fathers (40 ± 5.1 years of age, 45% university educated, 95% in a relationship, 50% the primary carer for their children ≥ 10 hours/week), were included in the final analysis. Eight themes were identified: (1) Shared responsibility for promoting healthy dietary and physical activity behaviours of their young children; (2) Family environment as the primary point of influence; (3) Parental role modelling; (4) Children's exposure to food marketing; (5) Use of food as a reward; (6) Conducive environments for food and physical activity education; (7) Limiting screen time and (8) Seeking knowledge and skills about young children's dietary and physical activity needs. Conclusions: This exploratory study presents the views of a socio-economically diverse group of fathers regarding the dietary and physical activity behaviours of their young children. It also provides insights into the underlying perceptions that generate these views. This study reveals that fathers view themselves as active participants in their young children's food choices and activity participation, despite often being overlooked in research and program development. Future, family focused, efforts addressing childhood health behaviours would benefit from including fathers to further inform our understanding of this complex area.

"IF NOT THE PARENTS, WHO ELSE?: A QUALITATIVE EXPLORATION OF HOW FATHERS ATTEMPT TO PREVENT CHILDHOOD OBESITY IN THEIR FAMILIES
Vollmer R1. Bradley University, Peoria, IL.

Purpose: If a father's views are not considered in the development of a prevention program, then the efforts may be futile, especially if the other parent does not feel supported; however, it is unknown how fathers of preschool age children make sense of childhood obesity. Specifically, the objectives of this study were to: 1) understand how fathers of preschool age children define overweight and obesity in children, and 2) investigate how fathers influence or attempt to influence their child's nutrition and physical activity behavior. Methods: Fathers of preschool age children were recruited via listservs and social media advertisements to complete an online, qualitative survey. This survey was open to all US fathers regardless of race, ethnicity, educational level, and income level. Demographic information was also collected from each participant. Thematic analysis was used to analyze qualitative data from the survey questions. Transcripts of the survey responses were read through and coded to identify categories and themes under each category. Results: A total of 117 fathers (35.6 ± 5.55 years of age, 85% white, 92% non-Hispanic, 82% had 4-year degree or more) were included in the final analysis. Four main categories were developed from the survey response transcripts: 1) Causes of childhood obesity, 2) Prevention and/or treatment strategies, 3) Recognition of child excess weight, and 4) Barriers to changing behavior. Within each category several themes emerged. Generally, fathers indicated that there is a combination of factors that cause childhood obesity including, genetics, diet, and physical activity. However, fathers were more descriptive in terms of how to prevent or treat obesity, with a heavy emphasis on role modeling and family inclusion for strategies to be effective. Although fathers indicated that parents have a majority control over their child's health behaviors, they also noted barriers that impede their efforts to improve health behaviors. Conclusions: This study provides insight into how fathers may approach nutrition and/or physical activity changes they may wish to make within their families. These results indicate that fathers are key players in their family's diet and physical activity behaviors, and therefore, should be included in future obesity prevention programs.

CO-PARENTING IN THE CONTEXT OF CHILD FEEDING: A QUALITATIVE EXAMINATION OF FATHERS’ PERSPECTIVES
Khandpur N1,2, Charles J1, Davison K1. 1Harvard University, Cambridge, MA; 2University of Sao Paulo, Sao Paulo.

Purpose: There is a dearth of literature assessing how mothers and fathers co-ordinate, support or undermine each other’s food parenting efforts in the context of child feeding. These inter-parental dynamics, also called co-parenting, may influence children's dietary behaviors and future weight and present an alternative pathway of
paternal influence on child health. The current study examined the extent to which fathers’ food parenting practices are cooperative versus conflicting with those of the mother. Methods Fathers from diverse backgrounds were recruited using a combination of purposive and snowball sampling methods (N= 37; mean age 38.6 ± 9.1 years; 40.5% non-residential; 40.5% college education; 51.3% married/in a relationship). Semi-structured interviews, conducted by trained researchers using an interview guide, were audio-recorded and transcribed verbatim. NVivo 10 was used for thematic coding. Instances of cooperative and conflicting food parenting practices and patterns in sources and consequences of conflicting practices were identified from the data. Results Co-operative food parenting practices were reported by approximately half of the fathers in this sample, a majority of whom were married. Having food rules, structuring the child’s environment to avoid distractions while eating and monitoring the child’s food intake were consistent between parents. Forty percent of the fathers reported instances of conflicting food parenting practices. Conflicting practices, reported by an equal number of married and divorced/separated fathers, focused on access to energy-dense, nutrient-poor snacks and introducing variety into the diet. Dissimilarities in practices were driven by differences in parental eating habits, feeding philosophies and concern for child health (sources of parental conflicting practices). Fathers either succumbed to the practices of the mother or over-compensated for them. Also, these situations often resulted in child tantrums or refusal to eat (consequences of parental conflicting practices). Conclusions This study identifies potential contexts, sources and consequences of inconsistencies in feeding related co-parenting between mothers and fathers. These would be important to address in future family-focused, obesity prevention interventions.

Jun 08, 17:00 – 18:15: Symposia

S.09 Moving towards positive mental health: Exploring the global utility of physical activity to promote psychological well-being and understanding causation (Convenor: Prof. Stuart Biddle) (Salon B)

PHYSICAL ACTIVITY AND SELF-REGULATION IN PRE-SCHOOLERS FROM LOW-INCOME SETTINGS IN SOUTH AFRICA
Draper Ce1, 2, Cook CJ1, Howard SJ2, 3, Division of Exercise Science and Sports Medicine, University of Cape Town, Cape Town, Western Cape; 2MRC/Wits Developmental Pathways for Health Research Unit, University of the Witwatersrand, Johannesburg, Gauteng; 3Early Start Research Institute, University of Wollongong, Wollongong, New South Wales.

Purpose: Self-regulation has been defined as the capacity to control our thoughts, feelings and behaviour, and is relevant to the mental health and well-being of young children. Self-regulation has been associated with positive life outcomes relating to health and human capital, and is likely to be compromised for children living in poverty. The aim of this research was to assess self-regulation in children from a low-income urban setting, and investigate the association between self-regulation and physical activity in this group. Methods: Physical activity was objectively measured using Actigraph GT3X+ accelerometers, with n=56 preschool children (3-6 years) from a low-income urban setting, in South Africa. Cut points were applied for sedentary behaviour (moderate- to vigorous-intensity physical activity (MVPA; >420 counts/15s. Self-regulation was assessed using the Early Years Toolbox Child Self-Regulation and Behaviour Questionnaire (CSBQ), which yields scores on the following subscales: cognitive self-regulation, behavioral self-regulation, and emotional self-regulation, as well as sociability, prosocial behavior, externalizing problems, and internalizing problems. The questionnaire was completed for each child by their class/group teacher. Results: All children met the recommendation for preschool children of 180 minutes of total physical activity (light, moderate and vigorous) on all days. Mean total physical activity for the group (on week and weekend days) was 446±49.11mins/day, and mean MVPA for the group (on week and weekend days) was 110.58±31.18 mins/day. Mean total physical activity and mean MVPA were not significantly associated with any of the CSBQ subscale scores. Preliminary observations of the physical activity patterns of these children, and space constraints of the preschools suggest that the majority of physical activity accumulated by the children is unstructured, informal activity outside of the preschool environment. Conclusions: Although research with older children indicates a positive relationship between physical activity and positive mental health outcomes, these associations were not evident in this population. The lack of association may be due to the high levels of activity observed across the sample. Furthermore, the context in which this activity is taking place, and therefore the potential for a positive mental health impact, may be an important consideration within low-income settings.
PHYSICAL ACTIVITY AND HAPPINESS: LONGITUDINAL EVIDENCE FROM THE PELOTAS BIRTH COHORT STUDY IN BRAZIL

Richards J¹, Mohnsam Da Silva I², Barros F², Menezes A², Assunção M², Gonçalves H², Wehrmeister F², Mielke G², Hallal P², ¹Charles Perkins Centre & School of Public Health, University of Sydney, Sydney, NSW; ²Federal University of Pelotas, Pelotas, Rio Grande do Sol.

Purpose: There is emerging evidence that physical activity can prevent mental ill-being (e.g. depression, anxiety). However, research on the role of physical activity in promoting mental well-being (e.g. happiness) is limited to cross-sectional studies in high-income settings. We aim to examine the relative merits of physical activity during early-mid adolescence on subsequent mental ill-being vs. well-being in early adulthood in a middle-income country.

Methods: We examined data from 3,235 participants in the 1993 Pelotas Birth Cohort (Brazil). Total and leisure-time moderate-vigorous physical activity at ages 11 and 15 years were categorised into three categories (low, moderate, high). The Subjective Happiness Scale and Mini International Neuropsychiatric Interview were completed at age 18 years and scores were dichotomised according to diagnostic criteria. Regression analyses were adjusted for sex and baseline BMI, socio-economic status and mental health. Associations with leisure-time physical activity were also adjusted for total physical activity at follow-up. Odds ratios (OR) and 95% confidence intervals (95%CI) were calculated with the low active group as reference. Results: Total and leisure-time physical activity at age 11 were not associated with any of the mental well-being or ill-being outcomes at age 18 years. Participants were more likely to be “happy” at age 18 if they were moderately (OR=1.25, 95%CI=1.04-1.51) or highly (OR=1.24, 95%CI=1.05-1.47) active at age 15 years. The associations with “happiness” at age 18 were even stronger when considering moderate (OR=1.34, 95%CI=1.14-1.57) and high (OR=1.26, 95%CI=1.06-1.50) levels of leisure-time physical activity at age 15 years. Only a moderate amount of leisure-time physical activity at age 15 was significantly associated with less “depression” (OR=0.69, 95%CI=0.51-0.95) at age 18 years. There were no significant associations between physical activity at age 15 and “anxiety” at age 18 years. Conclusions: Physical activity during mid-adolescence, but not early-adolescence, was predictive of mental well-being in early adulthood. This was particularly pertinent for moderate amounts of leisure time physical activity, which also predicted lower mental ill-being. Physical activity appeared to be a stronger predictor of mental well-being than ill-being. This has implications for physical activity promotion, where focusing on positive health outcomes may have more traction than disease prevention messaging.

PHYSICAL ACTIVITY AND CHANGES IN PHYSICAL SELF-WORTH: DANISH SCHOOL INTERVENTION RESEARCH

Christiansen Lb¹, Brondeel R¹, Lund-Cramer P¹, Smedegaard S¹, Holt Ad¹, Skovgaard T¹. ¹University of Southern Denmark, Odense.

Purpose: Physical activity at school can improve positive mental health of all children – especially if it is targeted to children’s needs and executed in a positive social climate. The purpose of the present study was to examine if and for whom the physical self-worth changed during a 9 month school intervention study comprising children aged 10-13 years. Methods: The intervention is based on Self-Determination Theory and was developed and pilot tested in close co-operation with schools and targeted 1) physical education lessons, 2) in-class activity, and 3) physical activity in recess. Using a cluster-randomized design, 24 Danish schools were randomized to either intervention or control. Study population included 3,136 children aged 10-13 years at baseline. Survey data on physical self-worth, socio-demographics, physical activity, self-efficacy and physical enjoyment was collected prior to intervention and after 9 months. Physical self-worth was measured with the Children’s Physical Self-Perception Profile with an index of six questions on a 4-point Likert scale. Results: There were 2,892 children (92%) who completed the survey, and 2,590 were retained at follow-up (82%). Preliminary results indicate that the mean score for physical self-worth increased from 3.1 to 3.2 and there was no difference between intervention and comparison schools. Despite this, there was an increase in physical self-worth for 48% of the children that was more prevalent in boys than girls. Conversely, there was a decrease in physical self-worth for 34% of children that was most apparent in girls at the comparison schools. Further mediation analyses will explore the implications of these findings and changes in physical enjoyment on physical activity levels and self-efficacy in different socio-demographic groups. Conclusions
Despite limited intervention effect on physical self-worth across the sample, it appears to vary according to socio-demographic group. Building physical self-worth may be an important mediating factor to improve physical activity levels for all children, but further investigation is warranted so that school-based physical activity interventions are tailored accordingly.

LESSONS LEARNED FROM THE FIELD: PRACTICAL CONSIDERATIONS IN ADVOCACY READINESS FOR AN OBESITY PREVENTION INITIATIVE

**Calloway Eric**, Pinard Courtney®, Fricke Hollyanne®, Carpenter Leah®, Yaroch Amy®. ²Gretchen Swanson Center for Nutrition, Omaha, NE.

Purpose: Describe practical aspects of advocacy readiness, including important tasks undertaken while planning and preparing a health policy advocacy campaign for childhood obesity prevention and lessons learned from the field.

Methods: A grounded theory approach was used to understand advocacy readiness within the context of a public health policy advocacy obesity prevention initiative conducted in the U.S. – VOICES. Campaign leaders and advocacy experts (n=21) completed semi-structured telephone interviews. Interviews were audio recorded and transcribed verbatim. Results: Themes emerged relating to the advocacy readiness process, key tasks completed, barriers and facilitators, and lessons learned. Key tasks included forty-two separate activities that can be grouped into four categories: collecting information, building organizational capacity, developing advocacy strategies, and considerations related to health equity and community engagement. Barriers included constraints such as limited funding, staffing, and time, as well as difficulty with building and maintaining strategic partnerships. Facilitators included learning from peers, utilizing available guides and online tools, early planning, and assembling a cohesive team with a diverse skill-set. Lessons learned related to messaging, navigating the political landscape, sharing information and asking for guidance, and organizing and planning. Conclusions: VOICES is among the first national initiatives to focus on changing state and local policies to promote childhood nutrition and physical activity. Findings from this study are practical in nature and broadly applicable to public health policy advocacy. Results can inform future advocacy campaigns to plan accordingly for important tasks, avoid potential pitfalls, and utilize facilitators.

EVALUATION OF PROVISION AND RECEIPT OF TECHNICAL ASSISTANCE IN A POLICY ADVOCACY INITIATIVE TO ADDRESS CHILDHOOD OBESITY PREVENTION IN THE U.S.

**Pinard Courtney**, Fricke Hollyanne, Calloway Eric, Carpenter Leah, Yaroch Amy. ²Gretchen Swanson Center for Nutrition, Omaha, NE.

Purpose: To describe technical assistance (TA) from both provider and recipient perspectives as part of an evaluation of a national policy advocacy initiative to address childhood obesity prevention in the U.S. – VOICES.

Methods: Client engagement surveys were conducted with 24 VOICES advocacy grantees. This survey asked about experiences requesting and receiving TA as part of VOICES. In addition, we conducted in-depth interviews with key individuals providing TA (N=34) to VOICES grantees, as well as those receiving TA (N=12). TA documentation and processes were explored with interviewees following a two-tiered definition: 1) traditional, standardized assistance provided in response to content-oriented questions that arise from the field; and 2) non-traditional, capacity building assistance that includes tailored coaching and guidance to improve relationship-building strategies. Results: As grantees prepared and conducted their campaigns targeting nutrition and physical activity related policies, typically sought out TA once or twice a month. Grantees reported TA being especially crucial in message research and polling, media advocacy/communications, and legal TA across the six priority areas: food access, active places, healthy drinks, smart school foods, food marketing, out of school. In addition, grantees used available tools that such as fact sheets, policy reports, and briefs. Drawbacks to the TA process included lack of timeliness due to a
cumbersome approval process. In-depth interviews with VOICES grantees found that most TA is received from an assigned regional technical assistance provider (called a "regional campaign manager"). The regional technical assistance provider acts proactively and reactively to address TA needs. In-depth interviews with TA providers revealed several recommendations to improve the TA model in Voices such as tracking TA requests with improved interoperability and coordinated systems across organizations, increased preemptive sharing of resources and tools to grantees, and improving alignment on nutrition and physical activity policy targets and bottom lines. Conclusions: Capturing utility of different types of TA provided, including both traditional and non-traditional, in a large policy advocacy campaign provides insights and lessons learned with regard to training, tools, and resources that are helpful in developing successful campaigns to address childhood obesity prevention.

HEALTH EQUITY CONSIDERATIONS IN ADDRESSING CHILDHOOD OBESITY PREVENTION THROUGH A POLICY ADVOCACY INITIATIVE

Fricke Hollyanne1, Calloway Eric1, Pinard Courtney1, Carpenter Leah1, Yaroch Amy1. 1Gretchen Swanson Center for Nutrition, Omaha, NE.

Purpose: Describe best practices for incorporating health equity into a childhood obesity prevention policy advocacy initiative in the U.S., focusing on barriers and facilitators to establishing and sustaining relationships with intended impacted communities (e.g., low-income, racial/ethnic groups at higher risk for obesity). Methods: Semi-structured phone interviews were conducted with practicing advocates (n=7) and advocacy/equity experts (n=6). As part of a broader interview related to advocacy readiness, advocates and experts were asked about the role of health equity in advocacy readiness, their health equity experience, and considerations for building equitable coalitions and sustaining change within communities, most specifically related to childhood obesity prevention. Interviews were audio-recorded and transcribed verbatim, then coded independently for themes by two authors. Results: Although interviews took place across different groups (practicing advocates; advocacy/equity experts), several themes around important considerations for health equity within policy advocacy campaigns that are applicable across populations and topic areas emerged. Main themes included: (1) aligning campaign objectives with intended impacted communities' needs; (2) avoiding "overload" on communities; (3) establishing authentic community participation; and (4) maintaining long-term community involvement. A proposed 'screener' for self- or funder-assessment of health equity considerations will also be presented. Conclusions: Addressing health equity is considered a key component of establishing advocacy readiness within a policy advocacy campaign, especially as it pertains to low-income disadvantaged populations at greatest risk for obesity. Though the results presented are in relation to the VOICES initiative, they are also applicable to a wider audience, including advocates, researchers, funders, and other stakeholders. Similar initiatives, whether in the U.S. or outside should consider adopting policies and practices that authentically engage their intended impacted communities to ensure equitable and sustainable initiatives, especially in relation to health promoting behaviors, including nutrition and physical activity.

S.11 Determinants of sedentary behavior through the lifecourse: Insights and advances from DEDIPAC. (Convenor: Prof. Sebastien Chastin) (Oak Bay 1 & 2)

BAYESIAN NETWORK ANALYSIS OF INTERDEPENDENCIES AMONG FACTORS ASSOCIATED WITH SEDENTARY BEHAVIOR

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Purpose: To the complex interplay between factors associated with sedentary behaviors and identify potential
levers for change across the lifecourse. Methods: The analysis was based on data of the Eurobarometer 80.2 from 2013 which included the IPAQ short, sociodemographic information and questions on perceived environment, health, and psychosocial information. By adding data on macro-level factors from Eurostat database, 32 variables from six systems were considered on individual or regional level: 1) physical health and wellbeing, 2) social and cultural context, 3) built and natural environment, 4) psychology and behavior, 5) institutional and home settings, 6) policy and economics. Overall, 23,865 participants of the Eurobarometer from 28 European countries, aged 16 and older, who provided complete information, were considered. The analysis was stratified by sex and four age-categories, i.e. young (16–25), adults (26–44), middle aged (45–64), and older adults (65+), to account for differences over the life course. Bayesian networks (BN) were applied to the overall study sample as well as to each sex- and age-stratum that allowed the complex modelling of conditional interdependencies between variables in terms of a directed acyclic graph (DAG). Results: A very complex web of interplay between factors is associated with sedentary behavior showing changes through the life course. As a main finding, SB was directly associated with occupational status in the three youngest age groups. Recurring factors indirectly linked with SB were perceived social status and life satisfaction in men and factors of the family setting in women. In older adults, SB was associated with environmental factors. Conclusions: Occupational status was found to be the main driver of SB through the life course. The Bayesian network analysis supports the priority for future research in the system of home and institutional (occupational) settings.

GAPS AND NEW CANDIDATE DETERMINANTS OF SEDENTARY BEHAVIOUR IN YOUTH: A DEDIPAC-STUDY

De Craemer M1, Verloigne M2,3, Ghekiere A1, Loyen A1,3, Ling F3, Lien N3, Brug J1, Chastin S3, Cardon G1. 1Ghent University, Ghent; 2Research Foundation Flanders, Flanders; 3VU University Medical Center Amsterdam, Amsterdam; 4University of Limerick, Limerick; 5University of Oslo, Oslo; 6Glasgow Caledonian University, Glasgow.

Purpose: Important gaps in the literature on determinants of sedentary behaviour emerged during the development of the SOS-framework. New candidates came out of the framework which have never been investigated before. But also several other factors came out of the framework for which there currently is insufficient evidence. Therefore, there is a need to investigate whether and how these factors are associated with sedentary behaviours. Making use of secondary data analyses, these potential new candidate determinants were tested in youth. Methods: First, datasets were selected out of a compendium of 114 datasets, based on the following criteria: (1) age (0-18 years), (2) sedentary behaviour was measured either objectively or subjectively, and (3) correlates and/or determinants of sedentary behaviour were investigated. Second, the selection of potential factors that were investigated was based on the final list of 190 life course factors from the SOS-framework. These factors were compared with the results of a systematic review of determinants of sedentary behaviour in youth, and all doubles were crossed out. In total, seven potential correlates of sedentary behaviours remained and were studied in two or more of seven included datasets: (1) ethnicity, (2) car ownership, (3) sleep, (4) smoking, (5) alcohol, (6) perceived health status and (7) perceived weight status. Further, it was decided to use self-reported television and computer time, as these data were available in every study. Finally, the data were pooled and harmonized and multiple regression analyses were carried out. Results: In total, 209,174 participants (mean age: 13.5 years; 49.0% boys) were included in the analyses, with a mean TV and computer time of 2.5 and 1.3 hours/day, respectively. The analyses showed that spirits and sleep were negatively associated with both TV and computer time. In addition, ethnicity was positively associated with TV time. The other factors (car ownership, smoking, perceived health status and perceived weight status) were not associated with TV or computer time. Conclusions: Sleep showed the strongest association with TV and computer time, which shows that sleep is an important aspect of health promotion. Longitudinal analyses should focus on confirming the results found in the current study.

CROSS-SECTIONAL AND LONGITUDINAL RELATIONSHIPS OF MACRO-ENVIRONMENTAL FACTORS WITH PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR: MODERATING EFFECTS OF GENDER, AGE, EDUCATION AND OCCUPATION

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Purpose: To examine macro-level environmental determinants of physical activity and sedentary behavior and
understand the role of societal megatrends. Methods: We analyzed data from the Special Eurobarometer 183.6 (2002), 246 (2005) and 412 (2013) complemented with regional-level objective data on population density and GDP from the Eurostat database. Generalized linear mixed models were applied to examine the (cross-sectional and longitudinal) relationships of population density and GDP with self-reported moderate-to-vigorous physical activity (MVPA), walking and sedentary behavior. Results: Data from 65,686 Europeans (age range= 18-98 years), 30 different countries and 305 regions were analyzed. Several moderating effects were observed and cross-sectional and longitudinal findings differed. Higher density was cross-sectionally related to lower volumes of MVPA and more sitting among retirees. Longitudinally, increases in density related to higher volumes of walking among participants younger than 25 and older than 65 years and those with less than 15 years of education. Increases in density also decreased sitting time among men, white collars, the self-employed and retirees. In regions with higher GDP, higher odds of MVPA and walking were observed among higher SES groups. Participants living in regions with higher GDP had higher levels of sitting time, except for those aged 65 and older, manual workers and the self-employed. Longitudinally, increases in GDP related to higher volumes of MVPA, but not among house persons, the unemployed and retirees. Among students, increases in GDP were related to decreases in sedentary behavior. Conclusions: Economic development appears to benefit the health of the wealthiest but not the most vulnerable Europeans. Our findings highlight the importance of studying interactions between individual and macro-environmental characteristics and of longitudinal studies when aiming for causal inferences.

S.12 Utilizing Mixed Methods in Childhood Obesity Research: Ecological Momentary Assessment, Video-recorded Family Meals, and Projective Interviews (Convenor: Dr. Jerica Berge) (Lecture Theatre)

EXAMINING THE ASSOCIATION BETWEEN PARENTAL REPORTING OF MOMENTARY STRESS LEVELS AND PARENT FEEDING PRACTICES AT FAMILY MEALS: A MIXED METHODS APPROACH

Berge Jerica1, Trofholz Amanda2, Neumark-Sztainer Dianne1. 1University of Minnesota, Minneapolis, MN.

Purpose: While research has suggested that aspects of the home environment, such as availability of healthful foods, non-controlling parent feeding practices, and authoritative parenting style, are protective against childhood obesity risk, important limitations and unanswered questions exist. First, results have been inconsistent for children from minority and low-income households. Second, key familial variables, including family functioning or intraindividual processes that may show within-day variations (e.g., stress, parenting practices), have not been well assessed. These limitations may partially explain why childhood obesity interventions have had limited success.

Methods: The current study is an incremental, mixed methods study. Phase I included an in-depth assessment of the home environments of African American, American Indian, Hispanic, Hmong, Somali and white families (n=120; 20 each race/ethnicity) utilizing video-recorded family tasks, qualitative interviews, and ecological momentary assessment (EMA). Phase II utilizes results from Phase I to create a culturally sensitive survey to be delivered at two time points to diverse parents (n=1200; 200 each racial/ethnic group). Longitudinal familial predictors of childhood obesity risk will be identified. The current presentation reports results from Phase I of the study using EMA data. Associations between parental reports of momentary stress early in the day and types of food served (e.g., fast-food, pre-prepared foods, fresh/home-cooked) and parent feeding practices (e.g., restriction, pressure-to-eat) engaged in at the family dinner meal later that day were examined. Results: Parents who reported higher stress levels early in the day served more unhealthful foods (e.g., fast-food, pre-prepared foods) and engaged in more controlling feeding practices at the dinner meal later that day (p

Conclusions: Findings suggest that momentary stress may influence parents’ decisions to serve less healthful foods at dinner and to engage in more controlling parent feeding practices, with African American parents being at higher risk. Interventions targeting stress may potentially help parents to make more healthful choices for family meals.

NO DESSERT UNTIL YOU’VE FINISHED YOUR PLATE! LACK OF RECEIVED SENSITIVITY DURING MEALTIME IS RELATED TO OVERWEIGHT IN EARLY CHILDHOOD

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Purpose: Weight gain between the ages of 2 to 6 years is the best predictor of adult adiposity. At this young age, parents play a crucial role in the type and amount of food a child consumes. However, little is known about which feeding strategies and general parenting styles parents actually utilize at the dinner table and whether this relates to child eating behavior and overweight, as most studies rely on parental self-report. The present study focuses on how much sensitivity (general parenting) and pressure-to-eat (specific feeding strategy) a child receives during mealtimes from any of their caregivers, and how this relates to: a) child eating behaviors during mealtimes; b) child overweight; and c) maternal self-reported pressure-to-eat and restriction. In addition, the present study used a projective interview-method to assess maternal opinions concerning their influence as a caregiver on the eating habits of their child. We assessed discrepancies and similarities between these three types of data (self-report, observations and interviews). Methods: A sample of 101 Dutch families with a 4-6 year old were video-taped at home during a family dinner mealt ime. Using Dutch population norms, 30% of children were overweight. Two trained coders scored parenting behavior shown during family dinners, while two other coders scored child behavior. Mothers filled out the Child Feeding Questionnaire and the Child Eating Behavior Questionnaire to measure parental feeding practices and general child eating behavior. Additionally, mothers were interviewed using the Five Minute Speech Sample. Hierarchical multiple (logistic) regression analyses were performed. Results: Children receiving less sensitivity and more pressure-to-eat during family mealtimes showed more challenging behaviors during mealtimes. Observed parenting did not relate to general approach or avoidant eating behavior. Receiving less parental sensitivity during mealtimes related to child overweight, over and above the effects of self-reported pressure-to-eat. Although some similarities were found between self-report, observation and interview-data, in general there was a lack of correlation. Conclusions: Using mixed methods provides a more complete picture of the relationships between parenting and childhood overweight, which is necessary to improve the effectiveness of existing interventions. Promoting parental sensitivity, in addition to discouraging pressure-to-eat, seems essential.

GENERAL PARENTING OBSERVATIONAL SCALE TO ASSESS PARENTING DURING FAMILY MEALS
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Purpose: There is growing interest in the relationship between general parenting and childhood obesity. However, assessing general parenting via surveys can be difficult due to issues with self-report and differences in the underlying constructs being measured. An objective tool was developed to assess general parenting by using video-recorded observational methods during a mealt ime interaction. The overall goal was to examine the relationship between several general parenting dimensions and 'decreasing / stable' BMI during a 16 week family-based behavioral weight control program. Methods: The General Parenting Observational Scale (GPOS) was based on prior work of Baumrind, Maccoby and Martin, Barber, and Slater and Power. Ten dimensions of parenting were included; 4 were classified in the emotional dimension of parenting (warmth and affection, support and sensitivity, negative affect, detachment), and 6 were classified in the behavioral dimension of parenting (firm discipline and structure, demands for maturity, psychological control, physical control, permissiveness, neglect). Overweight children ages 8-12 years and their parent (n=44 dyads) entering a weight control program were video-recorded eating a family meal. Parents were coded for their general parenting behaviors. The Mealtime Family Interaction Coding System (MICS) and several self-report measures of general parenting were also used to assess the parent-child interaction. Spearman's correlations were used to assess correlation between measures. We also examined the percent of children whose BMI 'decreased or stayed the same'. Multivariable logistic regression was used to examine the relationship between general parenting and decreasing/stable child BMI. Results: Warmth/affection and support/sensitivity were significantly correlated with affect management, interpersonal involvement, and communication from the GPOS. Firm discipline/structure was inversely correlated with affect management, behavior control, and task accomplishment. Parents who were older, with higher educational status, and lower BMIs were more likely to display warmth/affection and support/sensitivity. With regard to weight loss, in the multivariable model, higher level of warmth was associated with increased odds of decreasing/stable child BMI (OR = 1.28, 95% CI, 1.01, 1.62). Conclusion: This new observational tool appears to be a valid measure for assessing general parenting behaviors during mealtimes and adds to our ability to measure parent-level factors affecting child weight-related outcomes.
MAINTENING BEHAVIOUR AND WEIGHT CHANGE – WHAT DOES THEORY HAVE TO OFFER?
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Purpose: Supporting sustainable change in diet and physical activity behaviour is needed to tackle global challenges such as obesity. Maintenance of change is key to uphold benefits in health behaviours and outcomes. Behavioural theory can provide explanations of the behaviour change and behaviour change maintenance process. Moreover, basing interventions on explicit theory may lead to more effective behaviour change maintenance interventions. This talk synthesises findings from two separate systematic reviews which examined: (i) theoretical explanations of behaviour change; and (ii) associations between theory use and effectiveness in weight loss maintenance interventions targeting dietary and activity change. Methods: Systematic reviews of: (i) behavioural theories; and (ii) RCTs of weight loss maintenance interventions following clinically significant weight loss. Systematic searches of electronic databases and relevant sources were conducted for each review. Theories were synthesised thematically. Associations between theory use and effectiveness were examined using subgroup analysis in random effects meta-analyses. Results: In the first systematic review, one hundred theories were included. Most theories did not explicitly address maintenance. Theories that specifically addressed maintenance gave rise to five overarching, interconnected maintenance themes including: maintenance motives, self-regulation, resources (psychological and physical), habits, and environmental and social influences. Themes were synthesised in a coherent framework. The second systematic review included 45 RCTs, containing 21 comparisons between diet and physical activity change and control groups. Theory-based diet and activity interventions were more effective in halting weight regain compared to non-theory based ones [-2.3kg 95%CI -3.2 to -1.5 vs. -0.1 95%CI -1.2 to 0.9, P Conclusions: The two systematic reviews underline the importance of theory in understanding and changing maintenance related behaviours and outcomes. Although maintenance theory is in its infancy, practical application of theoretical concepts in weight loss maintenance targeted interventions is associated with greater effectiveness. Further research on maintenance should further strive to use and develop theory in this crucial area of health behaviour.

EFFECTIVENESS OF PHYSICAL ACTIVITY INTERVENTIONS IN ACHIEVING BEHAVIOUR CHANGE MAINTENANCE: A SYSTEMATIC REVIEW, META-ANALYSIS AND META-REGRESSION.
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Purpose: To achieve the health benefits of physical activity (PA), an active lifestyle must be maintained. PA interventions are generally effective in supporting short-term behaviour change, but increases are not always maintained. To inform future research and practice, this systematic review examined the effectiveness of PA interventions for behaviour change maintenance and investigated which Behaviour Change Techniques (BCTs) and other intervention features were associated with maintenance. Methods: Six bibliographic databases (Medline, EMBASE, PsycINFO, Cochrane Database of Systematic Reviews, CINAHL, Web of Science) were systematically searched. Eligibility criteria were controlled trials with adult non-clinical populations using validated measures of PA behaviour at baseline and at least six months post-baseline. Results were pooled in meta-analyses using standardised mean differences (SMD) at five different time-points (6-9, 9-15, 15-21, 21-24, 24+ months). Univariable and multivariable meta-regression investigated effect modification by intervention and participant characteristics. Results: 86 articles (55 studies) were included. The pooled SMD at 6-9 months (35 comparisons) was
0.32 (95% CI 0.23, 0.41; I-squared=78%), and at 9-15 months (36 comparisons) was 0.21 (95% CI 0.14, 0.28; I-
squared=73%). Beyond 15 months PA measurements were infrequent with little evidence supporting maintenance.
At 6-9 months, there were significant subgroup effects for intervention setting. Unvariable meta-regression showed the BCTs 'Prompt self-monitoring of behavioural outcome' (P

Conclusions: This review is the first to investigate PA maintenance in adult non-clinical populations with a focus on potential effect modifiers and BCTs using meta-analysis and meta-regression. There is little evidence of behaviour change maintenance beyond 15

months. Future interventions, trial design and theory should give greater consideration regarding how to integrate key intervention BCTs for encouraging maintenance of behaviour change and measure maintenance of changes, and investigate the broader psychological, social and environmental context within which PA occurs.

USING INCENTIVE-BASED INTERVENTIONS TO IMPROVE BEHAVIORAL MAINTENANCE FOR PHYSICAL ACTIVITY:
APPLYING LESSONS FROM PRO-ENVIRONMENTAL BEHAVIORS
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Purpose: Offering financial incentives is an increasingly popular intervention strategy to promote physical activity (PA). However, many studies, including our own experimental study, indicate that the increases in PA observed while an incentive is offered are often not maintained after the incentive is discontinued. In contrast, incentive-based interventions have often led to maintained behavior change in the pro-environmental behavior domain. Our goals are to identify the reasons why incentive-based interventions for pro-environmental behavior have often elicited maintained behavior change and to consider how these reasons might inform advances in incentive-based interventions for PA. Methods: Data pertaining to maintenance of PA after an incentive is removed, including data from our own lab, are reviewed briefly. We draw from theory to identify some reasons why incentive-based interventions for pro-environmental behavior have often elicited maintained behavior change whereas interventions for PA have not. Results: Three reasons were identified. First, satisfaction with changes in pro-environmental behaviour may be experienced quickly or easily. In the context of PA, the threshold for satisfaction with behavior change may be higher or more time may be required to experience satisfaction. Second, continuous financial benefits are associated with maintaining some pro-environmental behaviors (e.g., reduced bill payments). However, the financial benefits associated with maintaining changes in PA may not be obvious. Third, some pro-environmental behaviors, such as recycling, are relatively simple. As a result, these behaviors may have fewer barriers and may become habitual (i.e., automatic) relatively quickly. In contrast, PA behaviors are more complex. Individuals experience a number of barriers related to PA behaviors and PA behaviors may be less likely to become habitual. Strategies for applying these insights from the pro-environmental behavior domain to the context of incentive-based PA interventions are discussed. Conclusions: Although incentives seem to hold promise for changing PA in the short term, long-term effects have, in many cases, been elusive. Examining another behavioral domain in which incentives seem to promote maintained behavior change can prompt the development of intervention strategies that can be applied to PA.

THE GENETIC BASIS OF FOOD AVOIDANT BEHAVIOURS IN EARLY CHILDHOOD: TOWARDS A CHILD-RESPONSIVE
MODEL OF PARENTAL FEEDING
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Objective: Food fussiness (FF), food neophobia (FN) and disliking vegetables are common in young children; yet they remain a source of anxiety for many parents, who are often blamed for shaping these behaviours. This research establishes the extent to which food avoidant behaviours have a genetic basis, and provides evidence for parental feeding styles being developed in response to food avoidant behaviours. Methods: Data are from Gemini, a
population-based sample of British twins born in 2007. At 16 months of age, parents reported their children's food fussiness (FF) and food neophobia (FN) and their own feeding styles (restriction, instrumental feeding and pressure to eat). At 3.5 years, parents reported their children's liking for vegetables and reported again on their children's FF. The twin design was used to: (a) quantify genetic influence on FF and FN; (b) establish common genetic influences underlying both FF and vegetable liking, and (c) establish if parents use different feeding styles with twin pairs discordant for FF. Results: At 16 months variation in FF (46%; 95% CI: 41-52%) and FN (58%; 50-67%) had a substantial genetic basis; and effects were stronger at 3.5 years (78%; 73-82%). Shared environmental influences on FF were substantial at 16 months (46%; 41-51%) but negligible by 3.5 years (5%; 2-9%). At 3.5 years most of the observed association between FF and liking for vegetables (r=-.60, p. Parents with twin pairs discordant for FF use more pressure and more food rewards with the fussier child (ps Conclusions: Food avoidant behaviours have a substantial genetic basis in toddlerhood, and the relationship between FF and dislike for vegetables is largely explained by genetic influences, indicating that food avoidant behaviours in early childhood are somewhat innate. Parents use different feeding strategies when their children express different levels of fussiness, in support of a child-responsive model. Findings indicate that parents are not solely responsible for food avoidant behaviours. The stronger influence of the shared environment on FF at 16 months vs 3.5 years points toward early toddlerhood as a window of opportunity for modification of this behaviour.

MATERNAL PERCEPTION OF FUSSY EATING AMONGST AUSTRALIAN CHILDREN AGED 2 YEARS
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Purpose: Fussy eating tends to be defined as the rejection of familiar and unfamiliar foods resulting in limited dietary variety and diversity. We hypothesise that parents may find it difficult to make objective judgements of the adequacy of a child's intake and instead rely largely on behaviour to define their child as a fussy eater. Methods: Mothers in the control group of the NOURISH and South Australian Infants Dietary Intake studies were asked their perception of their child as a fussy eater at age 12-16 months and again at 2 years. The Child Eating Behaviour Questionnaire (CEBQ) was also completed at 2 years and mean factor scores for ‘Food Fussiness' and ‘Satiety Responsiveness' were calculated. Three days of dietary intake data (1x24hr recall and 2-day food diary) were used to derive scores for dietary diversity, vegetable variety, fruit variety and meat variety. Weight-for-age z-score (WAZ) was derived from weight measured by study staff. Logistic regression was used to determine variables independently associated with maternal perception of her child as a fussy eater at age 2 years. Results: Data were available for 226 children; 47% were male, mean WAZ(sd), .66(.87) and 46% were perceived as fussy by their mothers. Children with higher scores on Food Fussiness and Satiety Responsiveness has higher odds of being described as a fussy eater; x²(10)=162.06, p2=.46. Perception as a fussy eater at 2 years was predicted by perception at 12-16 months but independents of dietary diversity or variety. Conclusions: Maternal perception of the child as a fussy eater was related to the child’s eating behaviour, not variety and diversity of dietary intake. We need to consider the implications for children who have adequate dietary intake and growth but labelled as fussy based on food refusal behaviour that is part of normal child development.

CHILD FUSSY EATING: HEALTH CONSEQUENCES AND THE ROLE OF PARENTS' USE OF PRESSURE TO EAT.
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Purpose: Fussy (picky) eating is a common phenomenon in young children. Despite this commonness, the behaviour may be stressful for parents and could have an adverse effect on health. Using data from a large population-based study, we aimed to identify (1) possible health consequences, and (2) whether pressuring feeding practices are a cause or a consequence of children’s fussy eating. Methods: Data were available for 4914 children participating in the Dutch Generation R Study. Fussy eating was assessed with the Child Eating Behaviour Questionnaire (CEBQ) at 4 years and the Child Behavior Checklist at ages 1½, 3 and 6 years. Health outcomes included postal parent-reports of food consumption (Food Frequency Questionnaire at 1½ years) and of functional constipation at ages 2, 3, 4 and 6 years. BMI and body composition were measured at our research centre at age 6 years. Results: A latent profile analysis of the CEBQ showed that 6% of children fell in a fussy eater profile characterized by fussiness, slowness in
eating and low food approach behaviors. The repeated CBCL assessments indicated that 55% were never fussy eaters, 32% remitting, 4% late on-set, and 4.2% were persistent fussy eaters. Children classified as CBCL-persistent fussy eaters or in the CEBQ-fussy profile ate relatively few whole grain products, vegetables, fish and meat. These children were also at risk of developing functional constipation and underweight. The parents of fussy eaters used more pressuring feeding practices. Path analysis examining bi-directionality indicated that child fussiness at 3 years predicted more pressuring feeding at age 4 years (standardized B=0.25, 95% CI: 0.22-0.28), which in turn predicted more fussy eating at age 6 years (B=0.14, 95% CI: 0.11-0.17). The fussy eating to parents’ pressure pathway was, however, significantly stronger than the reverse pathway (p Conclusions: Although fussy eating seems a common phase in child development, particularly persistent or more severe fussy eating may adversely affect children’s health. Besides, a vicious circle seems to appear with parents responding to fussiness by pressuring their child to eat, which may have a counterproductive effect and result in more fussiness.

5.15 Tackling disparities in diet quality and obesity risk: Synthesizing methods, what can we learn from observational studies, trials, and policy approaches? (Convenor: Dr. Shirley Beresford) (Saanich 1)

CAN CONTEXT AND CULTURE IN COHORT STUDY INFORM INTERVENTION DEVELOPMENT?: THE SES AND OBESITY STUDY
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Purpose: Disparities in socioeconomic status (SES) at the individual- and area-level are powerful predictors of obesity in some ethnic groups. The SES and Obesity study was designed to characterize these effects in two ethnically distinct cohorts living in the same geographical area. Potential mediators at both levels were evaluated in each cohort, with the goal of developing tailored interventions to prevent weight gain. Methods: White (non-Hispanic) (n=503) and Hispanic (n=514) women aged 30-50 years were recruited to the cohort study, using geographically based multi-stage sampling. Household screening was conducted at selected addresses to identify age-eligible women. Women with high school education or less were oversampled among age-eligible White women. Analyses of demographic, individual level and area level SES, acculturation, and self-reported health in relation to body mass index used linear mixed models. Mediation analyses were conducted to explore the role of stress, culture and context on obesogenic dietary behaviors in explaining the SES and obesity relationship. Results: Among White women, education, subjective social status, and neighborhood SES were strongly associated with body mass index (BMI). Education persisted in its association with BMI independent of other indicators (P for trend = 0.004). Census block groups differing by one-fourth of the distribution of neighborhood-level SES composite score had a 4% increase in median BMI (95% C.I. 0%, 8%). Among Hispanic women, no significant associations with BMI were found with individual- or area-level SES. Socioeconomic differences in BMI tended to track over time. The ethnically distinct cohorts were found to have different patterns of predictors and mediators of obesogenic dietary behaviors. In Hispanic women, neighborhood food environment moderated, and in White women eating norms and food planning mediated, the association between education and obesogenic dietary behaviors. Conclusions: Significant disparities occur among SES and race/ethnicity groups. The findings within the Hispanic cohort are consistent with opposing effects related to obesity, such as acculturation or stress. Early results identified different mediators and moderators in White compared to Hispanic women, providing rich information for the development of tailored interventions for obesity prevention. This study contributes to the advancement of both behavioral nutrition methods and practice.

WORKSITE CONTEXT AND OBESOGENIC BEHAVIORS AMONG WHITE AND BLUE COLLAR EMPLOYEES: A POOLED ANALYSIS OF 2 WORKSITE RANDOMIZED TRIALS TO PREVENT WEIGHT GAIN
Purpose: In January 2014, Mexico implemented a "junk food tax"—a tax applied to non-essential foods with an energy density of ≥275 kcal per gram. The purpose of this study was to evaluate whether this tax on non-essential, energy dense foods resulted in a change in the purchased amount of these foods. This particular presentation will focus on how the tax changed purchases for consumers with lower socioeconomic status (SES). Methods: We used data on household packaged food purchases from The Nielson Company's Mexico Consumer Panel Services (CPS). Specifically, we included in our analyses households that participated in the Nielsen CPS for at least 2 months during the time period 2012-2014. Our primary dependent variables of interest were the volume of packaged foods that were affected by the tax and those foods not affected by the tax. Socioeconomic status was defined based on seven categories developed by The Nielsen Company that take into account the education level of the household member with the largest contribution to household income as well as household attributes and assets. We compared the change in the volume of taxed and non-taxed foods for the period after the tax to the change in the volume of these foods for the period before the tax, using longitudinal fixed-effects models. The models additionally controlled for household characteristics and area-level minimum wage and unemployment rate. Results: In the period before the tax, households with low socioeconomic status bought fewer taxed foods before the tax as compared to higher SES households. The lowest SES households experienced the largest decrease in the volume of taxed foods purchased after the tax. Specifically, the taxed foods decreased by 10.2% above and beyond what would have been expected given the pre-tax trends. This compared to a 5.8% decrease for middle SES households. The volume of untaxed food did not change significantly. Types of packaged food also changed with the introduction of the tax. Conclusions: These results suggest that taxing energy dense foods may be a promising approach for decreasing non-essential, energy dense foods among lower SES populations.
CONCEPTUALIZING PHYSICAL ACTIVITY PARENTING PRACTICES USING EXPERT INFORMED CONCEPT MAPPING ANALYSIS

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Purpose: Parents are widely recognized as playing a central role in the development of child behaviors such as physical activity. As there is little agreement as to the dimensions of physical activity-related parenting practices that should be measured or how they should be operationalized, this study engaged experts to develop an integrated conceptual framework for assessing parenting practices that influence multiple aspects of 5 to 12 year old children’s participation in physical activity. The ultimate goal of this study is to inform the development of an item bank (repository of calibrated items) aimed at measuring physical activity parenting practices. Methods: 24 experts from 6 countries (Australia, Canada, England, Scotland, the Netherlands, & US) sorted 77 physical activity parenting practice concepts identified from our synthesis of the literature (74 measures) and from surveying 134 Canadian and US parents. Concept Mapping software was used to conduct the multi-dimensional scaling (MDS) analysis and a cluster analysis of the MDS solution which was qualitatively reviewed by the experts. Results: The conceptual framework includes 12 constructs which are presented using the three main domains of parenting practices (neglect/control, autonomy support, and structure). The neglect/control domain includes two constructs: permissive and pressuring parenting practices. The autonomy supportive domain includes four constructs: encouragement, guided choice, involvement in child physical activities, and praises/rewards for their child’s physical activity. Finally, the structure domain includes six constructs: co-participation, expectations, facilitation, modeling, monitoring, and restricting physical activity for safety or academic concerns. Conclusion: The concept mapping analysis provided a useful process to engage experts in re-conceptualizing physical activity parenting practices and identified key constructs to include in measures of physical activity parenting. While the constructs identified ought to be included in measures of physical activity parenting practices, it will be important to collect data among parents to further validate the content of these constructs. In conclusion, the method provided a roadmap for developing an item bank that captures key facets of physical activity parenting and ultimately serves to standardize how we operationalize measures of physical activity parenting.

MOTHERS AND TEENAGE DAUGHTERS WALKING TO HEALTH: DEVELOPMENT OF AN INTERVENTION TO IMPROVE ADOLESCENT GIRLS’ PHYSICAL ACTIVITY AND MOTHERS’ PHYSICAL ACTIVITY PARENTING PRACTICES

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Purpose: The decline in physical activity (PA) during adolescence is substantial, particularly among girls. Engaging mothers in the promotion of PA for their daughters may be key to successful behaviour change. The study aimed to explore adolescent girls’ perceptions of PA and mothers’ parenting behaviours to guide the design of a multi-component intervention. Methods: Data collection involved: (a) reviewing published literature, (b) administering self-report questionnaires (n=58) and conducting two focus groups (n=13) with adolescent girls, and (c) interviews with mothers (n=6). The Capability, Opportunity, Motivation–Behaviour" (COM-B) model framed the evidence relating to capability, opportunity and motivation for adolescent girls walking and mothers’ parenting for PA (Michie et al, 2011). Results: Girls felt they would need to develop stronger resilience against barriers to being more active and improve aerobic fitness in order to walk regularly for exercise. They were unaware of the health benefits of walking. They believed that having dedicated time and social support from peers was important. A strong theme was that girls believed they would need to develop a habit of walking regularly and a belief that they want to do it. For mothers, greater understanding of the benefits of, and how to implement effective parenting strategies, is
required. Mothers' attitudes to and support for PA is essential to provide PA opportunities for their daughters. Assisting mothers to intentionally "parent for PA" may boost reflective motivation. Participants offered suggestions for how recruitment and retention could be maximised, in terms of timing, content, format and marketing. The majority of girls were supportive of participating in PA with their mothers and several already did so during leisure time. Conclusions: The COM-B model, a framework based on behaviour change theory, was used to scaffold formative research in order to understand adolescent physical inactivity and parenting practices, and inform intervention development. Our findings suggest that appropriate intervention functions from the Behaviour Change Wheel (Michie et al, 2011) include training, persuasion, education, enablement and environmental restructuring in order to overcome the deficits noted in capability, opportunity and motivation for adolescent girls to be physically active and mothers to adopt PA parenting strategies.

THE IMPACT OF THE DADEE (DADS AND DAUGHTERS EXERCISING AND EMPOWERED) PROGRAM ON PHYSICAL ACTIVITY LEVELS AND PA PARENTING PRACTICES

Morgan Philip1, Young Myles1, Lubans David1, Eather Narelle1, Barnes Alyce1, Pollock Emma1. 1University of Newcastle, Newcastle.

Purpose: This study evaluated the impact of a program targeting fathers and their daughters to improve: (i) daughter/father physical activity (PA) (ii) father PA parenting practices. Methods: Two-arm RCT of 115 fathers (mean [range] age = 41.0 [29.3-52.9] years) and their primary school-aged daughters (n=153) who were randomised to: (i) DADEE intervention, or (ii) wait-list control. The 8-week intervention included weekly sessions (theoretical and practical) that developed the daughters' social-emotional skills (e.g. self-control, resilience) using PA as the medium. Practical sessions focused on fundamental movement skills, rough-and-tumble play and fitness games. Weekly DADEE challenges also encouraged fathers and daughters to practice and reinforce new skills and behaviours at home. Assessments were held at baseline, immediate post-intervention and at 9-month follow up. The primary outcomes were father and daughter PA levels (pedometry), Co-PA, PA parenting practices and the quality of the father-daughter relationship were measured using validated scales. Intention-to-treat linear mixed models examined changes in continuous variables. Semi-structured interviews were held with fathers (n=25) and analysed using a general inductive approach in NVIVO 9. Results: At 9 months, significant group-by-time intervention effects were detected for both daughter PA (+1583 steps (95%CI; 532,2365, p<0.001) and father PA (+187 steps (95%CI; 11,363), p<0.05). In the qualitative analysis, key themes emerged explaining the PA findings for both dads and daughters. Themes for fathers included: improved family PA patterns; implementing successful PA parenting strategies, initiating fun co-PA, teaching sports skills optimally and being 'present'. Themes for daughters included: newfound physical confidence, new role as family PA leader and increased desire to try new sports. Conclusion: A program specifically targeting fathers and daughters improved father/daughter PA levels, co-PA, PA parenting practices, and father-daughter relationship quality. Encouraging fathers and daughters to support each other to achieve PA goals may have multiple, positive flow on effects for relationship quality and family functioning.

Jun 09, 08:00 - 09:15: Symposia

S.17 5441: How does physical activity determine cognitive performance and learning across the lifespan? (Convenor: Dr. Hieronymus Gijseelaers) (Salon B)

DIFFERENTIAL ACUTE EFFECTS OF EXERCISE TYPE, DURATION AND FREQUENCY ON COGNITIVE PERFORMANCE IN CHILDREN

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Purpose: Recent studies indicate that a single bout of physical activity (PA) can have immediate positive effects on children's cognitive performance. However, the specific PA features that benefit cognitive performance the most are largely unknown. We investigated the effects of PA type, duration and frequency on cognitive performance in
Dutch children. Methods: In three separate experimental studies, we examined the acute effects of 1) three types of 12-minute classroom-based exercise sessions (i.e. aerobic, coordination and strength) 2) three durations of moderate to vigorous exercise sessions (10, 20 and 30 minutes) and 3) two frequencies (1x 20 minutes or 2 x 20 minutes) of PA bouts. We assessed exercise intensity using heart rate monitoring. We examined effects on performance across three cognitive domains, i.e. (1) selective attention, using the d2, the test of everyday attention for children (TEA-Ch) and the Attention Network Test (ANT)), (2) information processing speed using the Letter Digit Substitution Test and (3) working memory using the n-back task. Statistical models included repeated measures ANOVA and generalized estimating equation models. Results: There was no effect of light to moderate PA on cognitive performance and this effect was not modulated by PA type. Exercising at moderate to vigorous intensity, for either 10, 20 or 30 minutes, resulted in a slight decrease in performance on the ANT (F(1,96)=5.21, p=0.025; ?=0.051). Children who performed two 20 minute bouts of moderate-intensity had significantly better scores on the TEA-ch test compared to children who performed one PA bout or remained seated the whole morning (B=-0.26; 95% CI=[-0.52; -0.00]). Conclusions: Our findings suggest that PA type or PA duration does not differentially affect cognitive performance in children. Instead, exercising at moderate to vigorous intensity was found to either decrease or improve selective attention depending on how performance was measured. Our findings support the importance of repeated physical activity during the school day for beneficial effects on selective attention in children.

ARE PHYSICAL ACTIVITY INTERVENTIONS PREFERABLY COMBINED WITH COGNITIVE CHALLENGES TO ENHANCE NEUROCOGNITIVE FUNCTIONING IN OLDER ADULTS? A META-ANALYSIS COMPARING THE EFFECTS OF COMBINED VERSUS SINGLE ACTIVITY INTERVENTIONS.

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Purpose. Aging is characterized by progressive changes in brain and cognitive functioning. Importantly, physical activity (PA) has the potential to slow down this age-related neurodegeneration. Recent animal literature suggests that the combination of physical and cognitively challenging activity (PA+CA) is to be preferred over single physical activities to optimally boost neuroplasticity. Moreover, simultaneous PA+CA (e.g. dual-tasks, exergames, dance) is suggested to induce greater and more extensive neurocognitive plasticity relative to sequential training (separate sessions of PA before or after separate sessions of CA). The present meta-analysis examines whether current evidence from human studies provides support for these recent hypotheses. Methods. Five databases were searched (since the start of the databases until November 2015) for English peer-reviewed papers investigating the effects of combined PA+CA interventions versus control interventions (i.e. single PA, single CA and/or passive control) on cognitive functions of older healthy adults (>65y). The Comprehensive Meta Analysis software was used to compute the random-effects Hedges'g. Results. Twenty-five studies were included in the meta-analysis. Relative to any of the comparison groups (passive control, single PA or single CA), combined PA+CA intervention showed significant larger gains in cognitive function (g=0.267; 95%CI=0.099-0.435; p=0.002). This effect was significantly (p=0.007) more pronounced for the studies using simultaneous designs (g=0.376; 95%CI=0.123-0.629) versus sequential designs (g=0.115; 95%CI=0.060-0.289). Studies that compared combined PA+CA with single PA, also showed small but greater cognitive improvement in favor of the combined intervention (g=0.144; 95%CI=0.021-0.309; p=0.086). Conclusions. These findings support recent hypotheses that PA induces larger gains in cognitive functioning when it is combined with cognitive challenging activity and when training both components simultaneously instead of sequentially. In order to fully gain from the promotion of PA as an important lifestyle factor to impact on human neurocognitive plasticity, further randomized controlled trials on a large scale and using a multimodal (behavioral cognitive testing + neuroimaging) approach are necessary.

PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR PREDICTING COGNITIVE AND ACADEMIC PERFORMANCE: RESULTS FROM AN OBSERVATIONAL STUDY AND THE DESIGN OF A BRAND-NEW INTERVENTION

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Purpose: Evidence shows a clear relation between physical activity and sedentary behavior on the one hand and cognitive and learning performance on the other, in children and adolescents. Research in adolescents, young, and middle-aged adults in specific educational settings such as distance education and vocational education and training (VET) is almost absent. Two studies will be presented: Results of an observational study investigating this relation in young and middle-aged adult distance education students and the design of a long-term intensive intervention study investigating this relation in adolescent VET students. This last study will also be used in the structured discussion to incorporate the expertise of all attending members. Methods: In the observational study, linear regression prediction models were used including multilevel analyses. Adult distance education students (N=2842) reported on physical activity and sedentary behavior at the start of their study. After 14 months, their accumulated academic performance was used in the analysis. Results: Linear regression models for cognitive performance showed sedentary behavior to be positively predictive for processing speed ($\beta=.064; p=.170$; $p<.05$). Conclusions: These results show that more sedentary behavior is associated with better processing speed and better academic performance. Future research should focus on which specific sedentary behaviors are responsible for this relation as sedentary behaviors may be differentially associated with academic performance.

736

S.18 5437: Complex System Modelling for Behaviour Interventions: Learning from Experience (Convenor: Dr. Ruth Hunter) (Saanich 2)

5439

SO, YOU WANT TO BUILD AN AGENT-BASED MODEL?

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Objective: Agent-based modelling (ABM) is a computational method that simulates individuals making decisions based on their own characteristics and their social and physical environment according to rules developed by the modeller. Such models can be used to simulate and test mechanisms of behaviour change and intervention approaches. However, there are several practical considerations when developing an ABM. Methods: We use case studies to demonstrate important approaches and challenges for researchers who wish to use ABM for physical activity and behavioural nutrition intervention research. One case study is a draft model which provides a platform to test social network interventions to encourage physical activity to help inform intervention design prior to pilot testing. Results: We identify three key practical considerations when developing an ABM. (1) The data required to calibrate and validate the model concerns the process of behaviour change, which is best collected in real time as behaviour change occurs. (2) If the advantages of ABM are to be maximised, the process data must also describe the relevant features of the social and physical environment that influence a participant’s behaviour at the time he or she makes a behaviour decision. (3) The researcher must learn the skills necessary to program the ABM. Conclusion: A model can draw from multiple data sources and, even if specific data collection is required, that effort would also deliver other benefits by providing an additional perspective on behaviour change and potentially increasing understanding. Other fields (notably sociology, human geography and ecology) use ABM for similar research as public health. These fields can provide interdisciplinary projects, methodological materials, and other resources that can supplement within field expertise for public health researchers wishing to use ABM. In addition, there are excellent resources for learning ABM. The potential benefit of simulating contextualised individual behaviour justifies the effort involved in increasing the use of ABM in public health research.

5447

THE IMPACT OF INDIVIDUAL AND ENVIRONMENTAL INTERVENTIONS ON INCOME INEQUALITIES IN SPORTS PARTICIPATION: EXPLORATIONS WITH AN AGENT-BASED MODEL

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Purpose: Socioeconomic inequalities in sports participation are shaped by dynamic interactions of individual and environmental factors. It is poorly understood how these inequalities could be best reduced. We developed an
MOVING TOWARDS MORE WALKABLE COMMUNITIES: WHAT ROLE FOR A WALKABILITY PLANNING SUPPORT SYSTEM?

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Background Planning Support Systems (PSSs) are spatial analytical tools designed for measuring, mapping analysing and visualising impacts arising from urban development. Objective The primary purpose of this research was to enable the development of the Walkability PSS, an original PSS for supporting the design of communities that encourage more walking and also fostering collaboration between researchers and urban planners in creating healthy built environments. Methods The Walkability PSS was developed in four successive phases including: (1) review of existing walkability PSSs followed by a participatory workshop; (2) pilot-study on activity centres across metropolitan Melbourne followed by a participatory workshop; (3) cross sectional analysis of the association of the built environment and transport-walking using travel survey data of adults across metropolitan Melbourne; and (4) development of the Walkability PSS using the model estimates in a spatial simulation software followed by a final participatory workshop. Results Consistent with previous findings, this research found that the provision of neighbourhoods with higher residential density (i.e., > 20 dwellings per hectare), a well-connected street network as well as easy access to a range of destination and public transport services had potential to increase adult population levels of transport-walking. These findings were embedded into a PSS to facilitate the translation of evidence on active living into planning policy and practice. Conclusions The Walkability PSS is an operational interactive computer-based tool built on a complex-system model and its estimates. It allows users to virtually sketch precinct plans designed to encourage more walking on a digital map using a tabletop interface. The tool estimates the probability that adults would walk for transport based on the mix of local spatial urban design features such as road network design, residential density, land use types and public transport services. In response to changes in these features, the estimate updates in real time and is displayed in an interactive chart. The qualitative component of this research provided an opportunity to enhance the quality of the Walkability PSS. The functions that were most sought after by the urban planners were identified and prioritised throughout the collaborative development process.
Purpose. The office workplace remains one of the most important apertures to reduce sitting time. While office SB-reduction interventions have shown success compared to control groups, the psychological mechanisms of action for changing SB are not well understood. Messages instructing people about the instrumental utility of lowering SB (lowered risk of chronic disease) may be useful to initiate behavior change, because this area of research is still relatively new and many people may not know about these health consequences. Another message that may hold promise concerns potential affective benefits (lowered depressive symptoms, stress) of reduced SB, as people tend to change behavior based on affective means more than longer-term health consequences. Finally, messages about how to regulate SB (monitoring, planning) may be helpful, given the need to break long-established SB routines.

This study sought to examine these instrumental, affective, and regulatory messages compared to an attention control group over 12 weeks. Methods. One hundred and sixteen adult office workers (M age = 43.07, SD = 10.95 yrs; 65% female) who reported sitting for over 7.5 hours during the work day were included in the study. Participants were assessed on SB (self-reported average total sitting time during office hours) at baseline and subsequently randomized to in-person presentations about the instrumental (n = 43), affective (n = 28), regulatory (n = 28) and nutrition attention control (n = 17) groups with follow-up SB assessments at four and 12 weeks (primary end-point). Differences between groups at 4 and 12 weeks were assessed using analyses of

Purpose. Much sedentary behaviour research is based on self-report. Yet, people tend to underestimate their sitting time. Domain-specific measures, which aggregate time spent in multiple typically-seated activities, tend to produce more accurate under-estimates. Drawing on Action Identification Theory, this talk proposes that people may in part underestimate sitting time because they mentally encode sitting not as action in its own right, but rather as a procedural element of more meaningful actions (e.g. reading, driving). Methods. New data are presented from three studies in which undergraduate students were tasked with organizing into meaningful categories actions performed by people portrayed in a series of photographs. Photographs unambiguously portrayed at least one person engaged in a seated or standing activity (e.g. a lady sitting by a fountain and reading a book). Descriptive analyses were undertaken to identify the frequency with which people categorized actions according to posture (e.g. sitting or standing) versus any other behavioural dimension. Results. In all studies, participants tended to organize actions according to their purpose or consequences (e.g. 'reading a book', 'studying'), rather than posture. Conclusions: Sitting appears to be less cognitively accessible than activities performed while sitting. Sedentary behaviour may be relatively 'invisible' to most people, being incurred by other activities, rather than for its own sake. This has important implications for conceptualizing and measuring sedentary behaviour. Sedentary reduction interventions should acknowledge that sitting may not be a 'motivated' action pursued for its own purposes. Reducing sitting may depend not on targeting sitting per se, but rather the common activities that incur sitting. Sedentary behaviour may also be more accurately recalled via indirect measures of time spent in sedentary activities, rather than direct reflections on sedentary time.

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Purpose. Sedentary behaviour research has focused a great deal on measurement, physical health outcomes, correlates and, more recently, behaviour change. The latter has involved an increasing emphasis on psychological issues, including behavior change techniques. However, less has been written about the links between sedentary behavior and mental health – a key construct in health psychology. Methods. A conceptual and narrative review is undertaken to critically assess the links between sedentary behavior and mental health. Associations between different sedentary behaviours are assessed with the different mental health outcomes of depression, ‘psychological well-being’, and cognitive functioning. Results. The majority of evidence draws on observational studies. Reverse causality cannot be ruled out and may probably be in operation, particularly for depression. Higher levels of sedentary behaviour are often associated with greater depression. Not all studies control for the effects of MVPA. Depression is associated most obviously with TV viewing. There are associations between sedentary behaviour and cognitive functioning across all age groups. Part of the association may be driven by underlying health conditions that affect both sedentary behaviour and cognition. Specific types of sedentary behaviour (e.g., watching television) may impact negatively on cognitive function, whilst cognitively stimulating activities and social interaction appear to be beneficial for cognitive function. Studies on psychological well-being show mixed results and may be dependent on the level of cognitive and social engagement. Conclusions. Sedentary behaviour may be associated with mental health, but the nature of such an association is dependent on the type of sedentary behaviour. Reverse causality is a distinct possibility.

S.20 6557: Nutrition Smartphone Apps: An effective approach to improving healthy eating behaviours (Convenor: Ms. Mavra Ahmed) (Lecture Theatre)

FOODFLIP®: A PILOT TESTING THE EFFECTIVENESS OF A FOOD INFORMATION SMARTPHONE APP TO PROMOTE SELECTION OF HEALTHIER FOODS
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Objective: With the growing burden of obesity and diet-related diseases, it is essential that Canadians have the tools they need to enable the selection of healthier foods. However, many consumers find it difficult and time-consuming to identify healthier foods using only the Nutrition Facts table (NfT) found on food packages. This study investigates the impact of FoodFlip®, a Smartphone app with interpretive nutrition information, among Canadian consumers. Methods: Beta testing of FoodFlip®, containing healthfulness ratings for ~15,000 packaged products, was conducted among 20 users. A pilot trial commencing in January 2017 will enroll household shoppers aged 18+, who own smartphones. Eligible participants will be randomly assigned (1:1:1) to receive two different interpretive nutrition information systems (Traffic Light (TL) or Health Star Rating (HSR)) in comparison with the control group (NfT). Using FoodFlip®, consumers will be able to scan a product to see a rating of its overall healthfulness (TL or HSR). The rating is based on a scientific nutrient profiling scoring system that accounts for nutrient contents (e.g., calories, sodium) as well as fruits, vegetables, nuts and seeds content to give it a score. Consumers will also be provided with a list of healthier alternative food products that have a more favourable rating. Results: Beta trial users required a wider selection of products than currently found in the database, resulting in web crawling of food information found on Canadian supermarkets’ websites. Further results from our pilot trial will demonstrate the relative comparability of the two interpretive nutrition information systems (TL vs. HSR) in comparison with the NfT on improving the healthiness of the food purchases. This will include assessments of the average nutrient profiling score and the differences in nutrients to limit (saturated fat, sodium and sugar) between each of the groups. Conclusion: This study is the first to test differences in nutrition information systems on the actual food purchases of Canadian shoppers in a time-constrained shopping environment. FoodFlip® has the potential to transform the way we eat by enabling healthy dietary decision-making by Canadians and can subsequently provide incentives for manufacturers to reformulate and create healthier products.
EFFECTS OF INTERPRETIVE NUTRITION LABELS ON CONSUMER FOOD PURCHASES: THE STARLIGHT RANDOMIZED, CONTROLLED TRIAL

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Purpose: Nutrition labelling is a prominent policy tool to promote healthy eating. We evaluated the effects of two interpretive nutrition labels, compared with a non-interpretive label, on the healthiness of consumer food purchases.

Methods: In this parallel-group, randomized controlled trial, we enrolled regular household shoppers across New Zealand who owned smartphones and were aged 18+ years. Eligible participants were randomly assigned (1:1:1) to receive either Traffic Light Labels (TLL), Health Star Rating labels (HSR), or control (Nutrition Information Panel (NIP)). Smartphone technology allowed participants to scan barcodes of packaged foods and receive allocated labels on their phone screen. The primary outcome was average nutrient profile score (healthiness) of all packaged foods and beverages purchased over the 4-week intervention period, using Food Standards Australia New Zealand nutrient profiling scoring criterion (NPSC). Results: Between October 2014 and November 2015, 1357 eligible shoppers were randomly assigned to TLL (n=459), HSR (n=443) or NIP (n=455). Mean (SD) T-NPSC score at baseline was 38.6 (6.1). Overall difference in mean T-NPSC score for TLL compared with NIP was -0.20 (95% CI: -0.94, 0.54; p=0.60). The corresponding difference for HSR compared with NIP was -0.60 (95% CI: -1.35, 0.15; p=0.12). In an exploratory per-protocol analysis of participants who used the labelling intervention more often than average, i.e. scanned >34 products over 4 weeks (n=423, 31%), those randomly assigned to TLL and HSR had significantly better T-NPSC scores (TLL compared with NIP: -1.33 (95% CI: -2.63, -0.04; p=0.04), and HSR compared with NIP: -1.70 (95% CI: -2.97, -0.43; p=0.01)), Participants randomised to HSR and TLL were significantly more likely to find the assigned labels useful, easy to understand, and say their nutrition knowledge improved as a result of using them (all p-values Conclusions: At the relatively low level of use observed in this trial, neither TLL nor HSR had a significant effect on the healthiness of packaged food purchases, compared with NIP. However, participants assigned to interpretive labels were significantly more likely to find them useful and easy to understand, and frequent TLL and HSR users had significantly healthier food purchases than frequent NIP users.

SALTSWITCH: A SMARTPHONE APPLICATION TO SUPPORT THE CONTROL OF HIGH BLOOD PRESSURE

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Objective: A high intake of dietary salt increases the risk of high blood pressure, and heart disease. With >75% of dietary salt coming from processed foods, it's important consumers are able to make lower salt food choices. In Australia salt is labelled as "sodium" on products. This can be confusing for consumers, and research indicates that most shoppers don't know what are "high" or "low" salt foods. This pilot study will test the feasibility of an innovative public health intervention that has potential to influence consumer behaviour at the point of purchase.

Findings from this study will 1) highlight the strengths and weaknesses of using the SaltSwitch smartphone application for a population at high risk of heart disease, 2) ascertain feasibility of an internet-based approach for recruitment, and 3) assess the feasibility of smartphone technology as a tool to collect purchased food data.

Methods: This will be a 4-week trial. Once informed consent is obtained, a baseline survey including 25 baseline questions documenting socio-demographic variables, disease history, medication use and knowledge about salt will be given using SaltSwitch. Control group participants will use the app solely to scan foods and photograph receipts. Intervention group participants will use the app to scan the barcode of foods, receive labelling information and photograph receipts. The app will provide an onscreen traffic light label with low (green), moderate (amber), and high (red) coloured discs displayed to indicate salt levels. Beneath the traffic light label will be a list of similar but lower salt healthier products that participants can 'switch' to.

Results: 100 participants will be targeted for this pilot project. Study recruitment began in October 2016, with results expected early 2017. These results will serve as the basis for a future large definitive trial to precisely quantify the magnitude of salt and blood pressure reduction achievable with this novel intervention using smartphone technology. Conclusions: With processed and fast foods playing a central causative role in diet-related disease burden, the search for interventions that can improve food...
choices is central to the prevention effort.

5.21 6459: ParticipACTION after 5 years: Assessing impact on the promotion of physical activity and the behaviour of Canadians (Convenor: Prof. Guy Faulkner) (Sidney)

PARTICIPATION AFTER 5 YEARS OF RE-LAUNCH: A QUANTITATIVE SURVEY OF CANADIAN ORGANIZATIONAL AWARENESS AND CAPACITY

Faulkner Guy1, Ramanathan Subha2, Plotnikoff Ron3, Berry Tanya4, Deshpande Sameer5, Latimer-Cheung Amy6, Rhodes Ryan7, Tremblay Mark8, Spence John9. 1University of British Columbia, Vancouver, British Columbia; 2University of Toronto, Toronto, Ontario; 3University of Newcastle, Newcastle, New South Wales; 4University of Alberta, Edmonton, Alberta; 5University of Lethbridge, Lethbridge, Alberta; 6Queen’s University, Kingston, Ontario; 7University of Victoria, Victoria, British Columbia; 8Children’s Hospital of Eastern Ontario, Ottawa, Ontario.

Objective ParticipACTION is a Canadian physical activity communications and social marketing organization re-launched in 2007. This study assesses current capacity (2013) of Canadian organizations to adopt, implement and promote physical activity initiatives. The four objectives were to compare findings from baseline (2008) and follow-up (2013) with respect to: (1) awareness of ParticipACTION; (2) organizational capacity to adopt, implement and promote physical activity initiatives; (3) potential differences in capacity based on organizational size, sector and mandate; and also to: (4) assess perceptions of ParticipACTION five years after re-launch. Methods Local, provincial/territorial, and national organizations completed an online survey assessing capacity to adopt, implement and promote physical activity. Descriptive statistics and one-way analyses of variance were conducted to examine the objectives. Results Response rate for opening an email survey invitation and consenting to participate was 40.6% (685/1688). Awareness of ParticipACTION increased from 54.6% at baseline to 93.9% at follow-up (Objective 1). Findings at both baseline and follow-up reflected good organizational capacity to adopt, implement and promote physical activity (mean scores of 4.0/5) (Objective 2) although some varied by organizational sector and mandate (Objective 3). Most respondents reported that ParticipACTION provided positive leadership (65.3%) but there was less agreement regarding ParticipACTION’s facilitation of infrastructure (44.0%) or organizational will/motivation (47.1%) (Objective 4). Conclusions Canadian organizations continue to report having good capacity to adopt, implement and promote physical activity. There was no discernible change in capacity indicators five years after ParticipACTION’s re-launch although its broader contribution to the physical activity sector was endorsed.

PERCEPTIONS OF ORGANIZATIONAL CAPACITY TO PROMOTE PHYSICAL ACTIVITY IN CANADA AND PARTICIPATION’S IMPACT FIVE YEARS AFTER ITS RE-LAUNCH: A QUALITATIVE STUDY

Ramanathan Subha1, Berry Tanya2, Deshpande Sameer3, Latimer-Cheung Amy4, Rhodes Ryan5, Spence John6, Tremblay Mark7, Faulkner Guy8. 1University of Toronto, Toronto, Ontario; 2University of Alberta, Edmonton, Alberta; 3Lethbridge University, Lethbridge, Alberta; 4Queen’s University, Kingston, Ontario; 5University of Victoria, Victoria, British Columbia; 6Children’s Hospital of Eastern Ontario, Ottawa, Ontario; 7University of British Columbia, Vancouver, British Columbia.

Objective ParticipACTION is a Canadian physical activity communications and social marketing organization re-launched in 2007. The purpose of this study was to qualitatively investigate organizational capacity for physical activity promotion among Canadian organizations, and the impact of ParticipACTION on capacity five years after re-launch. Methods Using a purposive sampling strategy, semi-structured telephone interviews were conducted with 44 key informants representing national, provincial, and local organizations with a mandate to promote physical activity. Interview data were analysed using a thematic analytic approach. Results Organizational capacity in terms of partnerships and collaborations, and the general climate for physical activity promotion have improved since ParticipACTION’s re-launch. Although financial resources reduced the ability of organizations to fulfill their mandates, internal factors such as skilled employees and sponsorships, and external factors such as technological improvements in communication and information sharing helped to offset this strain. There were mixed feelings
regarding ParticipACTION's contribution to capacity. While ParticipACTION has brought more attention to inactivity, this was perceived as a complement to work already taking place. While some organizations perceived ParticipACTION's re-launch as competition to funding and access to popular media, others found it as an opportunity to co-brand social marketing campaigns, utilizing ParticipACTION's products and reputation. Conclusions Based on this investigation, organizational capacity to promote physical activity in Canada has increased since 2007 in subtle but important ways because of a strong climate for physical activity promotion, skilled employees, and information sharing technology. Organizational capacity changes were minimally attributed to ParticipACTION.

AWARENESS OF PARTICIPACTION AMONG CANADIAN ADULTS: A 7-YEAR CROSS-SECTIONAL FOLLOW-UP

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Purpose: Guided by the hierarchy-of-effects model (HOEM), previous research by our team documented high prompted awareness of ParticipACTION among Canadian adults and associations between awareness and beliefs about physical activity (PA) and PA status. In this cross-sectional follow-up study, we explore Canadian’s awareness of ParticipACTION and their levels of PA after 7 years of campaigns. Methods: A population-based survey was conducted on 7,282 Canadians over a period of 14 months from February 2014 to May 2015. The survey consisted of a set of additional questions on the 2014-2015 Physical Activity Monitor (PAM). Our module on the PAM included questions related to awareness and knowledge of ParticipACTION. Weighted logistic models were constructed to examine whether awareness was associated with PA related beliefs, intention, and LTPA. After those cases with missing data were excluded, the final sample consisted of 4,445 respondents. Results: Approximately 13% of Canadians were aware of ParticipACTION unprompted and 83% were aware when prompted. Education, income, and child status were significant correlates of awareness among Canadians. Adjusted for age and gender, the odds of people being aware of ParticipACTION (prompted & unprompted) were greater if they were more educated (OR = 3.10 & 2.10), reported higher income (OR = 2.10 & 5.45), and had children (OR = 2.02 & 2.25). Furthermore, awareness of ParticipACTION was positively associated with outcome expectations and self-efficacy and negatively associated with LTPA status. Conclusions: Levels of unprompted awareness of ParticipACTION are higher than previously reported and inactive Canadians are more likely to be aware of the organization. Given that it had primarily targeted parents of inactive children over the past 7 years, it appears the organization has been partially effective in getting its message across. However, knowledge gaps in awareness, associated with level of education and household income, still remain.

S.22 6524: Food Environments in Low-Resourced Areas: Assessing Alternatives to Improving Access to Healthy Options (Convenor: Chelsea Singleton) (Colwood 1 & 2)

EXAMINING EXPERIENCES OF FOOD INSECURITY AMONG FOOD BANK USERS IN VANCOUVER, CANADA: REFLECTIONS FROM A MIXED METHODS STUDY

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Purpose: In British Columbia (BC), more than 1/10 households reported some level of food insecurity in 2011-2012, defined as a lack of adequate financial resources to access safe, nutritious food. Moreover, in March 2015, over 100,000 people in BC turned to food banks, representing a 28% increase since 2008. Despite rising food bank use in BC, few studies have described the diverse experiences of individuals who use them. This study therefore examined characteristics and experiences of individuals who visit food banks, including how and why users access food banks,
current challenges with services, and participants' visions for a more food secure future. Methods: This convergent mixed-methods study included interviewer-administered surveys (n=77) and focus groups (n=27) with food bank users from Vancouver, BC. Surveys assessed socio-demographic and health characteristics, frequency and duration of food bank use, and satisfaction with services. Focus groups examined experiences, challenges, and recommendations for improving services. Analyses included descriptive statistics of survey data and thematic analyses of focus group transcripts. Results: Inadequate income emerged as the most prominent factor influencing food bank use. Survey respondents reported severe food insecurity (66%), health challenges (77%), reliance on income supports (84%), and long-term engagement with the food bank (>5 years) (54%). Compared to province-wide estimates, food bank users also reported higher prevalence of stress (53% to 24%), current smokers (65% to 14%), hypertension (29% to 16%), diabetes (13% to 6%), fair or poor mental health (34% to 7%), and decreased fruit and vegetable intake (5 times/day) (19% to 40%). The majority of survey and focus group participants anticipated needing food bank services in future, though many reported that food banks did not provide enough food to meet their needs. Highlighted areas for improvement included food quality and quantity, changes to service delivery, and poverty reduction advocacy. Conclusions: Food banks are an entrenched, long-term strategy for low-income households driven by inadequate finances to access food. While gratitude for their services was apparent, this study supports growing evidence that food banks are an insufficient response to food insecurity as the majority of users remained food insecure and reported high nutrition-related health risks.

**ALTERNATIVE FOOD SOURCES: IMPACT OF LOCAL FOOD MARKETS ON DEPRIVED POPULATIONS LIVING IN FOOD DESERTS**

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Purpose: Deprived populations living in food deserts offering low accessibility to healthy food sources may benefit from alternative food systems (AFSSs). AFSSs can target deprived neighborhoods by implementing local productions and distribution systems such as local markets offering fruits and vegetables (FV) at affordable prices. Whereas these food environment interventions, including local markets, are multiplying in North-American cities, critics have also been made. Do these markets actually reach deprived populations or are they primarily adopted by more educated, higher-income consumers? Following a collaborative approach, we present a pilot study conducted in Montreal, Canada, to assess the usage of two recently implemented AFSS market initiatives selling locally grown fresh FV in low-income neighborhoods. The Cadillac market is located at a subway station while the Guybourg kiosk is situated in a landlocked area and food desert. Methods: Two primary data collection campaigns were conducted to evaluate awareness, access, FV shopping patterns, purchases and consumption of FV among both market shoppers and local populations. Market shoppers were recruited on site and surveyed face-to-face or phone interviews, while phone surveys were further conducted among a random sample of residents in local neighborhoods. Results: 268 eligible market shoppers responded to the on-site survey (Cadillac: 210; Guybourg: 58). Shoppers are more likely to be working women from varied socioeconomic status. Compared to Cadillac market users, preliminary results show that Guybourg shoppers are more concerned with access to healthy food in their surroundings. Satisfaction with FV offer is high for both markets (physical access to markets, FV quality and price). Furthermore, less than 5% of trips to Cadillac market are made by car compared to 35% to Guybourg. Analysis on shoppers’ FV consumption is ongoing. Forthcoming analyses will reveal how shoppers at these markets differ from other residents who do not use these resources. Conclusions: AFSSs offer potential to improve accessibility to FV in food deserts. While such initiatives are still operating at a relatively small scale in Montreal and in other cities, evidence about their reach, effectiveness, and adoption is needed to guide decision makers for possible scaling up and sustained investment.

**SNAP VENDOR REQUIREMENTS AND THE SUPPLY OF HEALTHY FOODS IN SMALL STORES LOCATED IN LOW-RESOURCED NEIGHBORHOODS**

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Purpose: The purpose of this study is to document the availability of healthy foods in Supplemental Assistance Nutrition Program (SNAP) (formerly known as Food Stamps) authorized small food retailers in low-resourced neighborhoods and to assess the extent to which the newly proposed SNAP vendor requirements may increase the supply of healthy foods in such outlets. Methods: This study developed and validated a new audit tool to evaluate SNAP-authorized retailer eligibility with respect to the newly proposed USDA SNAP vendor requirements which requires retailers to stock 7 instead of 3 varieties in each of the 4 staple food categories (i.e., meat, poultry, fish; bread, cereal; fruits, vegetables; and dairy) and to stock perishable foods in 3 rather than 2 categories. Using this tool, this study collected observational data from a full census of food stores in a one-square mile area in three separate low-income Chicago neighborhoods that lack a supermarket. Results: Food store audits were completed in a total of 114 stores. Approximately, three quarters of the stores are limited service stores and, of those, just over a quarter sell gasoline. Preliminary results show that despite being mainly small convenience stores, just over 8 in 10 of the stores audited in the three low-income neighborhoods are authorized to accept SNAP benefits. Among the stores that are currently SNAP-authorized vendors, preliminary results reveal that the vast majority of outlets do not meet the newly proposed stocking requirements. Ongoing analyses will reveal the extent to which the stores are able to meet the requirements across the different food staple categories and how this status differs across store types and characteristics. Conclusions: Stronger USDA SNAP vendor requirements will require small food retailers to increase their supply of staple food items. This is particularly important for low-resourced areas that lack supermarkets and, therefore, are environments wherein residents are likely to redeem their SNAP benefits at small food outlets that have a limited supply of healthy food options.

5.23 6502: Strong culture, healthy lifestyles: a global perspective of conducting research with Indigenous populations (Convenor: Dr. Rebecca Stanley) (Salon C)

A COLLABORATIVE APPROACH TO EVALUATING THE PHYSICAL LITERACY OF INDIGENOUS YOUTH: SUCCESSES AND CHALLENGES FROM THE NORTHWEST TERRITORIES, CANADA

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Objective: The purpose of this presentation is to highlight the successes and challenges of working within remote communities in the Northwest Territories, Canada to evaluate the physical literacy of Indigenous youth. Methods: Increasing physical literacy, or the confidence, competence, and physical capacity for performing a wide range of movements, has been gaining attention as a means to foster lifelong physical activity habits. Though work is beginning to emerge in Canada, we have limited insight on levels of physical literacy among Indigenous populations. To address this gap, our team of Indigenous and non-Indigenous researchers/research assistants worked in collaboration with two community schools in the Northwest Territories, Canada. We employed the recently developed Canadian Assessment of Physical Literacy (CAPL) protocol and the Physical Literacy Assessment of Youth (PLAY) tools to assess the physical literacy of the children (ages of 8 and 12 years). Results: Through our collaborative work over the past 3 years, we identified a number of factors that have contributed to the success of this research, including: (1) developing strong relationships with community partners, (2) creating a strong assessment team which included individuals familiar with the communities, and (3) the flexibility of researchers and community members to support an emerging research approach. Our research has also documented a number of challenges related to: (1) the cultural relevance of the physical literacy measures, (2) engaging in relationship maintenance while working from a distance, and (3) obtaining parental consent. Within this presentation we will describe the ways in which we have attempted to navigate the challenges, and optimize on the successes, within our research. Conclusions: This presentation may provide useful insights for researchers who intend to engage in not only physical literacy research, but any community-based and collaborative research with Indigenous populations, particularly within northern and remote Canadian communities.
CONDUCTING CHILDREN’S PHYSICAL ACTIVITY RESEARCH IN SOUTH AFRICA – A SETTING WHERE THE INDIGENOUS POPULATION IS IN THE MAJORITY

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Purpose: South Africa (SA) is a country with a complicated political history, and the Indigenous population (Black African) comprises the majority of the country’s population. Black African people are still disproportionately affected by poverty, so Indigenous populations are often located in low-income settings. This presentation will summarise physical activity research conducted with preschool children, teachers and parents/caregivers in these settings. Methods: The methods used for this research include measurement of physical activity (objectively and direct observation), assessment of gross motor skills, and focus groups with teachers and parents/caregivers to understand their perceptions regarding early childhood physical activity and related issues. This research has taken place with indigenous populations in urban and rural low-income settings. More recent research is investigating the relationship between cognitive outcomes with physical activity and gross motor skills in preschool children from these settings. Results: The presentation will give a brief overview of the main research findings, and experiences of conducting this research will be discussed. Challenges include having to deal with more pressing issues (besides physical activity) and other socio-political issues at play in these settings. Engaging with parents has also been challenging, and understanding culturally appropriate strategies for working with parents has become a key consideration for intervention. The highlight of this research has been the receptiveness of preschools to intervention research, and exploring how research can potentially contribute to positive social change with indigenous populations. This research has presented the opportunity to identify other more salient early childhood outcomes (besides physical activity), e.g. cognitive development and school readiness; and to establish feasible methods for engaging with parents/caregivers and community stakeholders around this type of research. Conclusions: This presentation will provide insight into the process of engaging with indigenous populations in SA, specifically in relation to early childhood physical activity. The findings of this research have been used to inform the development of intervention strategies with preschool teachers and parents/caregivers. In SA, it is essential that these are acceptable, culturally appropriate and feasible for indigenous populations; and are also accessible, sustainable and scalable, considering that many indigenous populations in SA are in low-income settings.

KOORI KIDS CULTURE CLUB – WORKING IN PARTNERSHIP WITH AUSTRALIAN INDIGENOUS COMMUNITIES TO BUILD CULTURAL CONNECTEDNESS AND HEALTHY LIFESTYLES AMONG CHILDREN

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Purpose: The purpose of this presentation is to present the successes and challenges experienced when working in partnership with an Australian Indigenous community to develop and evaluate the feasibility of an afterschool culture program for Australian Indigenous children. Methods: During an extensive two-year period of community consultation, our team worked with the Shoalhaven Indigenous community of New South Wales, Australia, to explore how culture could be used as a health resource to promote healthy behaviours among Indigenous children. This resulted in the development of an eight-week Koori Kids Culture Club. The program is run by local Indigenous mentors from the community and includes activities that reinforce and build on children’s connection to culture and healthy lifestyles, such as physical activity in the local natural environments (e.g. fishing, bushwalks), opportunities for learning and celebrating cultural stories, language, art, dance and song, and preparation and eating of local native foods. Results: The feasibility and acceptability of the pilot afterschool program will be presented and challenges and highlights experienced throughout the research process will be discussed. Some of the important lessons learnt include: having a consistent presence in the community, allowing time to build trusting and transparent relationships with the community, identifying key people in the community to assist with community engagement and provide cultural awareness support, and acknowledging and respecting the strengths of Australian
Indigenous ways of knowing, being and doing. Challenges experienced by the team were predominantly at a higher organisational level including time constraints associated with funding, ethical requirements for participant recruitment strategies, and high turn over of key stakeholders within partner organisations. Conclusions: Respecting the time required for effective community engagement, establishing feasible and culturally accepted research methods and utilising the strengths within a community are critical for the success of any Indigenous research project. This presentation will provide insights into working in partnership with Indigenous communities in Australia, using a practical example of the Koori Kids Culture Club. The lessons learnt from the pilot will be used to inform the development of a larger pilot study and future research in this setting.

DEVELOPMENT OF THE POSITION STATEMENT ON ACTIVE OUTDOOR PLAY


Objective: To develop an evidence-informed Position Statement on Active Outdoor Play for children aged 3-12 years. The need for a Position Statement stemmed from ongoing debate in Canada and beyond regarding the benefits and harms of active (including risky) outdoor play. Some argue that prioritizing safety and the use of the precautionary principle has reduced exposure to harm and promoted healthy children. Others argue that excessive risk aversion has limited children’s essential learning and development, and physical activity opportunities.

Methods: The Position Statement development process began with completion of two systematic reviews examining the relationships between outdoor time and physical activity, sedentary behavior and physical fitness, as well as risky outdoor play and health. This was followed by a critical appraisal of the current literature and existing position statements, engagement of experts (N=9) and cross-sectorial organizations (N=17), and an extensive stakeholder consultation process (N=1908). Results: The outdoor time systematic review identified 28 relevant studies and found overall positive effects of outdoor time on physical activity, sedentary behavior, and cardiorespiratory fitness. The risky play systematic review identified 21 relevant studies and revealed an overall positive relationship with a variety of health indicators and behaviours. Furthermore, available evidence did not identify any relationship between injuries and risky outdoor play. The Position Statement states: "Access to active play in nature and outdoors – with its risks – is essential for healthy child development. We recommend increasing children’s opportunities for self-directed play outdoors in all settings – at home, at school, in child care, the community and nature." It provides evidence-based recommendations for parents, educators, health professionals, administrators, media, attorneys general, various levels of government and society. Most stakeholders (95%) agreed with the position statement and 14/17 organizations endorsed it. To date 266 individuals/organizations have signed up to formally support it at http://www.haloresearch.ca/outdoorplay/. Conclusions: The systematic reviews and Position Statement have been recognized in Canada and other nations as useful advocacy and education tools and have already been cited in the scientific literature. The Position Statement was cited in a British Columbia Supreme Court case, helping set legal precedence for acceptable risk.

WHY CAN’T I PLAY OUTSIDE?: FINDINGS FROM THE BUILT ENVIRONMENT AND ACTIVE PLAY STUDY

Roberts Jennifer

Purpose: While physical activity rates in the form of childhood active play have been steadily declining throughout...
the United States, research examining the relationship between built environment and childhood active play is still evolving. Previous research has identified associations between built environment measures and active play; however, many of those prior studies were comprised of samples with predominately non-minority children or those from homogenous and affluent populations. The current cross-sectional Built Environment and Active Play (BEAP) Study examined the relationships between children's active play and parental perceptions of the home neighborhood built environment within the Washington, DC metropolitan area (DMV), an area with a unique and solid population of racial and ethnic diversity. Methods: The BEAP Study questionnaire, a $10 gift card, and a postage-paid self-addressed envelope with return instructions were sent through mail delivery in 2014 to 2000 parents of children (7-12 years old) residing in the DMV. Children's active play, home built environment parental perceptions, and demographic data were collected with the questionnaire. Active play response data were dichotomized by whether the child did (“active group”) or did not (“non-active group”) meet the 60 minutes/day Physical Activity Guidelines for Americans (PAGA) recommendation. Results: The BEAP Study population (n=144) included a uniquely diverse population of children with 23.7% African Americans and 10.4% Asian Americans. The average age was 9.7 years (SD=1.6). A statistically significant greater proportion of active children's parents agreed with the importance of neighborhood aesthetics, active play areas, walkability and safety as compared to the parents of non-active children. Conclusions: Our findings support the important role of both access and perception of built environment amenities and facilities on childhood active play.

PRAGMATIC EVALUATION OF THE GO2PLAY ACTIVE PLAY INTERVENTION: EFFECTS ON FUNDAMENTAL MOVEMENT SKILLS AND PHYSICAL ACTIVITY IN CHILDREN

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Purpose: Fundamental movement skills (FMS) and physical activity (PA) among children are of concern. Active play is a novel approach to improving FMS and PA in children. The primary aim of this research was to determine if a school-based, ‘Go2Play Active Play’ intervention improved FMS and school day PA. Methods: This study used a quasi-experimental design: children (n=172; mean age= 7 years) were recruited from seven schools taking part in the Go2Play Active Play intervention which consisted of structured play activities and free play; 24 children were recruited from two classes not receiving the intervention to act as a comparison group. PA was measured using an Actigraph GT3X accelerometer during ≥3 school days at baseline and again at follow-up 5 months later. School day PA was expressed as accelerometer counts per minute and percent time in sedentary behavior, light-intensity PA and MVPA. A sub-sample of children from both the intervention (n= 102) and comparison (n= 21) groups had FMS assessed using the TGMD-2 a few weeks into the intervention and then again at follow-up. FMS variables were expressed as scores and percentiles for: gross motor quotient (GMQ), locomotor and object control. Results: For school day PA there was a significant increase in mean counts per minute and percent time in light PA and MVPA (all p<0.01) and a significant decrease in percent time in sedentary behaviour (p=0.01) in the intervention group compared to the comparison group. For FMS there was a significant improvement on GMQ score (p=0.02) and percentile (p=0.04), and locomotor skills score and percentile (both p=0.02) in the intervention group compared to the comparison group. There was no significant improvement on object control skills score (p=0.1) and percentile (p=0.3) in the intervention group compared to the comparison group. Conclusions: The Go2Play Active Play intervention may be a promising way of improving FMS and PA in children and should be tested in a larger, longer-term, RCT.
Health Professionals as Gatekeepers to Lifestyle Intervention Trials in Cancer Settings.

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Purpose Undertaking trials of diet, physical activity or weight management with people in cancer settings usually involves interaction with specialist cancer professionals. The aim of this presentation is to review the experience of working with health professionals to aid recruitment to lifestyle trials. Methods Three feasibility trials carried out by the authors (2012 – 2015) were reviewed. In the ActWELL trial, radiographers were asked to inform women attending breast cancer screening about a lifestyle trial and seek permission for contact details if interest was expressed. The same process was employed with genetic counsellors for people attending clinics with a family history of breast or colorectal cancer for the LivingWELL trial. In the TreatWELL trial clinical nurse specialists informed patients newly diagnosed with bowel cancer about the study. Results In ActWELL, 966 women attended clinics over the recruitment period and radiographers informed 230 (24%) about the study. In LivingWELL, 600 patients were identified through the family history service, and 480 (80%) potential participants were approached. In TreatWELL, 84 people were newly diagnosed with colorectal cancer, of whom 82 (97%) were eligible for surgery but only 41 (48%) were referred to the study. Interviews with the staff involved in all three studies suggest that time, administrative requirements, reluctance to raise issues about body weight, concerns about answering questions about lifestyle that might arise, professional views about whether patient would benefit from study, perceived value of lifestyle interventions, study burden (e.g. measurement visits) and competition from other ongoing trials influenced decisions about approaching patients. Conclusions In cancer settings health professionals are important gatekeepers to successful recruitment. Early and regular engagement to mitigate potential barriers to recruitment including training needs, reinforcement of eligibility criteria, demonstration of potential benefits of interventions and minimisation of administrative burden are likely to yield beneficial responses.


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Purpose The majority of colorectal cancer survivors (CCS) does not meet lifestyle and body weight recommendations (e.g. on plant-based food intake). Dietary support can be offered to promote adherence to these recommendations. To be able to provide appropriate support to those in need for support, knowledge is needed on how many and which CCS perceive a need for dietary support, and on the preferred type, format, and timing of support. Since such knowledge is currently lacking, this study aimed to: 1) describe the proportion of CCS who perceive a need for dietary support; 2) examine which socio-demographic, cancer-related, and health-related characteristics are associated with the need for dietary support; 3) explore reasons for (not) needing support; and 4) explore CCS’ specific needs and preferences with regard to lifestyle support. Methods During this mixed-methods study, a cross-sectional survey was conducted among 1774 CCS recruited from the Dutch population-based PROFILES registry. Additionally, three focus groups were held with 16 CCS. Logistic regression analyses were conducted to examine which characteristics were associated with the need for dietary support. Focus groups were audiotaped, transcribed vertabim, and analyzed in accordance with content analysis principles using a thematic approach. Results Of the 1458 CCS who returned the questionnaire (response rate 82%), 1198 (67.5%) were included in the population for analysis. 17.5% reported a need for dietary support. Characteristics associated with the need for dietary support were: being younger, living without a partner, having multiple co morbidities, having a stoma, having diabetes, and being overweight or obese. Being unable to initiate and maintain lifestyle changes...
without appropriate support was mentioned as a reason for needing support. CCS reported a need for receiving information soon after diagnosis to be able to make an autonomous, informed decision on improving their lifestyle. They preferred to receive individually-tailored lifestyle support, including support in dealing with cancer-related complaints, preferably with involvement of fellow-sufferers and the home front. Conclusions Findings can be used to detect CCS in need for dietary support, and to tailor lifestyle support to their needs and preferences in order to promote uptake, adherence, and effectiveness of support.

WHICH HEALTH PROFESSIONALS PROVIDE LIFESTYLE ADVICE TO CANCER SURVIVORS AND DOES IT RESULT IN BEHAVIOUR CHANGE?

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Purpose Despite recommendations that cancer survivors be physically active, consume a plant-based diet and maintain a healthy weight, compliance with these recommendations remains low. There is some evidence that oncologists may serve as an influential source of motivation to be physically active in cancer patients, but little is known about the extent to which different health care providers address these issues with survivors. This study aimed to assess the prevalence of lifestyle advice (physical activity, diet, weight management) received by recent cancer survivors, which health professionals provided the advice, and if recall of advice was associated with taking action. Methods Design – Cross-sectional survey Participants - Survivors of breast, colorectal and prostate cancers who were approximately 9-months post-diagnosis were recruited from a cohort of cancer survivors in NSW, Australia. Measures - Participants took part in a telephone interview that assessed recall of health professional advice regarding lifestyle changes, and services they had accessed to support lifestyle behaviour change in relation to their cancer diagnosis. Results One-hundred and fourteen survivors took part. Forty-three percent were advised to exercise, 31% were advised to change their diet and 27% were advised to manage weight. Forty-two percent of participants reported accessing support services to increase physical activity, 37% to improve dietary behaviours and 23% to manage weight. There were no significant differences in the proportion of individuals advised to change lifestyle behaviours, or those who used a professional to change behaviours according to sex, age or cancer type. GPs and cancer specialists were the most common sources of advice regarding physical activity and dietary changes, while GPs and dietitians were the most common sources of information for weight management advice. Conclusions Cancer survivors report receiving advice to address lifestyle issues from a range of different health professionals. Recall of advice and subsequent action was most likely for physical activity and least likely for weight management. In line with the approach “health promotion is everyone’s business”, having many professionals reinforcing lifestyle messages may increase retention. Future research is needed to explore how to best engage with clinicians to increase lifestyle advice and referral.

5.34 6582: Built environments promoting walking and cycling among older adults: research priorities and methodologies (Convenor: Dr. Jelle Van Cauwenberg) (Oak Bay 1 & 2)

NEIGHBOURHOOD ENVIRONMENTS AND WALKING FOR TRANSPORTATION IN OLDER AUSTRALIANS: EXPLORING THE MODERATING ROLE OF RETIREMENT VILLAGE DESIGN

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Purpose: Neighbourhood housing options for older adults include congregate facilities like retirement villages. Previous findings have shown the importance of locating villages within destination-rich neighbourhoods to support
the physical activity behaviour of residents. When residents walk towards any destination in the neighbourhood, they will first walk through the village itself. Our aim was to investigate whether associations between neighbourhood environment attributes and walking for transportation among residents were moderated by pedestrian-related aspects of the village environment. Methods: We utilised cross-sectional data from a mixed-methods study conducted in Perth, Australia. Residents from 32 retirement villages (n = 323) reported village environmental perceptions and weekly minutes of walking to do errands. Neighbourhood environmental measures were generated using Geographic Information Systems for 800m network buffers surrounding the village. Adjusted logistic regression models assessed moderating effects of safety and pedestrian-related infrastructure in the village on associations between the neighbourhood environment and transport walking. Results: Mean participant age was 76.9 years (SD = 7.4) and 68.0% were female. Overall, 50.2% participated in any weekly transport-related walking. Land-use mix, walkability, number of shops, and number of destinations were positively associated with transport walking. Some village environment perceptions were found to moderate relationships between the neighbourhood environment and transport walking; distance to the nearest shop was negatively associated with transport walking only when perceiving the village to be more level and flat. Similarly, distance to the nearest public transport service was negatively related to transport walking only when traffic safety within the village was high. More neighbourhood parks and recreational facilities predicted more transport walking only when perceiving a more even gradient and more safety from traffic within the village. Conclusions: Traffic safety and a more flat terrain within retirement villages were found to moderate associations between the neighbourhood built environment and walking for transportation among residents. While locating villages close to destinations is important for walking, retirement village design also needs to be supportive of pedestrian movement.

MICRO-SCALE ENVIRONMENTAL FACTORS INFLUENCING A STREET'S APPEAL FOR TRANSPORTATION CYCLING AMONG OLDER ADULTS: AN EXPERIMENT WITH MANIPULATED PHOTOGRAPHS

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Background: Given that functional capacity (including leg strength, balance and reaction speeds) decreases with age, older adults may have different needs when cycling for transport compared to younger age groups. However, only a few studies have examined the environmental factors related to older adults' cycling for transport. Studies on the relationships between environmental factors and physical activity often suffer from following limitations; absence of an accurate neighborhood definition, lack of environmental heterogeneity, environmental co-variation, recall bias and lack of experimental designs. The use of manipulated photographs may overcome these limitations. The current study aimed to examine the effects of manipulating micro-scale environmental factors in a photographed street on the street's appeal for older adults' transportation cycling. Methods: Data were collected among 1248 Flemish older adults through an online or interview version of the questionnaire. This questionnaire included a choice-based conjoint exercise with manipulated photographs of a street. These manipulated photographs originated from one panoramic photograph of an existing street that was manipulated on seven environmental attributes. A sentence below each photograph indicated how long it would take the participant to reach his/her destination when choosing to cycle along this street (varying from 10 to 15 minutes). Participants chose which of two presented streets they would prefer to cycle for transport. Results: Type of cycle path (reflecting separation from motorized traffic and pedestrians) had the greatest effect on a street's appeal for transportation cycling (importance= 41.2%, 95% CI= 40.4-42.0). Participants had a clear preference for a cycle path that was separated from motorized traffic and pedestrians. The second most important factor was motorized traffic volume (importance= 16.4%, 95% CI= 15.8-17.0) with participants preferring streets with little traffic. This was followed by cycle path evenness (importance= 10.7%, 95% CI= 10.5-11.0) and distance (importance= 10.1%, 95% CI= 9.7-10.4). The remaining factors (speed limit, overall maintenance of the street, vegetation and the presence of a speed bump) appeared to be less important for older adults' transportation cycling. Conclusions: To promote transportation cycling among older adults through environmental modifications, the provision of cycle paths separated from motorized traffic and pedestrians should be prioritized.
DESIGNING AGE-FRIENDLY SOCIETIES: IMPACT OF URBAN REGENERATION ON MOBILITY AND PHYSICAL ACTIVITY IN OLDER ADULTS

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Purpose: Few question the intimate connections between the health of the population and the environment, and urbanisation presents new health challenges to vulnerable groups, among them older people. Older people face problems such as increasing load of non-communicable diseases (NCDs), physical frailty and social isolation. However, the social and physical environments that are required to mitigate these challenges to health and wellbeing are often lacking. Emerging evidence highlights that interactions between the built and social environment can facilitate or constrain physical activity. The aim of this qualitative study was to assess the potential impacts of a newly developed greenway on older adults’ mobility and physical activity.

Methods: The Connswater Community Greenway is a natural experiment which provided an opportunity to evaluate the public health impact of a major urban regeneration project in Belfast, Northern Ireland. The greenway aims to physically connect local communities by creating a 9 km linear park with enhanced opportunities for physical activity through built environment improvements including the construction of footpaths, cycle paths, and bridges. Semi-structured interviews were conducted with a purposive sample of adults (N=29), including older adults (N=11). Topics included exploration of their perceptions of their physical (e.g., walking, bicycling infrastructure) and social (e.g., safety, social networks) environment. Interview data was coded and thematically analysed using NVivo software.

Results: Themes from interviews highlighted that environments that supported walking also promoted social interactions through greater likelihood of meeting others. Despite reduced social networks among older adults, the presence of pedestrian infrastructure such as sidewalks and crosswalks encouraged them to walk to destinations. They valued experiences of sitting on a bench, watching people, and the informal interactions these locations provided. This generated a sense of community connectedness.

Conclusions: By evaluating the social and built environment through a 'real world' natural experiment, this study provides a better understanding of factors that encourage older adults to remain active and for the design of age-friendly societies. Issues that have surfaced offer opportunities to learn about the complex inter-relationships between individuals, social and built environments, and broader policies and practices that may influence wellbeing or independence of older people.
examined by adding an interaction term. Results: Higher levels of MVPA were associated with a lower waist circumference, levels of glucose and insulin and combined cardiometabolic risk regardless of weight status. The prospective association between sedentary time and cardiometabolic profiles differed between overweight and normal weight children. Higher levels of total and prolonged sedentary time were associated with higher systolic blood pressure, insulin, triglycerides and combined cardiometabolic risk in overweight children but not in normal weight children. Conclusions: Physical activity is important for cardiometabolic health in all children, while both total and prolonged sedentary time are detrimental for cardiometabolic health in overweight children only.

**COMBATING PROLONGED SITTING: EFFECTS OF STANDING INTERRUPTIONS AND ACTIVE SITTING ON CARDIOMETABOLIC RISK IN HEALTHY YOUNG MEN.**

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Purpose: The loss of contractile stimulation in weight-bearing muscles is hypothesized as one of the mechanisms underlying the potential adverse health effects of prolonged sitting. This experimental study examined the cardiometabolic effects of standing interruptions during prolonged sitting and active sitting (i.e. on a stability ball requiring leg and trunk muscle activation) versus one bout of prolonged sitting in normal-weight young men.

Methods: Twenty males (age: 19.2 ±0.6 years; BMI: 22.2 ±2.5) participated in this randomized crossover trial including three experimental conditions: prolonged sitting (SIT), sitting with hourly 10-min standing interruptions (SIT-STAND), and active sitting (SIT-ACTIVE). At each experimental day, participants visited the laboratory after a 10-h fast. An in-dwelling catheter was inserted to allow hourly venous blood sampling. After one steady state hour, baseline blood and saliva samples were collected and subsequently participants consumed a standardized liquid high-fat mixed meal. Next, participants remained seated in a chair with back support (SIT) or sat down on a stability ball (SIT-ACTIVE) for 4 h. During SIT-STAND participants completed a 10-min standing period that was repeated hourly. Prior to the last blood sampling, a second saliva sample was collected. Blood samples were analyzed for glucose within 10 s after collection. Analyses for C-peptide, triglyceride and high-sensitive C-reactive protein (hs-CRP) will be performed in the same assay within the next two months; saliva samples will be analyzed for cortisol. Differences between SIT, SIT-STAND and SIT-ACTIVE are examined using Generalized Estimating Equations (GEE) with statistical significance set at P Results: Postprandial levels of glucose were not significantly different for SIT-STAND (b=0.08; 95%CI=[-0.11; 0.28]) and SIT-ACTIVE (b=-0.04 [95%CI=[-0.26; 0.18]) when compared to SIT. Preliminary results for C-peptide, triglyceride, hs-CRP and cortisol will be presented at the ISBNPA conference.

Conclusions: Standing interruptions in prolonged sitting and active sitting did not have beneficial effects on levels of glucose in healthy young men.

**ACCUMULATION OF PHYSICAL ACTIVITY AND SEDENTARY TIME: INFLUENCE ON BONE STRENGTH ACCRUAL ACROSS ADOLESCENCE.**

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Objective: Bone strength, the 'bottom line' in fracture prevention, is influenced by bone geometry, density and the distribution of bone microarchitecture. All components continually adapt to increased mechanical loads during growth. Physical activity (PA) is essential for optimal bone strength accrual. However, less is known about how patterns of PA and sedentary time accumulation influence bone strength accrual during adolescence. Thus, our aim was to investigate the influence of patterns of PA and sedentary time on bone strength accrual from childhood to young adulthood. Methods: We assessed 172 girls and 137 boys (9-20y at baseline) from the mixed longitudinal University of British Columbia Healthy Bones Study. We used high-resolution peripheral quantitative computed tomography (HR-pQCT) to scan the distal tibia (8% site) and radius (7% site) and applied finite element analysis to estimate bone strength (Failure Load, N). We conducted a median of 4 annual measurements at the tibia (n=795) and 3 at the radius (n=590). We assessed PA and sedentary time with ActiGraph accelerometers (GT1M) using a 15-
sec epoch and Evenson cutpoints. We aligned boys and girls on maturity (age at peak height velocity), spanning 12-years of growth. We fit a mixed effects model adjusting for maturity, sex, ethnicity, leg muscle power, limb length and dietary calcium. Results: 9% of girls and 44% of boys met the recommended 60 min/day of MVPA. MVPA was an independent predictor of bone strength at the tibia and radius (pp >0.10). Analysis of bouted PA and sedentary time is ongoing and will be presented at the symposium. Conclusions: Given the strong influence of genetics, maturation and other biological factors on bone strength accrual, we view the positive association with MVPA as meaningful. Future studies should evaluate the dose-response relationship and whether these associations persist into later adulthood. Our findings do not support a detriment of sedentary time on bone strength accrual during growth.

S.36 6569: Web and mobile methods to assess or self-monitor dietary intake and provide personalised feedback (Convenor: Dr. Megan Rollo) (Lecture Theatre)

EVALUATION OF A TOOL TO MONITOR INTake AND PROVIDE PERSONALISED DIETARY ADVICE IN THE NETHERLANDS
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Objective: Only a small part of the Dutch population shows adherence to the Dutch food-based dietary guidelines. A feasible web-based tool, which monitors and provides personalized advice about dietary intake and physical activity, would be helpful. Therefore, the Eetscore application was developed. The tool consists of a short food frequency questionnaire (FFQ) which is scored with the Dutch Healthy Diet Index. The total Eetscore (including nine subscores) ranges from zero to 90, with higher scores implying better adherence to the guidelines. Both FFQ and Index have been validated. The aim of this study was to investigate to what extent 88 Dutch outclinic patients, receiving advice at baseline through the Eetscore, improve adherence to the guidelines and quality of life after three months, as compared to 88 controls receiving no advice. Methods: Participants were aged 61 - 75 y and participated in the Dutch national screening program for colon cancer. If they had a positive stool analysis for blood in the faeces they were assigned to an outpatient clinic for colonoscopy and invited to participate in the study. They were randomly assigned to the intervention or control group. Both groups completed the Eetscore questionnaire at baseline and after three months. Only the intervention group received advice on dietary intake and physical activity. Results: Until now results of 101 participants have been analysed (n=58 in the intervention group and n=43 in the control group). In the intervention group the average ± SD total score increased 2.1 ±1.5 more than in the control group during three months (p =0.100). Fish was the only component that significantly increased in the intervention group (0.55 ±2.7; p=0.032) compared to the control group. No statistically significant differences were found for quality of life. Conclusion: Participants receiving advice showed a larger but not significant increase in their adherence to the guidelines. An explanation may be that the control group also became aware of their dietary intake because of filling out the FFQ. Further analyses and results of studies in other target groups will be discussed and give a better picture of the performance of the Eetscore application.

IMAGE-BASED MOBILE METHODS FOR THE ASSESSMENT OF DIETARY INTAKE AND PROVISION OF TAILORED FEEDBACK
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Purpose: Tailored dietary feedback has the potential to enhance motivation. The purpose of this research was to identify the characteristics and diets of individuals who benefitted most from tailored feedback. Methods: For the 6-month intervention diet was captured using an image-based 4-day mobile food record App (mFR) and tailored
dietary feedback delivered via text messaging in 247 adults (18-30 years). A dietitian analysed the mFR for food group serves and prepared two dietary feedback text messages on fruit and vegetable and junk food intake, delivered a week apart. The outcomes were changes in food group serves (fruit, vegetable, junk, sugary drinks). At 6-months participants undertook a second mFR and completed a questionnaire evaluating the dietary feedback text messages (intervention group n=142). Data was analysed using chi-square and logistic regression. Results: More women (52.1%) agreed that the text message made a difference to their motivation compared to 32.6% of the men (p Conclusion: These results suggest tailored dietary feedback has the potential to enhance motivation but these effects may vary by gender and food group. Finding acceptable methods to capture diet for the provision of tailored dietary feedback is challenging. These results indicate the benefits of incorporating more detailed dietary assessment collected with an mFR App in formulating tailored dietary feedback.

A QUALITATIVE EVALUATION OF THE EATRACKER® MOBILE APP
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Purpose: eaTracker® (http://www.eaTracker.ca/) is Dietitians of Canada’s (DC) free, publicly available, online nutrition/physical activity self-monitoring tool designed for individuals ≥14y. Users enter their nutrition and activity behaviours into eaTracker® via a database of choices and receive feedback based on recommendations for healthy individuals. The eaTracker® website has been available since 2005 and in 2014, an eaTracker® mobile app was released for Android™ and iOS™. Few studies to date have qualitatively evaluated publicly available nutrition apps. The current evaluation aimed to identify, from the perspectives of users of the eaTracker® mobile app, what was working well, what was challenging and suggestions for improvement. Methods: Qualitative one-on-one semi-structured interviews (in-person, phone, online) were conducted with adult eaTracker® mobile app users. Participants (n=26; 89% female, 73% 18-50y) were recruited via an email blast sent to all eaTracker® users who: a) were ≥18y, b) southern Ontario, Canada residents, c) had used eaTracker® within the past 90d, and d) had previously provided permission to be contacted by DC. To be eligible, participants must have used the mobile app for ≥1wk within the past 90d. Interviews were audio recorded, transcribed, and coded using NVivo v10. First level coding and pattern coding were used, where first level codes were grouped according to common themes. Results: Participants mentioned several positive aspects of the app which included: a) dashboard displays to view feedback and progress; b) DC reputation; c) ease and convenience of the mobile app; d) multiple ways to enter food portion size; and e) that the app included both activity and food recording capabilities. Participants also identified challenges with the mobile app which included: a) aspects of the search feature (e.g., yielding too many results/food options, or unrelated items); b) limited foods database; c) inability to customize nutrition variables displayed for feedback; and d) failure to display specific information on individual food entries (e.g., calories). Several suggestions were provided to enhance the eaTracker® mobile app. Conclusion: This evaluation provides not only useful information to improve the eaTracker® mobile app, but useful information for those looking to develop apps to facilitate positive nutrition/physical activity behaviour change.

S.37 6597: Does the intervention even exist in the first place? Linking implementation quality with outcomes in process evaluation (Convenor: Dr. Thomas Skovgaard) (Salon B)

IMPLEMENTATION QUALITY AND OUTCOMES: PROCESS EVALUATION OF THE TRANSFORM-US! PROGRAM TO PROMOTE CHILDREN'S PHYSICAL ACTIVITY AND REDUCE SEDENTARY BEHAVIOUR
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Purpose: Transform-Us! is an evidence-based multi-setting intervention to increase physical activity and reduce
sedentary behaviour among primary school children. The efficacy of Transform-Us! was tested in a cluster randomised controlled trial (RCT) among 20 primary schools. The aims of this study were to evaluate program reach, dose, fidelity, appropriateness, satisfaction and sustainability, and the association between implementation level and outcomes. Methods: A mixed method post-hoc design was adopted based on the UK Medical Research Council recommendations for process evaluations of complex interventions. Surveys of teachers, parents and children at baseline, 18-months, 36-months and 2.5 years post baseline assessed process evaluation indicators. Children wore GT3X ActiGraph accelerometers for 7 days to determine physical activity and sedentary time. Linear and logistic regression analyses examined between group differences in implementation, and the association between implementation level and child physical activity and sedentary behaviour outcomes. Qualitative survey data were analysed thematically to examine implementation barriers and facilitators. Results: Fifty-two percent (n=85) of teachers, 29% (n=331) of parents and 92% (n=407) of children (58% girls; mean age 8.2 years) completed baseline evaluation surveys. At T3, teachers delivered on average 70% of the key messages, 65% set active homework, 30% delivered >1 standing lesson and 56% delivered active breaks. The majority of teachers (96%) made sports equipment available and used sports equipment in class (81%). Fidelity and dose of key messages and active homework reduced over time, fidelity to standing lessons, active breaks and sports equipment use increased. Transform-Us! was appropriate for the school setting and positively received. Approximately half of the teachers delivered 50% of the entire intervention. Implementation level and whole-day physical activity and sedentary behaviour outcomes were not associated. Qualitative themes identified that integration of the program, children’s enjoyment and teacher awareness of program benefits facilitated delivery and sustainability. Conclusions: This study has demonstrated changes to intervention dose and fidelity over time, and the importance of senior school leadership and effective integration of interventions for delivery and sustainability. Further exploration into the association between implementation levels and outcomes is required. Findings have informed the recently funded scale up of Transform-Us! across Victoria, Australia.

LESSONS LEARNED FROM LINKING DEGREE OF IMPLEMENTATION OF A SCHOOL-BASED OBESITY PREVENTION PROGRAM TO CHANGES IN ADOLESCENTS’ ADIPOSITY MEASURES AND BEHAVIORS

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Purpose: The aim of this presentation is to share lessons learned from developing a score for (1) the degree of implementation of the Dutch Obesity Intervention in Teenagers (DOiT) program and (2) linking this score to changes in adolescents’ adiposity measures and energy balance-related behaviors. Methods: Informed by earlier evidence-based recommendations and implementation research theory, we constructed an implementation score, combining different process indicators, such as dosage, fidelity, and quality of delivery at both the program and the support level. We used questionnaire data (44 items) of 68 teachers at 18 schools implementing the DOiT program. By conducting multi-level confirmatory factor (CFA) analysis in Mplus, we tested the validity of the implementation score. Goodness-of-fit indices (i.e. RMSEA 0.95 and Chi-Square P We calculated standardized coefficient scores to estimate the implementation score for each teacher. Data were then aggregated at school level. Results: CFA resulted in 33 items that formed the implementation score. The overall score per school ranged from 8 to 31 points (with higher scores corresponding with a higher degree of implementation). Adolescents attending schools with a high implementation score tended to have lower adiposity measures, while associations between implementation score and behavioural change were inconsistent. Conclusions: Further development of valid implementation measures for school-based obesity prevention programs and policies is warranted. The presented implementation score is a first step that needs further development and testing using different intervention programs and larger samples.

QUANTIFYING IMPLEMENTATION QUALITY WITH THE RE-AIM FRAMEWORK TO ASSESS DOSE-RESPONSE IN ‘MOVE FOR WELL-BEING’

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Purpose: This study focuses on the evaluation of a Danish multicomponent school-based physical activity intervention Move for Well-being in Schools. The purpose is to examine the implementation of the intervention using the RE-AIM framework and linking it to outcome. Method: The randomized controlled trial was guided by The Medical Research Council framework for development of complex interventions, and included cluster randomization of 24 schools. A total of 3124 children (10-13 years) were enrolled and followed over a period of 9 months. The intervention targeted 1) physical education lessons, 2) in-class activity, and 3) physical activity in recess for children. Physical self-worth and other intermediate outcomes were measured at the pupil level using an online questionnaire at baseline and at follow-up. The RE-AIM framework was used for the process evaluation and included assessments at three levels. The main objective of the process evaluation at the beneficiary level is to assess pupils’ experiences with the intervention components. This was assessed through observation, interviews, surveys and class evaluations. At the operational level, fidelity and feasibility of the intervention were assessed via online questionnaires to the teachers in the beginning, during and after the intervention. At the strategic level, the school managers were interviewed on their role in both leading and managing the intervention. Results: The preliminary results show that there was no difference between intervention and comparison schools for physical self-worth at follow-up. The teachers were by and large comfortable and contented with the intervention components, and they reported satisfying levels of implementation. However, there were large variations in implementation as some schools and teachers complied better with the targets and principles of the interventions. Further analyses will quantify implementation quality and show to what degree this can be associated with outcome. Conclusions: Project results will enable us to point out new and evidence-informed ways to implement and promote physical activity interventions in the school setting with a focus on well-being. The facilitators and barriers of implementation are important knowledge to increase the impact of future interventions, and establishing dose-response relationship makes the case even stronger.

FAST FOOD COMPOSITION AND SERVE SIZES IN NEW ZEALAND: 2012-2016

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Purpose: The proportion of food consumed away from home is increasing globally. Fast food is an important subgroup of food consumed outside the home, and the fast food industry is under pressure to provide healthier options. Little objective evidence exists on industry efforts to improve the nutritional quality and/or reduce the serve size of products. Our aim was to determine changes over time (2012 to 2016) in the composition and serve sizes of New Zealand fast foods and beverages. Methods: Product availability, nutrition information, and serve size data were collected annually between 2012 and 2016 for all fast food chains in New Zealand with 20+ stores. Descriptive analysis was undertaken of number of products, average serve size, and average nutritional composition overall, per category, and by fast food chain. Changes over time in composition and serve size were assessed using random effects mixed models for products available for sale over all five years, and in years 1 and 5. Results: Data were available for 23 New Zealand fast food restaurant chains and 14,840 food and beverage products. Mean (SD) serve size for all fast food products increased from 223 (213) g in 2012 to 236 (203) g in 2016 (5.8%). Over the same time period, mean energy content of all fast food products decreased slightly from 940 (443) KJ/100g to 912 (470) KJ/100g (3% decrease), and mean saturated fat (4g/100g) and total sugar (10g/100g) contents did not change. However, mean overall sodium content decreased from 373 (303) mg/100g in 2012 to 302 (306) mg/100g in 2016 (19% decrease). At the symposium, data will be presented by fast food category and chain. Results of the regression analyses will also be presented. Conclusions: Preliminary analysis indicates that the serve size of New Zealand fast food products has increased over time, and saturated fat and sugar contents have not changed. However there has been a small reduction in energy content and a more substantial reduction in sodium. More detailed analysis by fast food category will determine if observed changes are due to healthier product reformulation or changes in type of products sold.
THE EFFICACY & EFFECTIVENESS OF 5-HOLED SALT SHAKERS FOR REDUCING SALT DISPENSED BY FISH AND CHIP SHOPS

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Purpose Standard portions of English takeaway fish & chips contain about half the recommended maximum daily salt intake in adults. One method to reduce this is using salt shakers with five, instead of the standard 17, holes. We aimed to determine if: the amount of salt delivered by 5-holed salt shakers (5HSS) and 17-holed salt shakers (17HSS) differs under controlled conditions; if any differences are robust to variations in: amount of baseline salt in the shaker, time spent shaking, and the person serving; and if any differences translate into practice. Methods Four experiments were conducted comparing salt delivered by shakers. Independent variables were: type of shaker (5HSS, 17HSS), amount of baseline salt in shakers (full, half full, nearly empty), time spent shaking (3s, 5s, 10s), and individual serving. Servers were a convenience sample (n=10). In each trial, servers performed ten repeats of each condition, alternating between 5HSS and 17HSS. Data were analysed using repeated-measures ANOVA. Results Absolute and relative sodium content of meals from shops using 5HSS vs 17HSS were compared using linear regression with adjustment for purchase price and area. There was a significant difference in salt delivered between shakers when other independent variables were kept constant (mean (SD) salt delivered by 5HSS vs 17HSS: 1.1g (0.3) vs 2.3 (0.7); p=0.008). Conclusions 5HSS deliver significant reductions in salt in laboratory conditions, this translated into differences in relative, but not absolute sodium content in practice. Salt content of food served from all shops remained high. Additional measures may be required to substantially reduce the salt content of takeaway food.

EXAMINING CONSUMER AND PRODUCER RESPONSES TO RESTAURANT MENU LABELING REQUIREMENTS

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Purpose We fielded a discrete choice experiment to test the effects of nutritional labeling according to FDA’s proposed rules on how consumers perceive and respond to different menus. The goal is to assess whether different types of consumers react differently to labeling, the interaction with type of setting, and if it is possible to estimate the value of information to consumers. Methods The experiment was fielded on the American Life Panel. Each individual saw 9 different scenarios, reflecting different food outlets, including settings like ice-cream parlors or movie theaters. Every respondent saw each setting ones, but with randomization about menu labeling and prices. The survey closed on August 21, 2016 and 2221 respondents completed the survey. Results Total calories chosen decreases on average when participants are exposed to labeling, but there are substantial differences by the type of setting and how it interacts with respondent preferences. The strongest effects are for fast casual, pizza restaurants, or Mexican. Individuals who consider it "very important" that their selection helps them control their weight do not choose significantly fewer calories (in fact, they choose more in most settings), although respond more strongly to labeling. Individuals who report to be nutrition conscious respond strongest to labeling across all settings. However, we can identify a group of "value-conscious" consumers who increase calories ordered with menu labeling. Conclusions Menu labeling is an information tool, not a weight loss intervention. Different types of consumers make different (and possibly opposing) decisions (and many may ignore the information).
Background Ethnic inequalities in overweight and obesity are already seen in children and track into adulthood causing inequalities in health. As parents play a crucial role in shaping children’s weight-related behaviors, family-centered approaches are promising to prevent overweight among children. How a family-centered approach for ethnic minority groups should look like is unknown and requires input from families and community members. Therefore we assessed African-Surinamese and West-African families' needs and community capacities for intervention design to prevent overweight among children. Methods Using a community-based participatory approach, we conducted ten focus groups and two community meetings with African-Surinamese and West-African parents, community leaders and healthcare professionals in an ethnically diverse and socio-economically disadvantaged neighborhood in Amsterdam, the Netherlands. We discussed family needs, influence on child behavior (barriers and enablers) and community capacities with regard to a healthy weight. Interviews were analyzed by content analysis. Results Parents and community leaders identified mothers and, if living nearby, extended family as the most influential on children’s behavior and explained that cultural habits and norms regarding weight perceptions, the role of food, exercising (no sport cultures) and sleeping (bedtimes set to sunset) are passed on from parents to children. Major needs expressed by parents were neighborhood safety, stability in live (daily structure, housing, income), stress reduction and parenting skills to implement healthy living. Community involvement in intervention design and implementation was perceived as a crucial factor to make optimal use of capacities such as trust, expertise and reach. Conclusion Family needs are deeply rooted in the cultural, migration and socio-economic context. The present mismatch of current (professional) facilities to address these deeper-level factors calls for collaborated efforts from community leaders and professionals in creating a supportive family environment for the prevention of childhood overweight in low SES groups.

Objective. To gain insight into the barriers and facilitators for sufficient physical activity, limited sedentary time and healthy dietary habits that might be experienced by young European families at risk for developing type 2 diabetes.

Focus groups with teachers and local community workers were conducted to gain more insight into these barriers and facilitators. Methods. Twelve focus groups (six with teachers of primary schools and six with local community workers) were conducted across six European countries (Belgium, Bulgaria, Finland, Greece, Hungary and Spain). In total, 45 teachers and 41 local community workers participated in the focus groups. Barriers and facilitators for healthy physical activity, limited sedentary time and healthy dietary habits were mapped through semi-structured interview guides. Focus groups data were analyzed centrally using the qualitative data analysis software NVIVO.

Results. Across all countries, most of the barriers for sufficient physical activity reported by teachers and local community workers were situated on the individual level (e.g. lack of knowledge, motivation, etc.). Barriers for limiting sedentary time were mostly situated on the organizational level (e.g. indecent school policy, having a sedentary job, etc.) and barriers for healthy dietary behaviour were mostly situated on the interpersonal level (e.g.
Facilitators for sufficient physical activity and healthy dietary behaviour were mostly situated on the organizational level (e.g. availability of low-cost physical activities and mandatory physical education classes, positive school policy for dietary behaviour). For sedentary time only one facilitator was mentioned, i.e. having a good role model (interpersonal level). Conclusions. Teachers and local community workers reported some important barriers and facilitators to adopt a healthy lifestyle for young European families at risk for developing type 2 diabetes. These barriers and facilitators were situated on different levels (i.e. individual, interpersonal, organizational or community level), depending on the health behaviour. Interventions aiming to prevent type 2 diabetes should focus on reducing the identified barriers and on improving or providing the facilitators, taking into account the levels on which these barriers and facilitators are situated.

EURODHYAN - NEEDS ASSESSMENT AND DEVELOPMENT OF AN INTERVENTION APPROACH FOR TYPE 2 DIABETES PREVENTION IN SOUTH-ASIAN MIGRANTS
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Objective: South Asian populations living in Europe have an extremely high risk of Type 2 Diabetes (T2D). The evidence base for effective prevention in South-Asians is still limited. A small number of recently conducted lifestyle intervention trials have given important insights into how to reduce T2D risk in South-Asians with pre-diabetes. Overall, their effectiveness seems to be lower than observed in European origin populations. It is important to know how to support South-Asian people in Europe in the uptake and maintenance of a healthy lifestyle in order to develop effective T2D preventive strategies. Methods: Multi-method approach (e.g. literature review, interviews with trial study teams) to conduct in-depth analyses of promising elements from existing T2D prevention studies among South-Asians, with particular focus on the behavioural strategies employed and the role of the environment in supporting healthy behaviour. Preliminary results: Interventions that involve the South-Asian communities at several levels during the study development (design, recruitment, adaptation and implementation) seem to produce more favorable effects. Combined individual and community-based approaches seem to be more effective compared to one approach alone. Regular reinforcement instead of one-time or short-term education and intense monitoring and feedback during the intervention was perceived crucial. Conclusions: Intense, multilevel interventions with involvement of the study population are necessary to maximise the effect of the existing culturally relevant T2D prevention strategies in South-Asians. With this knowledge we aim to develop and test - in small scale experiments- potential preventive strategies to increase effectiveness.

S.40 6518: Effective intervention features and behavior change strategies in weight management interventions for pregnant and postpartum women: Candidates for translation (Convenor: Prof. Christine O (Saanich 2))

USE OF HEALTHY CONVERSATION SKILLS BY A REGISTERED DIETITIAN TO SUPPORT WOMEN TO IMPROVE LIFESTYLE BEHAVIORS IN PREGNANCY
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Purpose: Healthcare providers (HCP) report that they lack time, knowledge, and skills to support pregnant women in making healthy behavior changes. Meanwhile, pregnant women report that they would like more individualized support in prenatal visits to promote healthy lifestyles. This study examined the efficacy of Healthy Conversation Skills (HCS) as a person-centered counselling technique to support pregnant women in adopting healthy eating and physical activity behaviors and gain weight within the Health Canada gestational weight gain (GWG) guidelines. Methods: Sixty-three low-risk pregnant women, 1. Both groups received care from a Registered Dietitian (RD). The INT RD used HCS, a technique that is easily learned and implemented in practice. It uses open discovery questions to empower to participant to explore issues, identify barriers and generate personalized goals for change. Women
completed questionnaires at baseline, 29 and 34 weeks gestation, and 4 weeks postpartum about diet, physical activity, sedentary behaviors, and general lifestyle behaviors. GWG information was collected from obstetrical charts and adherence to GWG recommendations was defined in accordance with IOM guidelines. Data were analyzed using chi-square, t-test, or one-way ANOVA. Results: Demographic variables did not differ between INT (n=33) and AC (n=37) groups. In the INT group, diet quality improved at 29 weeks and sedentary behavior was lower at 34 weeks compared to AC. Women in INT vs. AC more strongly agreed that the study improved at least one of their lifestyle habits in pregnancy (p=0.016) and more strongly agreed with: "My study RD was interested in me and how this pregnancy was affecting my life" (p=0.035), and "My study RD took the time to ask about things that were important to me" (p=0.045). Adherence to GWG guidelines did not differ between groups. Conclusion: Use of HCS supported women to improve diet and reduce sedentary behaviors in pregnancy. Women in the HCS group had a higher sense of support from their RD. HCS holds promise as a practical counselling technique that can be implemented by HCP to support women to make healthy lifestyle changes throughout pregnancy.

EFFECTIVENESS OF THE LEVA PROTOCOL AMONG POSTPARTUM WOMEN: RESULTS FROM THE RANDOMIZED CONTROLLED LEVA IN REAL LIFE TRIAL

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Purpose: To evaluate the short- and long-term effectiveness of the LEVA protocol to produce weight loss among postpartum women within the primary health care setting in Sweden. Methods: During 2011-2014, 110 women with a self-reported body mass index (BMI) of ≥27 kg/m² at 6-15 weeks postpartum were randomly assigned to diet behaviour modification group (D-group) or control group (C-group). Women randomized to D-group (n=54) received a 12-week diet behaviour modification treatment according to the LEVA protocol. Women randomized to C-group (n=56) were given a brochure on healthy eating. The primary outcome was change in body weight after 12 weeks and 1 year. The LEVA protocol is built around the following items: four key dietary principles in line with the Nordic Nutrition Recommendations, self-weighing, and dietitian-participant education, interaction, and follow-up. The women were advised to introduce four key dietary principles (limit sweets, snacks, sugar-sweetened beverages; substitute regular foods with low-fat and low-sugar alternatives; gradually increase vegetables to cover half the plate at lunch/dinner; and reduce portion sizes), one at a time, at a pace that facilitated the weekly weight-loss goal of 0.5 kg/week. The women were instructed to self-weigh ≥3 times/week and were contacted biweekly with standardized cell phone text messages to report current body weight and receive personalized reinforcement and feedback on their progress. Results: At baseline, women had a median (1st; 3rd quartile) BMI of 31.0 (28.8; 33.6) kg/m² and 84% were breastfeeding. After 12 weeks, D-group had a weight change of -6.1 (-8.4; -3.2) kg as compared to -1.6 (-3.5; -0.4) kg in C-group. Conclusion: A low intensity diet treatment according to "the LEVA protocol" delivered within the primary health care setting can produce clinically relevant and sustainable weight loss among postpartum women with overweight and obesity.

ELECTRONIC SELF-MONITORING OF GESTATIONAL WEIGHT GAIN IS ASSOCIATED WITH REDUCED RISK OF EXCESSIVE WEIGHT GAIN IN NOT-LOW INCOME WOMEN

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Purpose: The components of effective interventions for reducing excessive gestational weight gain remain to be identified. This study investigates the socio-demographic, physical, psychosocial, and environmental correlates of the use of an electronic self-monitoring tool for gestational weight gain and the association of the consistency of self-monitoring with gestational weight gain outcomes. Methods: The e-MomsROC study included 898 and 437 women in the intervention and control arms, respectively, of a randomized trial assessing the effectiveness of an integrated online and mobile phone behavioral intervention to decrease the prevalence of excessive gestational weight gain. Consistent weight gain self-monitoring was expected across pregnancy with consistent weight gain monitoring or tracking defined as entering a weight in each 45 day interval of study participation. Excessive gestational weight gain was defined as gaining more weight during pregnancy than is recommended by the US Institute of Medicine for each woman's early pregnancy body mass index (BMI) category. Data were analyzed using
Purpose: Psychosocial factors are increasingly studied as potential risk or protective factors for cardiometabolic health. However, research in children and adolescents is still scarce. Therefore, we aimed to investigate the

Epidemiology

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Purpose: The negative impact of childhood overweight on psychosocial well-being has been demonstrated in a number of studies. There is also evidence that psychosocial well-being may influence future overweight. We examined the bidirectional association between childhood overweight and psychosocial well-being in children from a large European cohort. The dual aim was to investigate the chronology of associations between overweight and psychosocial health indicators and the extent to which these associations may be explained by parental education.

Methods: Participants from the IDEFICS study were recruited from eight countries between September 2007 and June 2008 when the children were aged 2 to 9.9 years old. Children and families provided data on lifestyle, psychosocial well-being, weight status, cardiometabolic markers and the measured anthropometry at baseline and at follow-up 2 years later. This study includes children with weight, height, and psychosocial well-being measurements at both time points (n = 7,831). Psychosocial well-being was measured by the KINDL® and Strengths and Difficulties Questionnaire respectively. The first instrument measures health-related quality of life including emotional well-being, self-esteem, parent relations and social relations while the second measures well-being based on emotional symptoms, conduct problems and peer-related problems. Logistic regression was used for modeling longitudinal associations. Results: Children who were overweight at baseline had increased risk of poor health-related quality of life (odds ratio (OR) = 1.23; 95 % confidence interval (CI): 1.03–1.48) measured 2 years later; this association was unidirectional. In contrast to health-related quality of life, poor well-being at baseline was associated with increased risk of overweight (OR = 1.39; 95 % CI: 1.03–1.86) at 2 year follow-up; this association was also only observed in one direction. Adjustment for parental education did not change our findings. Conclusions: Our findings indicate that the association between overweight and psychosocial well-being may be bidirectional but varies by assessment measures. Future research should further investigate which aspects of psychosocial well-being are most likely to precede overweight and which are more likely to be consequences of overweight.

THE ASSOCIATIONS BETWEEN PSYCHOSOCIAL WELL-BEING AND CARDIOMETABOLIC MARKERS IN EUROPEAN CHILDREN AND ADOLESCENTS

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Purpose: Psychosocial factors are increasingly studied as potential risk or protective factors for cardiometabolic health. However, research in children and adolescents is still scarce. Therefore, we aimed to investigate the

chi-square analysis and modified Poisson and linear regression approaches. Results: Only 16.5% of low income (Medicaid eligible) women consistently entered their weights into the online or mobile phone version of the weight gain tracker as did 34.2% of not-low income women. More highly educated, older, and white women were more likely to be consistent weight gain trackers. Among not-low income women, consistent weight gain tracking was associated with 2.35 kg less gestational weight gain (95% CI: -3.23 to -1.46 kg; p Conclusion: Electronic tracking of gestational weight gain appears to be an effective component of e- and m-health interventions aiming to decrease the prevalence of excessive gestational weight gain in not-low income women. Income-group specific motivators are needed to enhance the impact this intervention feature in real world practice settings.
association between psychosocial well-being and cardiometabolic markers in these age groups. Methods: We analyzed parent- and self-reported data of 3,748 children and adolescents aged 5 to 14 years from 8 European countries participating in the I.Family study (2013/14). A well-being score was calculated using 16 items of the KINDL Quality of Life Questionnaire covering emotional well-being, self-esteem and relations to family and friends (range: 0-48 points). Cardiometabolic markers comprised waist circumference, HOMA index and blood pressure (average of systolic and diastolic blood pressure). Linear mixed-effects models were estimated to assess associations between well-being and age-and sex-specific z-scores of the three cardiometabolic markers accounting for the clustered study design (siblings in the sample). In a first model, associations were adjusted for age, sex, study center and highest educational level of parents. In a second model, body mass index (BMI) was added to assess its potential mediating role. Results: Psychosocial well-being was strongly associated with waist circumference and HOMA index. Every four-point-increase in well-being score was associated with a 0.086 ([-0.124; -0.049]; 95% confidence interval) lower waist circumference z-score and a 0.064 [-0.093; -0.034] lower HOMA index z-score. No association between psychosocial well-being and blood pressure was observed. After including BMI, the association between psychosocial well-being and waist circumference was remarkably attenuated and no longer statistically significant (β=-0.012 [-0.031; 0.006]). The association between psychosocial well-being and HOMA index persisted, although the effect was attenuated (β=-0.042 [-0.070; -0.014]). Conclusions: Our results showed that higher well-being was associated with lower waist circumference although this association seemed to be explained by lower BMI. However, higher well-being was associated with lower HOMA index independent of BMI. In order to disentangle cause and effect, we will further explore this association in longitudinal analyses using data of the preceding IDEFICS study.

STRESS AND OBESITY IN CHILDREN: PHYSIOLOGICAL AND DIETARY ASPECTS
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Purpose: Longitudinal studies are needed to reveal the directionality and underlying lifestyle and hormonal factors (e.g. cortisol and leptin) in stress-induced adiposity. These insights can inspire prevention campaigns. Methods: In more than 300 Belgian children (5-12y), stress questionnaire data, lifestyle (food consumption, psychological eating behavior, physical activity by accelerometry, screen time), adiposity (BMI, fat% by BodPod, waist) and leptin were measured over two years. Cross-sectionally, salivary cortisol levels and fecal samples were collected. Cross-lagged analyses, mediation and moderation analyses were applied, while adjusting for relevant confounders. Results: Children with a high stress score reported more sweet food consumption, emotional eating, external eating, restrained eating and physical activity. Stress increased adiposity in children with high sweet food consumption, high screen time or high cortisol awakening response. Stress decreased adiposity in children with high physical activity. In the other direction, adiposity also increased stress. High cortisol was associated with an unhealthy diet (especially with the sweet foods) and also with higher leptin levels in girls. The combination of high leptin and high stress was related to high emotional eating. Also gut microbial differences were seen depending on the stress level e.g. more short-chain fatty acid producers. Conclusions: The results support the theory of cortisol-induced comfort food preference and a role of leptin in emotional eating. This study identified vulnerability factors to stress-induced adiposity: especially those with unhealthy food intake and when stress gets under the skin (high cortisol). This creates a perspective for multi-factorial obesity prevention, targeting stress and lifestyle factors in parallel. Herein, appropriate stress coping skills should be acquired to minimize e.g. stress-induced eating.

S.26 6488: Going Green: Advancing Interventions for Understanding the Value of Parks and Green Space to Physical Activity and Public Health (Convenor: Dr. Andrew Kaczynski) (Oak Bay 1 & 2)

THE IMPACT OF PARK REFURBISHMENT ON PARK VISITATION AND PARK-BASED PHYSICAL ACTIVITY: A NATURAL EXPERIMENT
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Purpose: Parks are important settings that provide opportunities for physical activity across the lifespan. Creating parks that optimise visitation and physical activity among park visitors is important for public health. There is very little evidence; however, to support park refurbishment or renewal as a means of achieving these objectives. Over two years, this natural experiment examined the impact of the installation of a play-scape (play area designed with the intent of bringing children and people back to nature) in a large metropolitan park located in a low socio-economic status neighbourhood in Melbourne, Australia (where the play-scape was installed) on park use and park-based physical activity compared with a control park. Methods: The Recording and Evaluating Activity in a Modified Park (REVAMP) study used systematic observations to assess park usage and park-based physical activity on three occasions, before the intervention (T1) and 12 and 24 months later (T2 and T3 respectively). On each occasion, the number of park users and their characteristics (age, sex and activity level) were recorded within pre-determined target areas in the intervention and control parks using the System for Observing Play and Recreation in Communities (SOPARC) on four weekdays (7.30am-4.30pm) and four weekend days (8.30am-4.30pm). Electronic monitors were used to record the number of people using the walking paths in the parks and cars entering the parks. Results: The intervention park had a 176% increase in park user counts from (T1) to T2 (IRR=2.76, 95% CI=1.04-7.33, p=0.042), relative to the control park. The intervention park had a 119% increase in park users engaging in moderate-vigorous intensity physical activity from T1 to T2 (IRR=2.19, 95% CI=1.14-4.20, p=0.019), and a 128% increase from T1 to T3 (IRR=2.28, 95% CI=1.19-4.38, p=0.013), relative to the control park. Conclusions: This study provides evidence that the installation of a play-scape positively influenced park visitation and park-based physical activity. The findings have implications for future park-renewal projects and can inform urban planners and designers seeking to develop parks that attract users and facilitate greater levels of physical activity.

PARK CHARACTERISTICS INFLUENCING THE SUPPORTIVENESS FOR PARK VISITATION AND PARK BASED PHYSICAL ACTIVITY IN ADOLESCENTS: A CHOICE-BASED CONJOINT ANALYSIS WITH MANIPULATED PHOTOGRAPHS

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Objective: Neighbourhood public parks are valuable and accessible places where adolescents can meet and accumulate recommended physical activity (PA) levels. Furthermore, parks can also be a destination to visit by foot or bike and thereby have potential to increase PA even if park users engage in sedentary behaviours upon arrival. However, little is known about the specific park characteristics that influence the supportiveness for park visitation and park-based PA among adolescents. The purpose of this study was to understand the relative importance of key park characteristics using manipulated photographs of parks. Methods: Adolescents (12-16 years) are being recruited from schools until a sufficient sample size (600 according to power calculations) will be reached (currently 494 collected). Participants are asked to fill in a web-based questionnaire including a survey assessing socio-demographics, PA levels, park use, and two sets of choice-based conjoint tasks. 6912 photographs were manipulated on ten characteristics using Photoshop to show parks with a range of characteristics from least supportive to most supportive: naturalness (i.e., trees and plants), walking paths, upkeep, playground, sport field, benches, drinking fountain, activities of peers, presence of mothers with children, and presence of a homeless person. These photographs were integrated into a set of choice tasks, in which adolescents are shown two parks. In the first task, participants have to indicate which park they prefer to visit, while in the second task, they are asked to select the most supportive park for PA. Data will be analysed using Hierarchical Bayes analyses in Sawtooth software. Results: Specific results will be available to present at the conference. The most important characteristics for perceived supportiveness for park visitation and park-based PA will be shared. The extensive experience of the research group with this novel methodology guarantees interesting late-breaking findings as part of this innovative symposium. Conclusions: Results of this study will be particularly important for policy makers, as they often have limited budgets for park development or renewal and need to prioritize the inclusion of particular park features. Parks that are supportive for adolescents' PA may also have potential to increase activity levels at the community level.
Purpose: Few question the intimate connections between the health of the population and the environment. More than half of the world's population lives in urban areas (towns and cities), and this number is projected to increase to two in three people by 2050. As populations become increasingly urbanised, the preservation of urban green space (UGS) becomes paramount. UGS is not just dedicated recreational space such as public parks, but other types of informal green space are important, for example, street trees and roof gardens. Despite the potential from cross-sectional evidence, we know little about how to design new or improve existing UGS for various benefits. Our aim was to systematically review the evidence on the environmental, health, and equity effects of UGS interventions.

Methods: Eight electronic databases were searched using search terms relating to "urban green space" and "study design" in August 2016. Eligibility criteria included: (i) a physical change to UGS; and (ii) health, social or environmental outcome(s). Studies were synthesized according to intervention approach: Park-based; greenways/trails; and, 'greening'. The PROGRESS-plus tool was used to explore equity effects of the interventions.

Results: Of the 6988 studies identified, 38 were included. There was promising evidence to support park-based interventions that also included a promotion/marketing programme (7/7 studies), greening of vacant lots (4/4 studies), provision of urban street trees (4/4 studies), and green infrastructure broader environmental benefits (6/7 studies). There was inconclusive evidence for the provision of greenways/trails (3/6 studies). We could draw little conclusions regarding the equity impact of UGS interventions. Conclusions: UGS has an important role to play in creating a "culture of health" of our neighbourhoods and communities. Results show promising evidence to support the use of certain UGS interventions for health, social, and environmental benefits. We argue that the true potential of UGS has not been realised as studies have typically under-evaluated the intervention. Significant UGS investment is made worldwide, and many researchers and policy-makers alike have gradually shown increased support to implement UGS interventions to improve population-level health. This review provides a platform for guiding the design, implementation, and evaluation of future research investigating UGS interventions.

ASSOCIATIONS OF OCCUPATION WITH BEHAVIOURAL RISK FACTORS AND CARDIO-METABOLIC DISEASE. DATA OF 324,938 WORKING ADULTS FROM THE UK BIOBANK

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Purpose: To examine the behavioural risk factor profiles of occupation categories and cross-sectional associations with cardio-metabolic disease. Methods: This analysis involved UK Biobank data from adults who reported being employed at the time of assessment (n=154,388 men and n=170,550 women). Participants' self-reported jobs were coded into nine occupational categories according to the Standard Occupational Classification 2000 codes (managers and senior officials; professional; associate professional and technical; administrative and secretarial; skilled trades; personal service; sales and customer service; process plant and machine operators; elementary). Multivariate logistic regressions calculated the odds ratios of high TV-viewing (>3h/day), insufficient physical activity (9h/day), current alcohol drinker, current smoker, and having cardio-metabolic disease by sex and occupational category. Cardio-metabolic disease status was determined by self-report in a questionnaire plus verification by a Biobank nurse during follow-up interview. Results: We observed the strongest associations for occupation group with TV-viewing and sleep with a gradient suggesting greater odds of high TV-viewing time and poor sleep duration in lower skilled occupations relative to managers, especially in women; e.g., high TV-viewing in elementary occupations OR=3.23 (95% CI: 3.05-3.43) in women and OR=2.45 (95% CI: 2.32-2.58) in men; in skilled trades OR=1.89 (95% CI: 1.72-2.07) in women and OR=1.87 (95% CI: 1.80-1.95) in men; only professionals had lower odds
of high TV-viewing (in women OR=0.65, 95% CI: 0.62-0.68; in men OR=0.70, 95% CI: 0.67-0.73). Relative to managers, men and women working in professional, associate professional, skilled trades, and personal service occupations had lower odds of having ≥3 risk factors (p Conclusions: This study provides a recent snapshot of the behavioural risk factor profiles of working adults in the UK by occupation group and associations with cardio-metabolic disease. Risk factors appear to cluster differently in occupation groups; TV-viewing and poor sleep duration appear to have more marked occupational gradients than other behavioural risk factors such as insufficient physical activity.

INDIVIDUAL AND ENVIRONMENTAL CORRELATES OF OBJECTIVELY MEASURED SEDENTARY TIME IN DUTCH AND BELGIAN ADULTS
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Purpose: As the detrimental health effects of sedentary behaviours are well established, insight into the individual and environmental factors that influence adults’ sedentary behaviours is needed. Most studies to date rely on self-reported measures of sedentary time. Therefore, the aim of the current study was to explore individual and environmental correlates of objectively measured sedentary time in Dutch and Belgian adults. Methods: Between March and August 2014, Belgian (n=133) and Dutch (n=223) adults, recruited as sub-sample of the SPOTLIGHT survey, wore an ActiGraph accelerometer to provide objectively measured sedentary and moderate-to-vigorous physical activity time. Participants completed a questionnaire assessing sociodemographic (country of residence, age, gender and educational level), lifestyle (sleep, smoking, sugar-containing beverage consumption, alcohol intake), health (body mass index, self-rated health), work (employment status and type of work), happiness, physical environmental (owning a car, number of screens, socioeconomic status and residential density) and social environmental factors (social network, social cohesion). Univariate and multivariable regression analyses were conducted. Results: Our study showed that Belgian participants had a lower odds of being sedentary for at least 9 hours per day compared to Dutch participants. Women, older participants and those meeting the WHO recommendation for physical activity were also less likely to sit for 9 hours or more per day. Participants doing (heavy) manual work or being in education, homemaker or unemployed had lower odds of being sedentary for at least 9 hours per day compared to participants with a sitting job. No associations between physical and social environmental characteristics and sitting time were found. Conclusions: Our findings add to the growing evidence of factors associated with prolonged sedentary time in adults. Country of residence, age, gender, meeting physical activity recommendations and employment status were associated with objectively measured sedentary behaviour. These findings may be used to inform the development of strategies and interventions aimed at reducing sedentary time, and to identify high risk groups. Yet, additional longitudinal research with objective measured sedentary time in combination with self-report domains of sitting is needed to get insight into the causality of these cross-sectional findings.

CROSS-SECTIONAL ASSOCIATIONS BETWEEN PHYSICAL ENVIRONMENTAL FACTORS AND DOMAIN-SPECIFIC SEDENTARY BEHAVIOURS IN ADULTS: MODERATING ROLE OF SOCIO-DEMOGRAPHIC VARIABLES
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Background: Despite the evidence for a positive association between sedentary behavior and mental as well as physical health problems, the majority of the adult population spend too much time sedentary. To develop effective sedentary behavior-reducing strategies, insight into the correlates of sedentary behavior is needed, even as understanding of whether these correlates hold across population subgroups. Methods: In total, 331 adults (18-60 years), and 293 older adults (≥ 65 years) from Sint-Niklaas (city in Flanders, Belgium) participated in this cross-
sectional study. Data on socio-demographic variables, physical environmental factors and domain-specific sedentary behaviours were obtained using a paper-based questionnaire for the adults, and using a face-to-face interview for the older adults. Generalized linear models were conducted to examine main associations between physical environmental factors and domain-specific sedentary behaviours. Interaction terms were added to test the moderating role of socio-demographic variables and BMI on this association. Results: The number of televisions, the proximity of the remote controller, and the presence of comfortable couches were positively associated with television time. The number of computers and the number of laptops were positively associated with having time spent sedentary while using a computer/laptop, and the number of motorized vehicles was positively associated with transport-related sitting time. Both age, children in the household and BMI moderated the associations between physical environmental factors and sedentary behaviours. Conclusion: Preliminary evidence was found for associations between physical environmental factors and domain-specific sedentary behaviours among adults. However, the associations varied between population subgroups, which makes it challenging to formulate general environmental recommendations.

5.28 6611: Man or machine? How far are we in the field of smart devices for dietary data collection (Convenor: Dr. bent egberg mikkelsen) (Salon B)

6649

RELATIVE VALIDITY OF AN IMAGE-BASED METHOD FOR THE ASSESSMENT OF DIETARY INTAKE IN PREGNANT WOMEN
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Purpose: Image-based dietary records simplify the recording process by using digital photographs to document eating occasions. This method has been used in children, adolescents and adults, but has not been evaluated in pregnant women. The study aimed to establish the relative validity and usability of an image-based dietary assessment method in pregnant women. Methods: Using an app on their smartphone, pregnant women collected image-based dietary records of all food, drinks and supplements consumed over a 3-day period (non-consecutive days; one weekend day). Three interviewer-administered 24-hour recalls (random days; one/week) were also collected in the weeks following the image-based record. Data from both methods were independently analysed by a dietitian using nutrient analysis software. Agreement between methods was ascertained via Pearson correlations and Bland-Altman plots. Perceptions on the use of the image-based method were collected via a questionnaire. Results: Twenty-five pregnant women (median age 29 years, gestation 6-24 weeks), collected the image-based records. Significant correlations between the two methods were observed for energy (r=.70, Pr=.58–.74, all Pr=.84, Pr=.47–.94, all Pr=.40–.85, all P Conclusions: As a method to assess the dietary intakes of pregnant women, image-based dietary records demonstrated acceptable relative validity. Overall, pregnant women found the image-based method easy to use and would be willing to use the method again to assess dietary intake.

6614

ASSESSING DIETARY INTAKE USING THE DIETARY INTAKE MONITORING SYSTEM (DIMS) & IDENTIFYING BEST DIGITAL IMAGE PORTION ESTIMATION APPROACH WITH EBUTTON WIRE MESHES FOR DIFFERENT TYPES OF FOODS.
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Background: To present two studies, DIMS and the eButton approaches that have been cooperating to make progress in ICT assisted dietary assessment. They are relying on imaging/scales and imaging/meshing respectively to achieve automaticity in the assessment of food type and amount consumed. 1.DIMS Purpose: To investigate the impact of service assistants and meal hosts involvement in serving patients meals on food intake and waste using DIMS2.0. Methods: DIMS integrates a camera, weighing scale, RFID sensor and WIFI connection for real-time photo and weight dietary data acquisition and analysis. It was used to collect 74 paired before/after meal consumption photos and weight of patient's plate content of hot meals, 36 and 38 served by service assistants and meal hosts respectively. The total portion consumed was estimated and compared using t-test. Results: There was no
significant difference in portion size consumed by patients served by service assistants and meal hosts. Conclusion: Relying on meal host prior knowledge in nutritional care to assign patient’s meal service responsibilities did have a major impact on portion consumed and food waste. 2. eBUTTON Purpose: To estimate inter-observer reliability and criterion validity for four digital wire mesh portion size estimation software for each of ten food images taken at different angles using the eButton for food intake recording. Methods: Images of ten foods of different types were taken at different angles. Two experienced dietitians independently employed digital wire mesh software for each image. Intraclass correlations between dietitians were employed to estimate inter-observer reliability across all images, and then for subgroups of images. Intraclass correlations among the dietitians and the measured amounts were employed to estimate criterion validity across all images and then for subgroups of images. Bland Altman plots will also be calculated. Results: Portion size estimates were obtained by both dietitians for all images from all angles. Inter-observer reliabilities, criterion validities and Bland-Altman plots will be presented at the meeting. Conclusion: Validity and reliability coefficients will guide the selection of the most accurate and reliable digital wire mesh software for estimating portion size in future use of the eButton for measuring food intake.

MIXED DEEP LEARNING & NATURAL LANGUAGE PROCESSING APPROACH FOR FOOD IMAGE DETECTION, RECOGNITION AND ANALYSIS AIMED TO ESTIMATE NUTRITIONAL VALUES, Eftimov Tome1. 1Jožef Stefan Institute, Ljubljana.

Purpose: Due to the complexity, the problem of food & drink image detection, recognition and nutritional values estimation is decomposed into sub-problems. While the goal of detection is to determine whether an image contains a food or drink item, the recognition is aimed to label the detected image as an individual food or drink item. Finally, the label of the recognized image is matched with compositional data from a selected food composition database in order to estimate its nutritional values. The first sub-problem of image detection and recognition is solved by using deep convolutional neural networks, while the second sub-problem of estimating nutritional values from the recognized image is solved by using a natural language processing (NLP) approach. Methods: To perform food & drink image detection and recognition, i) a dataset of 130,000 self-acquired food & drink images from 520 categories was created and ii) a new deep learning architecture (DL) was developed. The image dataset was split into a training (75%) and testing (25%) set. A server-side training component was implemented to continually fine-tune the food and drink recognition model on new images. In order to estimate nutritional values, we propose a novel approach for food matching that uses NLP techniques in combination with probability theory to rank matching pairs. At the end, the matching pair with the highest rank becomes the most relevant one. Results: The DL model, applied on the training set of food & drink images from 520 categories, achieved the recognition accuracy of 82.11% and the detection accuracy of 94.51%. The experimental results showed that the food matching approach can correctly match 91.82% of 1,615 randomly selected food items. Conclusions: The results are encouraging as the accuracy of food image classification is higher than similar contributions in the field. The DL model is being used in practice as part of a mobile app for dietary assessment of Parkinson’s Disease patients. The benefit of using the approach for food matching is that the whole process is done automatically, compared to several other techniques used in Europe that are based on manual matching.

WORKPLACE COUNSELING INTERVENTION TO PROMOTE PHYSICAL ACTIVITY IN INSUFFICIENTLY ACTIVE EMPLOYEES: LESSONS LEARNED FROM BELGIUM. Seghers J.1, Arrogi A1, Boagerts A2, Boen F1. 1Department of Kinesiology, Physical Activity, Sports and Health research group, Leuven; 2Faculty of Kinesiology and Rehabilitation Sciences, Leuven.

BACKGROUND: Insufficiently active employees are an important target group for worksite physical activity (PA) interventions, especially in view of the progressive increase in the prevalence of sedentary PA occupations. The majority of insufficiently active employees experience difficulties on how to integrate a regular PA pattern into their
daily life. Workplace counseling interventions might help and encourage employees to incorporate PA into their daily routines. PURPOSE: To evaluate the short- and long-term effectiveness of a three-month individualized need-supportive PA counseling intervention. METHODS: The intervention was conducted in a large company in Flanders, the Northern Dutch-speaking part of Belgium, with over 3,500 employees working on five worksites. The intervention was targeted at insufficiently active employees identified by the company's health risk assessment tool. From the 836 insufficiently active employees, 246 employees (mean age = 41 years, 76% women) were assigned to the intervention group and 54 (mean age = 43 years, 80% women) to the control group. Employees in the intervention group received a 12-week individualized need-supportive PA counseling intervention while the control group received no specific intervention (Clinical Trial id: NCT01759927). Behavioral outcomes included self-reported sitting time (IPAQ-short version) and objectively assessed steps per day (SenseWear Armband activity monitor). Health outcomes included Body Mass Index (BMI) (kg/m²), cardiorespiratory fitness (YMCA 3-Minute Step Test) and subjective well-being (Marcoen scale). Pre-, post- and follow-up tests were completed, respectively, before, immediately after, and 6 months after the end of the intervention. RESULTS: Linear mixed model analysis showed significant three (time) by two (groups) intervention effects for self-reported sitting time at weekend days (F=4.47, p CONCLUSIONS: A workplace individualized need-supportive PA counseling intervention is a promising strategy to promote a physically active lifestyle among insufficiently active employees. The presentation will also highlight some limitations (e.g., the lack of full randomization) and challenges for future research.

DEVELOPMENT OF AND RECRUITMENT FOR WORKWELL KANSAS PHYSICAL ACTIVITY WORKSHOPS

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Purpose Traditional worksite wellness initiatives often rely on the provision of information and programs to motivated employees at worksites with interests in health. The entities that make up WorkWell Kansas intentionally shifted this model to develop something more innovative. The goal of WorkWell Kansas is to change the culture of the workforce by implementing evidence-based strategies. The purpose of this presentation is to describe the recruitment success of WorkWell Kansas. Methods Design WorkWell Kansas offers a cohort design, but the physical activity workshops and data are new, and therefore only baseline data are reported. The curricula are developed based on best practices from the academic literature. Strategies include information and programs, but also include benefit design, policy, and environment. Participants Workshops are conducted for worksite teams (including those not interested in worksite wellness or health), and topic-specific workshops assist worksite teams in developing a worksite wellness plan that is consistent with the worksite’s culture and needs. Measures Worksite representatives complete a worksite-level assessment at baseline and one year post-workshop, reporting which evidence-based physical activity strategies are implemented at the worksite. Procedures WorkWell Kansas offers a unique approach to recruiting worksites. WorkWell Kansas "Champions," whose predominant responsibility is to recruit worksites for the traveling workshops, are identified across the state through their receipt of various grants, their roles in their communities (e.g., Chamber of Commerce Director, Economic Development Officer), or their interest in the curricula. Champions identify the worksites in their communities that are most influential in spearheading community-level change, and they work to recruit representative teams from each worksite to participate in a local workshop. Results More than 500 worksite teams have been recruited to participate in at least one WorkWell Kansas workshop over approximately four years. Baseline physical activity data suggest the most common strategy for worksites implementing physical activity interventions is the provision of information (33%), and the least common strategies are the implementation of programs and policies (both 14%).

THE FOOD CHOICE AT WORK TRIAL: FROM EVALUATION TO PRACTICAL APPLICATION IN EVERYDAY WORKPLACE SETTINGS

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BACKGROUND: It is accepted that the surrounding environments in which individuals live and work influences their health behaviours and that modifying these environments at both macro and micro levels is an important catalyst for behaviour change. However, evidence on effective workplace dietary interventions is limited. PURPOSE: The
comparative effectiveness of a workplace environmental dietary modification and an educational intervention both alone and in combination was assessed versus a control workplace on employees’ dietary intakes, nutrition knowledge and health status. METHODS: Based on a systematic review and pilot study, in the Food Choice at Work cluster controlled trial, four large, purposively selected manufacturing workplaces in Ireland were allocated to control (N = 111), nutrition education (Education) (N = 226), environmental dietary modification (Environment) (N = 113) and nutrition education and environmental dietary modification (Combined) (N = 400) in 2013. Nutrition education included group presentations, individual consultations and detailed nutrition information. Environmental dietary modification included menu modification, fruit price discounts, strategic positioning of healthier alternatives and portion size control. Data on dietary intakes, nutrition knowledge and health status were obtained at baseline and follow-up at 7–9 months. Multivariate analysis of covariance compared changes across the four groups with adjustment for age, gender, educational status and other baseline characteristics. RESULTS: Follow-up data at 7–9 months were obtained for 541 employees (64% of 850 recruited) aged 18–64 years; control: 70 (63%), Environment: 113 (50%), Environment: 74 (65%) and Combined: 284 (71%). There were significant positive changes in intakes of saturated fat (p = 0.013), salt (p = 0.010) and nutrition knowledge (p = 0.034) between baseline and follow-up in the combined intervention versus the control. Small but significant changes in BMI (− 1.2 kg/m2 (95% CI − 2.385, − 0.018, p = 0.047) were observed in the combined intervention. Effects in the education and environment alone workplaces were smaller and generally non-significant. CONCLUSIONS: Combining nutrition education and environmental dietary modification may be an effective approach for promoting healthy eating at work. The Food Choice at Work intervention represents a viable model and wide-scale implementation is underway at local and national workplaces.

**S.30 6548: New questions, enhanced methods to understand food environment contributions to health and policy implications (Convenor: Dr. Shannon Zenk) (Salon C)**

**DETERMINING PRICE ELASTICITY VALUES FOR STUDYING FOOD TAXES AND SUBSIDIES BY COMBINING EXPERIMENTAL METHODS, ECONOMETRIC MODELS, AND SIMULATION MODELLING: THE PRICE EXAM STUDY**

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Introduction: There is a need for accurate and precise food price elasticities (PE, change in purchases in response to change in price) to better inform policy on health-related food taxes and subsidies. Methods: We developed a novel approach to estimate more accurate and precise PE values including a Virtual Supermarket experiment and econometric methods. Findings are applied in simulation models to estimate population health impact (in quality-adjusted life-years [QALYs] gained) using a multi-state life-table (MSLT) model. Results: Our novel approach includes four sequential steps: 1. We generated 5,000 price sets with random price variation for all 1,450 Virtual Supermarket products. We then added systematic price variation of foods to simulate five policy interventions: a fruit and vegetable subsidy and taxes on sugar, saturated fat, salt, and sugar-sweetened beverages. 2. We use an experimental design where 1,000 shoppers are asked to complete five household grocery shops in the Virtual Supermarket where they were randomly assigned to one of the 5,000 price sets each time. 3. Output data (ie, multiple observations of price configurations and purchased amounts) are used as inputs to econometric models (using Bayesian methods) to estimate more accurate PE values. 4. The MSLT disease simulation model will be run with the new PE values as inputs to estimate QALYs gained and health costs saved for the five interventions. Currently, n=1,029 participants have completed at least one shop in the Virtual Supermarket, with a total of n=3,992 completed shops. In total, we aim for at least n=4,000 up to a maximum 5,000 completed shops. In addition to their use in the modelling steps of the study (step 3 and 4), these shopping data can be used in trial analyses estimating the impact of the five policy interventions on food purchases. At the conference, we will present the preliminary results of these trial analyses. Conclusions: This presentation will provide insight into a world-first combination of econometric, experimental and simulation modelling methods to provide more robust evidence on health-related food taxes and subsidies.
DOES THE FOOD ENVIRONMENT AFFECT WEIGHT LOSS MAINTENANCE?

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Purpose. Only a small fraction of those who participate in weight management programs keeps the weight off. Despite evidence that it can influence dietary intake and body weight, little is known about whether the food environment affects outcomes of weight management programs, especially weight loss maintenance. Among participants in MOVE!, a nationwide weight management program in the U.S. Department of Veterans Affairs, we hypothesized that 18-month weight loss maintenance among MOVE! participants who lived near a supermarket and had fewer convenience stores and fast food restaurants near home would be greater than among participants who lived further from a supermarket and had more proximate convenience stores and fast food restaurants. This analysis builds on our prior work that showed MOVE! participants with more convenience stores near home lost less weight at 6 months. Methods. The sample was MOVE! participants in 2009-2014 and matched controls living in U.S. metropolitan areas. We linked electronic health record data on BMI to commercial data on food outlet locations within 1-mile of their homes. We used inverse propensity score weights and difference-in-difference regression models to estimate the effects of MOVE! participation on weight loss at 18 months separately for men and women with different spatial access to retail food outlets. Covariates included individual- and neighborhood-level demographics, health conditions, and geographic region. Results. Of 1,118,507 men and 89,151 women in our sample, 61,866 (5.5%) and 9,401 (10.5%), respectively, participated in MOVE!. Preliminary analyses show MOVE! participation was associated with a 0.65-unit (at 6 months) and 0.48-unit (at 18 months) reduction in BMI among men and 0.62 and 0.58 BMI units among women. Availability of supermarkets, convenience stores, or fast food restaurants within 1-mile of home was not associated with BMI change at 18 months. Conclusions. Taken together, our results to date suggest that the residential food environment may affect initial weight loss but not weight loss maintenance. Results provide little support for the idea that policies aimed at increasing supermarket access or reducing access to fast food and energy-dense food sources will help individuals maintain weight loss over time.

THE DUTCH FAST-FOOD ENVIRONMENT AND THE INCIDENCE OF INDIVIDUAL-LEVEL CARDIOVASCULAR DISEASE AND ITS SUBTYPES: A NATIONWIDE STUDY

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Purpose: As municipalities are increasingly responsible for improving citizen health, understanding the impact of the food environment on citizen health is important to inform local policies. This study aimed to determine associations between fast-food outlet density and the incidence of individual-level cardio vascular disease (CVD) and its subtypes among a nation-wide sample of individuals living at the same address for a long period of time. Methods: Data were obtained from the Dutch Population Register, the Hospital Discharge Register, Cause of Death Register and the Locatus database. After linkage of these datasets, a cohort of 2,472,004 adults of ≥35 year, free from CVD at January 2009, and living at the same address for ≥15 years was constructed and followed for one year. CVD events and its subtypes (coronary heart disease (CHD), stroke and heart failure) were identified using International Classification of Disease codes. To account for fast-food outlet density, three street network buffer sizes around the addresses of each participant were included; 500m, 1000m and 3000m. Logistic regression analyses were conducted with incidence of CVD or CVD subtype as dependent variable and fast-food density as independent variable. Crude and adjusted models stratified by degree of urbanisation (urban vs rural) were runned, adjusting for age, sex, ethnicity, marital status, comorbidity, neighbourhood level income and population density. Results: About 87% of the population was native Dutch, and 46% male. In total, 2.3% of the participants suffered from CVD in 2009. Fully adjusted models showed that in urban areas the presence of fast-food outlets within 500m and 1000m were slightly but significant associated with an elevated incidence of CVD and CHD, whereas this was not found for the wider environment (3000m). Conclusions: The main findings indicate that individuals living in urban environments with fast food outlets in near presence (future studies should account for a wider range of lifestyle and environmental confounders.
S.32 6465: Lifestyle interventions during pregnancy: a window of opportunity or a lost cause? (Convenor: Prof. Mireille van Poppel) (Sidney)

BARRIERS AND FACILITATORS FOR LIFESTYLE INTERVENTIONS DURING PREGNANCY: A SOUTH AFRICAN PERSPECTIVE

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Purpose: Despite the potential role of physical activity (PA) in improving maternal health, very little research has been done in a South African context. In order to design interventions in this unique life-stage, and understanding of the context-specific behavioural aspects of PA during pregnancy is essential. Therefore, the overall aim of this study was to understand and examine maternal PA behaviours during pregnancy in black urban South African women. Methods: This study used a mixed-methods design, using semi-structured interviews (n=13; 29-33 weeks gestation), with a deductive thematic analysis based on the Theory of Planned Behaviour. A longitudinal observation of PA during pregnancy used the Global Physical Activity Questionnaire at 14-18 weeks and 29-33 weeks gestation (n=256). Results: Semi-structured interviews showed that although the majority of women believed that PA was beneficial, this did not appear to translate into behaviour. Only 52% of women were active in the second trimester and this decreased to 43% in the third trimester. The majority of PA time was spent in walking for transport (80%), and less than 2% in recreational activities. In both trimesters, married women were less likely to walk for transport (second trimester: β= -0.12; 95%CI= -0.31, -0.02; third trimester: β= -0.17; 95%CI= -0.47, -0.07) and women who owned a car were more likely to engage in leisure time PA (second trimester: β= 0.16; 95%CI=0.02-0.32), but less likely to walk for transport (β= -0.11; 95%CI= -0.31, -0.00). Factors affecting women’s perceived control to become active included pregnancy-related discomforts as well as lack of time, money and education. Facilitators for becoming active were mainly community-based, such as group exercise classes, as well as family and spousal support. Indigenous knowledge and cultural beliefs often provided vague, conflicting and often discouraging advice about PA during pregnancy. Conclusion: Socioeconomic status appears to play a significant role in PA during pregnancy and this study highlights the need PA interventions that are contextually and culturally sensitive. Incorporating the immediate and wider social community into interventions may promote PA behavioural change in not only the pregnant population, but at a community level as well.

THE PAMELA TRIAL: CHALLENGES AND STRATEGIES TO INCREASE PARTICIPANT’S COMPLIANCE TO A PHYSICAL ACTIVITY INTERVENTION CARRIED OUT IN SOUTHERN BRAZIL.

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Purpose: Barriers to physical activity practice during pregnancy are known to be numerous and complex and should be considered while planning interventions aimed at increasing physical activity levels among pregnant women. The presentation has the aim to describe the challenges involved in conduct a physical activity intervention among pregnant women living in Pelotas, Southern Brazil, and its planned strategies to increase participants’ compliance to the study. Methods: The Physical Activity for Mothers Enrolled in Longitudinal Analysis (PAMELA) Trial is a large randomized control trial that was carried out in South Brazil to study the effects of physical activity during pregnancy on several maternal-child health outcomes. A total of 639 eligible pregnant women were enrolled in the study, of which 213 were randomized to the intervention group and 426 to the control group. The exercise protocol included aerobics, strength and flexibility training, three sessions a week (60minutes each session) during 16 weeks. Reasons for non-compliance to the program were analyzed among participants from the intervention group. Results: Several strategies to increase adherence to the intervention program were put into practice in the PAMELA Trial. The strategies included: door-to-door transport to gym facilities, supervised exercise sessions and provision of appropriate clothes/shoes to physical activity practice. However, only 10% of the women from the intervention group completed the whole 16-week program and 40% of them reached the previously defined adhesion criteria.
The majority of the participants who quit participation in the exercise program reported feeling too tired, having no more available time or being advised by their health professionals to stop the exercise program to avoid medical complications or due to medical complications. Conclusions: Even with all efforts to increase adherence to the exercise protocol, participants compliance rate was low. Several barriers to adhere the exercise protocol were reported among the intervention group. Further intervention studies should consider the most reported barriers to plan new strategies to increase compliance to physical activity programs among pregnant women. Understand health care professionals views on physical activity during pregnancy is urgently necessary as their advice may importantly affect behaviour of pregnant women.

IS POOR MENTAL HEALTH A BARRIER FOR PREGNANT WOMEN FOR IMPROVING THEIR LIFESTYLE?

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Purpose: The aim of this study was to assess the relationship between maternal mental health and lifestyle interventions for preventing gestational diabetes mellitus (GDM) in European pregnant women. Based on the health action process approach (HAPA) model we investigated, if depressive symptoms are a barrier for pregnant women for improving their lifestyle (physical activity, healthy eating). If so, additional and/or different intervention strategies for pregnant women with depressive symptoms should be used for this purpose. Methods: This longitudinal study was part of the DALI (vitamin D and lifestyle intervention for gestational diabetes mellitus prevention) project. Pregnant women (BMI ≥ 29 kg/m²) from nine European countries were randomly allocated into four different groups: physical activity (PA), healthy eating (HE), combined (PA+HE) or usual care. Lifestyle interventions included five face-to-face and four optional telephone sessions by a trained lifestyle coach. Measurements took place at baseline (Results: A total of 436 women (mean age = 32.0 ± 5.3 years, mean BMI = 34.5 ± 4.0 kg/m²) were included. 112 (25.8%) women were classified as having a depressed mood at baseline. No intervention effects were found for PA outcomes. Compared to the control group, HE and HE+PA groups showed positive changes in vegetable, carbohydrate or sugar intake at either mid- or late-pregnancy. Moderation analysis did not reveal significant interaction effects between mental health at baseline, intervention group and PA or diet at follow-up (p > 0.05). Conclusions: The findings of this study suggest that lifestyle interventions (HE, PA) are not less successful for pregnant women with depressed mood compared to pregnant women with positive well-being. This implies that poor mental health is probably not a barrier for pregnant women with a higher BMI for improving their lifestyle.

S.45 6627: Movement Integration in the school classroom: getting research into practice (Convenor: Dr. Lauren Sherar) (Colwood 1 & 2)

MOVING TO LEARN IRELAND': PILOTING MOVEMENT INTEGRATION IN IRISH SCHOOLS

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Purpose: This study aimed to determine the feasibility of implementing a movement integration programme linked to the English, Irish and Maths curriculum in Irish primary schools. The pilot study sought to: 1) determine teachers' perceptions of movement integration; 2) describe children's experiences of movement in the classroom; and, 3) determine the impact of the programme on children's physical activity (PA). Methods: Teachers (n=13) attended a training workshop and received a resource of active lessons linked to the primary school curriculum. Teachers were encouraged to implement at least three active lessons per week. Teachers completed lesson reflections, questionnaires, and focus group interviews. Students' undertook write-and-draw activities and focus group interviews. Qualitative data were analyzed inductively using an interpretive approach (Erickson, 1986). A subsample of students children wore accelerometers for five consecutive days at baseline and follow-up (n=57). A paired
samples t-test was used to compare mean minutes in sedentary time, light PA and moderate-to vigorous PA (MVPA) between baseline and follow-up (8 weeks). Results: Teachers were positively disposed to movement integration because of the perceived benefits for their students, but they reported several barriers including time and space. They believed they could integrate movement if provided with specific supports (i.e. lessons with little equipment, a predetermined programme, professional development, and a resource that is simple and easy to implement). Students thought the lessons were fun, increased movement in the classroom and could result in improved fitness. They believed they not only learned more but they also liked learning while moving. During class time light PA significantly increased by 13 minutes from 86.5±15.0 to 99.5±18.2 per day (p

Conclusions: Moving to Learn Ireland has the potential to increase MPVA and decrease sedentary time of students during class time. Teachers and students were positively disposed to movement in the classroom. The findings of this project will allow the research team to develop a randomized controlled trail to confirm the effectiveness and sustainability of the programme.

‘CLASS PAL’: EVALUATING THE IMPLEMENTATION OF MOVEMENT INTEGRATION IN UK SCHOOLS

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Purpose: Children engage in a high volume of sitting in the school environment, particularly in the classroom. A number of strategies such as movement breaks and physically active lessons have been developed to integrate physical activity into this learning environment, however no one approach will likely meet all teacher’s movement integration (MI) needs. The CLASS PAL (Physically Active Learning) project was developed to upskill (through a one day workshop) primary school teachers in all modes of MI and provide requisite supporting online teaching resources (www.classpal.org.uk). The objectives of this presentation are a) to investigate individual (pupil and teacher) level and school level characteristics associated with successful implementation of CLASS PAL; and b) to determine pupil and teacher exposure and uptake. Methods: The study will use a single group pre-post design, strengthened by multiple additional interim measurements taking a mixed methods approach. The mixed methods approach will be used to explore implementation based on a convergent parallel design in which qualitative and quantitative data will be collected in parallel, analysed separately and then merged. Six state-funded primary schools were recruited within Leicestershire, UK. Data is collected at pre-workshop (October 2016), and at 2 months (December 2016), 5 months (March 2017) and 8 months (June 2017) after the workshop. Pupil outcomes include accelerometer-measured physical activity and sedentary time, self-reported sedentary behaviours, selective and sustained attention, and perceived classroom engagement. Teacher outcomes include self-reported competence to deliver MI and attitude towards school physical activity. Uptake and delivery of MI will be measured throughout implementation via an online teacher log and teacher-led video observations. During the intervention a selection of lessons in each school will be observed to characterise pupil on-task behaviour and intensity of MI strategies used, in addition to pupil focus groups and teacher interviews. Results/Conclusions: Findings will provide important new information on the implementation and uptake of a novel classroom MI intervention, and the factors at pupil, teacher and school level associated with implementation. This information will be used to generate practical recommendations on how best to support teachers and schools in the implementation of MI in the classroom.

‘TRANSFORM-US!’: SCALING UP OF MOVEMENT INTEGRATION APPROACHES IN AUSTRALIAN SCHOOLS

Arundell Lauren1, Koorts Harriet2, Timperio Anna3, Bauman Adrian2, Lubans David3, Lonsdale Chris4, Telford Amanda5, Rigdiers Nicky1, Barnett Lisa1, Lamb Karen1, Brown Helen1, Salmon Jo1. 1Deakin University, Melbourne; 2University of Sydney, Sydney; 3University of Newcastle, Newcastle; 4Australian Catholic University, Sydney; 5RMIT University, Melbourne.

Purpose: The school environment provides an opportune setting to target increases in children’s health enhancing physical activity and reductions in detrimental sedentary time. Transform-Us! incorporated novel pedagogical and environmental strategies to successfully target these behaviors and children's health. The next phase involves scaling up Transform-Us! into a state-wide ‘real-world' program implementation embedded into routine practice...
and policy. This presentation describes the key challenges faced in each phase of the Transform-Us! evolution. Methods: The 2.5-year Transform-Us! efficacy trial was a four-arm randomised controlled trial conducted among 20 Melbourne primary schools in primarily mid/low socioeconomic position (SEP) areas. It utilised pedagogical strategies including teacher professional development to deliver 18 key learning messages, 30-minute standing lessons and 2-minute standing breaks every 30-minutes. Schools also received class sets of standing easels, timers, and access to novel sport/circus equipment and line markings. Following this study, the original materials and face-to-face teacher training were adapted to be delivered using an electronic medium. Schools from one low SEP local government area (LGA) were invited to participate and provide immediate feedback on the training and materials at 2- and 12-months. Adaptations to the training and material delivery will be made based on these findings and piloted in a separate low SEP LGA of Melbourne in early 2017. The real-world implementation and effectiveness of the Transform-Us! program 'at scale' will be evaluated in partnership with key stakeholders from 2017-2021. All Victorian primary schools (n=1,786) will have access to the program. Partner/State level data will be collected throughout and individual and school level data will be collected from 20 participating and 20 control schools.

Results: There are challenges in translating the efficacious Transform-Us! program into a scalable program including training delivery, material accessibility, equipment costs, program fidelity, and adherence. The real-world effectiveness of Transform-Us! at scale will be assessed by examining Partner/State, school and individual data to determine the program's reach, effectiveness, adoption, implementation and maintenance. Conclusions: The scale-up of Transform-Us! has the potential to improve the behaviours and health of children across Victoria. Learnings will provide valuable information regarding the challenges and successes of research to practice translation.

Jun 10, 14:15 - 15:30: Symposia

5.31 6563: The socioeconomic impacts of policy change: contrasting examples of how policy affects inequality (Convenor: Dr. Elizabeth Ablah) (Sidney)

CAN POLICY AMELIORATE SOCIOECONOMIC INEQUALITIES IN OBESITY AND OBESITY-RELATED BEHAVIORS?

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Purpose: Obesity and obesity-related behaviors are socially patterned and are influenced by environmental factors that are largely outside of individual control. This suggests a role for policy in reducing health inequalities, however, the impact of policy on socioeconomic inequalities in obesity has not been comprehensively reviewed. This systematic review examined the impact of universal policies on socioeconomic inequalities in obesity, dietary and physical activity behaviors amongst adults and children Methods: PRISMA-Equity guidelines were followed. Database searches spanned 2004 to August, 2015. Eligible studies assessed the impact of universal policies on anthropometric, dietary or physical activity-related outcomes in adults or children according to socioeconomic position. Thirty-six studies were included. Policies were classified as agentic, agento-structural or structural, and their impact on inequalities was rated as positive, neutral, negative, or mixed according to the dominant associations observed. Results: Most policies had neutral impacts on obesity-related inequalities regardless of whether they were agentic (60% neutral), agento-structural (68% neutral), or structural (67% neutral). The proportion of positive impacts was similar across policy types (10% agentic, 18% agento-structural, 11% structural), with some differences for negative impacts (30% agentic, 14% agento-structural, 22% structural). The majority of associations remained neutral when stratified by participant population, implementation level, socioeconomic position measures, and by anthropometric and behavioral outcomes. Fiscal measures had consistently neutral or positive impacts on inequalities. Conclusions: Findings suggest an important role for policy in addressing obesity in an equitable manner and strengthen the case for implementing a broad complement of policies spanning the agency-structure continuum.
THE DIFFERENTIAL IMPACT OF SELECTED HEALTH-RELATED FOOD TAXES AND SUBSIDIES IN THE UK: AN ECONOMETRIC-EPIDEMIOLOGICAL MODELLING STUDY

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Purpose: Modelling can be used to estimate the health impacts of policies prior to implementation. Health-related food taxes and subsidies are recommended by the World Health Organisation and others as policy options for improving population diets. This study estimated possible health impacts of selected HRFTs in the UK by income group. Methods: We estimated the impact of four HRFTS scenarios in the UK: i) extending value added tax (VAT); ii) a 20% fruit and vegetable subsidy; iii) combining scenarios i) and ii); and iv) a healthy VAT reform based on a nutrient profile model. We used data from the Living Costs and Food Survey (2011-2013) to estimate price elasticities. We modelled health impacts using a comparative risk assessment model to give estimates of disease-specific deaths delayed or averted (DDA) in 2013 under the scenarios, overall and by income tertile. Results: The fruit and vegetable subsidy had positive impacts across all income groups (600 to 1300 DDA for low income, 800 to 1600 DDA for middle income, 1000 to 1900 DDA for high income). The full VAT extension had a negative impact (-2900 to -300 DDA low income, -3400 to 700 DDA middle income, -3700 to -900 DDA high income). The combined scenario had a positive impact in the high income group but a non-significant impact across other income groups (-500 to 900 DDA low income, -200 to 1100 DDA middle income, 200 to 1500 DDA high income). The healthy VAT scenario had a non-significant health impact across all groups (-1700 to 100 DDA low income, -1900 to 0 DDA middle income, -1700 to -100 DDA high income). Conclusion: Modelling the health impacts of similar interventions can help to identify features of interventions that may reduce or widen health inequalities. Whilst methodological approaches for assessing the differential impacts of HRFTS are present, country-specific data availability can inhibit the accuracy of such assessments. Researchers should make coordinated efforts to improve data availability for different socioeconomic groups so that impacts on inequalities can be assessed prior to policy implementation.

FOOD POLICY AS A LEVER TO REDUCE DIET-RELATED DISPARITIES: REVIEWING THE EVIDENCE

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Purpose: As the nutrition transition progresses worldwide, the health burden of poor diets, including obesity and related cardiometabolic diseases, shifts increasingly to low socio-economic status (SES) populations. Food policies serve as a lever to correct this imbalance by reducing poor dietary behaviors, stimulating food and beverage reformulation, and, in the case of taxes, generating revenue to fund public health programs. This presentation will review how recent food policies in Latin America differentially impacted lower SES individuals and introduce innovative methods to evaluate these policies. Methods: We will review results from one-year evaluations on Mexico's peso-per-liter sugary beverage tax and Chile's 8% sugary beverage tax, which use longitudinal data on household food purchases (n >6,000 for Mexico, n >2000 for Chile) to examine differential response to the taxation efforts by SES. We will also review emergent food policies across Latin America, including front-of-package warning labels and marketing controls in Chile, the potential of these efforts to reduce disparities, and methods for monitoring policy impact across SES. Results: In Mexico, low-SES households purchased on average 9.1% less sugary beverages after the tax compared to what would have been expected based on pre-existing trends, whereas middle and high SES households reduced purchases of taxed beverages by 5.5% to 5.6%, respectively. In Chile, the one-year SSB tax evaluation is underway (results anticipated December 2016). We will also introduce methods to evaluate policies on marketing and labeling and their differential impact on low vs. high SES, including the use of food purchase data linked to front-of-package marketing data, data on TV advertisements, and longitudinal cohort data on low-SES children and adolescents to examine policy-related shifts in attitudes, knowledge, and dietary intake. Conclusions: Food policies have the potential to reduce diet-related disparities among low-SES populations. More research is needed to understand the downstream effects on obesity and related comorbidities.
IMPLEMENTING WEB-BASED SUPPORT TO SUPPLEMENT FACE TO FACE SUPPORT FOR PATIENTS WITH CHRONIC CONDITIONS REFERRED FROM PRIMARY CARE TO AN EXERCISE REFERRAL SCHEME: LESSONS LEARNED WITHIN AN RCT


Purpose: Primary care exercise referral schemes (ERS) for patients with chronic conditions are common in the UK but lack rigorous evidence for effects on physical activity (Pavey et al., 2011). The e-coachER trial will, by March 2017, recruit over 400 patients (in SW England, Birmingham and Glasgow) with one or more chronic conditions (diabetes, obesity, hypertension, osteoarthritis, depression) eligible for ERS. The two-arm RCT aims to determine if the addition of web-based support (hosted on the ‘LifeGuide’ platform) will increase accelerometer assessed moderate or vigorous physical activity at 12 months. This presentation will present findings from the recruitment phase which inform us about potential scalability (implementation) issues should the intervention be shown to be effective. Methods: Using a mixed methods process evaluation we will explore: (1) how well the GP/practice nurse engaged in recruiting patients to an ERS across 3 different schemes and the characteristics of those participants; (2) how well patients engaged in and were receptive to the use of the e-coachER platform for managing chronic conditions to complement an ERS. Results: Despite the high prevalence of patients with the respective chronic conditions seen by clinicians in primary care the pressures on their time and lack of financial incentives to make a referral led to recruitment challenges. This was in spite of keen interest from the Clinical Commissioning Group in the use of IT for management long-term chronic conditions. The e-coachER system recorded generally good participant engagement in the intervention with less than 25% failing to register, and over 30% of participants working through to reviewing step count goals on at least one occasion (Step 5 of 7). Qualitatively, prior IT experience was linked to higher expectations about the functionality of the system. Conclusion: Further work would be needed to increase primary care staff interest in and value of ERS as a priority in busy surgeries. The addition of web-based support to build self-monitoring and goal setting skills is mostly acceptable, and can supplement usual ERS which not all patients perceived as useful.

EVIDENCE GENERATION FOR COMMUNITY-BASED BEHAVIOURAL INTERVENTIONS FOR CARDIAC PATIENTS IN AUSTRALIA – THE CHALLENGES TO RESEARCH TRANSLATION FOR PHYSICAL ACTIVITY PROGRAMS AMONG OLDER ADULTS

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Purpose: Two decades of intervention evidence has re-affirmed the benefits of exercise based cardiac rehabilitation programs (CRPs) for cardiac patients, but two-thirds of those eligible do not access CRPs. This symposium presentation demonstrates the challenges to evidence generation, and subsequent barriers to dissemination of a low-contact physical activity intervention across the population of New South Wales, Australia. The Bauman and Nutbeam (2013) model for evidence generation was followed as a model for research translation. Methods: Telephone-based pedometer-enhanced community interventions were trialed for patients referred to CRPs but who did not attend them; two serial randomized trials confirmed the intervention was efficacious on self-report and objective physical activity outcomes resultant from these feasible interventions (Butler L. J Cardiopulm Rehabil Prev 2009 Furber S, Pt Educ Counsel 2010). Results: Subsequent to the two efficacy studies, a replication study was implemented across six sites, also using a randomized trial design. This study demonstrated similar effects across sites on physical activity outcomes, with significant increases in physical activity compared to controls in these community-based (remote) rural dwelling post-cardiac patients. These changes were significant at 6 weeks and maintained at 6 months. The median increase in physical activity was around 90 minutes per week, most of which was attributable to walking (Sangster J, Heart Lung Circ. 2016; Sangster J, J Cardiopulm Rehabil Prev. 2015 35(2):124-9.). These effects were similar to those in the earlier efficacy studies, indicating the potential for further
scaling up. Conclusions: This work illustrates optimal principles in evidence generation, through a program of research assessed the efficacy and scaling up of behaviorally based physical activity phone counselling for community-based cardiac patients. Efficacy and replication success was observed in controlled studies. The next steps, disseminating this low-cost and feasible intervention across the whole state has proved problematic, based on changes to Government policy, differences in accountability for clinical and population health aspects of prevention, and difficulties in sufficient "funding at scale" being available. These barriers pose substantial challenges for research translation to improve population health.

USING BEHAVIOUR CHANGE THEORY TO LAUNCH A MULTIDIMENSIONAL KNOWLEDGE TRANSLATION STRATEGY FOR TOO FIT TO FRACTURE

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Purpose: Physical activity recommendations were developed for osteoporosis. We identified patient’s and physicians’ perceived barriers to implementing physical activity recommendations, used behaviour change theory to design knowledge translation (KT) tools, and examined uptake. Methods: Semi-structured focus groups/interviews were conducted with 59 primary care providers and specialists (49.8±11.2y), 94 rehabilitation professionals (40.5±12.6) and 243 older adults (72±8.3y) in Ontario, Canada, with purposeful sampling by gender and urban/rural location. Two researchers categorized emerging barriers/themes as influencing capability, opportunity and motivation, in accordance with the Behaviour Change Wheel framework, which informed selected interventions. Patient-direct (e.g., education, training, service provision via videos, booklet), health care provider interventions (point of care tools, Bone Fit™ workshops for exercise professionals) were co-developed with knowledge users, with Osteoporosis Canada webpages, mass distribution, and traditional/social media delivery methods (print: e.g., Globe and Mail, The Toronto Sun, Waterloo Record, radio: CBC Kitchener, Vancouver, TV: Rogers, CHCH, and Global Calgary, Twitter/Facebook. Uptake (brackets=pull date) categorized via distribution and Google analytics. Results: Since November 2015, Too Fit to Fracture had 54,095 page views (Sept2016). 20 videos were viewed 31,188 times in 94 countries (Oct2016); 24,458 views in Canada (78%), 3548 in United States (11%) and 1266 in other English-speaking countries (4%). Within Canada, rural residents accounted for 21% of viewers, slightly above the proportion of rural Canadians (19%). 27,108 booklets (English, French) were distributed (Sept2016) and 4,126 downloaded (Mar2016). A one-pager for physicians to give to patients had 2217 downloads (Mar2016); 1427 tear-off pads (50 one-pagers each) were distributed by Osteoporosis Canada (Sept2016). 4300+ researchers, health care providers and lay people were reached in oral presentations. Bone Fit™ workshops were held across Ontario (trained 400+ exercise professionals), and the Canadian Society for Exercise Physiologists partnered with us to develop professional competencies and online training. Therefore, our KT changed practice standards and continuing education. Unique pageviews and downloads peaked in November and February, coinciding with media promotion, and with oral presentations or events in April and August. Conclusions: Partnering with knowledge users to create patient-centred, theory-informed KT strategies resulted in broad uptake. Traditional media and educational events increase uptake of online resources.

5.42 6645: Uncertainty in spatial energetics (Convenor: Dr. Peter James) (Salon C)

CONCEPTUAL UNCERTAINTY IN SPATIAL ENERGETICS

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Objective data on physical activity and sedentary behavior that is time-matched to objective data on the location of that behavior form the basis of spatial energetics data. This type of data has a high–spatiotemporal resolution and makes it possible to examine how environmental characteristics, space, and time are linked to activity related health. Within health geography two problems related to the uncertainty about the context in which behavior takes
place have been defined and discussed: the Modifiable Areal Unit Problem (MAUP) and the Uncertain Geographic Context Problem (UGCoP). Both problems make it clear that it is very important to define the 'right' context when studying any potential relation between energetics behavior and the environment. Various concepts as to how to define the relevant context or neighborhood have been used and new approaches such as life-space or activity-space analyses have been used recently. With increasing use of GPS technologies to identify behavior in its true context it has become possible to use a data driven approach in defining the environment people are exposed to. In other words, objectively identifying the neighborhood or context behavior takes place in has become possible. However, from a conceptual point this possibility creates a new problem: selective daily mobility bias. The spatial context people perform a certain behavior in is, at least partly, a result of self-selection; people choose to visit a certain environment because they want to engage in a behavior that can be done in that particular environment. E.g., a person that wants to exercise in a park will find a suitable park to visit for exercising. This selective daily mobility bias makes studying causal relationships between environment and behavior challenging and new approaches to do so have to be explored further.

**TECHNICAL UNCERTAINTY IN SPATIAL ENERGETICS**

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Rapid development and ubiquitous uptake of wearable sensors offer promising avenues for better understanding health profiles and health inequalities. Such devices are increasingly used, and allow collection of data which can help unravel the complex people-place interactions influencing physical activity or sedentary behavior. Sensor-based data can document behavior, physiology, and environments, at high spatial and temporal resolution. A simple combination of a GPS trackers and accelerometer will reveal where and when physical activity – or sedentary episodes – occurs. Additional sensors can provide complementary physiological, social, or environmental information. Smartphones have embedded sensors and can further be used for self-reported ecological momentary assessment (EMA), providing the possibility for participants to add qualitative information such as defining type of activities, transportation modes, social interactions, or mood/affect. This data can further be linked to complementary environmental information through Geographic Information Systems. Yet, technical uncertainty remains regarding various aspects of data capture, data linkage, and data transformation. This presentation will review technical pitfalls and prospects in relation to accuracy, reliability, compliance, and capacity to transform raw data into indicators that are meaningful for health and intervention research. While the focus will be on technical aspects relating to GPS, accelerometry, and GIS, we will also discuss additional challenges and opportunities of using complementary sensors and EMA.

**ANALYTICAL UNCERTAINTY IN SPATIAL ENERGETICS**

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The measurement framework of combining GPS, GIS, and accelerometry generates very large data sets; data sampled at the sub-minute level quickly grow to terabytes of data. After adding participant information (e.g., health outcomes, questionnaire data, -omics, social networks), the large numbers of observations quickly become multidimensional, posing unique data-processing challenges that require complex database structures coupled with rapid computing solutions. There are current workflows that enable data streams to be merged by common timestamps and addresses numerous logistic problems, including different time zones across participants and timestamp rounding to ensure that data sets gathered at different time intervals can be merged. Beyond merely combining the data sets, researchers must continue to develop innovative tools to visualize and process GPS points and accelerometry data. These types of tools will prove extremely valuable to progress the field of spatial energetics and to make sense of diverse data types, and it will be important for researchers to share computational approaches and workflows. Statistical methodologies to analyze the complex structure of spatial energetics data have not been fully developed, and methods that do exist are challenging without robust computational infrastructures that have the processing capacity to model terabyte-sized data sets. Cross-classified multilevel modeling approaches must be applied that account for unbalanced data (e.g., some participants contribute more data than others); data aggregation (e.g., minute-level data aggregated to the daily level); and correlated data...
within individuals and locations (e.g., multiple observations within an individual within multiple, often proximal, locations), while addressing dominant conceptual causal questions (e.g., "selective daily mobility bias"). Spatial energetics may be able to borrow methods from other fields dealing with big data to address the computational burdens of spatial energetics data. For example, genome-wide association study methods have been applied in other domains such as nutrition and environmental health, and could similarly be applied to the high-dimensional nature of spatial energetics data.

CONFUSION, CONTRADICTION AND CONSTERNATION: IMPORTANCE AND IMPLICATIONS OF HARMONIZING DEFINITIONS IN SEDENTARY BEHAVIOUR RESEARCH
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Purpose: Over the past 10 years the attention for the potential adverse health effects of sedentary behaviour has steeply increased. Although the body of evidence that excessive sedentary time contributes to ill health among adults is expanding, the evidence in children is still contradictory. Further, relationships between health indicators and measures of sedentary behaviour (e.g., through self-report vs accelerometer or inclinometry) vary considerably. Adding to this confusion, a wide range of operational definitions for sedentary behaviour constructs are used. In this presentation we 1) critically explore and discuss the operational definitions of sedentary behaviour used in the research literature; and 2) provide recommendations for future research. Methods: A literature review was performed to provide an overview of currently used operational definitions of sedentary behaviour and related constructs (e.g., screen time, sedentary behaviour pattern, bouts and breaks) enriched with new data on the effects of these differences on estimations of sedentary behaviour. Results: The various operationalisations of sedentary behaviour constructs result in different outcomes and interpretations leading to confusion and sometimes even contradictory results. Conclusion: To prevent further confusion, contradiction and consternation we need to harmonize the operationalization of sedentary behaviour constructs.

SBRN TERMINOLOGY CONSENSUS PROJECT: METHODS AND SURVEY RESULTS
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Purpose: The purpose of this project was to develop definitions, caveats, and inclusive examples for key terms related to sedentary behaviour. Methods: More than 1,000 SBRN members were contacted to determine their interest in contributing to this project, and to solicit suggestions for key terms and potential definitions. An international steering committee of sedentary behaviour researchers used this feedback to create a first list of key terms that each member of the committee had to fill with proposed definitions and examples. The combination and the compilation of the proposed definitions resulted in the creation of a shortlist of general definitions of key terms, associated caveats, and inclusive examples. This shortlist was provided to all SBRN members for additional feedback, which was used to inform the final definitions. Results: 128 SBRN members from 21 countries expressed interest in participating in the current project. Initial consultations with SBRN members resulted in suggestions for definitions of 37 unique terms related to sedentary behaviour. The SBRN steering committee reduced this to 23 key terms, and asked for potential definitions, examples, and caveats for each term from the SBRN membership. Based on the input from 84 members, the steering committee drafted proposed definitions for 9 key terms adapted to different specific populations (infants, toddlers and preschoolers, children and youths, adults and people with movement impairments): stationary behaviour, sedentary behaviour, standing, screen time, non-screen-based sedentary time, sitting, reclining, lying, and sedentary behaviour pattern. Conclusions: With the help of >100
members from 21 countries, SBRN has developed definitions, caveats and inclusive examples for key terms related to sedentary behaviour. The use of harmonized terms may lead to reduced confusion for both practitioners and researchers interested in the health impact of sedentary behaviour.

**SBRN CONSENSUS DEFINITIONS, CAVEATS AND EXAMPLES**

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Purpose: To report the proposed definitions, caveats, and inclusive examples of key terms related to sedentary behaviour. Methods: Three rounds of feedback and suggestions from 128 international sedentary behaviour researchers were used to create harmonized definitions, caveats and examples of key terms. Results: The following definitions are proposed for each term, followed by the percent of survey respondents agreeing with the proposed definition. Sedentary behaviour: any waking behaviour characterized by an energy expenditure ≤1.5 metabolic equivalents (METs), while in a sitting, reclining or lying posture (98%). Standing: Any waking behaviour characterized by an energy expenditure ≤2.0 METs, while standing without ambulation, whether supported or unsupported (88%). Stationary behaviour: Any behaviour done while being sedentary or standing still (90%). Screen time: Time spent on screen-based behaviours. These behaviours can be performed while being stationary or physically active (96%). Non-screen based sedentary time: Time spent in sedentary behaviours that do not involve the use of screens (93%). Sitting: A position in which one’s weight is supported by one’s buttocks rather than one’s feet, and in which one’s back is upright (94%). Reclining: Reclining is a relaxed body position between sitting and lying (92%). Lying: Lying refers to being in a horizontal position on a supporting surface (95%). Sedentary behaviour pattern: The manner in which sedentary behaviour is accumulated throughout the day (e.g., the timing, duration and frequency of sedentary bouts and breaks) (99%). Conclusions: The process undertaken by SBRN has resulted in 9 proposed definitions for key terms related to sedentary behaviour. The high level of agreement with these terms amongst a large and diverse international group of sedentary behaviour researchers suggests that these definitions are appropriate for use in this field.

**S.44 6671: Picture that! Advances in digital imaging research to assess and analyze food consumption across settings (Convenor: Dr. Eleanor Shonkoff) (Lecture Theatre)**

**USING DIGITAL PHOTOGRAPHY TO ASSIST DIETARY ANALYSIS**

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Purpose: Digital photography is gaining popularity as a means of improving food records. Meal images captured using digital camera technology can be a useful adjunct to assist dietary analysis. However determining portion size from digital images can be problematic. In this study dietary analysis of meals calculated using estimated portion sizes from digital images and written food records were compared to nutrient analysis using actual meal weights (gold-standard). Methods: 100 digital images of home consumed, subject-selected meals were recorded by young adults drawn from the Avon Longitudinal Study of Parents and Children (ALSPAC). Each image was accompanied by a brief written description of the meal by the participant. All meals were eaten using a Mandometer, a novel computer device linked to a weighing scale that records the weight of a meal in real-time as the food is consumed from start to end of the eating episode. This allowed an accurate estimation of speed of food consumption and total meal weight. Meals were coded by an experienced dietitian using Diet in, Data Out (DIDO), a coding program developed by the MRC Human Nutrition Research Unit, and coded data converted to nutrient intakes using a database derived from McCance and Widdowson’s Composition of Foods. Portion size, energy and macronutrient content of each meal were estimated using the digital image and written meal description. Actual meal weights
recorded by the Mandometer were then used to adjust these estimated portion sizes. Results: The correlations between portion size estimates from digital photography and written food records with actual meal weights will be presented with corresponding energy and macronutrient calculations. Conclusions: Digital photography may add objective data to written food records, allowing dietitians to more accurately estimate energy and macronutrient intake in the research and possibly clinical setting. However, accurate portion size estimation is key to improving the accuracy of dietary analysis.

RELIABILITY AND VALIDITY OF DIGITAL IMAGES TO ASSESS PLATE WASTE IN A QUICK SERVE RESTAURANT SETTING
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Objective: Current methods for assessing child plate waste have limited feasibility for assessing consumption on a large scale. While digital images have been found valid and reliable methods for assessing plate waste in cafeteria settings, little is known about their potential use in restaurants. Given the increase in foods consumed away from home, an accurate and feasible method of assessing consumption is critical. This study examined the reliability and validity of a digital imaging procedure in the restaurant setting. Methods: Participants were 329 parents who had just ordered at a quick service restaurant. These results represent preliminary analysis of 86 parents (M age = 36.15 yrs.; 76.8% female; 50% had not attended college). Participants completed a survey and later provided plate waste of one of their children (M age = 6.7 yrs. 44.2% female; 53.7% Hispanic). Plate waste was weighed on a food scale (OXO 1130800), and digital images were taken by research assistants using grid paper. Two coders compared digital images to reference images, and coded using a modified Comstock scale. Estimated grams of plate waste were calculated by multiplying estimated percent consumed by the grams in the pre-consumption portion, which was provided by the restaurant. Kappas, Spearman correlations, and Wilcoxon signed rank tests assessed inter-rater reliability and correspondence between weighed plate waste and digital imaging methods. Bland-Altman plots assessed correspondence at different amounts of plate waste. Results: Plots revealed 3 outliers, which were removed due to food sharing. Two coders demonstrated acceptable reliability across meal components (range Kappa = .73 to .75). Grams estimated by digital imaging were highly correlated with weighed plate waste (r = .86, p < .001). Conclusions: Early results demonstrate the promise of feasibility and reliability of digital images to assess child meal consumption in quick serve restaurant settings.

FOODFINDER: TESTING A CROWDSOURCING APPROACH TO IDENTIFY FOOD GROUPS IN MEAL PHOTOS
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Purpose: Capturing meal images using mobile phone cameras is a promising alternative to traditional dietary assessment methods but nutritional analysis of images is a challenge. Automated food identification and portion size assessment is computationally complex. Dietitian analysis of photos is accurate but time-consuming and expensive. Crowdsourcing could offer a rapid low-cost alternative by using the life-long experience that all humans have in food identification. We aimed to develop a simple task and tested its feasibility for crowdsourcing dietary data. Method: FoodFinder, a basic task for identifying food groups and portion sizes, developed using Qualtrics (www.qualtrics.com/), was linked to the Prolific Academic (https://prolific.ac/) crowdsourcing platform. Thirty meal photos with measured total meal weight (grams) were analysed by a dietitian and crowds ranging in size from 5 to 50 people. The difference between actual meal weight (the gold-standard) and total meal weight estimated by crowds and a dietitian were compared. Crow group consensus was reached by weighted majority agreement. Bland-Altman analysis assessed limits of agreement (LOA). Correct identification of food groups by the crowd was examined as % of the crowd that reporting food groups that were present in vs. absent from photos. Results: A crowd of 5 people underestimated true meal weight by 63g, equating to 15% of actual meal weight with LOA from -299 to 174 g. In comparison experts overestimated by 28g equating to 9% of actual meal weight with LOA -158, 214g. With a crowd of 5 people, crowdsourcing cost £3.35 and took a mean 2 mins 55 sec (SD 2 min 6 sec) per
image. A crowd of 50 had similar accuracy and limits of agreement (\(-65g \text{ LOA} -278, 149g\)) but was more expensive. Correct food group identification was problematic but a higher percentage of the crowd reported food groups present in vs. absent from the photo (median (IQR) 55% (22, 71%) vs 4% (2, 8%). Cut-offs for improving the sensitivity of the crowd were explored. Conclusion: Crowds are a cheap and quick option for coding meal photos but further work is necessary to make FoodFinder an accurate and precise method for assessing diet.
VALIDATION OF AN OBSERVED FEEDING PRACTICES TOOL AMONG FAMILY CHILD CARE HOME PROVIDERS

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Family child care homes (FCCH) are a commonly used form of child care in the US, yet little is known about this environment, particularly the practices providers use when feeding children. Objective: To examine the ability of the Environmental Policy Assessment Observation Tool (EPAO) to assess a variety of provider feeding practices.

Methods: Data from an ongoing cluster-randomized trial were used for these analyses. FCCH provider feeding practices were assessed over 2 days using a modified version of the EPAO (adapted for use in FCCH with expanded assessment of feeding practices). The EPAO captures the nutrition and physical activity environments in child-care (e.g., provisions, practices, policies); however, only the feeding practices items (n=38) recorded during meals were used in this study. Use of practices across meals (morning vs. lunch vs. snack) were first examined with Spearman correlations. Since more than 75% of practices were significantly correlated across meals, like items from different meals were summed and then averaged across the two observation days. Confirmatory factor analysis was then used to test the anticipated 11-factor structure of feeding practice items (encouragement, modeling, family meals, reason, guided choices, praise, self-regulation, pressure to eat, behavior management, atmosphere of meals and uninvolved). Results: All FCCH providers were female (n=131) and the majority (74%) were African-American. Low variability was observed for several practices. For example, providers almost always served foods and decided portions (95% of the time), while they rarely used rewards/bribes to get children to eat (2% and 96%, respectively), pressured children to eat (10%), or enthusiastically role modeled (9%). Examination of individual items showed that all indicators significantly loaded onto proposed latent variables. The Chi-square value for the overall model fit was significant, X²(324) = 813.5 p Conclusion: The confirmatory factor analysis provided mixed results regarding the fit of the proposed model which may stem from the lack of variability in some practices. Future research should continue to refine this model and explore associations with child diet.

DEVELOPMENT AND VALIDATION OF THE PARENTING AROUND CHILD SNACKING (PACS) SCALE

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Objective: Children’s snacking behaviors - including frequency of snacking and quality of snacks consumed - predict their obesity risk. Although the family is an important context in which early eating behaviors emerge, very little is known about parenting practices focused on child snacking. To address this knowledge gap and foster increased research on familial factors affecting child snacking, this study outlines the development and validation of the Parenting Around Child Snacking scale (PACS). Methods: The PACS was developed using recommended scale development practices which included: (1) identifying relevant theoretical frameworks; (2) defining feeding
constructs specific to snacking; (3) constructing a pool of items based on theory and qualitative interviews with parents of preschool-aged children; and (4) refining items following expert review and cognitive testing. The resulting 105-item scale was administered in English or Spanish to 306 low-income mothers of children aged 1-6 years. Principal component analysis was used to identify a parsimonious set of high performing items. Exploratory factor analysis was used to test the anticipated factor structure. Internal consistency coefficients were calculated along with correlations between PACS subscale scores and children's body mass index (BMI) and eating temperament and mothers' feeding practices and styles to test the scale's reliability and validity respectively. Results: The PACS was reduced from a 105-item to 48-item scale reflecting 13 subscales including no snack rules, no involvement in snacking, emotional feeding of snacks, praise for healthy snacking, reasoning around healthy snacking, planning healthy snacks, availability/accessibility of healthy snacks, modeling healthy snacking, snacks as rewards, snacks to manage behavior, snack monitoring, limiting snacks, and pressure to eat snacks. Internal consistency coefficients ranged from 0.65 to 0.85 with 10 out of 13 subscales having coefficients of .70 or higher. Correlations between PACS subscale scores and child eating temperament and parent feeding styles and practices were consistent with theory-based hypotheses. Few correlations were identified between PACS subscale scores and child BMI. Conclusion: This study provides preliminary evidence of the reliability and validity of the PACS. Future research can confirm the factor structure of the PACS and test prospective relationships with child BMI.

HOW DO FIELD-BASED MEASURES OF FRUIT AND VEGETABLE INTAKE COMPARE TO SERUM CAROTENOIDs? EVIDENCE FROM THE STRONG HEARTS, HEALTHY COMMUNITIES TRIAL Morgan Eh1, Graham MI2, Seguin Ra3. 1Division of Nutritional Sciences, Cornell University, Ithaca, NY.

Purpose Accurate measurement of fruit and vegetable (FV) intake is important for population-based dietary surveillance as well as evaluation of nutrition interventions. Blood carotenoids are currently the best biomarker for FV intake. However, blood samples are invasive and costly to collect and analyze, thereby limiting their use in non-clinical research. The purpose of this study was to compare the correspondence between serum carotenoids and a range of non-invasive measures of FV intake, including a novel measure of skin carotenoids (resonance Raman spectroscopy) and three self-report methods. Methods This study used data from 188 sedentary, overweight, rural women aged 40+ enrolled in a community-randomized cardiovascular disease prevention intervention in Montana and New York. Fasting blood draws and skin scans with the portable Pharmatech© Biophotonic Scanner S3 were obtained from all participants at baseline. Serum was analyzed for total and fractionated carotenoids. Skin carotenoids were measured on the palm of the hand in duplicate or triplicate. Participants self-reported intake through the National Cancer Institute’s All Day Fruit and Vegetable Screener (FVS), two FV usual intake questions adapted from the American Heart Association’s Life’s Simple 7 "My Life Check" tool (Simple 7), and at least two dietary recalls using the Automated Self-Administered 24-Hour (ASA24) instrument. Pearson’s correlations were calculated to examine associations between serum carotenoids and the field-based measures. Correlations between recalls and serum carotenoids were deattenuated to account for within-person variability. Results/findings Total and fractionated serum carotenoids correlated more strongly with skin carotenoids (r=0.23-0.54) than with FV intake estimates from any of the self-report tools (r=0.08-0.28 for FVS; r=0.12-0.32 for Simple 7; r=0.16-0.29 for ASA24). Adjustment for within-person variation did not meaningfully change correlations between serum carotenoids and recalls. For most carotenoids, the Simple 7 questions correlated better with serum carotenoids than either the FVS or ASA24. All field-based measures correlated most strongly with serum β-carotene (r = 0.21-0.54) and most poorly with lycopene (r=-0.16-0.29). Conclusions The findings support using skin carotenoids measured by resonance Raman spectroscopy to estimate FV intake in field-based research. Also important to note is the potential of the brief Simple 7 usual intake questions to estimate FV intake.

VALIDITY OF THE GLOBAL PHYSICAL ACTIVITY QUESTIONNAIRE (GPAQ) IN ASSESSING PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR IN PREGNANT WOMEN Watson E D1, 2, Micksfield L K1, Van Poppel M N3, 4, Norris S A2, Sattler M C3, Dietz P3. 1Centre for Exercise Science and Sports Medicine, School of Therapeutic Sciences, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg; 2Developmental Pathways for Health Research Unit, Department of Pediatrics, School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, , Johannesburg; 3Institute of Sports Science,
Purpose: The physiological and biomechanical changes that occur during pregnancy make accurate measurement of physical activity (PA) a challenge during this unique period. The Global Physical Activity Questionnaire (GPAQ) has been used extensively in low-to-middle income countries, but has never been validated in a pregnant population. Therefore, the objective of this study was to assess the validity of GPAQ compared to accelerometry for measuring PA and sedentary behavior (SB) during pregnancy in a sample of black South African women. Methods: In this longitudinal, observational study, 95 pregnant women (mean age: 29.5±5.7 years; BMI: 26.9±5.0 kg/m²) completed the GPAQ and were asked to wear an accelerometer for 7 days at two time points during pregnancy (14–18 and 29–33 weeks gestation). The following aspects of validity were considered: content (face) validity, convergent validity, relative validity, and responsiveness. Results: There was a significant difference between accelerometry and GPAQ when measuring moderate-to-vigorous physical activity (MVPA) at 29–33 weeks gestation (16.6 vs 21.4 min/day; p = 0.02) as well as sedentary behaviour (SB) at both 14-18 weeks (457.0 vs 300 min/day; p = 0.02) and by 15.8 min/day at 29–33 weeks gestation. It underestimates SB by 127.5 min/day at 14–18 weeks and by 89.2 min/day at 29–33 weeks gestation. Additionally, there was poor agreement between the two tools for classifying participants into 'active' and 'inactive', with Kappa coefficients of -0.02 (p = 0.86) at 14–18 weeks gestation and 0.11 (p = 0.27) at 29–33 weeks gestation. Conclusion: When compared to accelerometry, the GPAQ shows poor agreement and appears to overestimate PA and underestimate SB during pregnancy. Consequently, the GPAQ may not be the most suitable questionnaire for measuring PA and SB in pregnancy, and should therefore be used with caution.

USING CONSUMER-LEVEL ACTIVITY MONITORS TO MEASURE PHYSICAL ACTIVITY IN HEALTHY OLDER ADULTS
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Purpose: Consumer-level activity monitors, such as Fitbit and Misfit devices, are an ever popular and low-cost means of recording and monitoring physical activity. However, the accuracy of such devices have not been extensively explored in older adults particularly in free-living conditions, limiting their use within research and clinical settings. This study aims to validate two consumer-level activity monitors in community dwelling older adults. As a secondary aim, this study will explore older adults' satisfaction of wearing such devices. Methods: Twenty-five community-dwelling older adults (aged 65+) simultaneously wore 5 devices; 3 consumer-level activity monitors (Fitbit Charge HR – wrist, Misfit Shine – wrist, Misfit Shine – waist) and two reference devices (Actigraph and NL2000i) during free-living conditions for 7 consecutive days. Accuracy of the devices was achieved by comparing the consumer-level and reference devices using Bland-Altman Plots and through Interclass Correlation Coefficients. The Assistive Device Subscale of the Quebec User Evaluation of Satisfaction with assistive Technology (QUEST) alongside open ended questions were used to assess participants' satisfaction with wearing the devices. Results: There was substantial agreement between the consumer-level activity monitors and reference devices. The waist worn Misfit Shine displayed the highest agreement amongst the consumer-level devices worn (ICC = 0.96, 95% 0.90 to 0.98) with the Actigraph reference device. The Fitbit Charge HR showed the poorest agreement compared to the Actigraph (ICC = 0.82, 95% 0.60 to 0.92), and displayed a systematic bias of overestimating steps taken. Participants were highly satisfied with the consumer-level devices, however it was identified that the ease in adjusting the device was a common issue amongst older adults. Discussion: Despite some variation, consumer-level activity monitors can accurately measure steps of healthy older adults, with excellent agreement between these and reference devices. Importantly, participants were satisfied with the design of the device, though there are certain design features that could be improved to reflect the requirements of older adults. As the number of consumer-level activity monitors grow, researchers need to select devices that are not only valid and functional, but also consider whether the devices are acceptable for the target population.

MEASURING THE UNINTENDED VARIABILITY OF PHYSICAL ACTIVITY ESTIMATES WHEN USING DIRECT OBSERVATION.
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Purpose: The System for Observing Fitness Instruction Time (SOFIT) is a widely used outcome measure in youth physical activity (PA) interventions. The SOFIT protocol, which calls for observing four randomly-selected students from a class in a sequential order (e.g., student 4th, 8th, 12th, 16th observed in the order of selection), may introduce unintended variability in PA estimates. The purpose of this study was to examine the variability of PA estimates from SOFIT across different combinations and orders of students during PE. Methods: Participants included 247 3rd-5th graders from 17 PE lessons. Lessons were video recorded. All students were coded start-to-end of each lesson using the SOFIT activity codes. The percentage of time students engaged in moderate-to-vigorous physical activity (MVPA—walking+vigorous/total scans, MVPA%) was calculated. Two studies were conducted. First, estimates of MVPA% were calculated based on permutations of every possible combination of four students and varying the order of their observation within each lesson (e.g., students 4th, 8th, 12th, 16th reordered to 8th, 12th, 4th, 16th and 16th, 4th, 8th, 12th etc.). The distribution (median, range) of MVPA% for each lesson was calculated. Second, four randomly drawn groups of four students from each lesson were selected (4 groups/class). Permutations were completed for each group (total of 24 unique combinations per group) and MVPA% for each different order within a group calculated. The difference between the minimum and maximum MVPA% within each group was calculated. Results/findings: A total of 5,140,608 student/order combinations were possible (avg. 302,389 combinations/lesson, range 143,640 to 570,024) from the 17 lessons. First, based on all possible permutations (combinations of four students and order of observation), the median MVPA% estimate across all lessons was 47.4%. This varied based on students observed and their order, with a ±42.1% difference between the minimum and maximum MVPA% estimates. For instance, based on every possible permutation, one lesson’s MVPA% ranged from 13.8% to 63.1% depending on the combination of students and their order. Second, reordering the same four students resulted in a difference between minimum and maximum MVPA% estimates of ±8.8% to ±35.2%. Conclusions: The selection of students and the order in which these students are observed dramatically influences the MVPA% produced by SOFIT.

HOW MUCH DO WE KNOW ABOUT PHYSICAL ACTIVITY AMONG CHILDREN AND YOUTH IN INDIA?

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Purpose: Lack of physical activity among children and youth is a major public health problem as it is associated with long-term risk of cardio-metabolic and other chronic diseases. Furthermore, activity patterns in childhood often track into adulthood. If activity can be increased among children, this is likely to have benefits in terms of health and human capital outcomes. In order to improve activity levels, it is important to understand existing patterns. Our objective was to identify and synthesize existing evidence on physical activity levels and determinants among Indian children and youth. Methods: An international working group was formed to develop the 2016 Indian Report Card, an endeavour which was part of Global Matrix 2.0, an international initiative that compared 38 countries across six continents. Existing data on 10 activity indicators were identified: overall physical activity; organized sport participation; active play; active transportation; sedentary behavior; family and peers; schools; community and the built environment; government strategies and investment; physical fitness. One cross-sectional national survey, several state and city level surveys were reviewed as well as grey literature. Standardized grades were assigned: (A=81-100%; B=61-80%; C=41-60%; D=21-40%; F=0-20%). Where insufficient data were available to assign a grade, this was recorded as INC (incomplete data). Results: Overall physical activity was assigned a C grade- with approximately half of children meeting guidelines. Active transportation and sedentary behavior were assigned a C grade. Government strategies and investments were assigned a D grade. All other indicators were graded as INC because of a lack of nationally representative data. Conclusions: This is the first comprehensive synthesis of evidence on physical activity among children and youth in India. As such, it provides baseline data for future report...
cards. Our findings indicate that most Indian children do not achieve recommended levels of physical activity and are sedentary for most of the day. We have identified gaps in research that must be addressed in order to understand the complete picture of activity in Indian children and youth. Going forward, it will be important to make investments, and design programs and interventions to increase physical activity among children and youth.

PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR AMONG KOREAN CHILDREN LIVING IN SOUTH KOREA AND CANADA: A CROSS-CULTURAL COMPARISON

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Purpose: Emigrating from one country to another may have impacts on the physical activity (PA) and sedentary behaviour (SB) of young people. Given the lack of cross-cultural comparative research, the purpose of this study was to compare PA, SB, and the built environment for active living among Korean children living in Canada and South Korea. Methods: Using a convenience sampling strategy, Korean children were recruited from Korean language schools and churches in Western Canada (KOR-CAN; n=468) and through schools in Seoul/Kyounggi province (KOR; n=626), resulting in a total of 1,094 Korean children aged 9-15 years residing in Canada and South Korea. Because of unequal sample sizes between the two countries, a simple random sampling technique was employed to select 200 age-matched cases from each country group. Height, weight, and waist circumference were directly measured. PA, SB, and built environment were self-reported. Analyses included Chi square and exact Wilcoxon rank sum tests. Results/Findings: More KOR-CANs participated in organized sport (57.5%) compared to KORs (39.0%, p), whereas more KORs used active modes of transportation (85.5%) than KOR-CANs (45.0%, p). However, overall self-reported PA did not vary by country. KORs, compared to KOR-CANs, spent more time in screen-based SB (1,466.76 ± 977.3 vs. 759.08 ± 665.7, p) and academic-related SB (1,054.80 ± 940.1 vs. 804.80 ± 721.7, p). KOR-CANs, compared to KORs, spent more time in travel (190.42 ± 238 vs. 67.22 ± 102.1, p), cultural activities (707.83±679.0 vs. 522.42±538.4, p), and social activities (447.99 ± 329.9 vs. 345.27 ± 431.4; p). More KOR-CANs, compared to KORs, reported that they feel safe from strangers (76.0% vs. 55.8%, p) and traffic (80% vs. 56.0%, p). More KORs, compared to KOR-CANs, reported that they have access to parks/playgrounds (91% vs. 82%, p). No difference existed in accessibility to sport facilities (65% in KOR-CANs vs. 55% in KORs). Conclusions: PA, SB, and perceptions of the built environment varied by the mode/type between Korean children living in Canada and South Korea. This research sheds insight on how physical and sociocultural environments shape the PA and SB of children.

SELECTION AND INFLUENCE EFFECTS OF YOUNGSTERS SOCIAL NETWORK ON PHYSICAL ACTIVITY.

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Objective: The level of physical activity in youngsters worldwide is declining (Kohl et al., 2012). Peers are an important determinant of physical activity in youngsters (McPherson, Smith-Lovin, & Cook, 2001) This study is particularly interested in the processes that explain the similarity in physical activity in adolescents' friendships. More specifically, this study will examine changes in friendships and physical activity levels at three time points and test whether similarity in physical activity exists prior to the formation of friendships (selection), or whether friends become more similar over time (influence). Methods: To test for selection and influence effects of friendship networks, stochastic actor-based models will be used (Snijders, van de Bunt, & Steglich, 2010). Longitudinal social network analyses simultaneously investigate changes in friendships and physical activity, and are capable of disentangling whether friends select other's based on physical activity and whether friends influence each other's physical activity. In total, 394 youngsters (41% boys, age: 11-14 y/o) out of eight secondary school classes participated for three separate weeks between January and June of 2016. Physical activity was measured by wrist-worn accelerometer (Fitbit Flex) for five days (M=8424.06 steps/day, SD =3595.37). Friendship was measured by asking participants to nominate their friends, via the research smartphone. Results: Social network modeling revealed that, after controlling for network and same-sex selection effects, the selection effect was statistically significant (b=2.71, SE= 1.13, p=.017). This indicates that youngsters initiate friendships with others that have
similar physical activity levels. In addition, a statistically significant influence effect was observed (b=.34, SE=.14, p=.017), which indicates that friends became increasingly similar in physical activity. Conclusions: The findings provided evidence for similarity in physical activity in youngsters. Youngsters who were not friends at the beginning of the study, but were similar in their physical activity level, were more likely to become friends at the end of the five-month period, than youngsters who were dissimilar in their physical activity. At the same time, youngsters who were already friends at the beginning of the study influenced the physical activity of their friends. Therefore, social network interventions might be preferable to individually oriented interventions.

THE IMPACT OF FLOOR HOCKEY TRAINING IN ADOLESCENT MALES WITH MILD INTELLECTUAL DISABILITIES

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Purpose: This study aimed to investigate the effects of a floor hockey training lasting 12 weeks (three times a week, 100-min per session) on physical fitness levels in adolescent males with mild intellectual disabilities. Methods: Fifty adolescent males with mild intellectual disabilities between 15 and 18 years of age (16.58±0.59 years) were randomly assigned to either exercise intervention (n=25, mean age =16.58±0.58 years) or control group (n=25, mean age =16.59±0.62 years). The floor hockey training program was delivered by a coach who had 10 years of experience and was familiar with teaching floor hockey exercise to adolescents with intellectual disabilities. The procedure of each single training session had the following structure: warm-up and skates protective gear wearing (25 min), the main part of floor hockey training (40 min), group games (10 min), and cooling down at the end (10 min). The Brockport Physical Fitness Test was used before and after the intervention. Differences between the intervention and the control groups were explored with a mixed-model analysis of variance (ANOVA), with group as a between-subjects factor and time as a within-subjects factor. Results: At postintervention, the exercise group significantly outperformed the control group on the 20-meter Progressive Aerobic Cardiovascular Endurance Run (PACER) (31.48±14.32 vs. 21.84±10.29, F=7.48, p<0.05, and sit-up (45.80±21.40 vs. 28.48±21.28, F=8.24, p<0.05). Participants in the exercise group had significantly greater before-after changes on the 20-meter PACER (31.48±14.32, F=41.37, p<0.05) and sit-up (29.32±17.43 vs. 45.80±21.40, F=24.89, p<0.05). Participants in the control group also had significantly higher scores on the 20-meter PACER (18.20±9.32 vs. 21.84±10.29, F=11.24, p<0.05) relative to their baseline in the pretest, but not in the sit-up test or the other measures. Conclusions: The present floor hockey training is an effective instrument to improve aerobic functioning as well as abdominal muscular strength and endurance of adolescents with mild intellectual disabilities.

STANDING UP FOR STUDENT HEALTH: AN APPLICATION OF THE HEALTH ACTION PROCESS APPROACH FOR REDUCING STUDENT SEDENTARY BEHAVIOR. A PILOT STUDY

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Purpose: Sedentary behavior (SB) has been associated with chronic diseases, such as hypertension and obesity; the risk appears greater the longer one engages in SB. University students are a high-risk population for excessive SB due to academic responsibilities. The primary purpose of this pilot study was to determine if a Health Action Process Approach (HAPA) based intervention, specifically action and coping planning, would increase occupational student break frequency and occupation student break duration. Methods: Forty-five university students (12 Males, Mean age 23.3) were randomized into a 8-week HAPA-treatment (sedentary behavior) or HAPA-control (nutrition) group. Participants completed a modified SIT-Q 7 d questionnaire (Windalele et al., 2014) that assessed break frequency and duration of occupational student SB at eight time points (Baseline, Week 1-6 Treatment and Week 7-8 Follow-up). Based on treatment allocation participants received behavioral counselling on either dietary information or SB at Baseline and Week 3. For the treatment group, the behavioral counselling focused on creating an action plan and coping strategies for increasing the number and length of standing breaks. These strategies were developed according to SB research recommendations (e.g. setting an alarm reminding participant to stand every 30 minutes for 2-3 minutes). Results/Findings: Missing data was less than 20% and there was no significant difference (p > 0.05) in missing data between treatment conditions. An intent to treat analysis revealed a large non-significant effect favoring the treatment group for occupational student break frequency (p = 0.19, η² = 0.23), and
a moderate non-significant effect favoring the treatment group for occupational student break duration (p = 0.76, \( \eta^2 = 0.10 \)). This translated to the intervention group increasing their break frequency and break duration by 17 and 6 percent, respectively, over the control group. Conclusions: The current pilot study provides preliminary evidence for the efficacious potential of a HAPA-based intervention for increasing occupation break frequency and duration in full-time university students.

**SEDENTARY BEHAVIOR AND CHRONIC DISEASE INFORMATION AS A SOURCE OF MOTIVATION TO REDUCE PROLONGED, SCHOOL-RELATED SITTING TIME IN UNIVERSITY STUDENTS: AN EXPERIMENTAL STUDY USING PROTECTION MOTIVATION THEORY**

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Purpose: Time spent in sedentary behavior (i.e., sitting) is associated with increased risk for all cause and cardiovascular disease related mortality in both men and women, even after controlling for body mass index and moderate-to-vigorous physical activity (Dunstan et al., 2010). Hence, it is important to promote strategies to mitigate this risk. Using a Protection Motivation Theory (PMT) framework, this study examined whether sedentary behavior and chronic disease information is a meaningful source of motivation to reduce prolonged school-related sitting among students. Methods: A cross-sectional design was employed with 343 university students. Participants were randomized into one of three conditions: PMT-experimental (sedentary behavior), PMT-attention control (physical activity), or control (no treatment). Using an online slide show the material for the PMT-experimental group targeted risk perceptions related to sitting by presenting research on prolonged sitting and chronic disease, the effectiveness of breaking up prolonged sitting, and strategies to break up sitting. The attention-control group material followed the same approach but focused exclusively on physical activity. Following treatment, purpose-built sedentary-related PMT constructs (i.e., perceived severity [PS], vulnerability [PV], response efficacy [RE], self-efficacy [SE] and goal intention [GI]) were assessed. Results/Findings: All PMT constructs underwent psychometric evaluation (i.e., factor and reliability analysis) prior to being computed. No significant differences were found among groups for the PMT constructs of PS, PV, RE, or SE (all p values ≥ 0.05; all \( r^2 \) values ≤ .002). Compared to the other groups, the PMT-experimental group reported significantly higher GIs to reduce daily school-related sitting time (p = .003; \( r^2 = .037 \)). Only RE (\( \beta = .229 \)) and SE (\( \beta = .518 \)) made significant and unique contributions to the prediction of intention scores, explaining 38% of the response variance. Conclusions: This study provides evidence that an intervention providing information regarding sedentary behavior and chronic disease, grounded in PMT may be an effective source of motivation (i.e., improved students' GIs to reduce daily sitting time during school-related activities). Future interventions need to focus on alternative methods to deliver sedentary health information in order to manipulate the PMT constructs, particularly RE and SE, to maximize intentions to reduce sedentary behavior.

**REMOTELY MONITORED EXERCISE-BASED CARDIAC REHABILITATION COMBINES EFFECTIVENESS OF TRADITIONAL CENTRE-BASED PROGRAMMES WITH NEAR UNIVERSAL ACCESSIBILITY: RESULTS FROM THE REMOTE-CR NON-INFERIORITY RANDOMISED CONTROLLED TRIAL.**

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Purpose: Exercise-based cardiac rehabilitation (exCR) is a critical component of the secondary prevention of coronary heart disease (CHD). The traditional delivery model—face-to-face supervised exercise in clinical centres—improves mortality, functional capacity and cardiovascular risk factors, and is cost-effective. However, centre-based
exCR is vastly underutilised, in part due to barriers that limit accessibility. Home-based exCR addresses accessibility barriers but sacrifices clinical exercise specialist monitoring and coaching during exercise. We developed a bespoke first-of-its-kind mHealth exCR platform—named REMOTE-CR—that overcomes access-related participation barriers while preserving clinical supervision. We aimed to evaluate the effectiveness and cost-effectiveness of REMOTE-CR compared to centre-based exCR. This presentation will update preliminary data with full trial results. Methods REMOTE-CR combines bespoke smartphone and web-based applications (apps), custom middleware, and wireless sensors to deliver evidence-based real-time remote exercise monitoring and coaching, as well as theory-based behaviour change strategies and social support. We conducted a non-inferiority RCT that compared 12 weeks of REMOTE-CR and centre-based exCR, among 162 individuals with CHD (ACTRN12614000843651). Outcomes included maximal exercise capacity (V02max, primary), cardiovascular risk factors, self-efficacy, motivation, adherence, quality of life, and cost-effectiveness. The primary outcome non-inferiority margin was -1.25 ml/kg-1·min-1. Results REMOTE-CR and centre-based programmes had comparable effects on V02max, and the non-inferiority criterion was met (difference=0.51, 95%CI -0.97–1.98ml-kg-1·min-1, P=.48). Effects on secondary outcomes were also comparable, except for differences in waist (1.71, 95%CI 0.09–3.34cm, P=.03) and hip (1.16, 95%CI=0.06–2.27cm, P=.03) circumferences that favoured centre-based exCR. Cost-effectiveness analyses are in-progress and data will be available at ISBNPA 2017. Conclusions REMOTE-CR appears to be as beneficial as traditional centre-based programmes for individuals with CHD, and increases intervention reach by overcoming traditional accessibility barriers. Innovative technology-based platforms like REMOTE-CR could increase overall exCR utilisation by providing effective alternatives for individuals who cannot attend centre-based programmes. As a complement to existing services REMOTE-CR could improve secondary cardiovascular risk management, and this may help to reduce healthcare burden and costs. Future challenges include broadening REMOTE-CR to include a more comprehensive array of recommended CR components, and determining sustainable and scalable implementation pathways.

OUTCOME AND PROCESS FINDINGS FROM THE “ECOFIT” RANDOMIZED CONTROLLED TRIAL: INTEGRATING SMARTPHONE TECHNOLOGY, SOCIAL SUPPORT AND THE OUTDOOR PHYSICAL ENVIRONMENT TO IMPROVE HEALTH-RELATED FITNESS AMONG ADULTS AT RISK OF, OR DIAGNOSED WITH TYPE 2 DIABETES.

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Purpose: The prevalence and risk of Type 2 Diabetes (T2D) has dramatically increased over the past decade. Physical activity (PA) has significant benefits for the treatment and prevention of T2D. The aim of this study was to develop, implement and evaluate a community-based PA intervention to improve aerobic and muscular fitness among adults (age 18-80 years) at risk of, or diagnosed with T2D. Methods: The eCoFit intervention was evaluated using a randomized controlled trial. The 20-week intervention was guided by Social Cognitive Theory, Health Action Process Approach Model, and Cognitive Behaviour Therapy strategies. The intervention included two phases: Phase 1 (weeks 1-10) integrated group face-to-face sessions (consisting of outdoor PA and cognitive mentoring) and the use of the eCoFit smartphone application (app) (with a description of where and how to use the outdoor environment to be more active) and Phase 2 (weeks 10-20) only included the eCoFit app. Participants (treatment N=42, control N=42) were assessed at baseline, 10-weeks (primary end-point) and 20-weeks (secondary end-point) post-baseline. Primary outcomes were aerobic fitness and lower body muscular strength. Secondary outcomes included objectively measured PA (pedometers), upper body muscular strength, functionality, waist circumference, body mass index, blood pressure, and the app data usage. Results: After 10-weeks, significant group-by-time effects were observed for the primary outcomes aerobic fitness (4.3 ml/kg/min), CI [1.1, 7.5], pd=0.67 and lower body muscular strength (3.6 rep.), CI [2.8, 4.2], pd=1.45. Intervention effects for secondary outcomes included reduced waist circumference (2.8 cm), CI [-4.7, -0.8], increased PA (1317steps), CI [42.3, 2592] improved functionality (-1.8 sec.), CI [-2.4, -1.2] and improved upper body muscular strength (5 rep.), CI [3.9, 6.0]. After 20-weeks, sustained effects were observed significant for aerobic fitness, upper and lower body strength, and functionality. The process results regarding the eCoFit components were positive. Conclusions: eCoFit is an innovative, community-based program, which integrates smartphone technology, social support, and the outdoor environment to improve aerobic and muscular fitness in the population at risk of or diagnosed with T2D. The study showed promising results to guide future interventions and to develop and implement effective community-based prevention programs.
STAND UP FOR HEART HEALTH: FEASIBILITY OF IMPLEMENTING AN INTERVENTION TO REDUCE SITTING TIME IN ADULTS UNDERGOING CARDIAC REHABILITATION

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Purpose: This study aimed to determine the feasibility of implementing an incremental goal setting intervention to reduce sitting time in adults with cardiovascular disease. The research question was: what is the feasibility and preliminary effectiveness of a program to reduce sitting time in adults undergoing cardiac rehabilitation? Methods: Design: Two group pilot randomised controlled trial (allocation 1:1), with limited disclosure to participants. Participants: Fifty adults were recruited prior to commencement of a 6-week outpatient cardiac rehabilitation program. Intervention: Usual cardiac rehabilitation plus a face-to-face session where participants were: guided through a review of their sitting time; provided with normative feedback on sitting time; and assisted with setting goals to reduce sitting time. Participants incrementally integrated one goal per week for five weeks. Control: Usual cardiac rehabilitation. Measures: Sitting time and bouts of prolonged sitting were measured objectively for seven days (activPAL3c inclinometer; PAL Technologies, Glasgow, UK) at baseline and post-rehabilitation. Intervention participants completed a project evaluation form. Analysis: Intention to treat analyses were completed with missing data imputed (last observation carried forward). Within group differences were calculated with paired t-tests, and between group differences with repeated measures ANOVA (α=0.05). Results: Fifty participants were included in the analysis (65.0±9.7 years, 86% male). Study retention was high, with 44 (88%) participants completing all study assessments. Intervention group participants were highly satisfied with the goal setting intervention (mean of 8.4, where 10 represented 'extremely satisfied'), rated the burden as low (mean 8.3, where 10 was 'not time consuming at all'), and were very likely to recommend the program to others (mean 9.1, where 10 was 'definitely'). Post cardiac rehabilitation, there were non-significant decreases in objectively-measured sitting time of 21.8 min/d in the intervention group, and 3.5 min/d in the control group. Differences between groups for sitting time and bouts of prolonged sitting were not significant. Conclusion: An incremental goal setting intervention is feasible to be implemented together with cardiac rehabilitation to reduce sitting time in people with cardiovascular disease. The intervention shows promise in reducing sitting time in this population, however, a larger, randomised controlled trial with adequate statistical power is required.

INFORMING THE NHS ENGLAND DIABETES PREVENTION PROGRAMME: FINDINGS FROM THE COMMUNITY-BASED PREVENTION OF DIABETES (COMPOD) TRIAL

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Purpose: The ComPoD study (www.isrctn.com/ISRCTN70221670) was a randomised, waiting list controlled trial across two UK sites (Exeter, Birmingham). It evaluated whether an existing community-based, voluntary sector-led diabetes prevention programme was effective in modifying weight and other diabetes risk factors. This programme is one of four being adapted for use in the NHS England Diabetes Prevention Programme which began roll out in 2016, and is proposed to be extended to the whole country by 2020 building up to 100,000 referrals per year. Methods: Overweight/obese adults with 'pre-diabetes' according to recent blood glucose testing were recruited via GP practices and randomised to receive the programme immediately (intervention) or after 6 months (control). Changes over 6 months in objectively-measured weight (primary outcome), waist circumference, blood glucose, blood pressure, physical activity (assessed via accelerometers), self-reported diet, health status and psychological well-being were compared between groups. Maintenance of changes from 6-12 months was assessed in the intervention group only. Results: 285 (91%) participants provided comparative 6 month follow up data, and 137 (87%) of the intervention group provided 12 month observational data. Results indicate significant but modest effects on weight loss (adjusted difference between groups -1.7kg, CI -2.6 to -0.9), other weight-related outcomes, and self-reported diet (fat and fibre) and health status at 6 months (all p Conclusions: The ComPoD trial is an innovative example of robust, in-practice public health evaluation of a voluntary sector-led programme. The
comparative evidence it provides suggests that a real world diabetes prevention programme led by voluntary sector providers can be effective but requires adaptation to achieve levels of weight loss anticipated in the NHS England Diabetes Prevention Programme.

THE ASSOCIATION OF LIFESTYLE BEHAVIOURS WITH HYPERTENSION IN ADULT SOUTH AFRICANS

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Objective The study aims were to determine the incidence of hypertension, and to determine the association between lifestyle behaviours (exercise, smoking, and alcohol) and hypertension in a sample of adult South Africans.

Methods Behavioural, anthropometric, and socioeconomic status data from the 4th wave of the National Income Dynamics Study were used (N=16871). The mean age of the sample was 42.8 ± 16.6 years, 68.8% of whom were black South Africans. The logistic regression model for hypertension (resting systolic blood pressure (BP): ≥140 mm Hg and/or diastolic BP: ≥90 mm Hg) was adjusted for age, body mass index, education, ethnicity, region, household ownership asset index, and gender. Results Hypertension was present in 73.3% of Africans, 22.1% of coloureds, 0.94% of Indians, and 3.72% of whites. The participants with hypertension exercised less than those without (p < 0.002). In the adjusted logistic regression analysis, daily alcohol consumption (odds ratio [95% CIs]: 2.25 [1.36, 3.74], p=0.002) and cigarette smoking (1.27 [1.12, 1.44], p=0.0001) increased hypertension risk, while physical exercise (>2 times/week) reduced risk (0.86 [0.74, 0.99], p=0.04). Conclusion The findings of this study confirm that smoking and higher alcohol use increase the risk of hypertension in adults, while higher amounts of physical exercise protects against the disease.

STEP PRESCRIPTIONS AND IMPACT ON CARDIOMETABOLIC HEALTH IN TYPE 2 DIABETES AND HYPERTENSION

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K Dasgupta and S Daskalopoulou for the SMARTER collaborators There are few clinically integrated strategies proven to enhance physical activity and cardiometabolic profiles in type 2 diabetes and hypertension. We examined physician-delivered step count prescriptions and pedometer-based monitoring. METHODS Prospective, randomized, open-label, blinded-endpoint (PROBE) pragmatic trial. The primary outcome was carotid femoral pulse wave velocity (cfPWV), a summative arterial health indicator; secondary outcomes included changes in step counts and cardiometabolic profiles. Participants randomized to the active arm were provided with pedometers and recorded step counts. Over a 1-year period, their physicians reviewed their records and provided a written step count prescription at each clinic visit. The overall goal was a 3,000 step/day increase over 1-year (individualized rate of increase). Control arm participants were advised to engage in physical activity 30-60 minutes/day Participants in both arms consulted with their physician at a similar frequency (3 to 4/year). RESULTS 369 completed the baseline evaluation, 347 were randomized, and 275 completed final evaluations (79%). Participants averaged 60 years of age (standard deviation, SD 11), over half were women, and approximately 60% were white. More than two thirds had type 2 diabetes and over 90% had hypertension. Systolic blood pressure was well-controlled at a mean value of 124 mm Hg (SD 10), LDL-C was 2.45 mmol/l (1.0), and A1C 7.7% (1.3) in participants with diabetes. Steps/day were low at 4,775 (2,300) and cfPWV was high at 9.8 m/s (2.3). There was a net steps/day increase in active vs. control arm participants (1190, 95% CI 550 to 1,840). Changes in cfPWV were inconclusive; active vs. control arm participants with type 2 diabetes experienced a lowering of A1C (-0.38%, 95% CI -0.69 to -0.06); HOMA-IR also declined in active vs. control arms (i.e., assessed in all participants not treated with insulin; -0.96, 95% CI -1.72 to -0.21). CONCLUSIONS A simple physician-delivered step count prescription strategy incorporated into routine clinical practice can augment physical activity, enhance glucose control, and improve insulin sensitivity. Future studies will evaluate an amplified intervention to increase impact.

O.04 Determinants physical activity & sedentary behavior in children (Lecture Theatre)
EARLY CHILDHOOD DIGITAL MEDIA USE AND SELF-REGULATION: BI-DIRECTIONAL LONGITUDINAL ASSOCIATIONS
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OBJECTIVE: Children's self-regulation – their ability to control their thinking, emotions and behaviours - is fundamental for later development and health. The impact of digital media on young children’s health and development has also received considerable attention. Yet reciprocal longitudinal associations between media exposure and self-regulation have not been investigated among young children. This study investigates: i) prospective associations between digital media exposure (television viewing, computers, digital games) at 2 years and self-regulation at 4 and 6 years, and ii) bi-directional associations between media exposure and self-regulation at 4 and 6 years. We hypothesized: i) media exposure would be negatively associated with self-regulation, and ii) media exposure and self-regulation would display bi-directional inverse associations. METHODS: Data from the nationally-representative Longitudinal Study of Australian Children when children were aged 2 (n=2786) and 4/6 years (n=3527) were used. Parents reported children's weekly digital media exposure. A composite measure of self-regulation was computed from parent-, teacher-, and observer-report. Associations were examined using linear regression and cross-lagged panel models, accounting for covariates (age, sex, parental education, family income, hostile parenting). RESULTS: Lower television viewing and total media exposure at 2 years were associated with higher self-regulation at 4 years (both β -0.02; 95% confidence interval [CI] -0.03, -0.01). Lower self-regulation at 4 years was associated with higher television viewing (β -0.15; 95% CI -0.21, -0.08), digital game use (β -0.05; 95% CI -0.09, -0.01), and total media exposure (β -0.19; 95% CI -0.29, -0.09) at 6 years. However, media exposure at 4 years was not associated with self-regulation at 6 years (P > 0.05). Associations between self-regulation at 4 years and media exposure at 6 years were stronger for children of tertiary (P < 0.05) compared to high school educated parents (P CONCLUSIONS: Media exposure and self-regulation may be reciprocally associated in early childhood, with young children’s early media exposure associated with later self-regulatory abilities, which subsequently predict children's media exposure during the early school years. Limiting early childhood media exposure and supporting parents, particularly those of tertiary education, with alternative strategies that enhance children's self-regulation may support young children’s development and health.

CHARACTERISTICS OF THE PHYSICAL ENVIRONMENT IN FAMILY CHILD CARE HOMES ASSOCIATED WITH YOUNG CHILDREN’S PHYSICAL ACTIVITY
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Purpose: Family child care homes (FCCHs) are the second largest provider of child care in the United States, yet little is known about how these environments influence children’s physical activity. The purpose of this study was to determine what aspects of the FCCH physical environment are associated with children's moderate to vigorous physical activity (MVPA). Methods: Data were collected from 166 FCCH providers and 496 preschool aged children enrolled in the Keys to Healthy Family Child Care Homes study from 2013-2015. Children's activity was measured using Actigraph GT3X+ accelerometers. Wear data from the child care day were isolated and Pate cut-points were applied in order to calculate children's minutes of MVPA per hour while at child care. FCCH-level estimates of child MVPA were then calculated. Indoor and outdoor physical environment characteristics were assessed during a two-day observation using the Environment and Policy Assessment and Observation (EPAO) modified for FCCHs. Separate general linear models were used to examine the relationship between indoor and outdoor FCCH physical environment characteristics and children’s MVPA per hour, controlling for outdoor time and provider income, BMI, and physical activity training. Results/findings: Children spent on average 4.7 minutes per hour engaged in MVPA during time at the FCCH. In the fully adjusted models, only indoor play space was significantly associated with children's MVPA (β=0.32, p Conclusions: Indoor space was the only physical environment characteristic associated with children’s MVPA, suggesting that teaching FCCH providers how to best utilize their indoor play space for active play may be a way to promote children’s physical activity. Futures studies should explore the impact of other environmental characteristics of the FCCH (e.g., provider practices and policies) on children's physical activity.
CROSS SECTIONAL ASSOCIATIONS OF SCREEN TIME AND OUTDOOR PLAY WITH SOCIAL SKILLS IN PRESCHOOL CHILDREN

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Background: Screen time and physical activity behaviours develop during the crucial early childhood period (0-5 years) and impact multiple health and developmental outcomes, including psychosocial wellbeing. Social skills, one component of psychosocial wellbeing, are vital for children's school readiness and future mental health. This study investigates potential associations of screen time and outdoor play (as a proxy for physical activity) with social skills.

Methods: Cross sectional data were available for 575 mothers with a child (54% boys) aged 2-5 years (2013/2014). Mothers reported their child’s screen time, outdoor play time and social skills (Adaptive Social Behavior Inventory; ASBI). Regression analyses assessed associations of screen and outdoor play time with three ASBI subscales (express, comply, disrupt) and overall social skills. Results: Boys and girls spent a mean of 2.0 and 2.2, and 3.3 and 2.9, hours per day in screen time and outdoor play, respectively. Girls scored significantly higher express and comply scores, and overall social skills, than boys. Conclusions: Findings indicate that screen time is adversely, and outdoor play favourably, associated with preschool children's social skills. Future research is required to identify the direction of causation and explore potential mechanisms of association.

SOCIO-CULTURAL REGION AS IMPORTANT CORRELATE OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR IN SWISS PRE-SCHOOLERS

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Purpose: Regional differences in physical activity (PA) have previously been observed in Swiss school-aged children and adults. These patterns could not be explained by individual or socio-demographic variables. We investigated whether such differences already exist in pre-schoolers. Methods: Children from 84 childcare centres in five Swiss regions participated in the SPLASHY study. PA was quantified by accelerometers (ActiGraph, wGT3X-BT) and potential correlates were assessed by direct measurement or parental questionnaires. Mixed regression models were used to investigate associations between 14 potential correlates and total PA (TPA), moderate-to-vigorous PA (MVPA), light PA (LPA) and sedentary behaviour (SB). Recommended cut-points for the frequently used epoch length of 15 sec and vertical axis were applied (SB≤25 and MVPA≥420 counts*15 s-1). Furthermore, data was analysed with the epoch length of 60 sec, both according the vertical axis (SB≤240 and MVPA≥2120 counts*60 s-1) and vector magnitude (SB≤820 and MVPA≥3906 counts*60 s-1). Results: 394 of 476 children (83%) provided valid PA data (at least two week- and one weekend-day with 10h of recording; mean age 3.9±0.7 years, 54% boys). 26% of the sample lived in the French- and 74% in the German-speaking part of Switzerland, which was the indicator for the socio-cultural region. Applying the two uniaxial cut-point sets socio-cultural region was the only correlate significantly associated with all four outcomes. Moreover, TPA and MVPA increased with age, were higher in boys and children with better motor skills; LPA and SB were associated with seasonal influence. Using the vector magnitude, the only correlates remaining significant were socio-cultural region for TPA, MVPA and SB, age for TPA and MVPA, and season for SB. Despite controlling for several individual characteristics, familial factors and childcare exposure, children from the French-speaking part showed 12-13% less TPA, 14-21% less MVPA, 3-8% less LPA and 8-14% more SB than German-speaking children. Conclusion: Socio-cultural region was the only correlate significantly associated with both PA and SB independent of the chosen cut-points or epoch length. Thus, regional socio-cultural difference (due to language, immigrant background, religious differences etc.) may hide some suspicious differences in activity behaviour and could be an important correlate overlooked so far.
Objective: Youth obesity is a major concern due to the physical, social, and psychological health consequences. While rates and disparities of youth obesity levels are known, less research has explored spatial clustering and associated predictors. Therefore, this study aimed to 1) examine spatial clustering of youth obesity, and 2) investigate what individual- and neighborhood-level sociodemographic characteristics are correlated with spatial patterns. Methods: This study occurred in a Southeastern US county (pop: 474,266) in 2013. Trained physical education teachers collected height and weight for all 3rd-5th grade youth (n=13,470) and schools collected youth demographics (gender, race/ethnicity, socioeconomic status (SES)). BMI z-scores were calculated using standard procedures. Youth addresses were geocoded and block group (BG) data obtained from the US Census Bureau. Global Moran's Index was used to detect broad spatial clustering while Anselin’s Local Moran’s I (LISA) was used to explore and map localized clusters of youth obesity. To examine correlates of spatial clustering, BMI z-score residuals from a series of five linear regression models were spatially analyzed, mapped, and compared. The following variables were added to the five models consecutively: 1) age and gender, 2) race/ethnicity, 3) SES, 4) BG racial composition, and 5) BG median household income. SAS 9.4 and GeoDA were used for analyses; ArcGIS was used for mapping. Results: Significant, positive global clustering (Index=0.02, p Conclusion: Significant global and local spatial clustering patterns were identified among children in this setting. Individual SES was a main correlate of global and local spatial clustering. Identifying geographic areas that contain significant spatial clusters is a powerful tool for understanding the location of and exploring contributing factors for obesity.

UNDERSTANDING THE HERITABILITY OF VOLUNTARY EXERCISE BEHAVIOR
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Purpose: Despite the well-known benefits of physical activity, there is a growing number of adolescents and young adults with a less than optimal physically active lifestyle. To improve the success of interventions aimed to increase moderate-to-vigorous physical activity, we need to better understand the determinants of the extensive individual differences in voluntary exercise activities. After childhood, genetic effects become a dominant factor in explaining these differences. This study aims to identify what gives rise to the high heritability estimates reported in late adolescents and young adults. Methods: A set of healthy adolescent twin pairs (16-18y) and their siblings from the Netherlands Twin Register were invited to participate in a study on the determinants of exercise behavior. Data on known determinants of exercise behavior (personality, perceived barriers and benefits, subjective and objective exercise ability, and the affective response to exercise) were collected using surveys and a laboratory study. Two years later subjects were interviewed on their current voluntary exercise activities. In a multivariate model, the phenotypic variance of these determinants and exercise behavior were decomposed in sources of genetic (co)variance and environmental (co)variance, and the ability of these determinants to predict follow-up exercise behavior was tested. Results: Sixty percent of the individual differences in exercise behavior were due to genetic factors. The determinants that showed significant associations with exercise behavior were extraversion, positive affect after exercise, perceived benefits and barriers (including lack of skills, time constraints, lack of energy and enjoyment, and embarrassment), subjective ability, maximal oxygen uptake, and flexibility (of lower back and hamstrings). Twenty percent of the variance in follow-up exercise behavior could be explained by the determinants. Multivariate modeling showed that the prospective association between the determinants and exercise behavior reflected shared genetic factors: the genetic variation in exercise behavior is entirely explained by the genetic variation in these determinants measured two years earlier. Conclusions: Taken their substantial predictive power we can assert that these determinants can be used to develop stratified interventions on adolescent and young adult exercise behavior. In addition, these results provide the first clues on 'where to look' for specific genes for voluntary exercise behavior.
O.05 Innovative dietary assessment tools (Sidney)

Attention to Temporal and Framed Consequences of (In)sufficient Fruit Intake - An Experimental Eye-Tracking Study
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Abstract
Purpose. Previous communication research has demonstrated that contextualizing positive or negative consequences of (in) sufficient fruit consumption in terms of short-term or long-term consequences impacts attitudes and motivation towards sufficient fruit intake. It is unknown which specific message elements account for these persuasion effects, so the purpose of this study was to assess how people attend and process persuasive messages related to (in)sufficient fruit intake using eye-tracking measures.

Methods. Participants were 145 undergraduate students (16.5% male, Mean Age is 22.7, SD = 5.2) who participated for either course credits or 5 euro. They were randomly allocated to one of four conditions, created from message frame (loss v gain) and temporal context (short-term v long-term). Fixation time (in ms) as a proxy for attention was assessed with SMI RED 120 eye-tracking device for four areas of interest (title, subtitle, and two persuasive texts) using self-paced reading. The persuasive texts emphasized long-term diseases consequences (cancer, obesity, and cardiovascular disease) or short-term increased satiety (making it less likely to consume in-between meal snacking) and resilience (making it more likely to not get the flu). Message consequences were based on previous studies. After reading, intention to assess sufficient fruits in the next week was assessed. A 2x2 ANOVA was conducted to investigate message effects. Results No effects of message frame was found in the long-term condition. In the short-term condition, there was a medium-effect sized difference (η² = .09) in attention for the snack-related information, for which participants in the gain-framed condition (M = 30660.1 ms) had more attention than participants in the loss-framed condition (M = 25121.4 ms), p = .08. Conclusions Persuasive messages that emphasize short-term positive consequences of fruit intake (more satiety, so less snacking) attract attention in young adult (female) samples and may be fruitfully included in message-based persuasion attempts to increase fruit intake.

Accurate Assessment of Nutritional Intake in School Cafeterias: A Validation of the Digital Photography Method
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Abstract
Purpose Accurate assessment of children’s nutritional intake is vital for investigations into typical eating behaviour and the effectiveness of interventions that aim to improve it. Indirect measures such as food diaries and recall interviews are subject to human error and systematic social desirability bias, yet direct weighted measures can be time consuming and intrusive. The present study set out to validate a non-invasive digital photography method, suitable for use in fast paced school environments. We compared the estimates of children’s consumption based on digital images with direct weighed measures. Methods A small research team measured children’s lunchtime food intake in one primary and one secondary school over seven working days. Participants’ (N = 288) lunchboxes or dinner trays were photographed pre- and post-consumption, and individual food items were weighed pre- and post-consumption, for comparison. Using standardised digital images, consumption of each food item was estimated to the nearest 10% to calculate the approximate weight consumed in grams. Following simple training, an independent rater second-coded around 40% of food items. Results Bland-Altman regression analyses were used to assess accuracy against the objective weighed measures across four food categories. The photography estimates were accurate, yielding only small bias (in grams) for each category: Main Starch (M = .22, SD = 8.19); Fruit and Vegetables (M = 1.64, SD = 8.67); Meat, Dairy and Wet foods (M = 1.14, SD = 8.12); and Snacks (M = .15, SD = 3.12). Using percentage relative error, it was determined that these biases were within the acceptable limit for free-living research. Kappa scores showed that good levels of inter-rater agreement were achieved for each food category, ranging from moderate (κ = .535 for Fruit and Vegetables) to near perfect (κ = .819 for Snacks). Conclusions This research validates the use of nutritional estimates derived from digital photography in lieu of
objective weighed measures, regardless of whether children ate school-prepared meals or brought their food from home, providing justification for the use of this accurate and time-effective observational method in research with children in primary and secondary school settings. (343 words)

THE INTERNATIONAL FOOD UNIT (IFU) CAN IMPROVE FOOD VOLUME ESTIMATION

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Purpose: Portion size education, aids and interventions can be effective in helping prevent weight gain, but consumers have difficulties to estimate food portion sizes and are confused, because measurement units and terminologies are used inconsistently. Visual cues are an important mediator of portion size estimation, but standardized measurement units are required. In this study, we present and test a new food volume estimation tool. The ‘International Food UnitTM (IFUTM) is a 4x4x4 cm cube (64cm³) that can be subdivided into eight 2cm sub-cubes for estimating smaller food portions. Compared with the currently used measures such as cups and spoons, the IFUTM standardizes the estimation of food volume with metric measures. Further, the IFUTM design is based on binary dimensional increments and the cubic shape facilitates portion size education and training, memorization and recall, and computer processing, which is binary in nature. Methods: We tested the performance of the IFUTM in a randomized between-subjects experiment; n=128 adults (66 men) estimated 17 food portions using 1) ‘no aid’ (weight estimation), 2) a rigid ‘IFUTM’ cube, 3) a deformable ‘play-dough’ cube or 4) a ‘household measuring cup’. Estimation errors were compared between groups using Kruskall-Wallis tests and post-hoc comparisons. Results: The estimation errors significantly differed between groups (H(3)=28.48, p<0.001). The IFUTM cube as estimation aid (Mdn=18.9%, IQR=50.2) and least accurate using the measuring cup (Mdn=87.7%, IQR=56.1). The deformable play-dough cube lead to a median error of 44.8% (IQR=41.9). Compared with the measuring cup, the estimation errors using the IFUTM were significantly smaller for 12 and similar for five food portions. Weight estimation was associated with a median error of 23.5% (IQR=79.8). Conclusions: The IFUTM improves volume estimation accuracy. The cubic shape is favourable because subdivision and multiplication facilitated volume estimation and may facilitate portion size training. Further studies are needed to investigate whether portion size education using the IFUTM is effective and sustainable in the absence of the aid. A 3-dimensional IFUTM could serve as a reference object for estimating food volume automatically with smartphones or wearable devices. A prototype will be presented.

DEVELOPMENT OF THE CANTEEN SCAN, A TOOL FOR ASSESSMENT OF THE FOOD ENVIRONMENT IN SCHOOLS, SPORT SETTINGS AND WORK PLACE

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Objective: People consume more of food and drinks prominently displayed and easily available. The Netherlands Nutrition Centre Guidelines for Healthier Canteens are based on this principle of environmental influences on food choices. In the guidelines, several nudging techniques are described that stimulate healthier choices. Three ambition levels of healthy canteens are defined; bronze, silver and gold. To implement the guidelines and gain insight in the food environment in schools, sport clubs and work, a tool was needed. Therefore in this study a tool was developed that provides insight in canteens’ healthiness. METHODS: In 2015, a multidisciplinary team of researchers and professionals designed a tool based on scientific literature and results of consultations, an expert meeting and focus groups with representatives from schools and catering, and experts on nutrition and health behavior. Subsequently, the tool was digitalized and pilot tested using interviews and a thinking aloud method to study the feasibility and usability of the tool among canteen managers and caterers in school. RESULTS: In accordance with the guidelines, the Canteen Scan was designed in three parts; 1) four general basic criteria (including presence of school policy on health), 2) the visible food and drinks offer, and 3) incentives. Indicators for assessing these levels were developed. Regarding the incentives, especially placement of foods on the counter, in vending machines and near the cash desk were considered important. Also attractiveness of fruits' and vegetables' presentation and images of food and
Purpose: Dietary assessment is complex and accurate measurement is paramount for elucidating diet-health

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relationships. Strategies which enable researchers to select the most appropriate dietary assessment tools (DAT) are needed. To this end, the DIET@NET partnership has generated expert consensus on Best Practice Guidelines (BPG) for dietary assessment in health research. Methods: The BPG were developed using the Delphi technique. An expert panel (BPG Working Group) generated draft guidelines for choosing tools and collecting dietary data. Two Delphi rounds were conducted using self-completed questionnaires either online or paper based. 131 experts were invited to participate, of these 65 accepted, with 48 completing Delphi round I and 51 completing Delphi round II. In all, a total of 57 experts from North America, Europe, Asia, and Australia commented on the 47 suggested guidelines. Results: After round I, guidelines with 70% agreement remained included; after round II, statements with 90% agreement were retained and ranked as essential or desirable. The BPG Working Group then reached final consensus on wording. 43 guidelines have been generated, grouped in 4 key stages with 8 main questions that includes 24 elaboration points (19 essential and 5 desirable), and 11 sub-elaboration points. Stage I. Define what is to be measured in terms of dietary intake. Consider the 1) 'what?' 2) 'who?', and 3) 'when?' of the study. Stage II. Investigate different types of DAT, 4) appraise their appropriateness for the research question. Stage III. Evaluate existing tools to select the most appropriate DAT by 5) evaluating published validation studies; 6) consider the need for modification of existing tools. Stage IV. Think through 7) the implementation of the chosen DAT in the study population. 8) Consider sources of potential biases and plan a minimization strategy. Conclusions: The Delphi technique enabled integration of expert views on best practice in assessing dietary intake. This should contribute to better research design with improved quality, consistency and comparability of dietary data. The BPG will be a valuable tool to guide health researchers when selecting the most appropriate dietary assessment method for their studies and will be accessible through the Nutritools website, www.nutritools.org.

O.06 Marketing and advertising in children and adolescents (Salon C)

ASSESSING THE EXPOSURE AND POWER OF FOOD AND BEVERAGE MARKETING IN PUBLIC RECREATION FACILITIES: A VALIDATED SETTING-BASED OBSERVATIONAL TOOL

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Purpose: Restricting unhealthy food (beverage) marketing to children is recommended worldwide to reduce childhood obesity. No known observational tools to measure food marketing from a settings perspective exist. The aim of this project is to develop a valid tool to measure the nature and extent of food marketing within public recreation facilities. Recreation facilities are an ideal setting to examine food marketing because of their variety of marketing techniques (point-of-purchase, sport sponsorship), unique marketing features (physical activity themes), and population reach. Methods: Food marketing was assessed in 25 facilities in Canada using the Marketing Assessment Tool (MAT). Facilities were scored based on the number of food marketing instances observed and evidence of "powerful" marketing characteristics (healthfulness, appeal to children, themes of physical activity, and size) ranked as present/absent based on evidence-based a priori definitions. The scoring scheme was informed by a theoretical model stating that the impact food marketing to children is determined by the exposure and power (persuasiveness) of marketing communications. Lower scores represent more favourable food marketing environments. Total and food-related annual sponsorship (advertising) dollars received by each facility were requested to test construct validity. Nonparametric correlations using Spearman's rho were calculated between the MAT Scores and Total Sponsorship Dollars, and Food Sponsorship Dollars using SPSS Statistics 22. Results: Nineteen facilities were scored with the MAT and also provided Sponsorship Dollars (Total and/or Food). One facility, an extreme outlier for MAT score and Food Sponsorship Dollars that also declined to provide Total Sponsorship Dollars, was excluded. The mean MAT score was 50.7 (SD = 42.6) (possible scores range 0 to ∞). Annual sponsorship averaged $20,074 (SD = $18,393) for Total Dollars and $2,098 (SD = $2,787) for Food Dollars. MAT scores were moderately correlated with Total Dollars (rs=0.49, p=0.054) and highly correlated with Food Dollars (rs=0.82, p Conclusion: The MAT is the first validated theory-based observational tool capable of documenting the exposure and power of food marketing in recreation facilities. It can be used to research unhealthy food marketing in other settings. Findings can inform and monitor comprehensive strategies to reduce children's exposure to unhealthy powerful food marketing.
BREAKFAST IS BRAIN FOOD? THE EFFECT ON GPA OF A RURAL GROUP RANDOMIZED TRIAL TO PROMOTE SCHOOL BREAKFAST.

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Purpose: Research has shown a link between breakfast consumption and cognitive and academic outcomes. No studies have tested the impact of a school-based intervention aimed at increasing breakfast consumption on GPA change and if such intervention was more effective for low resource students. Methods: Sixteen rural Minnesota, USA high schools were randomized to a policy and environmental change intervention or delayed intervention (control) group. The intervention consisted of training students, teachers and staff to market and implement healthier and more convenient breakfast distribution and eating options. Baseline screening among all 9th and 10th grade students (n=5,767) identified 44% of students that typically ate breakfast 3 times in a normal school week. From this group, a cohort of “breakfast skippers” was randomly selected (n=1253) and enrolled (n=904) for assessment. Mean unweighted GPA was provided by n=13 schools for n=636 students. Student-level sociodemographic data was obtained from an online student survey (race, public assistance, food security) and from administrative data (individual- and school-level free or reduced price meals). Linear mixed models included random effect of school, fixed effect of intervention, and adjustment of baseline sociodemographics (age, gender, free and reduced priced meal eligibility, and race). Latent class analysis (LCA) was used to identify at-risk student groups using sociodemographic indicators. Linear mixed models tested latent class on change in GPA and for interaction by condition. Results: Students were 54% female, 76% white, and 34% received free or reduced price meals. Unweighted cumulative GPA mean was 2.82 (0.78). The control condition schools had a higher proportion of white students, were less food insecure and had a higher mean GPA. There was no significant intervention effect on GPA in adjusted or unadjusted models. LCA revealed two classes: ‘higher resource’ (n=495) and ‘lower resource’ (n=141). There was no significant effect of LCA group on GPA. There was no significant difference in the intervention effect on GPA by ‘higher resource’ or ‘lower resource’ groups. Conclusions: The intervention aimed at increasing school breakfast consumption did not significantly change GPA overall or by sociodemographic groupings. Further and longer term targeted intervention activities may be necessary to change GPA.

CONTENT OF TELEVISION FOOD ADVERTISEMENTS MARKETED TO CHILDREN ON SPECIALTY CHANNELS IN QUEBEC AND ONTARIO

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Purpose: Unhealthy food and beverage marketing has been associated with children’s food intake and rates of obesity. Food marketing is self-regulated by the food industry in Canada; however, in Quebec, a law prohibits advertising to children under 13 years of age. The purpose of this study was to compare food advertisements under these two approaches. Methods: Data on food/beverage advertisements broadcasted on two children’s specialty channels in Montreal (Quebec) and Toronto (Ontario) were purchased from Nielsen Media Research for May 2011 and were analyzed. The frequency and healthfulness of all food advertisements and the use of various marketing techniques was determined. Comparisons were made between both cities using non-parametric chi-square analyses. Results: There was 23% less food advertising on children’s specialty channels in Montreal compared to Toronto. Candy, cookies, portable snacks and breakfast cereals were less frequently advertised in Montreal. Food advertisements in Montreal targeted children less frequently and used fun, health, spokes-characters, and licensed characters less often. Teens were targeted more frequently in Montreal than in Toronto. The overall healthfulness of the foods being advertised did not differ between cities. Conclusions: Compared to Ontario, which employs self-regulation, the ad ban in Quebec is associated with less frequent food advertising on children’s television channels and less frequent advertising of certain foods. The existence of some advertisement targeting children despite the ban suggests that advertising in Quebec needs to be monitored systematically. Health Canada is currently working towards developing unhealthy food advertising restrictions in Canada. Effective regulations in this area is needed to protect children up to age 16, include broad definitions of marketing, and including small audience thresholds.
NON-BROADCAST ADVERTISING OF FOODS HIGH IN FAT, SUGAR AND SALT: YOUNG PEOPLE’S VIEWS AND EXPERIENCES

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Purpose - Critics argue that regulation of non-broadcast advertising for foods high in fat, sugar and salt (HFSS) offers less protection to children than regulation of broadcast advertising. This is problematic given that people use a range of media platforms. There is a lack of research engaging with young people about the changing nature of advertising for foods HFSS, particularly younger teens who are often not included in industry self-regulatory initiatives. This study sought to identify: 1) where young people experience advertising for foods HFSS; 2) their perceptions of this advertising; 3) the ways in which they believe that they are influenced by this advertising.

Methods - We interviewed 65 teenagers aged between 12-15 years living in the UK. Participants were recruited into focus groups (n=15) using snowball sampling techniques through key contacts. Young people were provided with an information sheet and those who agreed to participate were asked to recruit a group of friends to take part in a discussion. Participants were drawn from a range of social backgrounds. Groups were held in young people’s homes or within the University. Topics included: leisure time, viewing habits and the perceived impact of advertising. Participants were shown a range of broadcast and non-broadcast advertising to stimulate discussion. All discussions were audio-recorded, transcribed verbatim and thematically coded. Results - Young people reported that they rarely watched live television, and instead engaged in leisure activities that included watching programming via subscription services, and watching and socialising on digital platforms (including video websites and social media). They recalled seeing extensive advertising for foods HFSS in non-broadcast media, both on and offline. Young people reported scepticism towards the healthfulness of many advertised foods. Nonetheless they believed that they were influenced to purchase foods HFSS based on emotive techniques, such as togetherness, and were attracted to high quality advertising campaigns that made use of music, colour and humour. Conclusion - Young people experience advertising across a wide range of non-broadcast media. It attracts, frustrates and influences their purchasing habits. Regulation of non-broadcast advertising for foods HFSS must be updated to reflect new viewing practices.

MIXED-METHODS APPROACH TO AID UNDERSTANDING OF THE BRAND-CONSUMER ASSOCIATIONS AND ATTACHMENTS BETWEEN DISCRETIONARY FOOD AND DRINK BRANDS AND CHILDREN

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Objective: Controlling the marketing of discretionary foods to children is recognised as a global health priority for obesity prevention. Studies have shown that discretionary food marketing can lead to powerful and positive perceptions forming around the brand, and it has been suggested that brands developing relationships with children is a critical step towards achieving this. The study proposes to use innovative measures to explore the associations and potential attachments that children make with their favourite discretionary food brands. Methods: This mixed methods study will draw from the PhotoVoice method. Children (8-11 years, n = approx. 54) will take photos of their top five favourite food and drink brands. The researcher will collate these images, along with five images of their closest family members and friends, images of the unpackaged product, and five filler (non-food) photos, for each child. Custom-built delivery stimuli software combined with a skin conductance level will indicate the level of arousal each child experiences towards each image. From this, we will infer the level of attachment to each brand, which will be compared to their response to the family and friend images. Focus Groups of three children at a time will complete a food branding task (underway, due for completion by February 2017). In these groups children will discuss their food and drink photos to elucidate their deeper associations and interactions with the brands. Results: This paper will present the statistical arousal differences experienced by the children for each photo category using Analysis of Variance tests. The focus group data will be assessed using deductive thematic analysis. The thematic analysis expects to include themes such as: social desirability of brands, appealing marketing techniques, brand separation anxiety, and locations of brand exposure. Conclusions: The findings from this study
THE SUSTAINED IMPACT OF UNHEALTHY FOOD ADVERTISING ON CHILDREN’S DIETARY INTAKE: RESULTS FROM AN EXPERIMENTAL STUDY


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Purpose: Children continue to be exposed to significant levels of unhealthy food marketing. A key issue impeding policy change is the shortage of evidence showing direct and ongoing links between food marketing and children’s energy intake and weight. Acute exposure to food advertising on TV or online has an immediate direct effect on children's food consumption, increasing their intake of snack foods. This study investigates children's food consumption over an extended period following exposure to food advertising from one or more media sources. The study aims to explore whether short-term increases in snack intake following food advertising exposure are compensated for at a subsequent meal; and hence identify if food advertising contributes to a positive energy balance likely to contribute to childhood overweight.

Methods: Across a series of six-day holiday camps, children (aged 7-12 years, n=40/camp; final camp January 2017) were exposed to food and non-food advertising in an online game and/or a television cartoon in a randomised within-subject, cross-over design. Children's food consumption (kilojoules) was measured at a snack immediately after exposure and then at lunch later in the day. Linear mixed models analyses and t-tests were conducted to examine relationships between exposure and dietary intake, taking into account sex, age and weight status.

Results: Higher snack intake after watching food advertising was not compensated for at lunch in any condition or group (n=115). Exposure to multi-media food advertising compared with a single-media source increased the effect on snack intake (340kJ, p = 0.01). All children (irrespective of sex, age or weight status) in the multi-media condition ate more at a snack after food advertising compared with non-food advertising (182kJ, p=0.002). In the single-media condition, weight status was a moderator of the relationship between exposure to food ads and snack intake. Conclusions: The lack of compensation for children’s increased snack intake suggests that unhealthy food advertising does play a role in contributing to a positive energy-gap, which can lead to overweight. These results are an important addition to the evidence needed to continue to advocate for regulation to limit food marketing to children.

VITAL CHANGE FOR MUMS: A FEASIBILITY STUDY INVESTIGATING TAILORED VIDEO-COACHING FOR EXERCISE AND NUTRITION CARE FOR POSTPARTUM WOMEN

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Purpose: Disrupted lifestyle factors following childbirth, including inadequate physical activity and inappropriate nutrition, contribute to postpartum weight retention (PPWR). As PPWR may lead to long-term obesity and complications in subsequent pregnancies, a tailored approach addressing common barriers (eg, lack of time, childcare and support) for women at this life-stage is warranted. This study evaluated the feasibility, acceptability and preliminary efficacy of a tailored postpartum exercise and nutrition program, delivered by Accredited Practising Dietitians (APD) and Accredited Exercise Physiologists (AEP) via video-consultations. Methods: Thirty women (31.6±3.1 years, BMI 29.0±4.0 kg/m2) who were 3-12 months postpartum, had internet access, and wanted to
achieve a healthy weight (BMI ≥25 or >2kg above pre-pregnancy weight) enrolled in the 8-week study. Participants received up to five real-time consultations (2xAEP,2xAPD,1x optional AEP/APD) focused on personalised nutrition and exercise advice, conducted via a video-conferencing platform. The Australian Eating Survey food frequency questionnaire and Godin Leisure Time Exercise Questionnaire (GLTEQ) assessed dietary intake and physical activity. Results: Completers (n=27) lost a mean of 1.2±1.9kg (p≥5% weight loss and 11% (n=3) a ≥5cm waist circumference reduction. The percentage energy intake from core foods (64.3±10.5% to 76.3±8.4%, p Conclusions: Findings suggest that exercise and nutrition care delivered via video-consultations is feasible, acceptable, and achieves positive outcomes for women following childbirth. Innovations in health service delivery are required to address the growing burden of overweight and obesity in women of childbearing age and health professionals need to be equipped with modern health service delivery skills.

A MIXED METHODS PROCESS EVALUATION OF A PILOT RCT AIMED AT SUPPORTING WOMEN TO ACHIEVE HEALTHY WEIGHT GAIN DURING PREGNANCY

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Purpose: A pilot RCT conducted in Edmonton, Alberta tested the impact of "Healthy Conversation Skills" (HCS) to support behavior change, in order to optimize healthy gestational weight gain. It is argued that by utilizing three HCS – asking Open Discovery Questions (beginning What or How), listening and supporting goal-setting – practitioners are more effective at supporting individuals to make lasting changes. This presentation will describe the process evaluation. Methods: Seventy pregnant women participated (intervention=33; control=37). Women in the intervention arm attended two sessions with a dietitian trained in HCS. Control participants attended the same with a dietitian not trained in HCS. Dietitians administered a lifestyle questionnaire, 24hr recall and measured height/weight. Control participants were encouraged to ask questions throughout the study, whereas the intervention dietitian created opportunities to use HCS. Process evaluation included: i) audio-recording 8 sessions from each arm; ii) postpartum questionnaire to measure participants' views of their study experience; iii) two focus groups with a sub-sample of participants from each arm. Results: Although encouraged to ask questions, control participants had fewer conversations about diet/lifestyle. Only one conversation took place in the recorded sessions eliciting information from the dietitian. In contrast, seven of the recorded intervention sessions involved at least one conversation where the dietitian asked ODDs to explore context, listened more than spoke, and supported goal-setting. Intervention participants were more satisfied with the study (p=0.05) and more likely to agree with the statement 'the dietitian took time to ask about things that were important to me' (p=0.04). The focus groups highlighted that women in the intervention arm felt more supported in making diet/exercise changes. Conclusion: Process evaluation of this RCT suggests that providing pregnant women with access to a dietitian trained in HCS is an acceptable and potentially effective way to support lifestyle changes to optimize healthy gestational weight gain.

FIDELITY OF A MOTIVATIONAL INTERVIEWING LIFESTYLE INTERVENTION AMONG OVERWEIGHT AND OBESE PREGNANT WOMEN

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Objective: The aim of the current study was to evaluate the fidelity of motivational interviewing (MI) and to investigate whether fidelity was associated with changes in the primary outcome gestational weight gain (GWG) in a lifestyle intervention program among overweight and obese pregnant women. Indicating how a planned MI intervention was conducted is important to make a distinction between the quality of MI in studies. This is even more important when different persons delivered an intervention across many countries, as was the case in our study. Methods: Pregnant women with a BMI≥29 (kg/m²) were recruited into a randomized trial in 9 European countries. Women were randomised to one of the three intervention arms: (1) healthy eating (HE); (2) physical activity (PA); (3) healthy eating and physical activity (HE+PA). Women received five face-to-face sessions with a lifestyle coach trained in MI. Fidelity of the lifestyle coach practitioners was assessed by analyzing audio recorded counseling sessions using the MI treatment integrity scale. Associations between fidelity and GWG were assessed with linear regression analyses. Results: A random sample of 17.5% of all recorded conversations, delivered between 12 to 28 weeks of gestation, were analysed. Most counsellors showed beginning proficiency skills on the global ratings, although sufficient use of complex reflections and the percentage of asking open-ended questions compared to closed-ended questions still required attention. High variability in quality of MI between practitioners was identified. In the current study a non-significant positive association was found for the PA group regarding high fidelity and GWG (β=−3.13 kg, 95%CI=−7.0;0.8). Conclusions: Ensuring audio recording of lifestyle sessions throughout the study and providing individualized feedback to practitioners throughout the study would both increase the chances of achieving MI proficiency. Furthermore, since less GWG was a result of practitioners correctly applying MI when focusing on physical activity behavior and since this positive association was not present in the HE group, it might suggest that the skillfulness of MI is essential when focusing on changing physical activity behaviors.


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Objectives: Establishing healthful eating and physical activity habits early in life is important for the prevention of obesity and related co-morbidities in childhood and beyond. Parents play a critical role in the development of their children’s eating and physical activity habits through specific feeding and physical activity practices, role modeling and by the home environment they create. To date most research examining parental influences on children's healthful eating and physical activity behaviors has focused on mother-child, and not on father-child interactions. The purpose of this study was to expand on the limited research examining father-child interactions in this area and explore Latino fathers' perceptions of and practices related to eating, physical activity and sedentary behaviors of their preschool-aged children. Methods: Qualitative study consisting of seven focus groups with a convenience sample of 28 Latino fathers. Focus groups were audio-taped and transcribed verbatim. Data were coded and categorized into key themes using thematic analysis. Results: Approximately 82% of fathers were born outside the US: 28.6% were born in the Dominican Republic, 25% in Colombia, 14.3% in Mexico and 14.3% in Guatemala. About a third of fathers reported working part-time or being temporarily unemployed and having major child care responsibilities. Analyses revealed that Latino fathers' perceive promoting healthy eating and physical activity as parental responsibility. Nonetheless, fathers felt they had greater influence on children's physical activity than feeding behaviors. Moreover, fathers reported that mothers were mostly responsible for decisions related to children's eating and feeding routines. Although the majority of fathers spoke of wanting their preschool children to be active, they acknowledged that their own lifestyles were often sedentary, and that they engaged in sedentary
activities with their children (e.g., watching TV, playing video games). Daily life demands including conflicting working schedules for employed fathers influenced family and parenting routines related to eating and physical activity. Conclusions: Findings revealed that Latino fathers appear to be more actively engaged in physical activity than feeding practices of their children. Health promotion and parenting interventions are needed, and can address fathers' self-efficacy to promote healthy eating behaviors of their young children and model physical activity.

DADS IN GEAR: RESPONSES TO A GENDER-SENSITIVE PROGRAM THAT ENGAGES FATHERS IN IN PHYSICAL ACTIVITY TO QUIT SMOKING

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Objective: Dads in Gear (DIG) is an innovative smoking cessation (SC) program designed to support fathers by integrating SC with physical activity (PA) and competencies in fathering. The objective of this study was to examine how including PA as an integrated component of the DIG program, could support SC and improve men's confidence to be more physically active and become healthy role models for their children. Methods: The DIG program was delivered in 8 weekly sessions that included SC, PA and fathering, using strength-based masculine norms (e.g., autonomous decision-making, active engagement). Trained male facilitators were provided with a program manual and web-based resources. Data were collected at baseline (T1), post-program (T2) and 3-month follow-up (T3). The Godin-Leisure-Time questionnaire was used to measure PA and sedentary behaviour was assessed (>4 hours of sitting/day). Content analysis was used to summarize responses to open-ended questions to gather men’s feedback on DIG. Results: Thirty-one eligible fathers (X=32 years, SD 7.2) were recruited at baseline; 21 fathers completed the program. At baseline, men were smokers, except for 6 who had recently quit. 86% of fathers did not meet PA guidelines for 150 weekly minutes of moderate/vigorous physical activity (MVPA). A short term, limited effect in weekly MVPA was observed at T2 follow-up (770.46 met-mins, SD 788.84) compared to T1 (536.71 met-mins, SD 582.6, t=-1.43, p= 0.172), however, this increase was not maintained at T3 (595.93 met-min, SD 602.8). No changes in sedentary behaviour were observed. At T2, 10/21 fathers were smoke-free and 9/21 remained smoke-free at 3-month follow-up. Post-program, most fathers either agreed/strongly agreed (95%) that DIG had increased confidence to be physically active on a regular basis. In open-ended questions, fathers indicated that the PA component was an essential part of the program and supported their goals to be healthy dads. Conclusions: Although our sample size was small, thus limiting effect, the PA component was an important 'hook' that motivated participation in DIG. Overall, there was a trend toward increased PA levels during the program and confidence to engage in PA—a positive health benefit that extends to the family.

HOW ARE MEN'S ATTEMPTS TO CHANGE DIET AND PHYSICAL ACTIVITY TO MANAGE THEIR WEIGHT INFLUENCED BY COHABITING PARTNERS?


Objective: This qualitative study recruited men who had taken part in the Football Fans in Training (FFIT) weight management and healthy lifestyle programme and their cohabiting partners. It investigated how cohabiting female partners influenced men's attempts to change their diet and physical activity (PA) as advised within the FFIT programme. Previous related research revealed that men identified their female partners and other close female family members as important in supporting (or undermining) their efforts to improve their diet. This study explored this further and investigated how cohabiting female partners themselves viewed and influenced men's attempts to change both their diet and PA. Methods: Separate one-to-one, semi-structured interviews were conducted with men (n=20) who had attended FFIT 3-12 months prior to interview and their cohabiting female partners (n=20). Interviews were transcribed verbatim and analysed thematically using a systematic framework approach. Results: Women provide wide-ranging levels of practical (e.g. limiting unhealthy food in the household) and moral (e.g.
admirng their commitment to increased PA) support to help men’s weight management attempts. Both men’s and women’s accounts suggest women’s involvement and influence was greater in respect of men’s attempts to change their diet. Men appeared to expect, and women appeared to be more involved in changes related to diet rather than PA. Participants suggested this variation was influenced by expectations related to the traditionally gendered nature of food-related practices as well as, men’s/women’s work and/or family commitments, and women’s desire and ability to be involved in men’s healthier lifestyle choices. Men’s and women’s accounts also suggested that some men only needed a small amount of support, while others seemed to expect and need more involvement and hands-on support from their partners. Conclusions: Qualitative research has identified variation in partners’ support and related expectations when men attempt to change their weight-related behaviours. Greater understandings of this could inform how health interventions aimed at one family member might benefit from considering the roles others in the household play in enabling or inhibiting behavioural changes.

O.08 Socio-economic status: Links with nutrition and physical activity (Saanich 2)

SOCIOECONOMIC STATUS AND DIETARY PATTERNS IN CHILDREN FROM AROUND THE WORLD: DIFFERENT ASSOCIATIONS BY LEVELS OF COUNTRY HUMAN DEVELOPMENT?

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Purpose: The purpose of this study was to examine the relationships among dietary patterns and socio-economic status (SES) in children from around the world and explore if the relationships differed across levels of human development or levels of inequality (Gini index). We hypothesized that unhealthy dietary patterns will be associated with lower SES in high-income countries and the opposite in low-middle-income countries (i.e. a gradient will be observed). Methods: This was a multinational cross-sectional study among 9-11 year-old children (n=6808) from urban/peri-urban sites in 12 countries. Self-reported food frequency questionnaires were used to determine the children’s dietary patterns. Principal Components Analysis was employed to create two component scores representing ‘unhealthy’ (UDP) and ‘healthy’ (HDP) dietary patterns. Multilevel models accounting for clustering at the school and site level were used to examine the relationships between within-country dietary patterns and SES. Results: The mean age of participants in this study was 10.4 years (53.7% girls). The total variance in dietary patterns accounted for by the individual, site and school levels were: 62.8%; 10.8%; 26.4% for UDP and 88.9%; 3.7%; 7.4% for HDP respectively. There were significant negative UDP-SES gradients in 7 countries and positive HDP-SES gradients in 5. Compared to participants in the highest SES groups, UDP scores were significantly higher among those in the lowest within-country SES groups in 8 countries: odds ratios for Australia (2.2.69; 95% CI: 1.33 - 5.42), Canada (4.09; 95% CI: 2.02 – 8.27), Finland (2.82; 95% CI: 1.27 - 6.22), USA (4.31; 95% CI: 2.20 - 8.45), Portugal (2.09; 95% CI: 1.06 - 4.11), South Africa (2.77; 95% CI: 1.22 – 6.28), India (1.88; 95% CI: 1.12 - 3.15) and Kenya (3.35; 95% CI: 1.91 – 5.87). Conclusions: This study provides evidence of diet-SES gradients across all levels of human development and that lower within-country SES is strongly related to unhealthy dietary patterns. Consistency in within-country diet-SES gradients suggest that interventions and public health strategies aimed at improving dietary patterns among children may be similarly employed globally. However, future studies should seek to replicate these findings in more representative samples extended to include rural representation.

THE STRUGGLE IS REAL: FOOD INSECURITY AFFECTS NUTRITION, PHYSICAL ACTIVITY, AND HEALTH OUTCOMES OVERTIME AMONG DIVERSE UNIVERSITY STUDENTS

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Purpose: Numerous international studies have examined cross-sectional correlates of food insecurity (FI) among post-secondary students. This analysis examined effects of FI on nutrition and health outcomes longitudinally among a large, diverse sample of university freshmen. Methods: Freshman students (n=1135; 65.1% female; 50.7%
white) participating in the SPARC (Social impact of Physical Activity and nutRitio in College) study completed surveys reporting health behaviors up to 4 times (T1-T4) during the 2015-2016 academic year. To determine if current FI significantly predicted health behavior, beyond the previous behavior level, logistic regressions adjusted for the behavior level at the previous time, gender, race/ethnicity, Pell grant status and clustering within dormitories were examined. Results/findings: FI increased during each semester (starting at 28% and 32%, respectively; ending at 35% and 36%, respectively). Cross-sectional analyses showed FI was significantly associated with lower breakfast (T1-T4) and evening meal consumption (T1-T4), perceived healthy eating on campus (T1-T3), and physical activity on and off campus (T1 and T2), and also higher stress (T1-T4), depression (T1-T4), anxiety (T1-T3), not sleeping enough (T1-T4), waking up tired (T1-T3). Longitudinal models showed that after adjusting for previous behavior, at all time points, FI participants were still less likely to consume an evening meal (ORs=0.29-0.61, p Conclusions: FI rates remained extraordinarily high across the year for participants. FI was related to poorer nutrition, mental health, sleep, physical activity behaviors, even after adjusting for prior levels of behavior. Effective interventions are needed to support at-risk young people struggling with FI.

ACTIVEASSIST: A QUALITATIVE EVALUATION OF A PHYSICAL ACTIVITY AND RECREATION FEE ASSISTANCE PROGRAM FOR INDIVIDUALS IN LOW INCOME
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Background: Multiple barriers limit access to physical activity and recreation programming among individuals living in low income, and a need exists for evaluations of programs and policies that may improve inclusion and access to physical activity and recreation opportunities. In 2009, the City of Mississauga (COM) launched Active Assist, which provides a credit of $275 that can be used to register in physical activity and recreation programs for individuals living in low income. The purpose of this project was to examine the benefits and challenges of the Active Assist program for individuals living in low income, and to identify strategies for program improvement. Methods: 24 individuals (M age = 39.5 years; 7 men, 16 women, 1 preferred not to identify gender) registered with the Active Assist program participated in individual semi-structured interviews. Participants were asked questions regarding their perceptions of the benefits and challenges in accessing physical activity and recreation programming using the Active Assist program. Data were inductively analyzed using thematic analysis. Results: Participants reported various benefits associated with the Active Assist program including: (1) affordable access to physical activity and recreation, (2) community involvement and personal benefits, (3) opportunities for inclusion and participation among immigrants and newcomers to Canada, and (4) physical and social benefits for children. Participants reported several barriers that hindered their participation in physical activity and recreation, and suggestions for improvement of the Active Assist program included more flexible credit use, increasing credit amounts for children in summer camp programs, and a streamlined application process. Conclusions: Active Assist appears to be an effective mechanism for engaging families living in low income in physical activity and recreation programming. Suggestions for implementing and evaluating fee assistance programs are considered in relation to national physical activity and recreation frameworks and guidelines. Acknowledgements: This research was supported by funding from the Province of Ontario – Local Poverty Reduction Fund. The researchers would like to thank Jennifer Cowie Bonne and Kristina Zietsma from the City of Mississauga for their assistance with this project. Keywords: program evaluation, low income, physical activity, fee assistance program

DOES TAILORING ON ETHNIC IDENTITY IMPROVE THE EFFICACY OF A COMPUTER-TAILORED DIETARY AND PHYSICAL ACTIVITY INTERVENTION FOR LOW SES WOMEN WITH DIFFERENT ETHNIC BACKGROUNDS?
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Objective: Promotion of healthy dietary and physical activity behaviors among people with a lower socio-economic status (LSES) is an important public health challenge. We developed a print-delivered computer-tailored dietary (snack, fruit and vegetables intake) and physical activity promotion intervention for LSES women with different ethnic backgrounds (Dutch, Turkish and Moroccan). The intervention focused on improving awareness of one’s own
behavior, attitude, subjective norm, self-efficacy, action and coping planning and evaluation of goal achievement. A second version of the intervention was in addition tailored to ethnic identity, to make the information more appealing for the target group. The aim of the study was to assess the short and long term effects of both versions of the intervention. Methods: A three group (two intervention and a control group) randomized controlled trial was conducted, with measurements at baseline, one, three and nine months post-baseline. Dutch, Turkish and Moroccan LSES women were recruited through multiple recruitment channels. Self-reported physical activity, snack, fruit and vegetable intake was assessed at all measurement points. Repeated measures analyses were conducted to assess group differences in the target behaviors at the various time points. Results: A total of 921 women (497 Dutch; 324 Turkish and Moroccan) started with the study and 575 women completed it (414 Dutch; 161 Turkish and Moroccan). Mean age was 42 (SD 12). Preliminary analyses on number of days engaged in a behavior resulted in significant time effects in the desired direction. There was a significant group*time interaction effect for snack intake, indicating that exposure to the basic intervention resulted in a higher reduction in number of days on which snacks were eaten as compared to the control group. The intervention materials were highly appreciated, with better appreciation scores for individualization and personal relevance for the two intervention versions. Results of the more elaborate analyses will be presented during the meeting. Conclusions: It is feasible to develop and implement a computer-tailored intervention for LSES women with different ethnic backgrounds, but it was difficult to retain the women with a Turkish or Moroccan background in the study. Preliminary analyses show good prospects for intervention efficacy.

PROSPECTIVE ASSOCIATIONS BETWEEN DIET QUALITY AND BMI IN DISADVANTAGED WOMEN: THE RESILIENCE FOR EATING AND ACTIVITY DESPITE INEQUALITY (READI) STUDY
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Purpose: Dietary patterns that align with recommended guidelines appear to minimize long-term weight gain in the general population, however prospective associations between diet quality and weight change in disadvantaged groups have not been examined. This prospective study examined associations between concurrent change in diet quality and body mass index (BMI) over 5 years amongst women living in socioeconomically disadvantaged neighbourhoods. Methods: Dietary intake and BMI were self-reported amongst 1242 randomly selected women living in disadvantaged neighbourhoods in Victoria, Australia at three time points from 2007/08 - 2012/13. Diet quality was evaluated using the validated Australian Dietary Guideline Index (DGI), which reflects adherence to the Dietary Guidelines for Australian Adults. Scores from 0-10 were assigned for 12 indicators, thus total DGI scores could range from 0-120. Higher scores reflect better diet quality. Associations between concurrent change in diet quality and BMI were assessed over the three time points using fixed effects and mixed models, and their effect estimates were compared. Models were adjusted for age, smoking, menopausal status, education, marital status, number of births, urban/rural location, and physical activity. Results: Mean DGI scores increased from 83.1 to 85.4. Average BMI increased by 0.14 kg/m2 per year increase in age in the fixed effects model, and by 0.13 kg/m2 in the mixed model (p<0.001). The rate of change in BMI with age was marginally greater for those with a lower DGI score than for those with a higher score (p Conclusion: Positive change in diet quality consistent with the recommendations in the Dietary Guidelines for Australians is associated with reduced BMI amongst disadvantaged women. The interaction between age and DGI score suggests that those with lower quality diets may derive slightly greater weight-related benefits from further improvements, relative to those with higher quality diets. Thus, supporting disadvantaged women to adhere to population-level dietary recommendations may assist them with long-term weight management.

IMPROVING SHOPPING AND BUDGETING BEHAVIOURS FOR HEALTHIER DIETS ON A BUDGET
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Objective Consumption of healthier diets is encouraged by public health initiatives and clinicians. However, there can be a perception that healthier foods (e.g. fruits, vegetables, seafood, olive oil and nuts) are expensive. Good budgeting skills could be helpful in provisioning for a healthy diet, given some populations have very low grocery budgets. This study contributes to the yet under-researched area of assessing and improving consumer skills in budgeting and smart shopping. Using secondary outcomes data collected in a randomised controlled trial, this study tests the efficacy of education sessions designed to improve shopping and budgeting knowledge and consumer ability to provision healthier foods on a budget. Method Adults with self-reported depression aged 18-65 years (N=163) were randomly assigned to a dietary intervention, receiving 4 fortnightly cooking workshops, nutrition education and education on shopping budgeting, or fortnightly social groups as a control. This paper reports on data regarding shopping and budgeting knowledge in the dietary arm (n=75) compared to controls (n=59). The sessions covered tips for buying healthy foods on a budget: using unit prices in supermarkets, not getting caught by price promotions, using shopping lists, shopping around, and eating home-cooked meals. Knowledge about shopping and budgeting was evaluated using a purpose-designed questionnaire of 14 statements (analysed as one measure) and a 0-10 point agreement scale. Adherence to target behaviours was assessed using self-reports. Responses were compared between the treatment and control groups using linear mixed modelling from baseline to 3 months (after the intervention), and 3-6 months (maintenance). Results After the intervention, the treatment group had better knowledge of smart budgeting and shopping techniques than the control group (significant improvement in individual items and the aggregated measure by 0.45+/-.0.1 scale point, p=.015). The treatment group also reported higher frequency of using unit prices (by 1.3+/-.3 scale point, p=.003) and 17.4% more consumers were writing shopping lists before shopping (p=.018). These behaviours were maintained after 6 months. Conclusions Shopping and budgeting education sessions may improve consumers' ability to provision healthy foods, helping to sustain healthier diets in the longer term.

Jun 09, 15:15 - 16:30: Oral Presentation

O.09 Physical activity and dietary interventions in adults (Salon B)

PHYSICAL ACTIVITY PREVALENCE IN CHILDREN DEPENDS ON OUR METHODOLOGY: FINDINGS FROM THE HEALTHY LIFESTYLES PROGRAMME (HELP)
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Purpose: The use of wrist versus waist-worn accelerometry to assess children's physical activity (PA) has been hypothesised to increase wear-time. When wear time is Methodology: Data was collected at the baseline of the Healthy Lifestyles Programme (HeLP) trial. 886 children were randomised to wear a GENEActiv accelerometer on their non-dominant wrist for a period of 8 days. Data was analysed in R using the GGIR package. The percentage of children complying with a minimum (≥10hours for ≥ 4 days including 1 weekend day) and two extended wear time criteria (≥10 hours for 7 days; ≥16 hours for 7 days) were calculated. Percentage of children achieving an average of ≥60minutes of MVPA per day and ≥60minutes of MVPA on each of 7-days was calculated for those children achieving ≥10 hours for 7 days. Results: 851 children had useable data. Of those 97.5% (n=830) met the minimum wear criteria; 94.8% (n=807) achieved ≥10 hours for 7 days; 92.7% (n=789) met the ≥16 hours for 7 days criteria. In the children who complied with ≥10 hours for 7 consecutive days only 3.2% (n=26) accumulated ≥60 minutes of MVPA on each day of the week. In contrast when the average MVPA per day was calculated, 30.6% (n=247) of children accumulated ≥60 minutes of MVPA per day. Conclusions: High compliance with wrist worn accelerometers can be achieved in children, which in turn allows for a more accurate estimation of whether children meet PA recommendations. Previous studies utilising average MVPA per day are likely to have overestimated the percentage of children meeting recommendations.

HARNESSING RECREATION INFRASTRUCTURE TO INCREASE PHYSICAL ACTIVITY - THE MOVE FRANKSTON TRIAL
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Objective The neighbourhood environment, including the availability of infrastructure for walking and leisure, has been found to be associated with physical activity. There is, however, little longitudinal evidence about the impact of new recreational facilities upon population levels of physical activity. The MOVE Frankston trial investigated the effect of a new multipurpose aquatic and leisure facility upon physical activity in the community over 12 months, and tested whether supplementary incentives and marketing strategies improved facility usage. Methods A community-based randomised controlled trial was conducted. A random sample of 1320 inactive residents from Frankston City was recruited (60% female, mean age 52 years). These were randomised to control (exposure to the new facility only), minimal intervention (single incentive), or expanded intervention (incentive plus mailed materials) groups. The validated Exercise Recreation and Sports Survey and measures of social and cognitive determinants of activity were used to assess outcomes after 12 months. Analysis was undertaken using bivariate tests (Chi-square) and multivariable modelling. Results The follow-up rate at 12 months was 70.3%. Persons in the minimal (37.3%) and expanded (32.7%) intervention groups were more likely than controls (24.9%, p Conclusions The provision of minimal incentives can increase the proportion of inactive people who make occasional visits to new leisure facilities. Around 1 in 20 inactive people will become regular users through exposure to the facility alone, and incentives and mailed information does not appear to significantly improve this. Focused effort to contact and support trial users, and address major barriers they face, could lead to higher rates of regular attendance.

**HOCKEY FANS IN TRAINING CAN LEAD TO LONG-TERM WEIGHT LOSS IN OVERWEIGHT AND OBESE MEN**

**Petrella RJ**, 1,2, Gill Dp1,2, De Cruz A1,2, Riggin B1, Bartol C1,2, Pulford R1,2, Blunt W1,2, Zou Gy1,3, Hunt K4,5, Wyke S5, Gray Cm5, Bunn C5, Danylichuk K1, Zwarenstein M1,2. 1Western University, London, ON; 2Lawson Health Research Institute, London, ON; 3Robarts Research Institute, London, ON; 4MRC/CSO Social and Public Health Sciences Unit, Glasgow; 5University of Glasgow, Glasgow.

Objective: To examine the potential impact of Hockey Fans in Training (Hockey FIT), a weight loss and healthy lifestyle program designed to work with masculine ideals, on long-term weight loss and improvement in other health indicators. Methods: We conducted a pilot pragmatic randomized controlled trial in 80 men (35 to 65 years; BMI ≥28 kg/m2) from two cities in Ontario, Canada. We used the affiliation of being a fan of local junior hockey teams to engage men who were randomized (1:1) to intervention (Hockey FIT) or comparator (wait-list control). Hockey FIT consisted of a 12-week active phase (weekly 90-minute sessions involving classroom education on behaviour change techniques, physical activity, and healthy eating, plus exercise sessions) and a 40-week minimally supported maintenance phase (smartphone app for sustaining physical activity; private social network for group members only; standardized emails; booster session/reunion). Measurement occurred at baseline (T0), 12 weeks (T1) and 12 months (T2; intervention only) and included objective measurements of weight, body-mass index (BMI), waist circumference (WC), and blood pressure (BP). Linear mixed models for repeated measurements adjusted for age and site were used to examine mean changes within the intervention group. Interpretation of results is based on estimation and 95% confidence intervals (CI). Results: Within the intervention group, 82.5% of men attended T1 measurement sessions and 75.0% of men attended T2 measurement sessions. Mean changes (95% CIs) were as follows – (1) weight (kg), T0 to T1: -4.44 (-5.63, -3.25) and T0 to T2: -3.96 (-6.37, -1.56); (2) BMI (kg/m2), T0 to T1: -1.39 (-1.75, -1.02) and T0 to T2: -1.21 (-1.93, -0.48); (3) WC (cm), T0 to T1: -3.96 (-5.58, -2.35) and T0 to T2: -3.73 (-5.70, -1.75); (4) systolic BP (mmHg), T0 to T1: -10.00 (-14.38, -5.62) and T0 to T2: -13.96 (-20.01, -7.91); and (5) diastolic BP (mmHg), T0 to T1: -5.45 (-8.70, -2.19) and T1 to T2: -8.62 (-12.03, -5.21). Conclusions: Hockey FIT is an innovative program that engages overweight and obese men through the power of sport and helps them maintain long-term behavioural lifestyle change leading to weight loss and reductions in BMI, WC, and BP.
Objective: Receiving objective feedback on physical activity (PA), weight and other indicators of health risk may influence behaviour change. However, the ways in which men respond to objective feedback is not well understood. The aim of this qualitative study is to understand men’s responses to receiving information on PA and additional indicators of health risk, before and after taking part in Football Fans in Training (FFIT), a 12-week, gender-sensitised group weight loss programme, delivered via Scottish Professional Football League clubs to overweight/obese men. Methods: Semi-structured telephone interviews (n=28) were conducted with participants post-programme, purposively sampled to compare men who did and did not achieve ≥5% weight loss. Data were analysed thematically and interpreted through the lens of Self-Determination Theory. Results: Men’s reactions to objective feedback varied depending on whether the information was supportive of basic ‘needs’ (for autonomy, competence and relatedness) defined by SDT as crucial for optimal motivation and wellbeing. Some men were apprehensive about receiving information before the programme which confirmed their overweight status and/or elevated health risk, undermining feelings of competence/self-worth. The setting (professional football club) and the people (trained fieldworkers; other men ‘like them’) facilitated relatedness, ensuring men felt comfortable in an otherwise potentially embarrassing/threatening situation. Men who achieved greater weight loss were more likely to report being motivated as a consequence of receiving feedback pre-programme. Men who could interpret post-programme feedback and were successful in achieving weight loss during the 12-weeks were most positive about feedback. However, men who did not achieve ≥5% weight loss were unenthusiastic, experiencing feedback as further confirmation of their lack of success. Some struggled to make sense of the information, perceiving it as too complex. For these men, feedback was not viewed as useful. Conclusions: These findings highlight the importance of communicating sensitive information to overweight/obese men in environments that hold intrinsic value and are congruent with their identities. Providing feedback on changes in PA and other health risk indicators may facilitate maintenance of behaviour change for those who are successful but undermine motivation for those who are not. To be useful, information must be presented simply.

HOW DO MEN SUSTAIN LONG TERM WEIGHT LOSS FOLLOWING A WEIGHT MANAGEMENT PROGRAMME DELIVERED THROUGH PROFESSIONAL FOOTBALL CLUBS?

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Purpose: Understanding what works for maintenance of weight loss is crucial if weight management programmes are to impact public health. Football Fans in Training (FFIT) is a weight management and healthy living programme for men aged 35-65 with BMI ≥28. In a 3.5-year follow up of participants in a randomised controlled trial (RCT) of FFIT, 32.0% sustained ≥5% weight loss. The current study aimed to investigate the factors involved in, and men’s experiences of, maintaining weight loss long term. Methods: A mixed methods longitudinal cohort study of 488/747 RCT participants to assess behavioural, psychological, theory-based and practical mediators of 3.5-year weight change; and thematic analysis of qualitative interviews with 70 participants, purposively selected to reflect varied success in long term weight control. Results: Increases in self-reported physical activity (PA) and fruit and vegetable intake; reductions in sitting time, fatty and sugary food intake and portion sizes; and improvements in positive affect, physical health-related quality of life and self-esteem, were associated with better 3.5-year weight outcomes. Self-determination theory constructs of autonomy, internalised locus of control and perceived competence for PA and diet, and relatedness to other participants and family members, as well as self-monitoring of weight and routinisation of PA, meal times and dietary restraint, were also associated with lower weight at 3.5 years. Many interviewees reported PA as important for weight control, and walking remained a popular way of incorporating PA into daily routines. Common dietary strategies at 3.5 years included watching portion sizes and eating fewer unhealthy snacks. Some men also described a process of internalization of regulation of PA and eating: many reported how other people, the benefits of a leading healthier lifestyle, enjoying PA/healthy eating, and doing things that were personally important, motivated them to continue to control their weight. However, only those who were successful in long term weight control reported a changed view of themselves. Conclusions: Interventions should promote: incorporation of PA into daily routine (e.g., by walking); dietary restraint; continued self-monitoring of weight; and internalisation of regulation (control) of PA and dietary behaviours to support sustained
weight loss long term.

THE IMPACT OF HOCKEY FANS IN TRAINING ON LONG-TERM MAINTENANCE OF HEALTHY EATING BEHAVIOURS IN OVERWEIGHT AND OBESE MEN

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Purpose: To examine whether Hockey Fans in Training (Hockey FIT), a gender-sensitized weight loss and healthy lifestyle program, can lead to long-term changes in healthy eating behaviours in overweight and obese men.

Methods: We conducted a pilot pragmatic randomized controlled trial (RCT) in two sites in Ontario, Canada where 80 male fans of local junior hockey (35-65 years; BMI ≥28 kg/m2) were randomized (1:1) to intervention (Hockey FIT) or comparator (wait-list control). Hockey FIT consisted of a 12-week active phase (weekly 90-minute sessions including education on behaviour change techniques, physical activity (PA), and healthy eating, plus group-based dry-land exercises) and a 40-week minimally supported maintenance phase (smartphone app for sustaining PA; private social network for group members only; standardized emails; booster session/reunion). Measurements at baseline (T0), 12 weeks (T1) and 12 months (T2; intervention only) included self-administered diet questionnaires (Starting the Conversation [STC]; Modified Dietary Instrument for Nutrition Education [DINE]). Linear mixed models for repeated measurements adjusted by age and site were used for continuous outcomes to examine mean changes within the intervention group. McNemar’s test was used for dichotomous outcomes to examine change in proportions. Results: 82.5% of the intervention group completed T1 measurements and 75.0% completed T2 measurements. Within the intervention group, mean changes (95% confidence interval, CI) were as follows – (1) STC healthful eating score (range 0-16; lower=more healthful eating), T0 to T1: -3.12 (-3.89, -2.35) and T0 to T2: -2.47 (-3.34, -1.60); and (2) DINE fatty food score (range 8-68; lower=less fatty food consumption), T0 to T1: -3.05 (-5.07, -1.02) and T0 to T2: -2.31 (-4.48, -0.14). The proportion of men within the intervention group consuming fruit and vegetables ≥3 times/day was 27.5% at T0 compared to 72.7% at T1 (p Conclusions: Hockey FIT is a novel weight loss and healthy lifestyle program designed to engage hard-to-reach men at high risk of chronic disease through the power of sport affiliation. Findings from this pilot RCT suggest that Hockey FIT can lead to long-term maintenance of healthy eating behaviours in overweight and obese men.

A NOVEL INTERVENTION TO INCREASE PHYSICAL ACTIVITY AND MOTIVATION IN PHYSICAL EDUCATION: THE SELF-FIT CLUSTER RANDOMIZED CONTROLLED TRIAL

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Purpose: Research has shown that students’ moderate-to-vigorous physical activity (MVPA) levels during school physical education (PE) are low. Although high intensity activities (i.e., fitness infusion) can be easily integrated into PE lessons, students are likely to view such activities as unenjoyable and aversive. The purpose of this study was to test the efficacy of an intervention based on self-determination theory (SDT) using "fitness dice" to incorporate game play elements into fitness exercises. Methods: The effects of the intervention on students' MVPA during PE and motivation were examined using a clustered randomized controlled trial. Participants (N = 826) were Grade 8 students from 26 secondary schools. The primary outcome was participants' MVPA during PE lessons assessed using Actigraph accelerometers. Secondary outcomes included student-reported autonomous and controlled motivation for PE. After baseline measures were taken, schools were randomized into either an experimental or a wait-list control group. PE teachers in the experimental group were trained to use more need supportive teaching behaviors, and were asked to insert a 20-minute activity within PE using the dice. At follow-up, students' MVPA and motivational outcomes were measured again. Multilevel modeling analyses were used to account for the clustered
equipped one classroom in a government secondary school with 27 height adjustable desks (WC), EE, and perceptions of musculoskeletal health. Methods This quasi-experimental pilot study was conducted to examine associations between each day of data collection for the outcomes of interest (MPA and VPA). Intervention effects were examined using linear mixed models. To determine evidence of a change in overall physical activity (i.e. compensation), multilevel linear regression models were conducted to examine associations between each day of data collection for the outcomes of interest (MPA and VPA). Results: Participants randomized to HIIT significantly increased MPA (5.08 min, 95%CI 0.74-9.42; p=0.039) and VPA (2.39 min, 95%CI 0.13-4.66; p=0.039) in comparison to baseline, representing a moderate intervention effect for VPA (d=0.55). MPA and VPA were higher on the first HIIT day compared to baseline school days and PE days. No evidence of a difference in MPA or VPA for other HIIT days compared to baseline days (PE/sport/usual school day) was observed. Conclusions: The inclusion of HIIT within the school-day had a moderate effect on VPA. HIIT was effective for significantly increasing overall MPA and VPA on intervention day one. However, no evidence of a difference between the remaining HIIT and baseline days was observed, indicating compensatory behavior. Further research examining larger samples sizes is needed to confirm these findings.

EXPLORING THE IMPACT OF HIGH INTENSITY INTERVAL TRAINING ON ADOLESCENTS' OBJECTIVELY MEASURED PHYSICAL ACTIVITY: FINDINGS FROM A RANDOMIZED CONTROLLED TRIAL

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Objective: Dose-response evidence suggests participating in vigorous physical activity (VPA) has extensive health benefits for young people. The inclusion of High Intensity Interval Training (HIIT) within the school day may be an effective way for adolescents to accumulate VPA. However, it is unknown how HIIT contributes to overall physical activity. The primary aim of this study was to explore the impact of a school-based HIIT intervention on adolescents' objectively-measured physical activity. The secondary aim was to explore within-individual changes in physical activity in response to participating in HIIT (i.e., activity compensation). Methods: Participants (mean age=15.8(0.6)) were randomized into a HIIT group (AEP(n=21) or RAP(n=22)), or control group (n=22). Intervention groups participated in three HIIT sessions/week during PE lessons/lunchtime. Objective physical activity was assessed (GENEActive accelerometers) at baseline and in the first week of the intervention to detect changes in moderate physical activity (MPA) and VPA. Intervention effects were examined using linear mixed models. To determine evidence of a change in overall physical activity (i.e. compensation), multilevel linear regression models were conducted to examine associations between each day of data collection for the outcomes of interest (MPA and VPA). Results: Participants randomized to HIIT significantly increased their MPA (5.30 min, 95%CI 1.76-8.83; p=0.004) and VPA (2.39 min, 95%CI 0.13-4.66; p=0.039) in comparison to baseline, representing a moderate intervention effect for VPA (d=0.55). MPA and VPA were higher on the first HIIT day compared to baseline school days and PE days. No evidence of a difference in MPA or VPA for other HIIT days compared to baseline days (PE/sport/usual school day) was observed. Conclusions: The inclusion of HIIT within the school-day had a moderate effect on VPA. HIIT was effective for significantly increasing overall MPA and VPA on intervention day one. However, no evidence of a difference between the remaining HIIT and baseline days was observed, indicating compensatory behavior. Further research examining larger samples sizes is needed to confirm these findings.

HEIGHT-ADJUSTABLE DESKS IN SECONDARY SCHOOLS: IMPACT ON ENERGY EXPENDITURE, ADIPOSEITY AND PERCEIVED MUSCULOSKELETAL DISCOMFORT.

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During school hours, adolescents spent large amounts of time sitting (=80%). Although reducing/breaking up sitting time using height-adjustable desks have shown positive effects on classroom energy expenditure (EE), adiposity and musculoskeletal health among children, the impact of these desks on adolescents' health has not yet been studied. Objective The aim of this study was to investigate the effects of height adjustable desks into classroom, accompanied by messages encouraging breaking-up sitting on adolescents' body mass index (BMI), waist circumference (WC), EE, and perceptions of musculoskeletal health. Methods This quasi-experimental pilot study equipped one classroom in a government secondary school with 27 height-adjustable desks and posters displaying...
information about the impact of break-up sitting on health and how often to break up sitting while in class. In addition, intervention teachers assisted to a professional development session. Participants included 55 adolescents and their teachers (n=3) who used the intervention classroom at least 2-5 times per week and 50 adolescents and their teachers (n=4) who used traditional 'seated' classrooms, matched on year level and subject. All measurements were taken at three time points: baseline before the desks were installed, at 4 weeks and at 17 weeks follow-up. EE (kcal/min) was objectively assessed for five school-days using a SenseWear wireless activity monitor (Body media, Inc., Pittsburgh). BMI and WC were assessed by trained research staff. Musculoskeletal discomfort was self-reported. Hierarchical linear and multilevel logistic regression mixed models were used to examine intervention effects. All models were adjusted for baseline values, sex and age. Results Compared to the control group, the intervention group had significantly: a) higher EE at 4 weeks (29.4 kcal/lesson) and at 17 weeks (37.68 kcal/lesson); b) lower WC at (-3.53 cm) and at 17 weeks (-2.64 cm) and c) higher BMI at 4 weeks. No intervention effects on BMI and no musculoskeletal discomfort were found at week 17. Conclusions The height-adjustable desks and messages encouraging breaking-up sitting did significantly increase classroom EE and may reduce WC, suggesting that these strategies over the long term may result in health benefits. The desks did not negatively impact on adolescents’ perceived musculoskeletal discomfort.

EXAMINING THE IMPACT OF A PROVINCE-WIDE SECONDARY SCHOOL PHYSICAL EDUCATION (PE) POLICY ON STUDENT PHYSICAL ACTIVITY AS A NATURAL EXPERIMENT. 
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Objectives To examine the impact of a province-wide physical education (PE) policy on secondary school students’ moderate to vigorous physical activity (MVPA). Methods Policy: In fall 2008, Manitoba expanded a policy requiring a PE credit for students in grades 11 and 12 for the first time in Canada. The PE curriculum requires grades 11 and 12 students to complete a minimum of 55 hours (50% of course hours) in MVPA (e.g., ≥30 minutes/day of MVPA on ≥5 days/week) during a 5-month semester to achieve the course credit. Study Designs: A natural experimental study was designed using two sub-studies: 1) quasi-experimental pre-post analysis of self-reported MVPA data obtained from census data in intervention and comparison [Prince Edward Island (PEI)] provinces in 2008 (n= 33,619 in Manitoba and n= 2,258 in PEI) and 2012 (n= 41,169 in Manitoba and n= 4,942 in PEI); and, 2) annual objectively measured MVPA in cohorts of secondary students in intervention (n= 447) and comparison (Alberta; n= 224) provinces over 4 years (2008 to 2011). Analysis: In Study 1, two logistic regressions were conducted to model the odds that students accumulated: i) ≥30 minutes/day of MVPA, and ii) met the recommended ≥60 minutes/day of MVPA, in Manitoba versus PEI after adjusting for grade, sex, and BMI. In Study 2, a mixed effects model was used to assess students’ minutes of MVPA per day per semester in Manitoba and Alberta, adjusting for age, sex, BMI, school location and school SES. Results In Study 1, no significant differences were observed in students achieving ≥30 (OR:1.13, 95%CI:0.92,1.39) or ≥60 minutes per day of MVPA (OR:0.92, 95%CI: 0.78, 1.07) from baseline to follow-up between Manitoba and PEI. In Study 2, no significant policy effect on students’ MVPA trajectories from baseline to last follow-up were observed between Manitoba and Alberta overall (-1.52, 95%CI:-3.47,0.42), or by age, sex, BMI, school location, and school SES. Conclusions The Manitoba policy mandating PE in grades 11 and 12 had no effect on student MVPA overall or by key student or school characteristics. However, findings can provide evidence about policy features that may inform future PE policies.

THE FEASIBILITY AND ACCEPTABILITY OF PLAN-A, A SCHOOL-BASED PEER-LED PHYSICAL ACTIVITY INTERVENTION FOR ADOLESCENT GIRLS IN ENGLISH SECONDARY SCHOOLS
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Purpose: To evaluate the feasibility and acceptability of PLAN-A, a new school-based Peer-Led physical Activity iNtervention for Adolescent girls in English secondary schools. Methods: A cluster-randomised feasibility study in six schools (4 intervention, 2 control) with 427 girls aged 12-13 years. The intervention consists of girls nominating
influential female peers in their school year. Nominees (~18% of year group) are trained for three days to be peer-supporters (focusing on empowerment, physical activity knowledge and interpersonal skills). Peer-supporters informally diffuse messages to support physical activity in their peer network for ten weeks. Data provision rates, recruitment of pupils, trainers and peer-supporters, intervention delivery and acceptability, evidence of promise to influence physical activity and estimated intervention cost were assessed. Accelerometer and psychosocial measures were taken pre-randomisation (T0), immediately after the intervention (T1) and 1 year after baseline (T2) and were analysed descriptively. A mixed-methods process evaluation was undertaken with peer-supporters, trainers, non-peer-supporters, parents and school contacts. Results: 95% of eligible participants were recruited (N = 427) and 395 (93%) were retained at T2. The target proportion of peer-supporters (n = 55) was recruited in each school (M [SD] = 20% [2.97%]) and 94% attended all three training days. Peer-supporter training was delivered as planned and with high fidelity. Peer-supporters reported enjoying the training (3.8/5), gaining new physical activity knowledge (3.6/4) and confidence to peer-support (3.3/4). Trainers were supportive and inclusive. Diffusion of PA support was mixed; some peer-supporters and parents reported positive encouragement but others reported barriers such as fearing not being listened to. Suggested intervention refinements included more interactive learning, advice on starting conversations and being persuasive. Questionnaire data provision was high (T0 = 99%; T1 = 94%; T2 = 90%) and accelerometer return rates (provision of two valid days) were 97% (84%), 91% (71%) and 90% (62%) at T0, T1 and T2 respectively. Data analysis to estimate evidence of promise will be conducted in December and presented in this session. Discussion: PLAN-A is an acceptable intervention and the research needed to evaluate it is feasible. Refinements to the intervention were identified. The potential for a definitive trial will be discussed.

6596:

PROCESS EVALUATION METHODOLOGY IN THE GIRLS ACTIVE RANDOMISED CONTROLLED TRIAL: EXPERIENCES FROM THE RESEARCHERS AND STAKEHOLDERS

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Purpose: The Girls Active programme, developed and delivered by the Youth Sport Trust (YST), was evaluated through a randomised controlled trial for effectiveness and cost-effectiveness in 10 intervention and 10 control schools and 1753 girls. PE teachers were provided with training, resources and funding to enable peer leaders (girls aged 11 – 14) to drive changes to girls’ physical activity provision within schools. We will outline the process evaluation methodology and how stakeholders refined this. We will also present the process evaluation data and how this could be used to inform and guide the future direction of school-based PA programmes. Methods: Process evaluation methods consisted of a mixture of training evaluation forms, interviews with the training deliverers, observations of training and peer sharing days, attendance logs, interviews with all teachers (n = 18) and YST staff at two time points and focus groups with peer leaders and a sample of girls (9 groups each) and boys (6 groups) within intervention schools. Results: Stakeholders suggested numerous additions to the methodology e.g., capturing the impact of the intervention on boys. Data showed that the training and resources were well received but involving peer leaders earlier on in the process and more personalised case studies was recommended. Facilitators to delivery included the personalised, in-person support from YST, senior school staff, peer support from teachers at other local schools and use of the student voice to generate strategies. ‘Being part of something bigger’ with other schools and the University gave Girls Active extra status. Barriers included lack of time, conflict with other timetabled and extra-curricular priorities and lack of support within their school. Money was not a significant barrier to implementation as some teachers actively did not spend any, or much, of the funding received. Boys were interested in the Girls Active opportunities and many teachers planned to apply some of the strategies to boys. Conclusions: The detailed process evaluation enabled us to understand the delivery of the intervention in each school and identify facilitators and barriers to implementation. This can be used to inform the future development of school-based programmes.

703

O.11 Dietary and physical activity interventions (Oak Bay 1 & 2)
THE CHALLENGES OF USING SOCIAL THEORY TO UNDERPIN DIETARY INTERVENTIONS

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Purpose: Behavioural approaches to designing dietary interventions can over-emphasize the role of reasoned, individual decision-making, neglecting contextual factors, resulting in sub-optimal interventions. This presentation critically analyses the utility of social theory (structuration theory) in the design of dietary interventions. Methods: This study uses the example of designing, implementing and evaluating a school-based dietary intervention underpinned by structuration theory. Structuration theory describes the interplay of societal structures and individual agency that result in social practices and patterns. Qualitative data collected with children (n=124), parents (n=17) and teachers (n=8) were analysed identifying key structures (meanings and normative rules, and resources) as a framework to understand dietary practices. Identified rules and resources provided a basis on which to design an intervention. A process evaluation included interviews with school staff (n=4) and baseline and follow-up data collected from children (n=137). No feedback was returned from parents. The process evaluation examined adherence, fidelity, and acceptability, and provided an indication of effect. Results: Key rules and resources identified in qualitative work were valuing food cooked by family members, cooking inexperience, food misconceptions and rules, lack of food vocabulary, home food provision, school meal and drink provision, curriculum, teacher training, school funding, and national legislation. These findings were translated into an intervention that provided water bottles and water, classroom-based teaching around the curriculum that incorporated the development of cooking skills, a food vocabulary, homework exercises, and teacher training. Areas that could not be addressed included home food provision, school meal provision, school funding and national legislation. The intervention was acceptable to children and largely acceptable to teachers, but timing pressures meant not all exercises could be covered. Improvements were reported around children's drinks. Conclusions: Intervention components were largely limited to impacting individual level agency. For university-based research teams, structural components remain difficult to modify. Interventions seeking to impact at multiple levels must work with influential stakeholders working at structural levels, who can impact on long term processes. Social theory can help identify structural and individual level opportunities through which to focus dietary interventions, but the small scale approaches that predominate must be re-thought to increase intervention impact.

EVALUATION OF A STATEWIDE DISSEMINATION AND IMPLEMENTATION OF PHYSICAL ACTIVITY INTERVENTION IN AFTERSCHOOL PROGRAMS: A NONRANDOMIZED TRIAL

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Background: In 2015, YMCA operated afterschool programs (ASPs) across South Carolina pledged to achieve the national standard that calls for every child to accumulate 30 minutes/d of moderate-to-vigorous physical activity (MVPA) during program time. This study presents the first-year findings related to the dissemination, implementation and outcomes associated with the statewide intervention to achieve the MVPA Standard. Methods: Twenty ASPs were sampled from all YMCA-operated ASPs (N=97) and visited at baseline (spring 2015) and first-year follow-up (spring 2016). Programs were provided professional development training to increase the amount of MVPA children accumulated while attending that focused on extending the scheduled time for activity opportunities and modifying commonly played by games to increase MVPA. The RE-AIM framework was used to evaluate the statewide intervention. Accelerometer-derived MVPA was the primary outcome. Implementation was evaluated via direct observation. Intent-to-treat (ITT) and as-treated comparisons were conducted summer 2016. Results: Reach/adoptions was variable, with attendance of staff at trainings ranging from 0-100% across ASPs. Effectiveness of the intervention using ITT models indicated no changes from baseline in the percentage of programs meeting the MVPA standard for boys (33.6%-34.1%) or girls (15.7-17.2%). Implementation levels varied across ASPs. Programs (n=7, low implementers) that did not attend trainings or implement training components demonstrated declines in the percentage of boys (-13.0%) and girls (-9.8%) achieving the MVPA Standard, compared to improvements in the percentage of children achieving the MVPA Standard in ASPs that partially (n=7, +1.6% boys, OR [odds ratio] 2.46 95CI 1.5-4.2; +4.1% girls, OR 3.72 95CI 1.7-8.2) or fully (n=6, +12.9% boys, OR 4.5 95CI
2.6-7.7; +7.4% girls, OR 4.17 95CI 2.1-8.4) implemented the training components and attended trainings. Low implementers demonstrated the greatest reduction in time dedicated for activity opportunities (-31min vs. -12min and +1min), served a larger percentage of African American children (55% vs. 32-37%), and were mostly operating in YMCA facilities compared to partial and full implementers. Conclusions: Findings indicate improvements can be made from attending the trainings and implementing some or all of the training components. Additional work is necessary to identify ways to ensure ASPs attend trainings to implement strategies to increase MVPA.

EFFECTIVENESS OF A UNIVERSALLY DELIVERED SCHOOL-BASED RESILIENCE INTERVENTION IN IMPROVING ADOLESCENT PHYSICAL ACTIVITY, AND FRUIT AND VEGETABLE CONSUMPTION

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Purpose: Physical inactivity and inadequate fruit and vegetable consumption lead to a range of negative health outcomes, with schools often used as a setting for the universal prevention of such health risk behaviours. Resilience protective factors have been found to be associated with each of these health risk behaviours. Whilst such evidence suggests the potential of intervention approaches targeting resilience protective factors to reduce these health risk behaviours, the potential of this approach to multiple health risk behaviours has not been examined. An exploratory study was conducted to determine the effectiveness of a universally delivered school-based resilience intervention in improving the physical activity and fruit and vegetable consumption of secondary school students. Methods: A cluster-randomised controlled trial was conducted in 32 Australian secondary schools (20 intervention;12 control) designed to increase student individual and environmental resilience protective factors with the primary aim of reducing the prevalence of substance use in a cohort of Grade 7 students followed up in Grade 10 (2014;aged 15-16years) (ACTRN12611000609877). The universally delivered pragmatic intervention involved school staff selection and implementation of available programs and resources targeting student individual (e.g. self-efficacy, problem solving) and environmental (e.g. caring relationships at home or school) resilience protective factors (2012-2014). Schools were provided support to implement the intervention. An online survey collected data regarding secondary outcomes of physical activity (APARQ: minutes per week MVPA), fruit and vegetable consumption (meeting guidelines Yes/No), and resilience protective factors (individual, environmental). Generalized and linear mixed models examined differences between groups at follow-up. Results/findings: Follow-up data from 2119 students (intervention=1265; control=854) were analysed. No significant differences were found between intervention and control students for an outcome. Conclusions: The universally delivered school-based resilience intervention was not effective in improving student physical activity, fruit or vegetable consumption, or resilience protective factors. The null effect for resilience protective factors precludes ability to determine whether enhancement of such factors can be effective in improving adolescent physical activity and fruit and vegetable consumption.

USE MORE, LOSE MORE: PARTICIPANT ENGAGEMENT AND WEIGHT LOSS IN A DIGITAL HEALTH INTERVENTION AMONG LOW-INCOME PRIMARY CARE PATIENTS.

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Objective: Within weight loss interventions, participants who engage more, lose more. Yet, most stop engaging. To improve engagement, we designed Track, a largely automated digital health intervention among low-income patients in a primary care setting. We sought to examine patterns of participant engagement and associations between engagement and weight loss. Methods: We conducted a 12-month randomized controlled trial comparing the Track intervention to usual primary care for weight loss. The intervention included weekly self-monitoring of diet and physical activity goals (e.g., no sugary drinks, walk 10,000 steps/day) via automated text messages or
interactive voice response calls, daily self-weighing via a connected e-scale, and 18 counseling phone calls with a dietitian. Using data from our intervention platform, we operationalized engagement as the number of prompts needed for participants to engage and the proportion of days or weeks in which participants completed the recommended intervention activities. Weight was collected in-clinic at baseline and 12 months. Results: Intervention participants (n=170) were on average 50.9 years old and obese (BMI: 36.0 kg/m²). Most were female (69%) and non-Hispanic Black (54%), and 53% had an income ≤ $25,000/year. Intervention participants completed a median of 93.2% (IQR: 54%-100%) of weekly self-monitoring; 65% completed ≥80% of weeks. Our platform sent an average of 3.5 (SD:1.6) prompts before participants successfully self-monitored. Participants completed a median of 89% (IQR: 50%-100%) of counseling calls; 62% completed ≥80% of calls. The average number of attempts made by the dietitians to complete a call was 2.7(1.2) and calls lasted on average 25.3 (SD:5.7) minutes. Participants weighed on average 2.9 (2.0) days/week and 32.4% weighed on average ≥4 days/week. Participants who completed ≥80% of weeks of self-monitoring and coaching calls and weighed ≥5 days/week on average (N=34) lost more weight compared to those who engaged less often [mean difference: -4.6kg (95%CI: -7.0 - 2.1); p=.0003]. Conclusions: Among a low-income population, we effectively delivered a digital health obesity treatment that resulted in high levels of participant engagement and improvements in weight loss outcomes.

POINTS-BASED PHYSICAL ACTIVITY: A NOVEL APPROACH TO PROMOTE PHYSICAL ACTIVITY AND REDUCE CARDIO-METABOLIC RISK FACTORS IN OVERWEIGHT, INACTIVE FEMALES.

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Purpose: Given the perceived barriers to physical activity (PA) in females, there is rationale for interventions that promote choice and flexibility. The aim of this study was to investigate the effects of a novel, "points-based" approach to PA on cardio-metabolic risk factors in inactive, overweight females. Methods: Seventy-six overweight, inactive females were randomly allocated to one of three conditions: 'Points-based' PA (PBPA; 30 "PA points"•week-1), Prescribed exercise (PresEx; 150 minutes moderate-intensity exercise•week-1) or control (CONT; continue habitual inactive lifestyle) for a 24-week intervention. PA points for activities were adapted from MET values, and 30 points was equivalent to 150 minutes of brisk walking. Measures of body composition (dual-energy x-ray absorptiometry), anthropometry and blood-borne markers of metabolic health were obtained at weeks 0, 4, 12 and 24. Self-report PA was recorded weekly. Objective measures of PA (tri-axial accelerometer) and self-report measures of food intake obtained at weeks 0 and 24. Results: Twenty-one of 24 enrollees on PBPA reported a mean ≥30 "PA points"•week-1, compared with 16 of 26 enrollees on PresEx who reported a mean ≥150 minutes of moderate-intensity exercise•week-1. In PBPA, there were reductions in bodyweight of -3.3±5.9kg (-3.4±7.1%, p=0.004) and in waist circumference of -2.8±4.6cm (vs. CONT: +2.1±6.6cm, p=0.024) at 24-weeks. There was a trend for greater reductions in fat mass in PBPA vs. CONT (-2.3±4.6kg vs. +0.1±2.0kg, p=0.075). Android fat was reduced in PBPA at 12 (-6.1±12.6%, p=0.005) and 24-weeks (-10.1±18.4%, p=0.005), while there was a trend for greater reductions in visceral adipose tissue (-5.8±26.0%) vs. CONT at 24-weeks (+7.8±18.3%, p=0.053). Body composition, bodyweight and waist circumference were unchanged in PresEx. There were trends for increases in light-activity and reductions in sedentary time in PBPA. There was a non-significant reduction in daily energy intake of -445±564 kcal (p=0.074), and a significant reduction in daily fat intake of -19±28g (p=0.042) in PBPA. Measures of resting, fasted plasma glucose and lipid will be presented at the time of the conference. Conclusion: A "points-based" approach may be effective for promoting PA, reducing cardio-metabolic risk factors and inducing a "spill-over effect" on eating behaviour in inactive, overweight females.

PRELIMINARY EFFICACY OF THE 'HEYMAN' HEALTHY LIFESTYLE PROGRAM FOR YOUNG ADULT MEN: A PILOT RANDOMISED CONTROLLED TRIAL.

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Objective: Young adult men (18-25 years) commonly fail to meet recommendations set out in National physical activity (PA) and/or dietary guidelines, yet are under-represented in programs that target improving nutrition and
PA. The aim of this study was to evaluate preliminary efficacy of the 'HEYMAN' (Harnessing Ehealth to enhance Young men's Mental health, Activity and Nutrition) healthy lifestyle program for young men. Methods: A pilot RCT in 50 young men aged 18-25 years individually randomised to the HEYMAN intervention (n=26) or waitlist control (n=24). HEYMAN was a 3-month, multi-component intervention, targeted for young men to improve eating habits, activity levels and well-being. Intervention development was informed by a participatory research model (PRECEDE-PROCEED). Intervention components included eHealth support (website, wearable device, Facebook support group), face-to-face sessions (group and individual), a personalised food and nutrient intake report, home-based resistance training equipment and a portion control tool. Generalized linear mixed models estimated the treatment effect at 3-months for the following outcomes: diet quality (Australian Recommended Food Score), fruit and vegetables servings/day, % energy from energy-dense, nutrient-poor foods, total cholesterol to HDL-Cholesterol ratio, pedometer steps/day, MVPA minutes/week, weight, body fat mass, BMI and waist circumference. Results: Significant intervention effects were found for vegetable intakes (1.1 serves/day, 95% CI= 0.1, 2.0, p₂, 95% CI = -0.9, -0.2, p 95% CI = -2.5, -0.3, p 95%CI= -4.8, -1.4, pConclusions: The HEYMAN program demonstrated some positive preliminary findings in assisting young men to make positive lifestyle changes. This provides support for a larger, fully-powered RCT.

O.12 Adults physical activity and sedentary behavior (Saanich 2)

A POPULATION ANALYSIS OF SOCIO-DEMOGRAPHIC DIFFERENCES IN SEDENTARY BEHAVIOR AMONG MIDDLE-AGE ADULTS

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Purpose: Conflicting evidence on the socio-demographic differences in sedentary behavior exists. To clarify this relationship, socio-demographic differences in screen- and transport-based sedentary behavior in a large, population sample using contemporary data science methodology were assessed. Methods: Baseline data from the United Kingdom Biobank Prospective Cohort Study Study (N=100,423) were used in a segmentation analysis via decision trees to model the relationship between socio-demographic characteristics and the self-reported sedentary behavior metrics of daily hours of television, recreational computer use and driving. Socio-demographic variables were medical chart verified and included age, sex, race, education, employment, shift work, urban/rural location, bipolar/major depressive status, and season of assessment (fall, winter, spring, summer). Results/Findings: Most participants were White (93.1%), female (55.5%), did not attend college (65.6%), were employed (59.7%), with a mean age of 57.08 years (SD=0.93). On average, participants reported 2.73 hours of daily television viewing (SD=1.57), 1.18 hours of recreational computer use (SD=1.42), and 0.80 hours of driving (SD=1.27). In the decision tree model of daily television viewing, not attending college (tier 1) and being unemployed or retired (tier 2) accumulated the highest mean daily hours of television viewing (M=3.51) versus 1.98 mean hours reported by college attendees who were employed (model Relative Error [RE]=0.89; SE=). In the decision tree model of daily recreational computer use, only college education emerged as a significant distinguishing factor with college graduates averaging 1.46 hours per day versus 1.03 hours recorded by non-college graduates (RE=0.98; SE=0.01). In the decision tree model of transport based sedentariness, being employed (tier 1), male (tier 2) and not attending college (tier 3) distinguished the highest mean daily hours of driving (M=1.67) versus 0.91 mean hours reported by unemployed, female and college attending participants (RE=0.88; SE=0.008). Conclusions: Different socio-demographic profiles emerged for each sedentary behavior metric considered. Thus, depending on the form of sedentary behavior being intervened upon, a different demographic group will be at higher risk. These data support the multi-dimensional nature of sedentary behavior and underscore the need to measure and consider its multiple forms.

SUSTAINED LEISURE TIME SEDENTARY BEHAVIOUR CAN BE PREDICTED BY OTHER UNFAVOURABLE LIFESTYLE BEHAVIOURS: A LONGITUDINAL POPULATION-BASED COHORT STUDY

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Purpose: Sedentary behaviour sustained over longer periods is a strong risk factor for unfavourable health outcomes. Comparing lifestyle behaviours of these sedentary people with people who are capable of favourably changing their sedentary behaviour can provide cues do develop and optimize interventions. Therefore, the objective of this study was to determine predictors of sustained leisure time sedentary behaviour, compared to changing to less sedentary behaviour. Predictors of interest were potentially modifiable lifestyle behaviours that can be addressed in interventions. Methods: Data from a large longitudinal population-based cohort responding to a public health survey in 2010 and 2014 were used. Leisure time sedentary behaviour was measured asking for hours of sitting time e.g. watching TV or reading, with sedentary defined as ≥3 hours per day. Trajectory groups were made selecting those sedentary at baseline, and categorizing them as “sustained sedentary” or “changed to less sedentary” according to their follow-up measurement. Assessed predictors were unfavourable alcohol, smoking, and nutrition habits. Studied nutrition habits were: vegetables and fruit, fish, candy/cakes, and sweetened beverages. Logistic regression analyses with sustained sedentary behaviour as an outcome were performed, adjusting for possible confounders. Results: Data on leisure time sedentary behaviour were available for 49107 participants (57% women, 54±15 years old, 86% born in Sweden, 48% highly educated), of which 13% (n=6357) were classified as sustained sedentary and 7% (n=3205) as changed to less sedentary. Adjusted for possible confounding variables, unfavourable alcohol intake (expB=1.22, CI: 1.11-1.34) and unfavourable candy and cake consumption (expB=1.15, CI: 1.05-1.25) were found to predict sustained sedentary behaviour. Smoking and other unfavourable nutrition habits were not found to predict sustained sedentary behaviour. Conclusions: People with unfavourable alcohol intake and people with unfavourable candy and cake consumption are more likely to stay sedentary over longer periods of their life compared to sedentary persons who changed their behaviour to less sedentary leisure time. Potentially, strategies to reduce leisure time sedentary behaviour can be combined with existing interventions targeting alcohol and candy and cake consumption to increase efficiency of interventions.

Activity patterns in Australian white and blue collar workplaces: who sits most and moves least, and do managers care?

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Objectives: Most research on workplace activity patterns has focused on office-based occupations resulting in limited information from diverse occupations. This study aimed to assess managers’ perceptions of activity patterns and the potential health effects of these patterns in Australian workplaces from different industry sectors.

Methods: Managers of small-medium and large enterprises in a range of sectors were invited to complete a national on-line survey. Respondents reported on employee activity patterns, and their definition of what constituted prolonged sitting/standing, and potential health concerns. Results: 553 managers (from the education, public administration, construction, agriculture, manufacturing, finance, mining, utilities, trade, transport, accommodation and retail sectors) completed the survey. The highest ‘sitters’ were finance and technical workers (72% of time sitting at a desk and 7% while driving), followed by trade, transport and warehouse workers (45% at desk and 26% driving). The most active-at-work were agriculture, manufacturing, mining, utilities and construction workers; they were engaged in physical labour for 30% of their day. Many more managers were concerned about the potential health risks of too much sitting (97% expressed concern) than they were about standing or physical labour (52% were concerned about both). However, almost two thirds of the managers reported that activity in leisure time could offset the ill-effects of sitting at work. The managers’ definition of prolonged sitting was >2.86±1.59hrs, prolonged standing as >2.62±1.56 hrs and prolonged physical labour as >3.18±2.04hrs, with no significant differences between sectors despite differences in employees' movement patterns. Conclusions: Activity patterns vary substantially by industry sector, with high sitting times among blue collar workers in some sectors. There appears to be less concern among managers about too much standing or physical labour at work than there is about too much sitting. The results of this large study will inform the development of intervention strategies for ‘activating workplaces.'
THE SEATED INACTIVITY TRIAL (S.I.T.): A RANDOMIZED CONTROLLED TRIAL OF EIGHT WEEKS OF IMPOSED SEDENTARY TIME IN HEALTHY COLLEGE-AGED ADULTS

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Recent studies have examined whether sedentary behavior and physical activity are independent risk factors for cardiovascular disease (CVD). Typically, sedentary interventions focus on reducing sedentary behavior in those who are highly sedentary or at-risk for CVD, however, it is unknown whether imposing sedentary time in healthy young adults will impact overall physical activity behavior or CVD risk factors. Objective: The objectives of this study were to determine: 1) whether participants meeting physical activity guidelines (PA) would respond to eight weeks of imposed sedentary time differently than insufficiently active participants (IA), with regard to sedentary time and activity energy expenditure (AEE), and 2) to determine whether changes in sedentary time or AEE would be associated with changes in CVD risk factors. Methods: Twenty-seven healthy young adults (n=27 (16 PA, 11 IA), age 22.1±3.0yrs) were randomized to either a sedentary intervention (SIT, n=16) or a no-intervention control (CON, n=11) condition. SIT participants completed eight weeks of monitored sedentary sessions (10 hours/week). Physical activity and sedentary time (7-day accelerometer wear) were assessed at baseline, during week 5, and week 9. CVD risk factors were assessed at baseline, week 5 and week 9. Results: There were no differences between PA and IA for average sedentary time change (min/week) during the intervention (PA: 0.3% increase, IA: ~14.7% decrease, p=0.097). Conversely, for AEE (kcals/week), PA increased ~9.6% and IA decreased ~2.1% (p=0.008). From baseline to week 9, triglycerides decreased ~4% in PA, and increased ~32% in IA (p=0.022). Systolic BP increased ~6.0% in PA and decreased ~4.1% in IA (p=0.037), diastolic BP increased ~10.3% in PA and decreased in IA ~4.7% (p=0.036). Changes in AEE were significantly associated with total cholesterol change (r=-0.47, p=0.040), and body fat % (r=-0.80, p=0.002). Changes in sedentary time were not associated with changes in any CVD risk factors. Conclusions: Healthy young adults meeting physical activity guidelines responded to 8 weeks of 10 hours/week imposed sedentary time differently than those who were insufficiently active. Physical activity status, however, did not impact change in sedentary time, suggesting that physical activity and sedentary behavior may not be truly independent.

REPLACING SITTING WITH STANDING/STEPPING

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Purpose: While there is now a robust body of epidemiologic evidence linking sedentary behavior (SB) to numerous poor health outcomes, it is unclear whether standing is a suitable replacement or whether movement (stepping) is required to improve cardio-metabolic risk. We have examined the impact of replacing sitting with standing/stepping on cardio-metabolic risk biomarkers cross-sectionally in a broad sample of Australian adults and also in working adults who received a sitting-reduction intervention in their workplace. Methods: A sub-sample of participants from the 2011/2012 AusDiab study wore the posture-based activPal3 monitor (n = 698) and had biomarkers assessed at a clinical testing site. Isotemporal substitution analyses modelled cross-sectional associations with risk biomarkers of reallocating 2 h/day from sitting to standing to stepping. A separate cluster RCT (Stand Up Victoria), examined (relative to usual practice), the initial (3 mo) and long-term (12 mo) effects of a workplace intervention targeting reducing sitting in 231 desk-bound office workers. Results/findings: In cross-sectional analyses, sitting to standing reallocations were associated with lower glucose (2%), triglycerides (14%) and higher HDL-C (0.06 mmol/l) levels, whilst sitting-stepping reallocations were associated with lower BMI (11%), waist circumference (7.5cm), 2-h glucose (11%) and triglycerides (14%). In the intervention analyses, over 3 months, total workplace sitting time was reduced by 99.1 min/8 h workday and 45.4 mins at 12 months. Predominately, sitting was replaced with standing. Significant effects, favouring the intervention were observed at 12 months for fasting glucose and the overall cardio-metabolic risk score. Conclusions: Such evidence from observational and intervention studies indicates that benefits for cardio-metabolic health could be achieved through sitting-reduction strategies targeting increased standing or stepping.
EXAMINING RELATIONSHIPS OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR WITH COGNITIVE FUNCTION AMONG OLDER ADULTS WITH MILD COGNITIVE IMPAIRMENT: A CROSS-SECTIONAL STUDY
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Purpose: Mild cognitive impairment (MCI) represents a transition between normal cognitive aging and dementia, and may represent a critical timeframe to promote cognitive health through behavioural strategies. Current evidence suggests physical activity (PA) and sedentary behaviour (SB) are important for cognition. However, it is unclear if PA and SB differences exist between individuals with and without MCI or if the relationships of PA and SB with cognitive function differ by MCI categorization. Thus, using cross-sectional data, we examined: 1) differences in PA and SB between individuals with and without MCI; and 2) whether associations of PA and SB with cognitive function differed by MCI categorization.

Methods: We measured PA and SB in community-dwelling adults (N=150; aged 55+) using the MotionWatch8©. Using the Montreal Cognitive Assessment, we categorized individuals with MCI (N=83) had lower PA (p=0.03) than individuals without MCI (N=69). Higher PA and lower SB were associated with better ADAS-Cog Plus performance in the non-MCI group (β=−0.022, p=0.02 and β=0.012, p=0.04 respectively), but not in the MCI group (βp=0.993 and βp=0.948, respectively).

Conclusions: Individuals with MCI were less active and more sedentary. The relationships of these behaviours with cognitive function differed by MCI categorization; associations were only found in non-MCI individuals.

O.13 Dietary interventions in adults (Sidney)

TASTING WITH YOUR EYES: SENSORY DESCRIPTION SUBSTITUTES FOR PORTION SIZE
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Tasting with Your Eyes: Sensory Description Substitutes for Portion Size Purpose: Can sensory descriptive language substitute for portion size in dining satisfaction? A field study in a restaurant setting tested whether diners were just as satisfied with a small portion of a dessert that had a sensory-rich description as with a large portion with no sensory description. We assessed diners’ perception of portion size, satiation, and willingness to pay for a decadent dessert; in contrast, previous lab experiments on this topic have assessed only anticipated pleasure.

Methods: Diners entering a university-run diner were offered a free piece of cake in return for completing a survey. In a 2 x 3 factorial design, we varied size of chocolate layer cake slice (6 vs. 12 ounces) and description of the cake in the menu insert: control (no information), nutrition (calorie and fat content), and sensory information (hedonic description). Over 10 days, 861 diners completed the survey which assessed satiation, satisfaction with the size, and willingness to pay for the piece of cake provided. Results: In the control condition, subjects felt fuller after eating the large, compared to the small piece of cake, but this effect was attenuated in the sensory and nutrition conditions (p=.03). An interaction between cake size and condition on how pleased diners were with the size of cake piece (p=.02) reflects the fact that in the control and sensory conditions diners were more pleased with large size but in the nutrition condition (with calorie information) they were more pleased with the small piece. An interaction on willingness to pay (p=.001) indicates that in the nutrition and control conditions, diners were willing to pay more for the large piece (MNutr=$3.43±1.35 and MControl=$2.95±1.20) than for the small piece (MNutr=$2.37±1.22 and MControl=$2.58±1.23), but in the sensory condition, willingness to pay was similar for small (M=$2.82±1.27) and large (M=$2.90±1.33) cake pieces. Conclusion: Sensory description can be a substitute for size with a decadent dessert, in particular making diners willing to pay just as much for a small as for a large piece.

CAN DRINKING WATER BEFORE MAIN MEALS HELP ADULTS WITH OBESITY LOSE WEIGHT?
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Objective: There is a need to investigate the effectiveness of pragmatic weight loss interventions. Daily water consumption is widely advocated as an aid to weight loss, with little supporting evidence. One strategy to facilitate
weight loss is to modify perceptions of fullness before meals with a 'preload' such as water. Two test meal studies and a small trial have reported some preliminary evidence that water preloading before meals may facilitate weight loss. We have tested this further in a larger attention controlled RCT and investigated the efficacy of water preloading before meals as a weight loss strategy for adults with obesity. Methods: 84 adults with obesity were recruited from primary care. All participants were given a face to face weight management consultation at baseline (1 hour) and a follow-up telephone consultation at two weeks. Participants were randomized to either drinking 500mls of water 30 minutes before main meals or comparator (asked to imagine stomach is full prior to meals) for 12 weeks. The primary outcome was weight change at 12 weeks. The secondary outcome was the proportion which lost 5% or more body weight at follow-up. Several measures of adherence were also used, including 24hr total urine collections. Results: The water preloading group lost -1.3 kg (P=0.03, 95% CI -2.4 to -0.1) more than comparators at 12 weeks. 27% of those in the intervention group and 5% of those in the comparator group lost 5% or more body weight at follow-up. Conclusion: Water preloading before main meals leads to a moderate, but significant weight loss at 12 weeks and is a simple message that could easily be disseminated within weight management advice given to the public.

APP DESIGN CONSIDERATIONS FOR SUPPORTING DIETARY COUNSELLING IN DIETETIC PRACTICE
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Purpose: As mobile health technology rapidly advances, dietitians are increasingly using and recommending nutrition-applications (apps) in their patient care. Yet, most commercial nutrition-apps are not designed with input from nutrition-professionals and their ability to assist dietitians with dietary counselling is suboptimal. This study aimed to identify the tools, resources and design features for smartphone health-apps that would support dietetic practice and promote dietary behaviour change among patients. Methods: An interpretive paradigm that seeks to understand individual experiences was adopted by this study. As such, three open-ended questions were included as part of a larger 52-item online survey investigating health-app use by dietitians internationally. Open-ended questions explored the design preferences and additional resources or tools that would be useful to dietetic practice. Inductive thematic analysis of responses was conducted to elicit key themes that could guide the development of apps for use in dietetic practice. Results: Responses from a total of 381 dietitian respondents were analysed, revealing five overarching themes. Dietitians wanted access to credible apps, making suggestions that dietetic associations should have greater involvement in reviewing and endorsing evidence-based apps for use in dietary counselling. Improvements to the usability of apps, relating to their ease of use and design, was also raised, since patient self-monitoring of dietary behaviours using existing nutrition-apps was deemed to be burdensome. Furthermore, apps providing dietitian-oriented support were favoured, for example, those with the ability to streamline the dietary assessment process so dietitians could spend more time on dietary counselling and negotiating patient nutrition goals for dietary and lifestyle behaviour change. Provision of patient-oriented support, such as functionality to tailor apps to patient-specific needs and their readiness to change, was also considered important. Finally, respondents valued apps that could integrate into their work-systems to enhance the quality of the dietitian-patient relationship. Conclusions: To more extensively support dietary counselling, app developers should draw upon the features and functions characterised here by dietitians to guide their design and development of apps. Moreover, to achieve nutrition-apps that are effective at facilitating dietary behaviour change, a collaborative approach between dietitians, their patients and app developers needs to be established.

THE DIETARY INTERVENTION TO ENHANCE TRACKING WITH MOBILE DEVICES (DIET MOBILE) STUDY: A SIX-MONTH RANDOMIZED, CONTROLLED TRIAL TESTING TWO DIFFERENT MOBILE SELF-MONITORING DEVICES
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Purpose: The goal of the DIET Mobile study was to examine the use of two different mobile diet self-monitoring
methods during a remotely-delivered six-month randomized weight loss intervention. Methods: Overweight adults (mean BMI 34.7±5.6 kg/m²; age 48.1±11.9 yrs, 83% female, 18% African American) were randomized to self-monitor their dietary intake with either a standard mobile app (App; Fat Secret, n=42) or wearable bite counting device (Bite; Bite Counter, n=39). Calorie goals were calculated for both groups. The App group was instructed to track kcals/day with their app and the Bite group was told to track bites/day (which corresponded to a similar calorie limit) on their device. Both groups received the same behavioral weight loss information via twice weekly podcasts. Assessments were conducted at 0 and 6 months. Independent samples t tests were used to compare percent weight loss and differences in self-monitoring frequency between groups. Results: Attrition did not differ between groups; 75% of participants completed the study. Complete case and intent-to-treat analyses for weight loss (with baseline observations carried forward) yielded similar results; therefore complete case is presented. Participants in the App group lost significantly more weight (-7.5±6.5%) than the Bite group (-3.3±4.8%; P Conclusions: This study demonstrated that significant weight loss can occur in an entirely remotely-delivered weight loss intervention. Use of a diet app produced greater weight loss than use of a wearable bite counting device. Because this study demonstrated that regular self-monitoring, regardless of method, is associated with weight loss, future studies should examine how methods of self-monitoring can be personalized to individual preferences.

WHO BENEFITS MOST FROM PERSONALIZED NUTRITION? FINDINGS FROM THE PAN-EUROPEAN FOOD4ME RANDOMIZED CONTROLLED TRIAL

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Purpose: This study aimed to characterise individuals who benefited most from a proof-of-principle personalised nutrition (PN) intervention. Methods: Adults (n=555; 19-85 years) from the Food4Me personalised nutrition intervention – a 6-month, web-based, randomised control trial conducted across 7 European countries – were included in this analysis. Healthy Eating Index (HEI) scores at baseline and month 6 were derived from food frequency questionnaires. Self-report questionnaires collected socio-demographic, anthropometric and behavioural characteristics at baseline. Logistic (odd ratio; 95% CI) and linear regression (margins) compared characteristics between the top tertile (most benefit) and bottom tertile (least benefit) of change in HEI at month 6. Results/findings: Individuals who benefited most were on average older (44 vs 38 years; P Conclusions: This proof-of-principle intervention demonstrated that older females with healthier dietary behaviours and a desire to improve their wellbeing are those most likely to benefit from PN advice. These findings confirm the need to enhance PN interventions to improve their effectiveness in other population groups e.g. young men.

AN ECONOMIC EVALUATION OF COMPLEX WORKPLACE DIETARY INTERVENTIONS

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Objective Obesity and obesity-related chronic diseases are associated with absenteeism, incurring substantial costs for employers worldwide. The workplace is recognised as a priority environment to influence dietary behaviours and improve employee health. Yet, previous workplace dietary interventions have neglected to combine clinical effectiveness evidence with economic costs, thus the cost-effectiveness of workplace dietary interventions remains unknown. Employing cost and outcome data from the Food Choice at Work (FCW) trial, a cluster controlled trial, this study conducted an economic evaluation of nutrition education, environmental dietary modification and combined workplace interventions. Methods Each intervention (education, environment and combined) was compared to the control workplace. Firstly, a cost-utility analysis (CUA) measured the cost-effectiveness of the interventions in terms of QALYs. Secondly, sensitivity analyses tested the robustness of QALYs by performing cost-effectiveness analyses (CEA) using clinical measures to measure health outcomes. Thirdly, a cost-benefit analysis (CBA) employed the monetary value of absenteeism to report the net benefit of the interventions compared to the control. Probabilistic sensitivity analysis (Monte-Carlo simulation) assessed parameter uncertainty. Results The CUA indicated that each intervention (education (£37.85/QALY) environment (£5.88/QALY) and combined (£43.12/QALY)) is cost-effective relative to the control. Uncertainty in the incremental costs and effects translated
into decision uncertainty for the environment intervention (50% probability of being cost-effective at €45,000/QALY threshold). However, at no point between a ceiling ratio of €0 to €100,000/QALY do the education or the combined interventions have a higher probability of being cost-effective than the control. Secondary CEAs confirmed the CUA. The environment intervention reported the lowest ICERS for: BMI (€14/kg/m²), waist circumference (€3/cm) and weight (€7/kg). Each intervention can be considered cost-effective from an employer’s perspective as they each generated a positive net benefit with the highest positive net benefit (€145.82/employee) reported in the environment intervention. Conclusions Environmental dietary modification interventions offer a cost-effective approach for improving employee health and generate positive net benefit for employers. However, owing to uncertainty surrounding the extent of differences in health effects between the environment intervention and the control, it is imperative that future research employs long-term outcomes to avoid capturing mainly the initial high cost of intervention implementation.

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**O.14 Nutrition labelling and nudging (Lecture Theatre)**

**CUE-TO-ACTION AND NUDGING INTERVENTIONS INCREASE UNFAMILIAR VEGETABLE CHOICE**

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Objective: In order to prevent and decrease the prevalence of obesity, the Food4Gut project aims to encourage the consumption of foods that are rich in specific fibres called ‘colic nutrients’ in Belgium. These colic nutrients are typically found in particular vegetables, such as Jerusalem artichokes, salsify and artichokes. These vegetables are not very familiar and are consumed rarely. To increase colic vegetable consumption, a cue-to-action and a nudging intervention were implemented. Methods: Participants were clients of an university cafeteria that serves on average 510 people per day, with on average 23 clients per day at the warm vegetable buffet. The study consisted of five phases. In the baseline week, colic vegetables were introduced in the back of the warm vegetable buffet without any information. In the second week, information regarding the health benefits and location was provided on tray-sheets. In the third week, on top of the information that was provided, colic vegetables were placed in the front of the buffet, which increased their accessibility. The nudging intervention was removed in the fourth week so only the cue-to-action remained and this final intervention was removed in the fifth week resulting in a post-intervention week. Results: At baseline 4.6% of the total number of clients bought a plate at the hot vegetable buffet, in all three intervention weeks this amount increased to 6% and it decreased back to 5.1% in the post-intervention week. Regarding the colic vegetables, at baseline 3.6% of the total number of clients choose a colic vegetable at the hot vegetable buffet, this increased to 4.4% in the cue-to-action week and to 4.6% in the cue-to-action and nudging-week. This amount decreased when the nudging intervention was removed (4%) and the educational intervention was removed (3.9%). Conclusions: The results show that cue-to-action interventions aimed at specific vegetables can help to increase vegetable consumption in general. The cue-to-action and nudging-intervention combined was the most effective in increasing colic vegetable choice, although adding nudging did not improve the percentage much. These findings suggest that even for unfamiliar foods, cue-to-action and nudging can be used to increase consumption and overcome food neophobia.

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**ARE HEALTH CLAIMS NUDGING CONSUMERS TOWARDS HEALTHIER FOOD CHOICES? AN ANALYSIS OF THE NUTRITIONAL QUALITY OF PRE-PACKAGED FOODS CARRYING HEALTH CLAIMS IN THE CANADIAN FOOD SUPPLY**

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Objectives: Health claims (HC) are tools to enable consumers to make healthier food choices. However, these claims could potentially mislead consumers by highlighting certain nutrients or ingredients while minimizing other less desirable ones. This research assessed the proportion of "healthier"/"less healthy" foods carrying two different types of HC: disease risk reduction claims (DRRC) and structure-function claims (StFtC), per food category in the Canadian food supply. We also evaluated the proportion of "healthier"/"less healthy" foods for the three most prevalent DRRC. Methods: Data was obtained from the University of Toronto 2013 Food Label Information Program,
which contains nutrition information of pre-packaged products (n=15,342) representing approximately 75% of the grocery retail market. Analyses included foods carrying a DRRC (n=226) and StFtC (n=665). The Food Standards Australia New Zealand Nutrient Profiling Scoring Criterion (FSANZ-NPSC), a system developed to determine the eligibility of a food to carry health claims, was used to determine summary scores of "healthfulness" per product. Its algorithm is based on the content of nutrients to limit (e.g. sodium) and nutrients to encourage (e.g. fibre). Products were classified as "healthier"/"less healthy" using established cutoff scores in the FSANZ-NPSC. Results: Although 78% of products carrying DRRC and 76% of products with StFtC met the criterion for "healthier", the proportion varied across categories. Food categories with the highest proportion of "less healthy" foods carrying a DRRC were bakery (39%), cereals (35%), dairy (20%), fruit/fruits juices (15%), and soups (7%). Food categories with the highest proportion of foods displaying StFtC that were "less healthy" were sweets/sugars (100%), bakery (44%), beverages (40%), desserts (36%) and cereals (35%). For foods carrying the top three DRRC, which comprised 88% of all DRRC, the proportion of "less healthy" products was as follows: for food products with oat products and cholesterol lowering DRRC (45%), for fats and coronary heart disease DRRC (24%), and for DRRC related to fruits/vegetables and cancer prevention (12%). Conclusions: Overall, Canadian food products carrying health claims have a "healthier" profile, although the proportion varied across categories. Many foods in Canada that are "less healthy" carry HC, but would not be permitted to do so in Australia.

HEALTHFULNESS AND NUTRITIONAL COMPOSITION OF CANADIAN PREPACKAGED FOODS WITH AND WITHOUT SUGAR CLAIMS
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Purpose: Dietary guidelines need to be supported with trustworthy presentations of sugar claims to aid in selection of healthier alternatives and reduce the detrimental effects associated with excess free sugar consumption. This study evaluated products with and without sugar claims for differences in: 1) the proportion containing excess free sugar; 2) caloric and nutrient contents (i.e. free sugar, total sugar, carbohydrates, total fats, sodium); 3) overall healthfulness; and 4) use of low- or no-calorie sweeteners. Methods: Cross-sectional analysis of the University of Toronto's Food Label Database 2013. Subcategories where at least 5% of products (n≥5) carried a sugar claim were included (n=3048). Difference between products with and without sugar claims in terms of median calorie content, nutrient contents, and overall healthfulness using a nutrient profiling score, was determined using Wilcoxon Rank Sum Tests. Chi-square tests were used to compare the proportion of products with and without a sugar claim that had excess free sugar levels (≥10% of calories from free sugar) and that contained low- or no-calorie sweetener ingredients. Only differences that were statistically (p<0.25%) different were considered to be significant. Results: Almost half (48%) of products with sugar claims contained excess free sugar levels, and a greater proportion contained sweeteners (30% vs. 5%, X²=338.57 p Conclusions: Previous research on consumers' interpretation of sugar claims and the requirements to bear these claims conflicts with findings from this study and present several areas of concern. Results identify several shortcomings of the current regulations which govern the use of sugar-related nutrient content claims, such as no requirement for calorie reductions, absolute levels of free sugar, or for a product to be any healthier. Findings from this study can be used to support educational messaging to assist consumer interpretation of sugar claims and can be used to inform future changes in nutrition label policies.

UNDERSTANDING THE IMPACT OF NUTRITION AND HEALTH CLAIMS ON PORTION SIZE SELECTION USING A FAKE FOOD BUFFET
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Purpose: Studies show that nutrition and health claims (NHC) on food such as 'lower in fat' may actually encourage individuals to eat more. Previous studies investigating the effects of NHC on consumption have been limited by a restricted variety of foods and claims, thus not representing real environments where consumers are often faced with multiple choices and claims. The purpose of this study was to address these limitations and examine the impact of NHC on portion size selection using a fake food buffet (FFB) incorporating a wide range of NHC. Methods:
Using a repeated measures experimental design, 50 individuals aged 18-64 years completed two study sessions one week apart. In each session, participants served three meals (breakfast, hot meal, and snack) from a FFB, with each meal consisting of either NHC or no NHC, leading to a total of six conditions which participants completed: breakfast with NHC, breakfast with no NHC, hot meal with NHC, hot meal with no NHC, snack with NHC, snack with no NHC. Total weight of food (g) and the nutritional value of meals served were calculated. Participants also completed questionnaires assessing General Health Interest, mood, knowledge of NHC, and other factors known to influence consumption. Results: There were no significant differences in portion sizes selected between products with NHC and those without. However, participants changed the foods selected between the conditions. Participants were aware of the purpose of the experiments and the claims used, and rated the FFB positively. Possible explanations for these findings will be discussed. In addition, the effectiveness of using a FFB to investigate NHC will also be examined. Conclusions: The FFB is a useful tool to investigate the impact of NHC on portion size selection. Possible future applications of the FFB in this area will be discussed. This material is based upon work supported by safefood, The Food Safety Promotion Board, under grant no. 09/2015.

INFLUENCE OF ENHANCED FRONT-OF-PACKAGE LABELLING AND TAXATION ON CONSUMER PURCHASING OF SUGAR-SWEETENED BEVERAGES

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PURPOSE: Canadians consume added sugar in excess of recommended limits. The largest source of added sugar in the Canadian diet comes from sugar-sweetened beverages (SSBs), which have been identified as an important risk factor for obesity and its associated health effects. Two primary policy options for reducing SSB consumption have been implemented in other countries: enhanced front-of-package nutrition labelling, and taxation of SSBs. The primary objective of the proposed research was to examine the effects of (a) enhanced front-of-package nutrition labelling and (b) various levels of SSB taxation on consumer beverage purchasing in a Canadian context. METHODS: This study examined changes in consumer beverage purchasing using an experimental marketplace. A total of 675 respondents aged 16 years and older were provided a budget to make a series of beverage purchases, in which they were randomized to view 20 beverages with no label changes (control), or one of three front-of-package nutrition labelling formats. Participants completed five purchasing tasks with different SSB price increases in each (10%, 20%, 30% and a variable tax proportional to added sugar level). Participants received their selected beverage and their unspent budget from one randomly selected task. Linear mixed and generalized linear mixed models were used to assess the impact of price/tax and labelling format on various purchasing outcomes. RESULTS: Price/tax had a significant effect on the likelihood of purchasing an SSB, the amount of added sugar purchased and the number of calories purchased (pp=.111) and amount of added sugar purchased (p=.114). CONCLUSIONS: The findings provide the first empirical evidence of the impact of increased price on SSB purchase in Canada, and are consistent with evidence from other countries on the effectiveness of tax to modifying dietary intake. The study also provided preliminary support for front-of-package labels for 'high sugar'.

HOW MANY LIVES COULD BE SAVED THROUGH THE ADOPTION OF TRAFFIC LIGHT LABELLING IN CANADA? A SCENARIO MODELLING STUDY

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Purpose: Traffic-light labelling (TLL) is a promising front-of-pack system to help consumers make healthier dietary choices. Evidence suggests that when TLL is introduced, consumers tend to avoid products labelled with red traffic lights. However, the potential population impact of adopting TLL has rarely been tested. A previous modelling study by our group showed that, if TLL was adopted in Canada and the adult population avoided foods with red traffic lights, Canadians' intakes of energy, total fat, saturated fat, and sodium would be reduced by 5%, 13%, 14% and 6%, respectively. In the present study, we aimed to continue this work by modelling the health impact of avoiding foods with red traffic lights, due to these improved nutrient intakes. Methods: Nutrient levels in foods reported as consumed by adult respondents (n=19,915) of the Canadian Community Health Survey (CCHS)-Cycle 2.2 were profiled using the United Kingdom’s TLL criteria. Whenever possible, foods assigned a red traffic light for at least one of the profiled nutrients (non-compliant foods) were replaced with similar, but compliant, foods identified from...
the University of Toronto-Food Label Information Program 2010 database. Respondents' nutrient intakes were calculated using the CCHS original food list (baseline scenario) and the revised food list (TLL scenario). Intakes under both scenarios were entered in the Preventable Risk Integrated ModEl (PRIME), a macrosimulation model which allows to estimate the impact of changes in behavioural risk factors on mortality from noncommunicable diseases (NCDs) using national age- and sex-specific demographic and mortality estimates. Results: PRIME estimated that 11,715 deaths (95% confidence interval 10,500-12,865) per year due to diet-related NCDs could be prevented among Canadians if they avoided the consumption of foods labelled with red traffic lights. Potential lives saved would primarily be related to cardiovascular diseases (72%) and type 2 diabetes (15%), with similar proportions in men and women separately. Conclusions: Although the optimal scenario is depicted here (avoidance of "reds" whenever possible), it suggests that TLL, if properly adhered to, could be an effective population-level intervention to improve NCD risk in Canada. Such data are necessary to support the adoption of public health strategies by government bodies.

O.15 Home environment and parental influence on children's health behaviors (Saanich 1)

PARENTAL STRATEGIES FOR INFLUENCING THEIR CHILDREN’S DIET – A QUALITATIVE STUDY IN DISADVANTAGED AREAS

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Background/Objective A social gradient is evident in the prevalence of childhood overweight and obesity in high-income countries, to the disadvantage of children with low socioeconomic status (SES). Parents have a substantial influence on their children's dietary behaviours and weight development through the way they interact with the children around food. This study aims to explore the variation of how parents with low SES influence their child's dietary behaviours. Methods A phenomenographic approach and analysis was used on 29 unobtrusively collected sessions of motivational interviewing with mothers and fathers participating in the Healthy School Start intervention study in 2012. The parents had a maximum of 12 years of education and resided in areas targeted for socioeconomic development. In the sessions, parents explored perceptions and possible changes to their child's dietary behaviours. Results The model found in the analyses revealed five categories where parents used a variation of guidance to influence their children's dietary habits, ranging from parents silently guiding to parental enforcement. The categories were structurally related to each other through positive to negative impact of parental recognition of responsibility for the child's behaviours, level of trust in the child's satiety response, and level of parental emotional distress. Conclusion The results suggest that depending on the type of guidance used, parents are in need of different supporting strategies from interventions or clinicians to enhance positive parent–child interplay and balance parental level of demands on children's dietary behaviours with level of responsiveness towards the child. Interventions should focus on supporting parent's capabilities to trust their child's satiety, to recognise how to express responsibility for the child's behaviours, to regulate own emotions in food situations with the child, and to cooperate with the other parent around the child's behaviours.

THE LONGITUDINAL RELATION OF EMOTIONAL FEEDING IN INFANCY WITH HEDONIC EATING AND BMI IN CHILDHOOD: FINDINGS FROM THE GENERATION R STUDY

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Purpose: Feeding practices of parents have been implicated in childhood overweight. However, the long-term effects of emotional feeding (i.e. using food to comfort and soothe a distressed infant or child) on children's eating behaviors and weight remain unknown. This study examined the longitudinal relationship between emotional feeding in infancy and body mass index (BMI) in middle childhood, and explored whether hedonic eating mediated this association. Methods. This study of 3960 mother-child dyads was embedded in the prospective, population-based Generation R cohort in the Netherlands. Emotional feeding was assessed by questionnaire when children
Testing the Direction of the Association Between Child BMI and Parental Restrictive Feeding Practices: Results from a Population-Based Cohort Study.

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Objective: Experimental and cross-sectional studies suggest that parental restrictive feeding (i.e. regulating and limiting food-intake of children) is a risk factor for childhood overweight, but recent longitudinal studies do not support these findings. Thus, it remains unclear whether restriction is causally related to child weight development. This study aimed to examine bidirectional associations between parental restrictive feeding and children’s weight across the childhood years, and to explore the possible mediating role of parental concern about child weight.

Methods: Data were available for 4689 mother-child dyads participating in Generation R, a prospective birth cohort in the Netherlands. At ages 4 years and 10 years, children’s body mass index (BMI) was measured and parental restrictive feeding was assessed with the parent-reported Child Feeding Questionnaire. Both directions of the restriction-child BMI relation were examined with multivariable linear regression analyses and cross-lagged modeling. Mediation analyses were performed to study parental concern about child weight as a potential mediator.

Results: A higher child BMI SD score at age 4 years predicted higher restrictive feeding SD scores at age 10 years, adjusted for confounders including sex, ethnicity, birth weight, household income, maternal BMI, maternal depressive symptoms and baseline restrictive feeding (B per BMI SD score=0.13, 95%CI: 0.09, 0.15). However, there was no association of restrictive feeding at 4 years with child BMI at 10 years after accounting for baseline BMI. Child BMI and restrictive feeding at age 4 years were both positively associated with parental concern at age 10 years (e.g. per BMI SD at age 4 years, parental concern increased with 0.27 SD score (95%CI: 0.23, 0.31). Parental concern about child weight mediated the association from child weight at age 4 years to restrictive feeding at age 10 years (Bdirect effect=0.07, 95%CI: 0.04, 0.10; Bindirect effect= 0.10, 95% CI: 0.06, 0.12). Emotional feeding was not associated with BMI in early childhood nor with children’s food responsiveness. Conclusions: Emotional feeding seems associated with weight development throughout childhood, partly through its effect on children’s emotional eating tendencies. This suggests that parents should be advised to limit the use of food to soothe, while encouraging adequate alternatives to comfort infants beyond emotional feeding.

It’s All in the Delivery: Genetic and Environmental Influences on Responses to a Behavioral Dietary Intervention in Young Children

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Objective: The success of treatments, whether behavioral or pharmacological, is typically measured at the group level. However, variation in outcome is the norm, even for highly effective treatments. Understanding the causes of variability might enable intervention programs to be tailored to individuals’ needs. Twin studies provide a broad-
based estimate of the magnitude of genetic influence on response to treatments. To date, this has received virtually no attention in the behavioral treatment field; even though target phenotypes (e.g. weight or food fussiness) are highly heritable. Exposure-based treatments are widely used for modifying behavioral responses, and show variation in outcome. The present study uses a twin design to assess genetic influence on children's responses to an established exposure intervention designed to increase acceptance of disliked foods. Methods: 442 children (aged 3-4 years) from the Gemini twin cohort, whose parents judged them to have a troubling level of refusal to eat vegetables, were randomized to either a parent-delivered exposure intervention or a no-treatment control condition, stratified by family (i.e. parents delivered the intervention to both twins in the pair, or did not deliver the intervention to either of the twins). The primary outcome was change in vegetable intake from baseline to follow-up. Changes in intake for intervention twin pairs (n=98 pairs, 196 children) were modelled to quantify the genetic influence on variability in change scores. Results: There was a strong mean treatment effect, with a much larger increase in intake from baseline to follow-up in the intervention than the control condition. Variation in change in the intervention group showed only a weak and non-significant genetic effect (20%; 95% CI: 0% to 52%), with most of the effect due to aspects of the intervention completely shared by twin pairs (58%; 31% to 78%). Conclusions: In this established behavioral intervention, we observed only a small effect of genetic influence on responses to treatment. On the other hand, variation in response was largely determined by aspects of the intervention completely shared by the twin pairs, suggesting that aspects of treatment delivery by the mother were more important than innate child characteristics in determining the outcome.

THE INTERACTION BETWEEN PARENTING PRACTICES AND THE PHYSICAL ENVIRONMENT ON CHANGES IN CHILD PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR – A LONGITUDINAL STUDY
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Purpose: This longitudinal study aimed to investigate direct and interactive effects of physical activity parenting practices (PAPPs) and the physical environment (cycleability, walkability, sports facilities, playgrounds) on primary school children's moderate-to-vigorous physical activity (MVPA), light physical activity (LPA) and sedentary behavior (SB) up to 18 months later. Methods: We used data from the Active Living study (The Netherlands). This study focused on primary school children aged 8-12 years old. Data were collected at baseline (2012), 6 months, and 18 months after baseline. Children's PA levels were measured using accelerometry (N=240). PAPPs were measured via validated questionnaires which were filled out by parents. Environmental characteristics were measured via neighborhood audits. Multivariate multilevel regression analyses were conducted to determine the main effects and the interaction effects of PAPPs and the physical environment on children's MVPA, LPA and SB. Results/findings: In total, 240, 202 and 189 children were included in the analyses to explain MVPA, LPA and SB at baseline, and predict changes in MVPA, LPA and SB at 6 and 18 months. The PAPP logistic support and the number of playgrounds, walkability and cycleability positively predicted changes in PA and negatively predicted SB. We found that twenty interaction terms (14%) were statistically significant. Stratified analyses (based on significant interaction terms) showed strengthening effects of the physical environmental factors on the impact of PAPPs on children's MVPA, LPA and SB. Conclusions: Characteristics of both the social and physical environment of children have an impact on children's PA levels. The effect of specific PAPPs on children's PA level (up to 18 months later) can be strengthened by favorable physical environmental features and weakened or even nullified in non-supportive built environments.

HOME ENVIRONMENT MEDIATES THE RELATION BETWEEN PARENTAL SOCIOECONOMIC STATUS AND PRESCHOOLERS' SCREEN TIME
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Purpose: Previous studies suggest that preschoolers from low socioeconomic backgrounds have more screen time.
Still, the factors in the social and physical home environment driving to these differences are poorly understood. This study examines potential home environment mediators in the associations between parental socioeconomic status (SES) and preschoolers’ screen time. Methods: A total of 864 children aged 3-6 years and their parents participated in the cross-sectional DAGIS survey in years 2015 and 2016 in Finland. Parents completed a children’s screen time diary for one week (N=823). Screen time consisted of separate measures of television viewing, DVD/video watching, computer use and tablet/smartphone use. For the analyses, the daily average of screen time was calculated (N=768). Parental questionnaire (N=808) assessed the educational background and variety of social and physical home environment factors. The associations were tested by conducting mediation analyses with bootstrapping re-sampling. The significant mediators in the single-mediator models were included in the final multiple-mediator-model. Results: The following seven of 18 potential mediators had significant indirect effect in the single-mediator models: descriptive norm for children’s screen time (β=-2.58, 95% CI=-4.67 – -.85), satisfaction for children’s physical activity (PA) level (β=.61, 95% CI=.05 –1.63), parental efficacy for encouraging children into PA (β=.77, 95% CI=.19 –1.78), parental use of screens in front of children in weekdays (β=-2.30, 95% CI=-3.87 – -.95) and weekends (β=1.86, 95% CI=3.26 – -.71), parental importance for limiting children’s screen use (β=1.53, 95% CI=.03 – -.56), and parental consideration of societal pressures for using screens (β=.89, 95% CI=-1.86 – -.14). In the multiple mediator-model, the indirect effects of descriptive norm for children’s screen time (β=-2.06, 95% CI=3.83 – -.66), parental use of screens in front of children in weekdays (β=-1.16, 95% CI=-2.33 – -.42) and parental consideration of societal pressures for using screens (β=-.79, 95% CI=-1.72 – -.08) remained significant. Conclusions: When aiming to diminish SES differences in preschoolers’ screen time, descriptive norm for children’s screen time, parental use of screens in front of children and parental consideration of societal pressures for using screens are important factors to be taken into account.

708 O.16 Longitudinal studies of children’s physical activity, sedentary behavior and nutrition
(Colwood 1 & 2)

8288 TRACKING OF TOTAL SEDENTARY TIME AND SEDENTARY PATTERNS DURING CHILDHOOD
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Purpose Previous tracking studies are limited by the use of subjective sedentary measures and small sample sizes. Moreover, little is known about tracking of young people’s sedentary patterns. This study aims to examine tracking of total sedentary time, prolonged sedentary time and their day-to-day variation during childhood in a large international sample. Methods: Longitudinal accelerometer data of 5991 children (aged 4-17 years) was used from eight studies in five countries from the International Children’s Accelerometry Database (ICAD). Children were included when providing valid (>8 hours) accelerometer data on at least four days, including at least one weekend day, at both baseline and at least one follow-up (average follow-up: 2.7 years; range 0.6-8.1). Data processing decisions included: sedentary cut-point 60 minutes of consecutive zero’s. We performed individual patient data meta-analyses, with baseline levels of sedentary time/pattern as predictor and follow-up levels as outcome. Standardised regression coefficients were interpreted as tracking coefficients (low: 0.6). We used multilevel modelling with a four-level structure (repeated observations, child, study, and country) to adjust for clustering of observations. Analyses were adjusted for gender, follow-up duration, and baseline age. Results: Average total and prolonged sedentary time and their day-to-day variation increased over time, with mean increases of: 8% (SD 9), 7% (SD 10), 1% (SD 4) and 1% (SD 4) of wear-time/day, respectively. Total sedentary time (standardised b=0.49, 95CI [0.47-0.51]) and prolonged sedentary time (b=0.45, 95CI [0.42-0.47]) tracked moderately during childhood. Tracking for day-to-day variation in total (b=0.05, 95CI [0.02-0.07] and prolonged (b=0.07, 95CI [0.05-0.1]) sedentary time was low. Conclusion: Average daily total and prolonged sedentary time tracked moderately during childhood, suggesting that sedentary habits arise early in life. Tracking of day-to-day variation and the change in day-to-day variation over time were low. This may be explained by the structured school-days of children, resulting in little
variation between children and limited possibilities for change.

CHANGE IN CHILDREN AND PARENTS' PHYSICAL ACTIVITY AND SEDENTARY TIME BETWEEN YEAR 1 (5-6) AND YEAR 4 (8-9 YEARS OF AGE) OF PRIMARY SCHOOL

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Objective: Examine how children and parents physical activity changes from Year 1 (5-6) to Year 4 (8-9 years of age). Identify differences between children who provide follow-up data and those who do not. Methods: Data are from the Bristol (UK) B-PROACTIV cohort. 57 primary schools were recruited when the children were in Year 1, with 1299 children and their parents providing data. 47 schools were re-recruited in Year 4, with 1223 children providing data (685 of whom participated in Year 1). Children and at least one parent wore an accelerometer for five days and mean minutes of sedentary time, moderate-to-vigorous intensity physical activity (MVPA) and accelerometer counts per minute (CPM) were derived. Multiple imputation was used to impute missing data for all 1837 families who took part. Paired t-tests examined if there was statistical evidence of change in accelerometer measures. Univariable logistic regression models examined if demographic factors predicted whether Year 1 children participated at Year 4. Results: Multiple imputation and observed data were comparable and results using complete observed data were mostly the same as those using imputed data. Imputed data showed that mean boys' CPM decreased from 747 to 673 (difference in mean 74 [95% CI 45-103]) and girls' from 686 to 587 (99 [79-119])). Boys' MVPA reduced from 72 to 69 (3 [0-6]) and girls' from 62 to 56 (7 [4-9]) minutes per day. There were increases in sedentary time for both boys (354 to 428 minutes, 74 [61-88]) and girls (365 to 448, 83 [71-96]). There was no evidence of change in parent CPM or MVPA. Mothers sedentary time increased by 26 minutes per day [16-35]. Girls who took part in Year 1 had 42% greater odds than boys to take part in Year 4, while obese children in Year 1 had 37% lower odds to take part in Year 4. Conclusions: There were similar decreases in time spent in MVPA and increases in sedentary time in girls and boys between age 5-6 and 8-9. Early interventions to prevent the age-related decline in children's physical activity are needed.

LONGITUDINAL STUDY OF THE NUTRITIONAL STATUS OF MIDDLE SCHOOL STUDENTS: 15-YEAR MONITORING

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Objective: The purpose of this study was to verify the prevalence of underweight (UW), normal weight (NW) and overweight/obesity (O/O) among middle school students during a 15-year period. Methods: One thousand and ninety-nine students beginning 6th grade participated. The original data were collected between 2001 and 2015, and for this research, the database of body mass and height were used. Nutritional status classification followed the cut points proposed for Brazilian children and adolescents and the data were stratified in trienniums: first triennium (2001/2003); second triennium (2004/2006); third triennium (2007/2009); fourth triennium (2010/2012); and fifth triennium (2013/2015). The data were analyzed with descriptive statistics and t Student test. Results: The mean age of the students was 10.86±0.07 years and the mean Body Mass Index was 19.32±3.53 kg/m2. As for the nutritional status, 48% (n=533) were UW, 43.6% (n=479) had NW and 8% (n=88) presented O/O. The prevalence by triennium was the following: UW: 1st triennium – 52.8% (n=84), 2nd triennium – 47.7% (n=105), 3rd triennium – 52.2% (n=132), 4th triennium – 46.7% (n=112) and 5th triennium - 44.9% (n=102); NW: 1st triennium – 40.9% (n=65), 2nd triennium – 47.7% (n=105), 3rd triennium - 38.7% (n=98), 4th triennium – 43.3% (n=104) and 5th triennium – 45.8% (n=104); O/O: 1st triennium – 6.3% (n=10), 2nd triennium – 4.6% (n=10), 3rd triennium – 9.1% (n=23), 4th triennium - 10% (n=24); 5th triennium – 9.3% (n=21). There were no significant differences between the trienniums for UW, NW and O/O. Conclusions: The relatively high percentages of UW may be related to the biological maturation phase the students were going through, considering their age. The levels of O/O were inferior to what was expected according to the literature (20%), probably due to the adoption of new life habits. The results demonstrate the importance of monitoring the nutritional status of the students, so that strategies for the adoption of a healthy lifestyle may be created in time to avoid future health problems in adulthood.
CLUSTER PATTERNS OF BEHAVIOURAL RISK FACTORS AMONG CHILDREN: LONGITUDINAL ASSOCIATIONS WITH ADULT CARDIO-METABOLIC RISK FACTORS

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Objective: Much of what is known about childhood clusters of cardiovascular disease behavioural risk factors (RFs) is descriptive and comes from cross-sectional studies, providing little insight into the long-term health impacts of different behavioural cluster profiles on adult health. This study aimed to establish the longitudinal relationship between cluster patterns of childhood behavioural RFs and adult cardio-metabolic RFs.

Methods: Data were from an Australian prospective cohort study of 1,269 participants measured in 1985 (ages 9-15 years), and in 2004-06 (ages 26-36 years). At baseline, children self-reported smoking status, alcohol consumption, physical activity (PA, mins/week), dietary behaviour and psychological well-being. At follow-up, participants attended study clinics where height, weight and the following component indicators of the metabolic syndrome (MetS) score were measured: waist circumference, blood pressure, and fasting blood glucose and lipids. TwoStep cluster analyses were carried out to identify the optimum number of clusters in childhood. Linear regression was used to examine the longitudinal associations between cluster patterns of childhood behavioural RFs and adult cardio-metabolic RFs.

Results: Four childhood cluster patterns of behavioural RFs, labelled ‘most healthy’ (breakfast consumers, non-smokers, no alcohol consumption, moderate PA), ‘high PA’ (high PA, moderate alcohol consumption), ‘most unhealthy’ (smokers, high alcohol consumption, poorer mental health), and ‘breakfast skippers’ (breakfast skippers, high alcohol consumption, smokers) were identified. The unhealthier childhood clusters predicted a significantly higher adult body mass index (‘most unhealthy’: β=0.79, 95%CI=0.18, 1.41; ‘breakfast skippers’: β=1.16, 95%CI=0.34, 1.98), adult MetS score (‘most unhealthy’: β=0.10, 95%CI=0.01, 0.19) and adult waist circumference (‘most unhealthy’: β=2.29, 95%CI=0.90, 6.67; ‘breakfast skippers’: β=2.15, 95%CI=0.30, 4.00). These associations were independent of adult behavioural RFs and socioeconomic position. Conclusions: These findings demonstrate a long-lasting impact of childhood health behaviour clusters on important adult cardio-metabolic health outcomes. As a result, these findings can be used to identify those children who may be at higher risk of poorer adult cardio-metabolic health, and to inform the development of holistic, tailored interventions that target multiple relevant behaviours in childhood. Doing so may decrease overall cardiovascular risk and prevent the progression of cardiovascular disease in adulthood.

EARLY LIFE FACTORS ARE ASSOCIATED WITH TRAJECTORIES OF CONSISTENT ORGANIZED SPORT PARTICIPATION OVER CHILDHOOD AND ADOLESCENCE IN GIRLS: LONGITUDINAL ANALYSIS FROM THE RAINE STUDY

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Objective: To identify early life factors that are associated with childhood and adolescent organized sport participation trajectories. Methods: Based on data from the Raine Study, a pregnancy cohort in Western Australia, three organized sport trajectories over ages 5 to 17 years were previously identified for girls (n= 824, consistent participators, dropouts, and non-participators) using latent class analysis. Physical (preterm status, breastfeeding, anthropometrics, injuries, physical development, motor skills), psychological (temperament and child behavior) and social factors (siblings, family functioning, parent worries, childcare) were measured at various time points from birth to age 5. Multinomial logistic regression was used to test the association between early life factors and membership in the sport trajectory classes. Models were adjusted for family income at age 5 and probability of membership and results are presented as relative risk ratios (RRR). Results: Shorter height (RRR 0.96, 95%CI: 0.91, 0.99, p=.049), having a previous injury (1.55, 95%CI: 1.05, 2.29, p=.028), greater internalizing disorders at age 5 (1.02, 95%CI: 1.00, 1.04, p=.043), and more parent worries at age 5 (1.56, 95%CI: 1.00, 2.42, p=.049) were associated with a higher risk of being in the drop-out trajectory than the consistent participator trajectory. Being breastfed for less than 6-months vs not breastfed (2.71, 95%CI: 1.25, 5.84, p=.011), not being in childcare at age 1
higher approach temperament (1.28, 95%CI: 1.02, 1.59, p=.031) and more parent worries at age 5 (1.71, 95%CI: 1.09, 2.69, p=.020) were associated with a higher risk of being in the non-participator trajectory than the consistent participator trajectory. There were no differences between trajectories in preterm status, developmental stages, motor skill, or having siblings. Conclusions: Early life factors were associated with membership in different sport trajectories into adolescence. Identifying young girls at-risk for non-participation or drop-out from sport can help us to target sport promotion efforts to increase sports participation among girls.

ORGANISED SPORT TRAJECTORIES FROM CHILDHOOD TO ADOLESCENCE PREDICT PEAK BONE MASS OF YOUNG ADULTS IN THE Raine STUDY
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Purpose: To assess the relationship between organized sport participation during key developmental stages and bone mass at age 20. Methods: Longitudinal assessments (at ages 5, 8, 10, 14, 17 and 20) of self-reported participation in organised sport were made in 1181 offspring (48% female) of a pregnancy cohort (the Raine Study). Latent class analysis was used to identify patterns of sport participation. Three trajectory classes were identified for females: consistent sport participators (52.7%), sport dropouts (32.5%), and sport nonparticipators (14.7%). For males, three trajectory classes were identified: consistent sport participators (57.8%), sport dropouts (35.3%), and sport joiners (6.9%). Whole body bone mineral content (BMC) at age 20 was assessed by dual-energy X-ray absorptiometry (DXA). The association between BMC and organised sport participation trajectory was tested using generalised linear models. Results: After adjustment for height, body mass, physical activity, calcium intake, serum 25-hydroxyvitamin D levels, alcohol, and smoking (all at age 20 years), females in the consistent sport participator trajectory had significantly greater leg BMC (570 ± 2g) compared with dropouts (458 ± 3g) and non-participants (457 ± 4g). Males, who were consistent participators, had significantly greater whole body (3251 ± 14g vs 3092 ± 18g), leg (597 ± 3 vs 559 ± 4g) and arm BMC (222 ± 1.2 vs 214 ± 2g), compared to dropouts. Males who were joiners had significantly greater leg (594 ± 8 vs 559 ± 4g) and arm BMC (220 ± 3 vs 214 ± 2g) than dropouts. Conclusion: A higher peak bone mass at age 20 was independently predicted by consistent sport participation during childhood and adolescence in this community based cohort. In males, joining sport during adolescence was associated with a greater peak bone mass than those that started sport in childhood, but then dropped out. Therefore, joining organised sports participation over the adolescent period may be positively associated with peak bone mass in males. Consistent sports participation (beginning in childhood) in females and males, as well as joining of organised sport during adolescence (in males) may offset the later risk of osteoporotic fractures by optimising attainment of peak bone mass.

OLDER AUSTRALIAN ADULTS’ GETTING OUT AND ABOUT: THE ROLE OF ACCESSIBLE LOCAL DESTINATIONS
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Objective: Age-friendly city guidelines by WHO emphasise the importance of older adults getting out and about in the community in maintaining physical and mental function. Although people tend to go out less often as they age, little is known about how availability of local destinations may help older adults to maintain getting out and about. We examined cross-sectional associations of home-based trips with age in areas with different levels of access to local destinations among Australian older adults. Methods: Data were collected from 5,305 participants aged 60-84 years in the 2009 South East Queensland Travel Survey, who reported trips using a 24-hr travel diary. Home-based trips were defined as a walking or car trip that commenced or ended at home. Walk Score was used as a measure of
Objective Studies have shown that residents from disadvantaged neighbourhoods are more active for transport than those from more advantaged neighbourhoods, suggesting social inequalities in health may be reduced through facilitating active forms of transport. However, it is not clear how neighbourhood built environments contribute. This study examines associations between neighbourhood socioeconomic disadvantage and transport walking, before and after adjustment for neighbourhood built environment characteristics. Methods This investigation included 11,035 residents from 200 neighbourhoods in Brisbane, Australia who participated in the How Areas in Brisbane Influence Health and Activity (HABITAT) study at baseline. Respondents self-reported their walking for transport in the previous week; neighbourhood disadvantage was measured using a census-derived index. Associations between the odds of being a transport walker and neighbourhood disadvantage were examined before and after adjustment for network distance to the closest bus stop, train station, and shop, and street connectivity, land use mix, and dwelling density were measured at 1km buffers around the residence. All models were adjusted for age, sex, and individual-level education, occupation, and household income. Data were analysed using multilevel binary logistic regression with Markov chain Monte Carlo simulation. Results Prior to adjustment for built environment characteristics, those residing in Q5 (most disadvantaged neighbourhoods) had significantly higher odds of being a transport walker compared to Q1 (least disadvantaged). After adjustment, the association was attenuated to the null (Q5 – OR 1.17 95%CI 0.96, 1.44). Conclusions This study provides evidence that the social gradient in transport walking in Brisbane, Australia is explained by neighbourhood built environment attributes. Given that residents of disadvantaged neighbourhoods tend to be less active during leisure time, focused and strategic transport and land use policies that facilitate active transport to be undertaken as a pragmatic method of travelling to destinations of need may be used as a meaningful strategy to reduce health inequalities.

Objective Travel initiatives such as 20mph speed limits can reduce traffic-related casualties, however less is known about their impact on active travel, perceived pleasantness of communities, and health inequalities. From July 2016,
the city council began implementing a city-wide 20mph speed limit in Edinburgh (Scotland), using signage and road markings, complemented by legislation, an education campaign, and enforcement. This study reports on the development of a programme theory aimed at elucidating the public health impact and the potential explanatory mechanisms of change of this complex intervention. Specifically, the mechanisms through which an increase in active travel could occur are reported here. Methods An initial logic model was developed (Sept 2015) using a review of existing literature. This study was refined using data from 15 interviews (Nov/Dec 2015) with 17 key informants and stakeholders involved in, or directly affected by, the 20mph speed limit implementation in Edinburgh. Data analysis was both inductive and deductive in nature, conducted using the framework method based around the logic model. Results Mechanisms of change regarding how the implementation of a city-wide 20mph speed limit could impact active travel were identified. Key emergent themes included an improvement in perceived levels of safety for pedestrians and cyclists, and greater route availability for active travel. One mechanism identified as to how perceived safety could increase is through reducing the on-road speed differential between cars and cyclists. Also identified was the improved ease and pleasantness for pedestrians when crossing roads. Conclusions Themes from the qualitative data supported the initial hypotheses, including the anticipated improved perceptions of safety as a mechanism for increasing active travel. Potential moderators of change (e.g., level of public awareness and/or support and enforcement) were also identified. The interview data provided an in-depth understanding of the underlying assumptions held regarding the impact of the implementation of a 20mph speed limit in Edinburgh. Many cities worldwide are considering implementing 20mph (30kmph) speed limits; this refined logic model and programme theory provide a framework for developing and selecting appropriate measurement tools, testing potential mechanisms of change, and assessing outcomes within the evaluation of 20mph speed limit programmes.

LAND USE PROPORTIONS AND WALKING: ISOTEMPORAL SUBSTITUTION ANALYSIS

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Purpose: Land use mix, operationalized as entropy, has been used as a component of walkability. However, entropy measures are not intuitive to understand and often produce mixed findings. The proportion of land uses is more straightforward to communicate with practitioners and previous studies using such measures show promising results. Since the sum of proportions of different land uses always adds up to 100%, the impact of substituting one land use with another can be examined using isotemporal substitution models. This study examined associations of land use proportions (residential; commercial/institutional; recreational; and industrial/other) with walking, using isotemporal substitution analysis. Methods: Data were obtained from 11,035 participants (aged 38-68 years) of the How Areas In Brisbane Influence Health and Activity (HABITAT) study, recruited from 200 neighborhoods in Brisbane, Australia. Participants reported walking duration in the previous week. The four land uses were identified within a 1-km network buffer for each participant and isotemporal substitution models were used to examine the effects of replacing residential area with commercial/institutional, recreational, and industrial/other area on any walking and sufficient walking (150+ min/week). Results/Findings: Overall, 80% and 37% of participants reported any walking and sufficient walking, respectively. The buffer area on average consisted of 78% residential, 8% commercial/institutional, 7% recreational, and 7% industrial/other areas. Replacing 5% of residential area with commercial/institutional area was associated with a 10% higher odds (95%CI: 1.04, 1.16) of any walking and a 5% higher odds (95%CI: 1.01, 1.10) of sufficient walking. Replacing residential area with recreational or industrial/other area was not associated with a greater odds of walking. Conclusion: Substituting residential area with commercial/institutional area may facilitate residents' walking, possibly by providing more local destinations to walk to. However, replacing residential area with recreational area does not seem to affect walking. It is possible that the quality, rather than quantity, of recreational area is more relevant to walking in this study area. Isotemporal substitution analysis has been typically used in studies involving accelerometer-derived activity measures. This study shows that the same approach may be applicable to land use proportions as land uses are competing within a finite land area.
DO POKEMON GO PLAYERS WALK MORE THAN OTHER COLLEGE STUDENTS?
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Purpose: To verify if college student's that are playing augmented reality games, such as Pokémon GO, have a daily higher step count when compared to non-players. Methods: Participants were recruited via e-mail through a State University Recreation in the United States. Additionally, the study was publicized in a weekly newsletter sent out to the entire student community. Those interested in the study –both players and non-players- contacted the research team for participation. Responses to participants included an online survey about their gaming habits, physical activity and demographics. They were required to download two smartphone apps, available for both Android and iOS: PACER, used to count steps; and PACO (Personal Analytics Companion), used to complete a short daily survey three times per day during seven days. At the end of the week, participants received a message requesting the completion of a final survey, addressing (game preferences and a general assessment of the gaming experience). A total of 133 students showed interest in participating, 79 started participation and 66 completed all components of the study. Results/findings: A total of 367 complete days of data were recorded, with an even balance between females who self-identified as non-players (27.5%), female players (23.9%), male non-players (22.6%) and male players (25.8%). First unadjusted results indicate that players are walking less distances than non-players. An independent-samples t-test was conducted to compare average number of steps at the end of the day for players and non-players. There was a significant difference in the number of steps for male players (M= 6647.8, SD=4415.6) and male non players (M=8103.3, SD=4061.7) conditions; t (181)=2.15, p = 0.04. Adjusted models will include age, weight, weekly self-reported physical activity, played time, bouts of playing per day, playing environments and active vs sedentary playing, among others. Conclusions: Smartphone games based on augmented reality have the potential to alter the amount of walking time college students. Establishing whether playing has a positive or negative effect on walking times is a necessary first step towards using gamification as a tool in public health policies.

A MULTILEVEL APPROACH TO EXPLORE INDIVIDUAL AND CONTEXTUAL DETERMINANTS OF COMMUTING AND NON-COMMUTING TRAVEL BEHAVIORS IN 5 EUROPEAN URBAN REGIONS (THE SPOTLIGHT PROJECT)
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Purpose: The urban environments in which our daily lives take place have seen great changes in recent decades, with major impacts on human behaviour and patterns of travel. Promoting active transport is a key component of policies aiming at increasing daily physical activity and improving health. In transportation research, very few studies have explored determinants such as weight status or the choice of residential neighborhood. The aims of our study were to assess associations of individual and contextual determinants with travel modes for commuting and non-commuting purposes in European adults. Methods. The most frequently used travel modes (individual motorised transport, public transport, walking, cycling) were obtained from a web-questionnaire in 6,037 adults from 60 urban neighborhoods across 5 European regions (within Belgium, France, Hungary, the Netherlands and the United Kingdom). A virtual neighborhood audit was conducted using Google Street View to assess built environment characteristics in these urban neighborhoods. Associations with main travel modes were explored using multinominal multilevel models based on 2-level analyses: individual (age, gender, educational level, having a child, BMI, length residency, attachment to residential neighborhood, residential self-selection, and perceived...
environmental characteristics) and contextual (objective presence of traffic calming devices, public transport stops, cycle lanes and socioeconomic levels). Individual motorised transport was used as the reference category. Results. For both commuters (n=2,219) and non-commuters (n=4,984), having a child and higher BMI were negatively associated with using public transport and walking. Women reported more time in public transport and walking than men. Participants who reported that perceived access to public transport had been a criteria to choose their residential neighborhood spend more time in public transport, walking and cycling. Objective presence of public transport stops and higher SES level were significant predictors at the contextual level. In all models, individual and contextual-level factors explained 20 to 40% of the variance of the choice of mode of transport. Conclusion. This enhanced understanding of the correlates of transport behaviors can help to promote active transport, and support the introduction of policies by environmental, urban, transport and health policy makers.

O.18 Primary school physical activity and sedentary behavior and interventions (Salon C)

CLASSROOM PHYSICAL ACTIVITY BREAKS INCREASE PHYSICAL ACTIVITY AND DECREASE LENGTHY BLOCKS OF SEDENTARY TIME FOR ELEMENTARY SCHOOL STUDENTS
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Objective: This study examined the effects of teacher-implemented classroom physical activity breaks (PABs) on the maximum length of continuous sedentary (MLCS) minutes, and total moderate to vigorous physical activity (MVPA) minutes for elementary school students during the school day. While evidence of the benefits of PABs is emerging, there is a paucity of research showing how PABs contribute to students' overall daily MVPA and, in particular, whether they can reduce MLCS at school. Methods: Teachers at three schools received professional development about why and how to use PABs. For one week, 6 to 12 students in each classroom wore ActiGraph accelerometers. Teacher-reported PAB usage and other activities (i.e., minutes of recess and physical education [PE] class) were obtained by daily calendar. Daily PAB was coded as a binary variable (1 = yes; 0 =no), and minutes of recess/PE were calculated daily. MVPA and MLCS outcomes were calculated using ActiLife software. A multi-level mixed effects regression was used to examine the effects of PAB use on MLCS and MVPA, while controlling for multiple days of data per student. Models controlled for recess/PE minutes, student grade, and gender. A total of 115 days of data were gathered from 49 students within 14 classrooms. Results: On days with PABs, students had significantly shorter MLCS times (M=16.8 minutes, SE=1.9), than on days without PABs (M=29.9, SE=2.7, p Conclusions: PABs can positively impact students' school day MVPA and sedentary behavior. Because PE and recess are often not available every day, classroom PABs are an important contributor to the 30 minutes of MVPA that students should achieve during school hours. Furthermore, PABs are effective for breaking up long bouts of sedentary time, which can occur during lengthy instructional blocks. Prior work shows that PABs benefit students' attention, behavior, and academic performance; this work extends that literature to show benefits in increasing MVPA and minimizing lengthy episodes of sedentary time.

A RANDOMIZED CONTROLLED TRIAL TO ASSESS THE EFFECTIVENESS OF AN ADAPTED EFFICACIOUS SCHOOL-BASED INTERVENTION IN IMPROVING CHILDREN’S MVPA.
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Introduction Although comprehensive school-based physical activity interventions are efficacious when tested under research conditions, they often require adaptation in order for implementation at scale. The primary aim of this paper is to report on the effectiveness of an adapted efficacious school-based intervention in improving children's MVPA. Methods A cluster randomized controlled trial was conducted in primary schools (25 intervention and 22 control schools) located in New South Wales, Australia. Follow-up measures were taken at six months post randomization. The multi-component school-based intervention was based on an efficacious school physical activity
program (SCORES program) which was adapted for scalability and delivery by a local area health service over a six month period. The intervention consisted of four physical activity strategies and seven implementation support strategies. The primary outcome was students mean daily minutes spent in MVPA, objectively measured using accelerometers. Mean daily minutes spent in VPA, MPA and school day MVPA, VPA, MPA were also assessed. School level outcomes included PE lessons quality measured via observation and school physical activity practices were also assessed. Results: Participants (n = 1139, 49% male) were Grade 3-6 students at follow-up (May-August 2015). At six-month follow-up there were no significant effects in favour of the intervention group for overall daily minutes of MVPA with the adjusted mean difference in daily MVPA between groups being 1.96 minutes (95% confidence interval [CI]: (-3.49,7.41, p = 0.48). However, adjusted difference in mean minutes of overall VPA (adjusted diff = 2.19,CI 0.06-4.32 , p=0.04), mean minutes of school day MVPA (adjusted diff = 2.90,CI 0.06-5.85 ,p=0.05) and mean minutes of school day VPA (adjusted diff = 1.81,CI 0.78-2.83 p= Conclusion: The modified intervention was not effective in increasing children's overall daily minutes of MVPA, when adapted for implementation at scale. However the intervention did improve daily minutes of VPA and school day MVPA and PE lesson quality.

BUILDING ACTIVE SCHOOLYARDS: EFFECT OF SCHOOLYARD INTERVENTIONS MEASURED BY ACCELEROMETER AND GPS

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Purpose: Previous schoolyard interventions promoting physical activity have reported mixed results. The level of evidence does not seem sufficient to draw conclusions on the intervention effects. The Activating Schoolyards Study is a quasi-experimental schoolyard intervention study aimed at investigating the effect of renewed schoolyard interventions on 10-15yrs old children's physical activity during the school day. The interventions were tailored to the school context and contain both physical and organizational changes. Even though the design and dimension of the intervention components varied, some features were established at several schools, e.g. climbing walls, balance-bars, amphitheater-stages, skating areas and trampolines. The total budget for each of projects ranged from 120,000 to 900,000 USD. Methods: At six Danish schools, 554 students (grade 4-8) were assessed. Results: Participants (n = 139, 49% male) were Grade 3 students at follow up wore an accelerometer (ActiGraph GT3X) and a GPS (Qstarz BT-Q1000XT) for 5 schooldays to determine their time and physical activity in the schoolyard. Data were collected between April and June in 2014 and again in 2016 post the schoolyard interventions. Multilevel analysis of combined accelerometer and GPS data points was used to assess change in time and physical activity in the schoolyard. Results: A significant increase of 32.5 minutes was found in daily average minutes spent in the schoolyard during the school day post the interventions, of which 10.1 minutes was spent being physically active. Time in the schoolyard during recess increased significantly with 9.3 minutes of which the students were physically active in 4.5 minutes. Conclusions: These findings support that schoolyard interventions can increase time and physical activity in the schoolyard during the school day. The effect can seem small compared to the cost of the renovation, but it's likely that the effect is maintained for several years. Further analyses will reveal the underlying mechanisms.

PHYSICAL ACTIVITY PROGRAMMING IN LOWER-INCOME SCHOOLS: PRELIMINARY IMPLEMENTATION RESULTS FROM THE FUELING LEARNING THROUGH EXERCISE (FLEX) STUDY

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Objective: There is national interest in adding opportunities for physical activity (PA) at school in addition to physical education (PE). Our purpose was to evaluate the implementation of two innovative, community-developed programs to understand their potential for contributing to PA offerings in lower-income schools. Methods: Seventeen schools from lower-income Massachusetts school districts were enrolled in the Fueling Learning through Exercise Study (FLEX) and randomized to Just Move (JM; teacher-led active classroom breaks; n=6), 100 Mile Club (100MC; school champion-led walking/running program; n=6), or a Control group (n=5). Teachers/champions
academic content. Purpose: To study the response of the physically active lessons and identify facilitators and

reported implementation in 3rd and 4th grade classrooms (minutes/session; sessions/week) of JM and 100MC and teachers'/administrators' reception to the programs during the 2015-16 school-year. Enrolled 3rd and 4th grade children also reported their receptivity to the programs. Results: Among JM schools, 59% of eligible teachers (19/32 classrooms) participated in JM. Participating teachers offered JM breaks from 0-2 times/week (36%) to 6-8 times/week (36%), with a median session length of 5-6 minutes (43%; range: 0-10 minutes). Teachers offered JM breaks during subject transitions and to refocus students; 36% reported integrating JM with academics most of the time. Teachers felt positively about JM (78%). Students reported liking JM (75%), and 90% indicated they would do JM again next year, if offered. Among the five 100MC schools reporting on implementation, 34% of eligible children participated per school (~84 children/school). Champions reported 100MC sessions were, on average, approximately 13 minutes; the median number of sessions/week/school was three (range=2-6), primarily held before school and/or during recess. Champions reported teachers and administrators felt positively (90%) about 100MC. Students reported liking 100MC (56%), and 83% indicated they would do 100MC again next year, if offered. Teachers/champions reported equal participation by male and female students in both programs; female students reported somewhat higher receptivity to both JM and 100MC. Conclusions: Initial evidence suggests that 100MC provided more PA time than JM and that both were acceptable to children, teachers, and administrators, with some evidence of greater student receptivity to JM. Though implementation was variable, these PA programs could complement scheduled PE, and may be appropriate for low-resourced schools.

EFFECTIVENESS OF BRITISH COLUMBIA’S DAILY PHYSICAL ACTIVITY POLICY IN ELEMENTARY SCHOOLS

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Purpose: In 2008, the British Columbia Ministry of Education (BCED) mandated a Daily Physical Activity policy (DPA) requiring elementary schools to help students achieve 30 minutes of moderate-to-vigorous physical activity (MVPA) during the instructional (class time) and non-instructional (lunch and recess time) school day on days without physical education (BCED, 2016). School-based physical activity policies have the potential to increase children’s physical activity (Lagarde & LeBlanc, 2010), yet no research has examined the effectiveness of the DPA policy in BC (Olstad, Campbell, Raine, Nykiforuk, 2015). The aims of this study were to determine how elementary teachers implement the DPA policy and to examine the differences in children’s physical activity levels at school when participating in different implementation methods of DPA. Methods: This study used mixed methods in a multi-phase sequential design. In phase one, twelve teachers (8 female) were interviewed on their implementation approaches and responses were categorized descriptively. In phase two, ten students from each interviewed teacher’s classroom were randomly selected to wear accelerometers for one school week. Independent sample t-test and MANCOVA were conducted to test for differences in percent proportion spent in MVPA during the total school day, instructional and non-instructional day, respectively, between implementation groups. Results: Teachers who provided DPA opportunities during instructional time were classified as using a prescriptive method (n=9). Teachers who relied on students to be active during non-instructional times were classified as non-prescriptive (n=3). Children in the prescriptive group spent a greater proportion of their time in MVPA during the total, instructional and non-instructional school day compared to those in the non-prescriptive group, p’s < .05. Conclusions: Heterogeneity in policy implementation creates variations in policy effectiveness. Teachers who provide opportunities for students to be active during the instructional school day may have students that accumulate more MVPA than those who are not given these opportunities, but it does not ensure that students will meet policy recommendations. Measures should be taken to assist teachers in the implementation of school-based physical activity policies.

PHYSICALLY ACTIVE ACADEMIC LESSONS: ACCEPTANCE, BARRIERS AND FACILITATORS FOR IMPLEMENTATION

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To improve health and academic learning in school-children, the Active School program in Stavanger, Norway have introduced physically active academic lessons. This is a teaching technique combining physical activity with academic content. Purpose: To study the response of the physically active lessons and identify facilitators and
barriers for implementation. Methods: Five school leaders, 13 teachers and 30 children from five intervention schools were interviewed about their experiences with a 10-month intervention, consisted of weekly minimum 2x45 minutes of physically active academic lessons, and the factors affecting its implementation. All interviews were transcribed and a qualitative content analysis was carried out using the data analysis program NVivo 10 (QSR international, London, UK). In addition, weekly teacher's intervention delivery log were collected during the intervention period. Results: Physically active lessons were well received among school leaders, teachers and children. Main facilitators for implementation of the physically active lessons were active leadership and teacher support, high self-efficacy regarding mastering the intervention, ease of organizing active lessons, inclusion of active lessons into the lesson curricula, and children's positive reception of the intervention. Main barriers were unclear expectations, lack of knowledge and time to plan the active lessons, and the length of the active lessons (15-20 minute lessons were preferred over the 45 minute lessons). Conclusion: Physically active academic lessons were considered an appropriate pedagogical method for children's learning. This teaching activity created positive variation, and were highly appreciated among teachers and children. Both the principal and the teachers should be actively involved the implementation, which could be strengthened by including physical activity into the school's strategy. Barriers for implementing physically active lessons in schools could be lowered by increasing implementation clarity and introducing the teachers to high quality and easily organized lessons.

O.19 Physical activity, sedentary behavior and mental health (Oak Bay 1 & 2)

PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR PREDICTING COGNITIVE AND ACADEMIC PERFORMANCE: RESULTS FROM THE ALOUD STUDY
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Purpose: Clear relations have been shown between physical activity and sedentary behavior on the one hand and cognitive and learning performance on the other, in children and adolescents. Research regarding these relations in young and middle-aged adults in a specific educational setting such as distance education is almost absent. This is where the Adult Learning Open University Determinants (ALoud) study adds to the body of knowledge as it investigates psychological and biological predictors of cognition and learning. Based on the findings in traditional education in children and adolescents it was hypothesized that: 1. physical activity was positively related to cognitive and learning performance 2. while, sedentary behavior was negatively related to cognitive and learning performance. Methods: In an observational design, 2842 adult distance education students reported on their physical activity and sedentary behavior at the start of their study. Cognitive performance was measured directly after the survey using the digital versions of the following cognitive tests: the Trail Making Test, the Substitution Test, and the N-back task, which measure shifting, processing speed, and updating, respectively. After 14 months, their accumulated learning performance, measured as academic performance, was used in the analysis. Linear regression prediction models were used on multilevel (i.e., for academic performance) data. The final sample on which the analyses were executed counted 2034 students. Results: Linear regression models for cognitive performance showed sedentary behavior to be positively predictive for processing speed (β=.064; pβ=.170; p Conclusions: In contrast to the hypotheses, the results showed that more sedentary behavior was associated with better processing speed and better academic performance, while physical activity was not. These findings are surprising considering that previous research in children and adolescents show sedentary behavior to be detrimental to academic performance. It is likely that sedentary time reflects time spent on positive sedentary behaviors (e.g., studying), which stimulates the brain rather than negative sedentary behaviors (e.g., TV viewing).

IMPROVING MENTAL HEALTH OUTCOMES THROUGH COGNITIVE MENTORING, SMARTPHONE TECHNOLOGY & THE OUTDOOR ENVIRONMENT TO INCREASE PHYSICAL ACTIVITY AMONG ADULTS AT RISK/WITH T2D.
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Purpose: It is estimated 50% of adults with diabetes suffer from depression or anxiety, which can increase the
OBJECTIVE The impact of physical activity on physical and mental health may be particularly pertinent in Tonga, where almost 50% of adults are insufficiently active, the prevalence of overweight is among the highest in the world.
(i.e. >80%), and there is an increasing burden of mental illness. However, there is a paucity of evidence for the
effect of sport programs on health in low- and middle-income countries. Our objective was to assess the impact
of the One Netball Pacific program on netball participation, recreational physical activity levels, mental well-being
and body composition in Tonga. METHODS We conducted a natural experiment on the island of Tongatapu. The
program comprised training local champions to promote netball at varying intensities in 10 villages where there
had previously been no organised netball participation. Measurements taken from a convenience sample of 30 women
in each village (n=300) at baseline and after 3 months of program delivery included: 1) Netball participation
frequency; 2) Global Physical Activity Questionnaire (recreation); 3) WHO-5 Well-Being Index and Happiness visual
analogue scale; 4) Body weight. The effect size for each of these outcomes was calculated for the overall sample
and separately for each village. The socio-ecological model was used a framework to identify key determinants of
netball participation and establish indicators of program quality. Comparisons between villages grouped according
to program quality enabled the identification of key program components for each outcome. RESULTS There were
91% of participants retained at follow-up. Netball participation increased by 4.1 sessions/week (village range: 3.6–
4.3 sessions/week) and this corresponded to an increase in moderate-vigorous recreational physical activity of 3.5
hours/week (village range: 3.1–4.1 hours/week). Mental well-being scores improved by 21% (village range: 3–78%)
and body weight decreased by 2.3kg (village range: 0.1–7.0kg). The quality of program delivery appeared to be an
important determinant of mental well-being, but did not have a significant effect on netball participation,
recreational physical activity volumes or body weight. CONCLUSIONS The netball program positively influenced
netball participation, recreational physical activity levels, mental well-being and body weight of participants.
Broader dissemination and scaling-up of similar interventions appears to be warranted in Tonga.

7829

DOMAIN-SPECIFIC PHYSICAL ACTIVITY AND AFFECTIVE WELLBEING AMONG ADOLESCENTS: THE MODERATING ROLE
OF SELF-DETERMINED MOTIVATION
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Purpose: The relationship between physical activity and mental wellbeing is not consistent across different life
domains. Leisure-time physical activity appears to be beneficial, while physical activity in some other domains (e.g.,
work) may be detrimental to wellbeing. The factors that influence these relationships and contribute to variation,
both within and between different domains, are not well understood. Grounded in self-determination theory, the
purpose of this study was to examine the reasons why adolescents participate in physical activity (i.e., their
motivation) moderates the relations between physical activity and affective wellbeing within two different
domains (i.e., leisure-time and active travel). Methods: A sample of 1,632 adolescents (M age = 12.94 years, SD =
0.54, 55% male) completed self-report measures of leisure-time physical activity and active travel. Participants also
wore an accelerometer across seven days in order to objectively measure domain-specific physical activity.
Participants also completed two measures of motivation – one towards leisure-time physical activity and one
towards active travel – as well as a measure of affective wellbeing (i.e., positive and negative affect). Results:
Structural equation modelling revealed that greater self-reported leisure-time physical activity was associated with
greater positive affect (β = .29) and less negative affect (β = -.19), while self-reported active travel had no
relationship with positive (β = -.06) or negative affect (β = -.00). However, the relationship between active travel and
affective wellbeing was significantly moderated by motivation. Active travel had a positive association with negative
affect when controlled motivation (e.g., guilt/pressure) was higher (β = .12), but a negative association when
controlled motivation was lower (β = -.10). A similar relationship was found among the objective active travel
measure. Active travel had a positive association with positive affect if autonomous motivation (e.g., enjoyment,
valued benefits) was high (β = .05), that was significantly different from the relationship observed when
autonomous motivation was low (β = -.11). Conclusions: Tailoring interventions and physical activity guidelines to
focus on leisure-time physical activity could be beneficial. Promoting autonomous participation in physical activity
outside leisure-time is also likely to support adolescents’ mental wellbeing.

7837

IS THE LINK BETWEEN MOVEMENT AND MENTAL HEALTH A TWO-WAY STREET? PROSPECTIVE ASSOCIATIONS
BETWEEN PHYSICAL ACTIVITY, SEDENTARY BEHAVIOUR AND DEPRESSIVE SYMPTOMS AMONGST WOMEN LIVING IN
Socio-Economically Disadvantaged Neighbourhoods

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Objective: Engaging in physical activity (PA) and limiting sedentary behaviour (SB) have been linked to lower risk of depression. However, associations between specific domains of PA (e.g. leisure-time, transport, domestic and occupational) or types of SB (e.g. TV viewing, computer use, prolonged sitting) and depressive symptoms are not well understood. Further, most existing prospective studies have examined associations between PA and SB at baseline and depressive symptoms at follow-up, and have neglected to examine the potential for reverse causality. The aim of this study is to investigate the prospective associations between different domains of PA, SB and depressive symptoms in both directions amongst women living in socio-economically disadvantaged neighbourhoods in Victoria, Australia. Methods: Women (n=1033), aged 18-46 years at baseline, completed reliable and validated self-report measures of PA (leisure-time, transport, occupational, domestic) and SB (TV viewing, computer use, overall sitting time and screen time) using the International Physical Activity Questionnaire (IPAQ-L), as well as depressive symptoms (Centre for Epidemiologic Studies Depression Scale, CES-D 10) in 2007/08 (T1), 2010/11 (T2) and 2012/13 (T3). Separate linear mixed models were fitted to examine if change in depressive symptoms from T1-T3 differed dependent on each of the baseline PA or SB measures. Similar models were fitted examining baseline depressive symptoms as a predictor of change in PA and SB. All models adjusted for potential confounders and clustering within neighbourhoods. Results: There was no evidence that change in depressive symptoms differed depending on any of the baseline PA or SB measures. In general, there was no evidence that the change in PA or SB differed depending on baseline depressive symptoms. The one exception was change in leisure-time PA, which declined more among those with heightened depressive symptoms at baseline (Interaction: β= -0.003, 95% CI= -0.007, -0.0003). Conclusions: No evidence of a bi-directional relationship between PA, SB and depressive symptoms was found. Changes in women’s PA and SB may not predict depressive symptoms; however, heightened depressive symptoms at baseline may predict lower levels of leisure-time PA over time. Targeting individuals with heightened depressive symptoms may be of particular importance for the promotion of leisure-time PA.

O.20 Measurement and analysis of physical activity and sedentary behavior (Lecture Theatre)

Brief History of Step Counting and Cadence Tracking

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Walking is one of the most common forms of human locomotion. The evolution of objective monitoring devices (e.g., pedometers or accelerometers) and the current wave of commercial wearable technologies has afforded public health researchers, practitioners, and the general public a unique opportunity to measure and promote ambulatory behavior, including walking, with minimal bias. In recent decades objective monitors have been used in a number of cross-sectional national- and state-representative studies to assess walking behavior and are increasingly used in clinical, community, and workplace based interventions. Amassed data now includes reference and index values useful to support interpretation and goal setting. We have better understanding now of “how many steps/day are enough?” and “how many steps/day are too few?,” and now with an increasing interest in cadence (steps/min) as a reasonable index of ambulatory intensity, ”how fast is enough?” This brief history of step counting and cadence tracking: 1) summarizes current epidemiological literature examining objectively monitored ambulatory behavior, 2) answers public health relevant questions concerning insufficient and sufficient amounts of daily walking, 3) considers the relative importance of walking speed in relation to public health, and 4) identifies future research directions related to the assessment and promotion of walking behavior.

ISOTEMPORAL SUBSTITUTION OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOURS: PREDICTING EFFECTS ON BODY COMPOSITION AND METABOLIC RISK FACTORS

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Purpose: Increased daily physical activity is widely recommended as a means to improve metabolic health. However, discretionary leisure time is limited, so the addition of physical activity into an individual’s day must come at the expense of time spent in other activity. Therefore, the aim of this study was to theoretically substitute time spent in sedentary behaviour with physical activity of moderate or greater intensity, and examine predicted improvements in body composition and markers of metabolic risk. Methods: Participants in this cross-sectional study were 349 healthy New Zealand women of three ethnicities (Maori, Pacific, European), aged 16-45 years (mean ±SD, 31.6 ±8.5 years). Physical activity and sedentary behaviour were objectively assessed for 7 consecutive days, using hip-worn tri-axial accelerometers. An isotemporal substitution paradigm was used to examine the effects of reallocating time between sedentary behaviour and physical activity of different intensities on body composition and metabolic risk factors. Results/findings: Reallocating any time from sedentary to an equal time in moderate, vigorous or moderate-vigorous (MVPA) activity, had significant improvements on all markers than when equivalent time was reallocated into MVPA. Improvements to body composition markers resulting from reallocation of time into moderate or vigorous physical activity were not significantly different, regardless of whether that time was originally spent in sedentary or in light physical activity. Conclusions: Significant improvements in body composition and metabolic risk markers were predicted when sedentary behaviour was theoretically substituted with physical activity of moderate or greater intensity. Although the vigorous component of MVPA could provide the most potent effect on health outcomes, simply increasing walking pace from slow to brisk could confer significant health benefits. These finding may provide useful insight for simple messaging in public health recommendations.

A NOVEL PROCEDURE FOR IDENTIFYING AND INTEGRATING THREE-DIMENSIONS OF OBJECTIVELY MEASURED FREE-LIVING SEDENTARY TIME
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Objective:The widely accepted definition of sedentary behaviour (SB) refers to i) any waking behaviour characterized by ii) an energy expenditure ≤1.5 metabolic equivalents while iii) in a sitting or reclining posture. At present, there is no single field-based device which accurately measures all three key dimensions of SB. The aim of this study was to develop a novel integrative procedure to combine sleep, activity intensity and posture information from two validated activity monitors to quantify sedentary time. Methods:Sixty-three female participants aged 37.1 (±13.6) years with a body mass index (BMI) of 29.6 (±4.7) kg/m2 were continuously monitored for 5-7 days to track free-living SB with the SenseWear Armband (for sleep and activity intensity) and the activPAL (for posture). A set of data merging operations controlled via a simple graphical user interface were developed. After accounting for sleep time, differences in sedentary time according to sitting/reclining (SEDAP), low EE (SEDSWA) and the integration of these dimensions (SEDINT) were compared. Results:The three SB measures were positively inter-correlated with the weakest relationship between SEDSWA (awake and AP (awake and sitting/lying posture) [r(61)=.37, p=.003], followed by SEDSWA and SEDINT (awake, AP and SEDINT [r(61)=.91, p1.18, 73.15)=104.70, pSWA resulted in the most sedentary time (11.74±1.60hours/day), followed by SEDAP (10.16±1.75hours/day), and SEDINT (9.10±1.67hours/day). Conclusions:It is possible to combine information from two validated activity monitors to obtain a three dimensional measure of free-living SB based on posture and activity intensity during waking hours. The positive correlation suggests that both activity intensity and posture are related aspects of the same phenomenon (sedentary behaviour). However, sedentary time according to posture and sedentary time according to activity intensity are conceptually different. Only the combination of these dimensions meets the definition of SB proposed by the Sedentary Behaviour Research Network. The implications of this methodological development for clarifying the impact of SB on health and obesity are yet to be determined.

CAN FUNCTIONAL MRI HELP OPTIMISE LIFESTYLE BEHAVIOUR CHANGE FEEDBACK FROM WEARABLE TECHNOLOGIES?
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Purpose: Commercially available wearable technology allows individuals to self-monitor behaviour (physical activity and sedentary behaviour) and health (glucose levels). However, there is limited evidence on how best to present feedback to optimise behaviour change. Innovative communications research using functional magnetic resonance imaging (fMRI) has highlighted that increased levels of brain activation in the prefrontal cortex in response to health messages were associated with smoking cessation. Objective: (i) identify the pattern of neural activity following exposure to personalised physical activity, sedentary behaviour and glucose visual feedback and (ii) examine behaviour change following exposure to the personalised feedback. Methods: Twenty-eight adults aged 30-60 years were recruited at Loughborough University, UK. Continuous physical activity, sedentary time and glucose data were collected via accelerometer, inclinometry and a minimally invasive glucose sensor, respectively. Using their previous 14 days of data, 20 personalised feedback messages (5 relating to moderate-to-vigorous physical activity (MVPA), light physical activity, sedentary behaviour and glucose) were produced. Neural activity was assessed via fMRI whilst participants were presented with feedback messages. Imaging data was acquired on a 3.0T MRI scanner. In total, 24 blocks (12 active, 12 rest) were presented. Each active block consisted of stimulus presentation of five back-to-back trials (feedback messages) of 8s, totalling 40s, followed by a rest period of 40s, during which participants viewed a fixation cross and were instructed to clear their minds. Functional data were pre-processed and analysed using Statistical Parametric Mapping (Wellcome Department of Cognitive Neurology, UK) and anatomical labels using WFU_PickAtlas. Following the fMRI task, participants were asked to continue wearing the devices for 7 days. Results: T-tests identified significant activations within the prefrontal cortex (middle frontal gyrus and sub-gyral area) after glucose feedback compared with behavioural feedback (p

DEVELOPMENT OF AN OBJECTIVE MEASURE OF OUTDOOR ACTIVE PLAY IN CHILDREN USING ACCELEROMETRY AND GPS
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Purpose: Outdoor active play has declined substantially in recent decades, and in recent years there has been a renewed interest in studying this behaviour. The sporadic and unorganized nature of outdoor active play presents unique challenges from a measurement perspective, and to date an objective measurement approach has not been established. This study aimed to develop an objective measure of children’s outdoor active play using combined accelerometry and GPS. Methods: 50 children (50% female, aged 10-13) were recruited from Kingston, Canada. Participants concurrently wore an Actical accelerometer on their waist and a Garmin Forerunner 220 GPS watch on their wrist for 7 consecutive days. During these 7 days, participants maintained a physical activity log where they recorded any time that they went outside in 15-minute intervals throughout the day, along with what they were doing during this outdoor time. The initial step of data processing consisted of removing time spent indoors and time spent outdoors while engaged in organized sport (determined from the log), or active travel (determined using GPS data and PALMS software) from the accelerometer data. Following this, a predictive algorithm was developed that distinguished between accelerometer epochs that occurred during outdoor active play versus those passive outdoor pursuits (e.g., eating dinner outside). The algorithm maximizes sensitivity and specificity. Results: There were 110 sessions of outdoor active play and 22 sessions of passive outdoor pursuits recorded. The final predictive algorithm that was selected to distinguish outdoor active play from passive outdoor pursuits uses a combination of 1) bouts of sedentary, light, moderate, and vigorous physical activity of various minimum and maximum lengths, and 2) rolling average accelerometer epoch count values (e.g., a forward 5-minute rolling average > 93 counts/15 seconds). The best identified combination distinguished between outdoor active play and passive outdoor pursuits with a sensitivity and specificity of 86.1%. The positive and negative predictive values were 94.8% and 68.1%, respectively. Conclusions: The predictive algorithm can be used with accelerometers, GPS and behavior logs to derive objective estimates of children’s habitual outdoor active play.
CALIBRATION OF SELF-REPORT QUESTIONNAIRES TO MEASURE SEDENTARY BEHAVIOUR IN OLDER ADULTS
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Purpose: To systematically compare and calibrate a range of self-report SB tools against an objective postural measure of sitting (activPAL3), to determine the optimal self-report measure for population surveillance. Methods: Older adults from two existing UK cohorts (Lothian Birth Cohort 1936 aged~79, West of Scotland Twenty-07 aged ~63 and ~83) wore an activPAL3 continuously for 7 days (n=700 analysed), and completed three sets of self-report SB questions, before (assessing usual week), and during (assessing previous day and previous week) monitor wear. Each set of questions considered seven types of SB assessment questions (total sitting time, proportion of day spent sitting [VAS scale], proxy measures [TV time, screen time], sum of domains, sum of behaviours, pattern [number x average duration of events]). Objective daily sitting time (excluding self-reported sleep) was used to calibrate all twenty-one self-report measures. Calibration was best effected by adding a fixed correction factor to the self-report outcome. Outcomes of correction factor, % overlap of corrected distribution, correlation (to assess individual ranking), and % missing data were used to identify the optimal self-report questions for future use. Results: In general, the previous day recall period resulted in less missing data (0.5-5%) than previous week (0.5-16%) or usual week (2-10%). The sum of behaviours (5-16%) and pattern (10-15%) questions had most missing data. Within each recall period, total sitting time (89-96%), TV time (86-90%) or screen time (90-92%) had the best overlap of distribution with the objective measure. However, proportion of the day spent sitting (VAS scale, 0.30-0.34) and sum of behaviours (0.26-0.33) had the highest correlation with objective measures. Correction factors to calibrate self-report varied from -4.0 to +7.4 hours/day. Conclusions: As originally reported, none of the self-report measures reported was an accurate measure of self-report sedentary behaviour, however fixed factor calibration resulted in a high level of agreement for the group mean and distribution about the mean. Total time spent sitting the previous day (1.2% missing, 96% distribution overlap, +3.53h/day correction factor) was the optimal tool to provide a group mean, and proportion of the previous day spent sitting (0.8% missing, r=0.32) was optimal to rank individuals.

O.21 Food environment and perceptions (Saanich 2)

INVESTIGATING CONSUMERS’ PRACTICAL UNDERSTANDING OF HEALTHY AND NORMAL FOOD CHOICES USING A FAKE FOOD BUFFET
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Purpose: To examine laypeople’s practical understanding of a healthy diet using a ‘fake’ food buffet. This is important to successfully promote healthy eating. The present study is the first to experimentally examine how consumers define healthy and balanced food choices for an entire day compared with normal choices and compared with dietary guidelines. Methods: We used an extensive replica food buffet with 179 foods commonly consumed in the Swiss diet. The ‘fake food buffet’ is an innovative method, to experimentally investigate food choice behaviour in a well-controlled laboratory setting. The method has been validated by comparing portion sizes selected from a buffet with real foods to portions selected from the fake food buffet. People from the general population in Switzerland (n=187; 51.9% female), aged between 18 and 65 years, were invited to participate in a food choice study. They were randomly assigned to one of two conditions. In the control group, the participants were instructed to serve themselves foods they would eat on a normal day, whereas in the ‘healthy’ group they were instructed to choose foods representing a healthy diet. Portion sizes, meal compositions and nutrients were compared between the conditions. Results: Participants chose significantly more healthy foods, with 4.5 g more dietary fibre, 2% more protein and 2% less SFA in the ‘healthy’ condition compared with the control group. However, in both experimental conditions, participants served themselves foods containing double the amount of sugar and salt recommended by dietary guidelines. Conclusions: Laypeople lack knowledge about the recommended portion sizes and the amounts of critical nutrients in processed food, which has important implications for communicating dietary guidelines. Furthermore, the energy of the food served was strongly correlated with the energy needs of the participants, demonstrating the potential of the fake food buffet method.
APPETITE RATINGS OF WHOLEGRAIN BREAKFARTS EVALUATED UNDER LABORATORY AND FREE-LIVING CONDITIONS

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Objective Satiating properties of foods are usually investigated under laboratory conditions, whereas in real life, foods are consumed under free-living conditions. The objective of this study was to compare the acute satiating properties of breakfasts when tested in a laboratory condition and in a free-living at home condition. Also, satiating properties of the five breakfasts were compared. Methods In this randomized cross-over trial balanced for laboratory and free-living test conditions, thirty-two women consumed five breakfasts, i.e. two bread breakfasts, two cereal breakfasts and one fried-egg breakfast (European breakfast). Visual analogue scales for measuring appetite were captured via an on-line scoring system and were analysed as incremental area under the curve, as satiation phase and as satiety phase. Results Location effects were limited to two small effects only. An overall location effect in hunger feelings was observed (p=0.040), which occurred specifically during the short satiation period (p=0.0002) where hunger feelings scored higher under laboratory conditions. Similarly, a location effect was observed for desire to eat (p=0.001); this was again higher under laboratory conditions. No other location effects were observed. The fried-egg breakfast scored lower in appetite ratings compared to the other four breakfasts. Bread breakfasts did not differ in their satiating properties. The Steel Cut oatmeal breakfast was reported to be more satiating as compared to the ready-to-eat cereal. Conclusions Where as the five breakfasts varied somewhat in their satiating properties, evaluation under laboratory conditions overall did not yield different results as compared to evaluation under free-living conditions. This may have implications for the conduct of human studies.

ARE YOUNG ADULTS’ PERCEPTIONS OF HOW NUTRITIOUS SNACKS ARE INFLUENCED BY THE NUTRIENT CONTENT OR PORTION SIZE?

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Objective: Snacking has become more prevalent in developed countries. While poor food choices pose a health risk, nutritious choices contribute important nutrients to overall nutrient intakes. Young adults are large snack consumers and nutritious choices should be promoted among this group. However, it is unclear how young adults currently define nutritiousness or how they evaluate the nutritiousness of various foods. Methods: The current study used a mixed methods design to explore this question, with 115 young adults invited to sort 32 snack foods commonly available for consumption in their environment. The participants sorted the snacks on a three meter line, scaled from ‘not nutritious’ to ‘very nutritious’. In addition, the subjects answered an open-ended question about their definition of nutritious. The sorting data was analysed by hierarchical cluster analysis and multi-dimensional scaling (MDS) analysis. The participants were asked to think out loud and the criteria and definitions of nutritiousness they reported were analysed. Results: Predictors of perceived snack nutritiousness were food sugar content (β=-.45, Pβ= -.21, Pβ=.011, Pβ=.007, Pβ=.79, P=. Conclusions: The findings of this study can provide insight into consumer perceptions and might help to design more effective nutrition education materials and labels that guide healthy choices.

THE ECONOMIC BURDEN OF INADEQUATE CONSUMPTION OF VEGETABLES AND FRUIT IN CANADA.

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Objective: Inadequate consumption of vegetables and fruit in Canada. METHODS: We accessed the Canadian Community
Health Survey to assess the inadequacy in the consumption of vegetables and fruit and published meta-analyses to assemble risk estimates for chronic diseases. Based on these inadequacy and risk estimates, we calculated the population-attributable fraction and avoidable direct and indirect costs to society. Direct costs include those for hospital care, physician services and drugs in 2015. RESULTS: About 80% of women and 89% of men consume inadequate amounts of vegetables and fruit. We estimated this to result in an economic burden of $CAD 3.3 billion per year, of which 30.5% is direct health-care costs and 69.5% is indirect costs due to productivity losses. A modest 1 percentage point annual reduction in the prevalence of inadequate vegetables and fruit consumption over the next 20 years would avoid approximately $CAD 10.8 billion, and an increase of one serving of vegetables and fruit per day would avoid approximately $CAD 9.2 billion. CONCLUSIONS: Further investments in the promotion of vegetables and fruit will prevent chronic disease and substantially reduce direct and indirect health-care costs.

CONFRONTING THE CONVENIENCE: THE ROLE OF CONVENIENCE STORES IN NEW ZEALAND CHILDREN'S FOOD ENVIRONMENTS
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Purpose: Convenience stores are often geographically located around schools and observational evidence suggests that they are a key source of unhealthy food in children's lives. However, little is known about the nature and extent of the foods and beverages marketed and available to children, and their real-time purchasing behaviour, within convenience stores. Wearable cameras provide a novel means of capturing children's behaviours and environments in real-time. This study investigated the role of convenience stores in children's food environments. Method A random sample of 169 children (11-13y) from 16 randomly selected schools in the Wellington region of New Zealand, wore cameras for four days that automatically took photographs every 7s. Images in the data set of the inside of convenience stores were selected and coded for the type and quantity of foods and drinks marketed, and available and accessible, to the children within the stores. Children's purchasing behaviours, including the path they take within the stores and products purchased, were also documented. Results/findings The majority of foods and beverages available to children were predominantly sugar-sweetened beverages, confectionery, pies and pastries, and snack foods. Children typically do not move beyond the front of the store and counter area, where little if any healthy food is displayed. Conclusions This is one of the first studies to objectively assess and report real-time evidence of the foods and beverages available to children, and their purchasing behaviour, within convenience stores. The study findings will inform health promotion strategies, including advocacy to local governments, to limit unhealthy food outlets, particularly around schools.

EXAMINING FOOD ENVIRONMENT POLICIES OF MAJOR CHAIN RESTAURANTS IN CANADA
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Objective Food company policies play a critical role in influencing the quality of the food environment, with downstream consequences on obesity and non-communicable diseases (NCDs). This study aimed to test methods to evaluate restaurant company commitments relating to the food environment. Methods This study builds on work of the INFORMAS collaboration to monitor and benchmark food environment policies globally. The Business Impact Assessment – Obesity and related population-level nutrition (BIA-Obesity) tool was developed to measure and benchmark nutrition-related commitments, performance and disclosure practices of the largest global food companies and distributors across four sectors (packaged food manufacturers, beverage manufacturers, restaurants and supermarkets), adapted from the Access to Nutrition Index methods. This preliminary study examined publicly available information on company commitments among ten national restaurant chains in Canada. Canadian and international company websites, social media accounts, annual reports, and media releases were scanned to identify policies across ten domains (company nutrition strategy, product classification system(s), reformulation, labelling, health claims, promotion to children, pricing, distribution and availability, relationships with external organizations and population nutrition policy positions). Results Ten top companies representing a total of 30% of the Canadian foodservice market were included in this preliminary evaluation, including national and...
multinational companies. Of the ten companies, six mentioned 'nutrition' or 'health' in their mission statement or had a nutrition strategy, and none mentioned obesity or NCDs in these mission statements or strategies. Overall, either companies reported having reformulated products for one or more nutrient, five reported ongoing reformulation, and two provided specific targets for future reformulation. Two of ten restaurant chains published commitments to limit advertising to children. While all companies had nutrition information available on websites, only one company voluntarily listed calorie information on menu boards. No companies published pricing or distribution policies, and few details on policies regarding funding relationships with external organizations or company policy positions were published on websites. Conclusions The major restaurant companies in Canada have published few food environment policy commitments. Future work will include verifying policies directly with companies, testing these methods for scale up in other countries, and comparing company commitments to actions.

O.22 Food environments, shopping and adults dietary behavior (Colwood 1 & 2)

NEIGHBOURHOOD FOOD ENVIRONMENT IN FOOD INSECURE SOUTH AFRICA COMMUNITIES: PRELIMINARY RESULTS FROM STOP-SA (SLOW, STOP OR STEM THE TIDE OF OBESITY IN THE PEOPLE OF SOUTH AFRICA)

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Purpose: In South Africa, the burden of overweight and obesity disproportionately affects women and tracks socioeconomic deprivation. The purpose of this study was to characterise food purchasing decisions in high and low income communities, at point of purchase, as part of a larger study on complex dynamics that shape urban food environments in South Africa. Methods: Six urban communities were selected by socioeconomic status, and 4 supermarket chains identified. Shoppers were invited to participate in a 34-item intercept survey, and offered a ZAR50 shopping voucher as a token of appreciation. The survey instrument included questions concerning reasons for selecting the store, shopping patterns, perceptions of cost and availability of healthy food, food security and demographics. Results: We present preliminary results from 39 intercept interviews, in 2 retail supermarkets, from 2 low-income communities. More than half (53%) of persons indicated that they had experienced hunger and 75% had experienced at least moderate food insecurity, in the previous 12 months, because there was too little money for food. Most people (72%) were shopping for their household. More than half (56%) shopped on a monthly basis, except for perishables. Reasons given for choosing the store in which they were shopping, were price (75%), proximity (52%), quality (49%) and cleanliness (48%). Over half (56%) indicated that food stores were widely available in their area, with 22% disagreeing. 53% felt that fruits and vegetables were available in stores in their area, but quality was c poor. Half of shoppers said that healthy food was expensive, and 53% felt that it was difficult to buy low fat foods in their neighborhood. Finally, more than 70% said that fast food outlets were prominent in their area. Food security was not associated with shoppers' reasons for choosing the store or shopping patterns, nor was it associated with perception of cost or availability of healthy food (NS). Conclusions: Preliminary results suggest that shoppers from low-income communities are influenced by price and proximity, that healthy food is perceived to be expensive, quality of fresh food poor and fast food prevalent. The experience of food insecurity does not alter these perceptions.

8150

SPATIAL ACCESS TO FOOD OUTLETS AND GROCERY STORES IN RELATION TO FREQUENCY OF HOUSEHOLD HOME-COOKING (THE SPOTLIGHT STUDY)

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However, movers differ from non-movers in their change in food outlet exposure. Increases and decreases in exposure were evenly distributed among movers. Movers who also experienced a change in food outlet exposure (54%) were equally likely to experience an increase (27%) as a decrease (27%) in exposure after relocation. Conclusions: For movers who experience a change in food outlet exposure, increases and decreases in exposure were evenly distributed. However, movers differ from non-movers on a range of baseline demographic and socioeconomic circumstances.

Purpose: Regular consumption of meals cooked at home is associated with having a healthier diet. Little is known about the role of the food environment in the frequency of cooking meals at home. We explored the independent and combined associations of spatial access to grocery stores and to food outlets and the frequency of household home-cooking. Methods: We analysed data from the European SPOTLIGHT study (N=5,084). The outcome ‘frequency of household home-cooking’ was split into three categories: 0-3; 4-5; and 6-7 days per week. Food environment data was collected through a virtual audit. We constructed scores for spatial accessibility to grocery stores (supermarkets and local food shops) and food outlets (restaurants, fast food and take away restaurants, and café/bars) based on a combination of distance and density and split them into tertiles. We used multilevel multinomial logistic regression models to test the independent and joint associations of the two spatial access measures and the outcome. Results: Mean age was 52 years, 44.1% was male and 64.9% report cooking 6-7 days a week. After adjustment for key covariates, individuals with the greatest spatial access to food outlets showed lower frequency of household home-cooking 6-7 days a week: (Relative Risk Ratio (RRR): 0.48; 95%CI: 0.27; 0.86) than individuals with lower access. Individuals with the greatest access to grocery stores showed lower frequency of household home-cooking 6-7 days a week (RRR: 0.56; 95%CI: 0.30; 1.02). When added to the model simultaneously, only greater spatial access to food outlets, and not spatial access to grocery stores, was associated with home-cooking. Additive interaction terms between the two spatial access measures showed that a combination of greatest spatial access to grocery stores and medium spatial access to food outlets was associated with the lowest odds for household home-cooking 6-7 times a week (RRR 0.25; 95% CI 0.09-0.66). Conclusion: Greater spatial access to food outlets is related with lower frequency of household home-cooking. Our results show stronger evidence for a role of food outlets, rather than grocery stores, for home-cooking.

CAN WE USE RESIDENTIAL RELOCATION TO STUDY CHANGE IN LOCAL FOOD OUTLET EXPOSURE? GETTING AT CAUSALITY IN BUILT ENVIRONMENTS AND HEALTH
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Purpose: Local food availability has been linked with diet and weight status in adults. However, unpacking causal factors related to changing food environments across the population is a challenge. One possible approach is to use residential relocation to track changes in food environment exposure, while accounting for accompanying life events that could confound potential conclusions. This study explores the utility of residential relocation within a longitudinal panel survey linked with national food outlet data to examine differences in the life events experienced by movers and non-movers, and whether relocation results in a simultaneous change in food outlet exposure. Method: A descriptive analysis of longitudinal data for England UK from a pool of unique participants across Waves 1-5 of the UK Household Longitudinal Study (n=55,527 adults aged >= 19y) linked with food outlet data from Ordnance Survey. Percentage of movers and non-movers were summarised for baseline demographic (e.g. number of children, marital status) and socioeconomic factors (e.g. income, employment) and odds of movers experiencing a change in these circumstances were compared to non-movers. Percentage of movers and non-movers were summarised for food outlet exposure at baseline and direction of change in exposure for movers. Results: Movers and non-movers differed across several demographic and socioeconomic circumstances at baseline. Movers were also more likely to experience a change in demographic characteristics (OR 3.49 95% CI 3.23-3.78) or socioeconomic circumstances (OR 3.11 95% CI 2.95-3.29) compared to non-movers. Movers and non-movers did not differ in their baseline food outlet exposure, and movers who also had a change in food outlet exposure (54%) were equally likely to experience an increase (27%) as a decrease (27%) in exposure after relocation. Conclusions: For movers who experience a change in food outlet exposure, increases and decreases in exposure were evenly distributed. However, movers differ from non-movers on a range of baseline demographic and socioeconomic circumstances.
and experience more changes in life circumstances than non-movers, which should be accounted for when using residential relocation to study the effect of change in local food environment exposure on behaviour and health outcomes.

**INVESTIGATION INTO THE BALANCE OF HEALTHY VERSUS LESS HEALTHY FOOD PROMOTIONS AMONG REPUBLIC OF IRELAND FOOD RETAILERS**

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**Purpose:** With two in three Irish adults overweight or obese, one in six living in poverty, and the majority spending their money more carefully now than in the past, there is an urgent need to understand the availability of healthy food promotions to help householders manage food budgets. This research aims to determine if a balance between ‘healthy’ and ‘less healthy’ food promotions exists in order to inform the development of strategies to increase consumer accessibility to healthier food products sold on promotional offer. For the first time in Irish context, a research study employs primary research rather than secondary analysis of historical sales data to examine the healthfulness, or otherwise, of promotional evidence.

**Methods:** A quantitative approach utilised eighty (N=80) in-store audits of retail food promotions. Each promotional product was assigned a Food Pyramid category and analysed using SPSS.

**Results/findings:** Analysis indicated 47,100 promotional items from supermarkets/discounters/convenience stores representing a 63% share of the Irish grocery market. The majority (95.6%) of promotional items were collated from supermarkets/discounters. The top three promotional mechanics used were price reduction (56.6%), multi-buys (31.9%), and standalone offers (6.9%). This was consistent among supermarkets/discounters, while rank order shifted for convenience stores: standalone offers (51.3%), multi-buys (27.8%), and price reduction (18.4%). Nutritional analysis disaggregated promotional activity into Food Pyramid categories: food/drinks high in fat, sugar and salt (HFSS) (36.7%); bread, rice, potatoes, pasta and cereals (14.6%); fruit and vegetables (14.2%); meat, poultry, eggs, beans and nuts (13.3%); milk, cheese and yoghurt (13.1%); other (6.7%); and fats and oils (1.3%). HFSS promotions for food/drinks were greater in convenience stores than supermarkets/discounters (57.7% and 36.8% respectively) while fruits/vegetables (14.5% and 7.6%) and dairy products (13.4% and 6.7%) were more prevalent among supermarkets'/discounters' promotional activities. Additional nutritional information yielded further beneficial insights into food retail promotional trends.

**Conclusions:** Given the current policy focus on the cost of living and population health emphasising the need for food shopping to represent health and value for money, this study contributes meaningfully to retailers' future monitoring and evaluation activity around healthy retail food promotional environments in response to national public health policy.

**FOOD SHOPPING CAMPAIGN USING BEHAVIORAL ECONOMIC STRATEGIES TO IMPROVE HEALTHY PURCHASES AMONG RURAL RESIDENTS IN HIGH OBESE COUNTIES, USA, KY 2015-2016**

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**Background:** Obesity rates in rural areas tend to be higher compared to urban counterparts. Unique and tailored strategies aimed at decreasing rates of obesity are needed with key participation from community stakeholders. One upstream approach to tackling obesity rural communities is utilizing behavioral economic strategies within food shopping stores to improve healthy food shopping habits. The aims of this study were to: 1) examine the effectiveness of a food shopping campaign among rural residents on awareness of marketing efforts; 2) determine the effectiveness of a food shopping campaign on purchasing habits among shoppers.

**Methods:** We conducted a social marketing campaign with behavioral economic strategies (offering gas cards, putting fruit on the end of isles, recipe demonstrations with coupons) aimed at improving food purchases in 17 different stores (small grocery stores, large grocery stores and supercenters) over a one year period in 5 counties in rural Kentucky. Surveys and store receipts were collected among customers at exit of store with a small monetary incentive for completing the survey. The strategies were conducted over a one year period with recipe sampling and gas cards offered one week...
THE IMPACT OF THE MONTHLY SNAP ISSUANCE CYCLE ON CONSUMER SHOPPING BEHAVIORS IN A LARGE NORTHEASTERN SUPERMARKET CHAIN

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Objective: The Supplemental Nutrition Assistance Program (SNAP) provides financial assistance for food purchases to approximately 1 in 7 Americans, with benefits distributed once monthly. This issuance policy may lead to overspending early in the cycle and premature depletion by the end, and may also disproportionately affect specific food groups. Evidence-based sales data from supermarkets is lacking. Methods: Using individually tracked sales data from 401 participants enrolled in a randomized trial of fruit and vegetable incentives in Maine (October 2015 – April 2016), we examined purchases by SNAP participants in week 1 of the monthly issuance cycle (when using benefits) vs. week 4 (when using other payment methods). We also used mixed models with repeated measures to compare purchasing patterns of selected food groups by SNAP participants vs. SNAP non-participants in the first 2 weeks compared to the last 2 weeks of the SNAP cycle, adjusting for covariates (race/ethnicity, sex, family size, season, and intervention arm). Results: For 89 SNAP participants, unadjusted mean spending decreased across all examined food groups from week 1 when using SNAP benefits to week 4 when not using SNAP benefits (sugar-sweetened beverages: $7.40 in week 1 to $4.73 in week 4, fruits: $13.41 to $6.26, vegetables: $10.34 to $7.74, red meat: $47.14 to $19.96, poultry: $50.72 to $24.89, convenience foods: $16.04 to $7.75). In adjusted models, there was a statistically significant decrease in average spending per transaction from the first 2 weeks of the benefit cycle to the last 2 weeks across all examined food groups for SNAP participants (sugar-sweetened beverages: -24%, fruits: -17%, vegetables: -17%, red meat: -48%, poultry: -52%, convenience foods: -38%), compared to almost no difference for non-participants. Conclusions: We found that towards the end of the monthly SNAP cycle individuals reduced purchasing of all major food categories and did not preferentially use non-SNAP dollars to purchase only unhealthy foods. More research is needed to understand the implications of monthly distribution of SNAP benefits on dietary quality of low-income individuals on government food assistance.

LESS OPTIMAL SLEEP PATTERNS ARE ASSOCIATED WITH POORER DIET QUALITY AMONG US ADOLESCENTS

Nansel TR1, Haynie DL1, Lipsky LM1, Liu D1, Lewin D2, Luk JW1, Simons-Morton B3. 1Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, Maryland; 2George Washington University School of Medicine, Washington DC.

Objective: Shorter sleep duration is associated with higher BMI in observational studies, and experimental studies suggest that insufficient sleep is associated with greater energy intake. However, few studies have examined the association of sleep duration with diet quality in free-living persons using 24h recall data, and none of these have investigated other aspects of sleep. This study examined the association of sleep duration, quality, chronotype, and social jetlag with diet quality among US adolescents. Methods: Data are from the first three waves (annual assessments) of the NEXT Plus subsample (n=567) of the NEXT Generation Health Study, a cohort of US adolescents enrolled in 10th grade during the 2009-2010 school year. Self-report measures of weekday and weekend sleep and awake time were used to calculate sleep duration (categorized as 9.5 hrs, >9.5 hrs), chronotype (midpoint of sleep, physical activity, sedentary behavior and nutrition (Salon B)

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weekend sleep time, adjusted for oversleeping), and social jetlag (absolute difference between weekday and weekend sleep duration); participants additionally reported difficulty falling asleep and staying asleep. Participants completed 3 non-consecutive 24-hour diet recalls annually; from these, three indicators of diet quality were calculated – Whole Plant Food Density (WPFD), Healthy Eating Index 2010 (HEI2010), and percent of intake from empty calories (%emptycal). Generalized estimating equations estimated time-varying associations of sleep variables with diet quality indicators, controlling for baseline sociodemographics. Results: Shorter weekend (but not weekday) sleep duration ( Conclusions: Shorter weekend sleep duration, later chronotype, greater social jetlag, and poorer sleep quality were associated with poorer diet quality across several indicators among US adolescents. These observational findings suggest the need to examine mechanisms for these associations and determine whether interventions that improve sleep patterns enhance diet quality.

VARIABILITY IN SCHOOL-NIGHT SLEEP PATTERNS BY ACCELEROMETRY IS CORRELATED WITH BODY COMPOSITION IN ICELANDIC ADOLESCENTS

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Corresponding author: Vaka Rögnvaldsdóttir, vakar@hi.is Presenting author: Vaka Rögnvaldsdóttir Sleep plays an essential role in adolescents' health. Sleep guidelines for adolescents typically recommend that they maintain consistent bedtimes and wake-up times during the week for overall health benefits. Purpose: We examined associations between body composition and objectively measured sleep quantity, schedule and quality and their variations on school nights (SchN) in Icelandic adolescents. Methods: Using wrist-worn accelerometers, we assessed free-living sleep over one week in a cross-sectional sample of 122 boys and 179 girls (15-16 year-olds) from six Reykjavik elementary schools. Sleep parameters were computed for all valid SchN (wear time>14 hours) using manufacturer software verified by self-administered diaries. Weekly averages and within-subject nightly variation (standard deviation) were computed for participants with ≥3 valid SchN. Body composition was assessed using dual-energy X-ray absorptiometry. Correlations between sleep parameters and body composition measures were calculated with Spearman’s rank correlation coefficient (r) with significance level p Results: Our compliance rate was 95.3% (177 boys, 170 girls). The mean total sleep time (TST) was 6.2±0.7 hours, total rest time (TRT) was 7.0 ± 0.8 hours, bed time was 00:22 ± 53 minutes, and sleep efficiency was 87.9 ± 4.4% for the group. All mean values were similar between the sexes and did not correlate to body composition parameters. The variation in TST was 56.4±42.9 minutes, and was correlated with body fat percentage for girls (r=0.20, p=0.011) and boys (r=0.19, p=0.046). The variation in TRT (56.4 ± 42.9 minutes) was correlated with fat mass index for both girls and boys (r=0.22, and 0.19, p’s=0.004 and 0.042, respectively). The variability in bed time was correlated with body fat percentage for boys and girls (r=0.24 and 0.21, p’s=0.002 and 0.026, respectively). The variability in sleep efficiency was correlated with body fat percentage in girls only (r=0.16, p=0.038). Conclusion: Surprisingly, the within-individual nightly variations, but not the nightly averages, in sleep quantity, schedule and quality during school-nights were associated with body composition in 15-16 year-old Icelandic adolescents. This result supports the recommendation of a consistent sleep routine for youths.

SLEEP TIMING IS ASSOCIATED WITH DIET AND PHYSICAL ACTIVITY LEVELS IN 9 TO 11 YEAR OLD CHILDREN FROM DUNEDIN, NEW ZEALAND: THE PEDALS STUDY

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Abstract Objective: Recently, research has begun to investigate the role of sleep timing, independent of total sleep duration, on diet and physical activity. However, there is a lack of research investigating these relationships in children. Therefore, the aim of this study is to investigate these associations in children from Dunedin, New Zealand. Methods: A cross-sectional study of 9-11 year old children. Sleep and physical activity data were collected
using accelerometry, and food choice using a short food frequency questionnaire (FFQ). Participants were classified into one of four sleep timing behaviour categories using the median split for sleep onset and sleep offset times. Principal components analysis (PCA) was used to derive dietary patterns. Differences between sleep groups for weekly frequency of consumption of selected food groups, dietary pattern scores, minutes of moderate-to-vigorous physical activity, and meeting screen time guidelines were examined in 439 participants using generalised estimating equations. Results: Participants slept for an average of 8.6 (SD 0.7) hours per night. Those in the late sleep-late wake category had a lower 'Fruit and Vegetables' pattern score (-0.13 vs 0.29; p=0.035) and a higher consumption frequency of sweetened beverages (7 vs 5; p=0.022) compared to those in the early sleep-early wake category, as well as a higher consumption frequency of sweetened beverages than the early sleep-late wake category (7 vs 3; p=0.022). Additionally, those in the late sleep-late wake category also had a lower 'Fruit and Vegetables' pattern score (-0.22 vs 0.29; p=0.035) than those in the early sleep-early wake category. Those in the late sleep-late wake category accumulated fewer minutes of moderate and vigorous physical activity (MVPA) per day compared to those in both the early sleep-early wake category (70 vs 81; p=0.005), and those in the late sleep-early wake category (70 vs 79; p=0.005). Those in the early sleep-late wake category also accumulated fewer minutes of MVPA per day than those in the early sleep-early wake category (72 vs 81; p=0.005). Conclusions: These findings suggest that sleep timing is an important factor to consider in addition to total sleep duration for good health.

**UNRAVELLING THE COMPOSITIONAL EFFECTS OF TIME SPENT IN SLEEP, SEDENTARY BEHAVIOUR AND PHYSICAL ACTIVITY ON OBESITY MEASURES IN CHILDREN**

**Talarico R.f, Janssen I.** 1Queen's University, Kingston, Ontario.

Purpose: Physical activity, sedentary behavior, and sleep are movement behaviors that have co-dependent effects on health. Evidence among adults indicates that there is a bi-directional association between physical activity and sedentary behavior during the day and sleep duration at night. Evidence is lacking in children. The purpose of this study was to investigate whether physical activity and sedentary behavior during the day were associated with sleep duration the following night, and whether sleep duration at night was associated with physical activity and sedentary behaviour the following day. Methods: Participants consisted 440 children aged 10-13 years. A log was used to determine sleep duration for 8 consecutive nights and an Actical accelerometer was used to determine physical activity and sedentary behavior for the 7 days that fell between these 8 nights. Generalized estimating equation (GEE) models were used to assess the relationships of interest. The GEE models accounted for the repeated measures nested within participants (e.g. there were 7 sleep – physical activity pairings per participant) and were adjusted for age, gender, season, and body mass index. Results: A one standard deviation increase in sedentary behavior during the day was associated with a 0.09 standard deviation decrease in sleep duration the following night (p<0.1). Conclusions: These findings suggest that there is a bi-directional association between sedentary behavior and sleep duration within children. Moderate and vigorous intensity physical activity are not strong correlates of sleep duration.

**BI-DIRECTIONAL ASSOCIATION BETWEEN PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR DURING THE DAY AND NIGHTTIME SLEEP AMONG 10-13 YEAR OLDS**

**Lin Yy1, Janssen I.** 1Queen's University, Kingston, Ontario.

Purpose: Physical activity, sedentary behavior, and sleep are movement behaviors that have co-dependent effects on health. Evidence among adults indicates that there is a bi-directional association between physical activity and sedentary behavior during the day and sleep duration at night. Evidence is lacking in children. The purpose of this study was to investigate whether physical activity and sedentary behavior during the day were associated with sleep duration the following night, and whether sleep duration at night was associated with physical activity and sedentary behaviour the following day. Methods: Participants consisted 440 children aged 10-13 years. A log was used to determine sleep duration for 8 consecutive nights and an Actical accelerometer was used to determine physical activity and sedentary behavior for the 7 days that fell between these 8 nights. Generalized estimating equation (GEE) models were used to assess the relationships of interest. The GEE models accounted for the repeated measures nested within participants (e.g. there were 7 sleep – physical activity pairings per participant) and were adjusted for age, gender, season, and body mass index. Results: A one standard deviation increase in sedentary behavior during the day was associated with a 0.09 standard deviation decrease in sleep duration the following night (p<0.1). Conclusions: These findings suggest that there is a bi-directional association between sedentary behavior and sleep duration within children. Moderate and vigorous intensity physical activity are not strong correlates of sleep duration.
standardized z-score. For the statistical analyses, an isometric log ratio transformation was applied to the movement behaviours. Next, a linear regression model was fit. The regression coefficients were then back-transformed. A change prediction matrix was computed to estimate how body fat is influenced by displacing 10 minutes from one movement behaviour with another around the average composition (sleep = 9.7 hours/day, SB = 10.2 hours/day, LIPA = 2.9 hours/day, MVPA = 0.9 hours/day). Results The composition of movement behaviours was associated with body fat (p Conclusions The composition of movement behaviours across the day was associated with body fat. The displacement of time from LIPA or SB to MVPA were associated with the largest changes in body fat.

SCHOOL BREAKFAST CONSUMPTION AND SLEEP AMONG HIGH-SCHOOL STUDENTS
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Purpose: Among adolescents, breakfast consumption may be important for academic and health outcomes. Efforts in U.S. schools to expand school breakfast programs include offering breakfast that is quick (“grab and go”) and served later in the morning (“second chance breakfast”). Breakfast programs have the potential to improve nutrition-related behaviors by encouraging breakfast consumption, without requiring students to wake up earlier. The connection between sleep and breakfast consumption may be especially important among adolescents, among whom sleep inadequacies are growing. Along with inadequate physical activity (PA) and suboptimal diet, sleep inadequacies are an additional behavioral risk factors for obesity. The purpose of this study was: (1) to examine the co-occurrence of inadequate sleep, PA, and dietary behaviors among high-school breakfast-skippers; and (2) to test whether students with inadequate sleep were more likely to participate in a new school breakfast intervention that promoted quick and later-morning breakfast options. Methods: This study was part of Project breakFAST, a randomized controlled trial with 16 rural Minnesota, USA high schools (8 intervention, 8 control). Intervention schools expanded school breakfast, including "grab and go" and "second chance breakfast". Ninth and tenth graders who identified as breakfast-skippers (eating breakfast 19% of total kilocalories) were included. Inadequate sleep was defined as Adjusted regression models tested whether sleep inadequacy was associated with increased participation in school breakfast. Results: Thirty-six percent of students reported inadequate sleep. Of those, 75% also had inadequate diet, and 53% had inadequate diet and PA. Sleep inadequacy at baseline was not associated with change in school breakfast participation over time. Conclusion: Adolescent breakfast-skippers commonly exhibit multiple behavioral risk factors for obesity. Students with adequate sleep were not more likely to increase school breakfast participation when quick and later options became available.

ASSOCIATIONS BETWEEN SLEEP DURATION, SEDENTARY TIME, PHYSICAL ACTIVITY AND ADIPOSITY INDICATORS AMONG CANADIAN PRESCHOOL CHILDREN USING COMPOSITIONAL ANALYSES
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Purpose: Sleep duration, sedentary time, and physical activity are three co-dependent behaviours that fall on the movement/non-movement intensity continuum. Compositional data analyses provide an appropriate method for analyzing the association between co-dependent movement behaviour data and health indicators. The objectives of this study were to examine: (1) the combined associations of the composition of sleep duration, sedentary time, and physical activity with adiposity indicators; and (2) the association of the time spent in sleep, sedentary behaviour, and physical activity with adiposity indicators relative to the time spent in the other behaviours in a representative sample of Canadian preschool children. Methods: Participants were 552 preschool children aged 3 to 4 years from cycles 2 and 3 of the Canadian Health Measures Survey (CHMS). Sedentary time, light-intensity physical activity (LPA), and moderate- to vigorous-intensity physical activity (MVPA) were accelerometer-derived and sleep duration was parental reported. Adiposity indicators included body mass index (BMI) z-scores based on...
World Health Organization growth standards and waist circumference (WC). Compositional data analyses were used to examine the cross-sectional associations. Results: The composition of movement behaviours was significantly associated with BMI z-scores (p=0.006) but not with WC (p=0.718). Further, the time spent in sleep (BMI z-score: γsleep = -0.72; p=0.138; WC: γsleep = -1.95; p=0.285), sedentary behaviour (BMI z-score: γSB = 0.19; p=0.624; WC: γSB = 0.87; p=0.614), LPA (BMI z-score: γLPA = 0.62; p=0.213, WC: γLPA = 0.23; p=0.902), and MVPA (BMI z-score: γMVPA = -0.09; p=0.733, WC: γMVPA = 0.08; p=0.288) relative to the other behaviours were not significantly associated with the adiposity indicators. Conclusions: This study is the first to use compositional analyses when examining associations of co-dependent sleep duration, sedentary time, and physical activity behaviours with adiposity indicators in preschool children. The overall composition of movement behaviours appears important for healthy BMI z-scores in preschool children. Future research is needed to determine the optimal movement behaviour composition that should be promoted in this age group.

ASSOCIATION OF SCREEN-VIEWING TIME AND BLOOD PRESSURE IN YOUNG SINGAPOREAN CHILDREN

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Objective: Screen-viewing time (SVT) in late childhood has been associated with later blood pressure (BP) and pre-hypertension, but less is known at younger ages, particularly in Asians. We investigated the associations of total and device-specific SVT with BP in 2- to 5-year-old Singaporean children from the GUSTO mother-offspring cohort. Methods: Time spent on watching television, and using computer and handheld devices during weekdays and weekends were reported by parents through interviewer-administered questionnaires when the children were aged 2 and 3 years. Total daily SVT was calculated and categorized into low (25th percentile for age, sex and height. Associations were investigated using multiple linear and logistic regressions for the total sample and stratified by sex: socio-demographics characteristics and potential confounders were included in the models. Results: 903 participants (52.4% boys) were analysed. Boys engaging in high levels of SVT at 2 years had higher SBP and DBP at age 3 years compared to boys in the low-level group (β [95% CI]: 2.56 [0.04, 5.09], p=0.047, and 1.88 [0.23, 3.52], p=0.026, respectively). No associations were observed with BP in girls or in boys at ages 4 and 5 years. Children whose SVT increased between 2 and 3 years were more likely to have pre-hypertension at 3 years (OR [95% CI]: 1.59 [1.05, 2.43], p=0.031) and had higher DBP at 4 years (β=1.17 [0.33, 2.00], p=0.006), as compared to children who did not increase SVT; comparable effect-sizes were observed in boys and girls. Conclusion: Greater SVT at 2 years and increases in SVT were associated with higher blood pressure, but the results were not consistent across age and sex. Further studies are necessary to confirm our finding, especially in Asian populations.

PERSPECTIVE OF FAMILIES ELIGIBLE FOR A PEDIATRIC OBESITY PROGRAM

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Purpose Raising Well (RW) was initiated in 2015 by Enolve People Care, and uses expert clinical coaches via phone contact to deliver an educational intervention promoting lifestyle change to families with at least one overweight or obese child in an eligible Medicaid health plan. This gives RW significant potential for reach and population impact.
LONGITUDINAL ASSOCIATIONS BETWEEN PHYSICAL ACTIVITY WITH BODY COMPOSITION AND PHYSICAL FITNESS IN PRESCHOOL AGED CHILDREN (MINISTOP)
Leppänen Mh1, Henriksson P2,3, Nyström Cd4, Henriksson H2,3, Ortega Fb5, Pomeroy J5, Ruiz Jr3, Cadenas-Sanchez C3, Löf M2,4, 1University of Jyvaskyla, Jyvaskyla; 2Linkoping University, Linkoping; 3University of Granada, Granada; 4Karolinska Institutet, Huddinge; 5Marshfield Clinic Research Foundation, Marshfield.

Purpose: Little is known about the longitudinal associations between physical activity (PA) and sedentary behavior with body composition and physical fitness in preschoolers. We investigated whether higher PA levels at 4.5 years of age were associated with healthier body composition and better physical fitness over a one year follow-up in Swedish children. Methods: The data from the population-based MINISTOP trial was collected between 2014-2016, and this study included the 137 children who were in the control group. PA was assessed over 24-h during seven days using the wrist-worn ActiGraph (wGT3x-BT) accelerometer. Subsequently, PA was defined as sedentary behavior, light-intensity PA (LPA), moderate-intensity PA (MPA), vigorous-intensity PA (VPA), and moderate-to-vigorous PA (MVPA). Body composition was measured using air-displacement plethysmography, and physical fitness (cardiovascular fitness, motor strength, as well as lower and upper muscular strength) by the PRefIT fitness battery. Linear regression and isotemporal substitution models were adjusted for the child’s sex, age, and ActiGraph awake wear time. Results: Greater VPA and MVPA at the age of 4.5 were associated with higher fat-free mass index (FFMI) at 5.5 years of age (p SB, LPA or MPA for VPA at the age of 4.5 were associated with higher FFMI and BMI, and with greater upper and lower muscular strength at the one year follow-up (p Conclusions: Time spent in VPA and MVPA at the age of 4.5 were associated with higher FFMI and with better physical fitness at the one year follow-up. VPA and MVPA were also positively associated with BMI, however, we were able to show that this finding reflected higher fat-free mass (not fat mass). The results suggest that promoting high intensity PA at young ages may have long-term effects by improving childhood body composition and physical fitness, in particular muscular strength.

SUGAR SUBSTITUTES: ARE THEY LINKED TO OBESITY AND METABOLIC DISEASES IN COLLEGE FRESHMEN?
Davis J1, Pilles K1, Vandyousefi S1, Landry M1, Khazaee E1, Ghaddar R1, Asigbee F1. 1University of Texas at Austin, Austin, TX.

Purpose: To examine the relationship between non-caloric sugar substitutes (NCSS) and adiposity and metabolic parameters in Hispanic college freshmen. The hypothesis is that NCSS intake will be linked to lower adiposity and metabolic disease risk. Methods: Cross-sectional study of 99 Hispanic college freshmen (18-19 y) with the following...
measures collected: dietary intake via multiple 24-hour diet recalls (1 weekend and 2 weekdays); physical activity via 7-day accelerometers; anthropometrics (height, weight, BMI parameters, and waist circumference); total body fat mass and lean mass via BodPod; visceral adipose tissue (VAT), subcutaneous adipose tissue (SAT) and hepatic fat via magnetic resonance imaging; and metabolic parameters (glucose, insulin, HOMA-IR, lipids, and inflammatory markers) via fasting blood draw. NCSS intake included aspartame, acesulfame potassium, and sucralose and intake was divided into consumers (n=22, average intake of 91.8 ±102.3 g/d) and non-consumers (n=77). Multivariate analyses were run to assess differences in diet, physical activity, adiposity and metabolic parameters between NCSS groups with the following a priori covariates: sex, and energy intake (kcal/d). Results: There were no differences in energy, macronutrients, food servings, physical activity levels or inflammatory markers between NCSS consumers and non-consumers. NCSS consumers compared to non-consumers had significantly more intake of diet beverages (1 serving per day vs. none; p Conclusion: In Hispanic college freshmen, non-caloric sugar substitutes were linked to lower obesity levels and reduced metabolic disease risk, specifically type 2 diabetes risk factors. These results suggest that interventions should target use of non-caloric sugar substitutes to prevent and treat obesity and type 2 diabetes risk factors.

IS THERE A RELATIONSHIP BETWEEN HOW CHILDREN ACCUMULATE MODERATE TO VIGOROUS PHYSICAL ACTIVITY AND THEIR BMI SDS? FINDINGS FROM THE HEALTHY LIFESTYLES PROGRAMME (HELP)

Price L¹, Lloyd J², Wyatt K², Hillsdon M¹. ¹Sport and Health Sciences, University of Exeter, Exeter; ²University of Exeter Medical School, University of Exeter, Exeter.

Purpose: Current physical activity guidelines recommend that children achieve a minimum of 60 minutes of moderate to vigorous intensity physical activity (MVPA) each day. Using accelerometer data, studies typically report the average time spent per day in MVPA with no attention given to how the time in MVPA is acquired. The same volume of MVPA could be accumulated in multiple, short bursts of MVPA or in less frequent longer bouts. The pattern of MVPA accumulation may modify the relationship between physical activity (PA) and health. The aim of the present study is to examine whether the pattern of MVPA accumulation is associated with BMI sds in children.

Methods: The baseline BMI sds and PA data from 886 children in the Healthy Lifestyles Programme (HeLP) trial was used. Children were randomised to wear a GENEActiv accelerometer for a period of 8 days; data was processed using the GGIR package in R. Average time per day in MVPA was based on 1 second epochs. MVPA accumulated in ≥1, ≥5 and ≥10 minute bouts were estimated. Multiple stepwise regression models were created for individual bout lengths; variables for each model include the time accumulated at or above the bout threshold (e.g. ≥10min bouts) and minutes accumulated below the bout threshold (e.g. Results: 823 participants had valid accelerometer (≥10hours for ≥4 days) and anthropometric data. Average time per day in MVPA (with no minimum bout criteria) explained 0.7% variance in BMI sds (? = -.006; p=.015). In addition, MVPA accumulated in less than 10 minutes (<.006; p=.016), less than 5 minutes (<.006; p=.019) and greater than 1 minute bouts (<.021; p=.007) were all significant predictors of BMI sds. In the final model, only MVPA accumulated in 1-4.99min bouts was associated with BMI sds (r² = .009; ?=.03; p=.006). Conclusions: Accumulating MVPA in bouts of 1-4.99 duration is most strongly associated with BMI sds in children, though the magnitude of the effect is small.

Jun 10, 10:00 - 11:00: Oral Presentation

DIFFERENCES IN CHILDREN’S SCHOOL TRAVEL BEHAVIOURS, CARDIOVASCULAR FITNESS AND PHYSICAL ACTIVITY BETWEEN URBAN AND SUBURBAN NEIGHBOURHOODS IN METRO VANCOUVER, CANADA

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Purpose: We previously reported that active school travel was more common among adolescents living in an urban versus a suburban neighbourhood. Thus, we aimed to determine if differences in active school travel, cardiorespiratory fitness (CRF) and physical activity (PA), were also apparent in younger children. Design: Participants were 468 children (237 girls, mean age 10.4±1.1 yrs) who attended elementary schools in urban Vancouver (1 school, n=88 children) and suburban Surrey (5 schools, n=380 children) British Columbia and were part of the Active Streets, Active People – Junior study. Children self-reported travel mode to and from school for one week; we considered walk, bike, scooter and skateboard trips as active. We assessed CRF (laps completed using Leger’s 20-metre shuttle run test and PA (light (LPA) and moderate-to-vigorous PA (MVPA) min/day) in a subset of participants (n=238, 138 girls) using accelerometers (ActiGraph GT1M and GT3X+). We fit multivariable regression models to compare active school travel (≥6 active trips/week), CRF and PA between neighbourhood types after adjusting for distance to school, age, sex and body mass index. Results: Three quarters of children actively traveled to school, and active travel was more common among urban (88%) than suburban (68%) children (odds ratio: -1.27; 95% CI: -1.96, -0.57, p=0.001) even after adjusting for slightly shorter distance to school in urban children (836 metres vs. 1095 metres, p=0.06). CRF was significantly higher in urban (38.5 laps, 95% CI: 35.5, 41.5) compared with suburban (36.0 laps, 95%CI: 34.5, 37.4, p=0.048) children. Compared with suburban children, urban children accumulated more LPA in the hour before school (24.9 min vs. 22.4 min, p=0.01) and more MVPA (59.0 min/day vs. 48.1 min/day, p=0.01) and were more likely to meet current Canadian PA guidelines (51% vs. 25%, p<0.01) even after adjusting for slightly shorter distance to school in urban children (836 metres vs. 1095 metres, p=0.06). Conclusions: Our findings highlight disparities in active school travel, CRF and PA in children living in different neighbourhood types in Metro Vancouver. Efforts are needed to promote children’s active school travel in suburban neighbourhoods as a means to potentially increase their MVPA and CRF. Further study is warranted to determine the influence of factors such as safety and parental decision making on these relationships.

CHILDREN’S OBJECTIVELY MEASURED ACTIVE TRANSPORTATION TO SCHOOL AND OTHER DESTINATIONS

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Purpose: Descriptive data on active transportation in children focuses on the trip to school and has relied on subjective reports. The purpose of this study was to use objective measures to describe children’s active transportation to school and other destinations over the course of a week. Methods: This is a cross-sectional study of 182 children (aged 10-13 years) from Kingston, Ontario, Canada. Participants wore a Garmin GPS watch to log their locations during waking hours for seven consecutive days. The GPS data were uploaded into the Personal Activity Measurement Location System (PALMS) software which identified all trips that participants made throughout the week, and for each trip the time spent in that trip and the trip modality (walking, bicycle or vehicle). Google Earth and Street View software were used to identify the destination of each trip. Results: 51% of participants were girls. A total of 4,324 trips were identified in the cohort. Most (65%) of these trips were made by vehicle; 29% were made by walking and 6% by bicycling. The median (interquartile range) time spent travelling was 35.1 (19.0-52.8) minutes/day for vehicle travel, 8.5 (2.5-17.1) minutes/day for walking, and 0 (0-2.3) minutes/day for bicycling. The three most common active travel destinations were schools, parks or greenspace, and other people’s homes, with 40%, 38%, and 36% of children walking or bicycling to these destinations at least once over the week long measurement period. Across all participants, 43%, 55%, and 27% of the total travel time to these three destinations was made by walking or bicycling. Approximately 45% of all active transportation trips were made to one of these three destinations. Fewer than 25% of participants made an active transportation trip to a store, restaurant, recreation facility, community center, place of worship, or arts or entertainment venue. Conclusions: Over 65% of trips made and time spent travelling were done in a vehicle. When active transportation was used the most common destinations were schools, parks, and other people’s homes.

WALKING ROUTES TO PROMOTE PHYSICAL ACTIVITY IN CHILDREN WITH AUTISM

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Purpose: Children with autism are at increased risk for being overweight and obese. Children with autism face a variety of challenges with achieving the recommended levels of physical activity, including social barriers, decreased
motor skills and motor coordination, sensory sensitivities, and executive function challenges. Sporting activities traditionally used to promote physical activity in children, such as team and individual sports, may not be ideal for children with autism. Walking is an achievable form of physical activity for children with autism, and prior work has shown that use of walking routes can increase daily physical activity in children and adolescents. The purpose of this study was to test the feasibility and preliminary efficacy of using walking routes as a novel approach for increasing physical activity among children with autism. Methods: This feasibility and preliminary efficacy pilot RCT study aims to enroll 24 children with autism ages 6-18 years. The study will determine baseline physical activity levels and then test the benefit of counseling patients with autism and their families on daily walking routes as a means to increase physical activity. Objective physical activity will be collected over one week periods at baseline, after receiving the intervention (T1), and 3 months after receiving the intervention (T2). Physical activity will be measured by accelerometry; location will be recorded by GPS. Baseline physical activity patterns will be mapped using Geographic Information Systems to inform physical activity counseling. Intervention subjects and their families will receive counseling on personalized walking routes; control subjects and families will receive standard of care physical activity recommendations. Results: We have begun enrolling patients, with 3/24 patients enrolled to date. Feasibility will be assessed by reporting the study completion rate and documenting reported autism-specific barriers to wearing the study equipment and/or to study participation and completion. Preliminary efficacy will be calculated as the change in non-sedentary time from baseline to T1 and T2. Conclusions: Walking routes represent a novel possible approach to increasing physical activity in children with autism.
Purpose Walking has become a cornerstone of physical activity promotion for public health however little is known about the walking behaviour of third level students. The Student Activity and Sport Study Ireland (SASSI) was conducted to establish levels of self-reported participation in sport, and physical activity by third level students. As part of this study we investigated the self-reported walking volume and pace of university students in Ireland.

Methods A representative sample of 8122 students from 31 of 42 higher education institutions in Ireland completed an online survey during a class. Self-reported walking (all and recreational) for the previous 7 days was reported in 10-minute intervals. Participants reported usual walking pace and typical mode of transport to and from college. Independent t-tests were used to compare differences in self-reported walking (all and recreational) between male and female students. A chi square test was used to compare self-reported walking pace between males and females. Results 89.2% of students reported walking for 10 minutes or more on at least one day per week. 34% of students report walking as their main mode of personal transport to college. Mean self-reported time spent walking was 441.5 mins.wk⁻¹. Females reported significantly less walking (mean 95% CI 420.1 (407.7, 434.2) compared to males 462 (449.0, 475.2) mins.wk⁻¹. 50.8% of students reported walking for recreation. Of those who reported walking for recreation mean self-reported walking was 286.2 mins.wk⁻¹. Males reported more walking for recreation 322.5 (308.6, 336.4) compared to females 258.0 (245.7, 270.4) mins.wk⁻¹. Self-reported walking pace was slow (3.3%) steady (36.9%) brisk (48.0%) and fast (10.1%) with significantly more males reporting walking at a fast pace compared to females. Conclusions A higher proportion of students (89%) report walking than the general adult population in Ireland (68%) (Murphy et al 2012) with over half reporting walking at a pace that is likely to contribute to meeting current physical activity guidelines. Promoting brisk and fast recreational walking among student populations particularly among females, may help to increase the proportion of adults achieving physical activity recommendations.

O.26 Physical activity and sedentary behavior interventions in preschoolers (Salon C)

MINI MOVERS: A RANDOMISED CONTROLLED TRIAL TO REDUCE SEDENTARY BEHAVIOUR IN 2- TO 4-YEAR-OLD CHILDREN
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Purpose This study aimed to test the feasibility and efficacy of a parent-focused, predominantly mobile telephone-delivered intervention to support parents to minimise the amount of time their children spend in sedentary behaviour. Methods: Mini Movers is a pilot randomised controlled trial delivered to parents of 2- to 4-year-old children in Melbourne, Australia. Development of the intervention was underpinned by Social Cognitive Theory and guided by the CALO-RE taxonomy of behaviour change techniques. The intervention was 6 weeks in duration and was predominantly delivered via personalised and interactive text messages promoting positive health behaviours (strategies for decreasing screen and sitting time), goal setting and self-monitoring. The primary outcome was intervention feasibility. Secondary outcomes were children's screen time (parent reported) and sitting time (activPAL™ accelerometers) measured pre- and post-intervention. Mean change scores in screen and sitting time from pre- to post-intervention for were determined and effect sizes (Cohen’s d) were calculated. Results: Fifty-seven participants (30 intervention; 27 wait-list control) were recruited at baseline; data collection is due to be completed in December 2016. Preliminary analysis of data from the first 25 participants suggests that the intervention was well-received, with the majority (85.7%) of parents reporting that the information provided overall was useful and relevant. From pre- to post-intervention, preliminary data shows that screen time decreased by an average of 25.4 (95% Cl -53.8, 2.0) mins/day in the intervention group, and increased by an average of 13.8 (95% Cl -20.5, 48.1) mins/day in the control group, resulting in a moderate to large effect (d = 0.79). Preliminary activPAL™ data shows a small to moderate effect (d = 0.44) on sitting time, with intervention children decreasing sitting time by an average of 50.2 (95% Cl -151.0, 50.7) mins/day and control children decreasing sitting time by an average of 1.9 (95% Cl -45.3, 41.3) mins/day. Conclusions: Preliminary data suggests that Mini Movers is a feasible, acceptable and potentially efficacious intervention to reduce screen and sitting time in 2- to 4-year-old children. The use of
mobile telephone technology is novel in this population and affords the potential for the intervention to be scaled-up and widely disseminated.

AN M-HEALTH INTERVENTION TO INCREASE PHYSICAL ACTIVITY AND DECREASE SEDENTARY BEHAVIOUR IN 1-3 YEAR OLDS

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Purpose: Even from very early life, levels of active play (physical activity) and sedentary behaviours appear to be suboptimal. This pilot randomised controlled trial (RCT) aimed to assess an m-health (text message and online resources) intervention to increase active play and decrease sedentary behaviour in young children. Methods: Families with a child aged 1-3 years were recruited and randomised to an intervention or wait-list control group. The 6-week intervention involved text messages twice per week with links to written information, infographics and videos on a purpose designed website. Content provided information and practical strategies for increasing active play and decreasing sedentary behaviour. Data were collected pre- and post-intervention with parent-report surveys. Mean change scores were calculated and differences between intervention and control groups assessed using Cohen’s d effect size. Results: Of the 150 expressions of interest, 113 families enrolled in the study (75%) with 97 completing (86% retention). Most participants found the overall intervention information, and the individual elements (text messages, infographics, videos, website and written information) useful (68-89%) and relevant (82-95%). Intervention children were reported to spend an additional 9 min/week in active play at the end of the intervention compared to 1 min/week more for children in the control group (d=0.05). Larger differences were seen for girls (45 min/week more versus 7 min/week less for intervention and control girls, respectively; d=0.27). For girls only, a moderate effect size was observed for playing active games with an adult (20min/week increase for intervention group versus 7 min/week decrease for control group; d=0.50). Intervention children spent 7 min/week less watching television compared to 3 min/week more for control children (d=0.29) with almost identical changes seen for boys and girls. Conclusions: A remotely delivered m-health intervention for parents of young children was well received and resulted in small behaviour changes. Sex differences were observed for active play, with the intervention appearing to have greater impact for girls than boys. Given girls tend to have lower physical activity levels from early childhood and throughout the school years, this may be particularly promising for prevention efforts.

EFFECTIVENESS OF AN INTERVENTION TO INCREASE PHYSICAL ACTIVITY AMONG PRESCHOOLERS IN CHILDCARE: A RANDOMIZED CONTROLLED TRIAL

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Objective: Many Canadian preschoolers are enrolled in childcare, wherein they learn many important behaviours and establish health-related habits. Physical activity should be promoted and encouraged among this population. The main objective of the Supporting Physical Activity in the Childcare Environment (SPACE) study was to implement and evaluate an evidence-based physical activity intervention for preschoolers attending centre-based childcare. This is one of the first childcare-based interventions which focuses on the importance of re-structuring outdoor play periods. Methods: A cluster randomized control trial, the SPACE intervention comprised of: 1. staff training, 2. addition of portable play equipment, and 3. restructuring the frequency of outdoor playtime (4x30 min sessions). This 8-week intervention was introduced in 11 randomly selected childcare centres, while 11 centres acted as a control group. Participants (2.5-4 years) wore Actical™ accelerometers (15s epoch) for 5 consecutive days during childcare hours to assess activity levels. Using a subset of participants (n = 76), two repeated measures ANOVAs were carried out for total physical activity (TPA) and sedentary time (ST) to determine the impact of the intervention post-intervention, and whether these changes were sustained at 6- and 12-month follow-up. Results: A time by condition interaction effect was apparent for TPA (F[2.59, 191.34] = 3.467, p .05). Similarly, ST was lower (p .05). Conclusion: The findings of this work indicate that the SPACE intervention was effective at increasing preschoolers’ TPA and decreasing ST levels; however, this effect was not sustained after the intervention ceased.
This intervention appears promising for supporting improved PA levels (and decreased ST) among preschoolers during childcare hours. Additional investigations are needed to explore the feasibility of long term changes to outdoor playtime sessions in centre-based childcare.

IMPACT OF CHILDCARE CENTRE OUTDOOR PLAY SPACE UPGRADES ON YOUNG CHILDREN’S PHYSICAL ACTIVITY
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Purpose: Considering a large proportion of children spend a significant amount of time in childcare each week, childcare centres are an ideal setting for targeting strategies aimed at increasing physical activity levels in young children. Through a series of natural experiments, the aim of this study is to evaluate the effect of childcare centre outdoor space upgrades on children's physical activity. Methods: Participants (n=595 2-5 year olds; 56 childcare centres) in the Play Spaces & Environments for Children's Physical Activity (PLAYCE) Study in Perth, Australia, wore accelerometers over 7 days. Mean mins/day of PA at childcare was calculated. The centre indoor and outdoor physical environment was audited using EPAO and other validated items including outdoor paths, presence of natural features, indoor activities and size of useable space. A subset of 10 centres are undergoing an upgrade to their outdoor space and another 10 centres are matched controls (n=200 children). Pre- and post-intervention (3 months) measures will capture changes in preschoolers’ physical activity (accelerometry) and the childcare centre environment (audit). Results: Baseline data has been collected for five intervention centres. Mean mins/day of total PA and MVPA at childcare was 118 (SD 44) and 58 (SD 28), respectively. Overall, 15% of centres had an outdoor curved looped path, 8% had good connection between indoor and outdoor spaces and on average centres had five different indoor play activities. Centres had a mean total of 16 outdoor natural features with most centres having at least one outdoor gathering place and space for dramatic play. Centre size was associated with the number of natural features (p Discussion: Careful evaluation both before and after an upgrade to a childcare centre’s outdoor space can provide important information about the effect of the physical environment on preschoolers’ physical activity. This timely research will provide best practice recommendations and strategies to promote physical activity in childcare settings in line with the phased implementation of the Australian National Quality Framework (2012-2020).

ARE DIGITAL MEDIA, PHYSICAL ACTIVITY AND SPORTS PARTICIPATION ASSOCIATED WITH EXECUTIVE FUNCTIONS IN PRESCHOOL CHILDREN?
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Are digital media, physical activity and sports participation associated with executive functions in preschool children? Objective: The pre-school years are a critical period of cognitive development, and studies in school-aged children indicate that digital media use and physical activity may influence development. No studies have simultaneously investigated associations of objectively measured physical activity and digital media use with higher-order cognitive capabilities known as executive functions in young children. The purpose of this study is to examine if digital media, objectively measured physical activity and sports participation are associated with executive functions in preschool children. Methods: 252 children (mean age=4.2±0.6y, 57% boys) participating in the Preschool Activity, Technology, Health, Adiposity, Behaviour and Cognition (PATH-ABC) study completed tasks from the iPad-based Early Years Toolbox. Tasks assessed children's ability to either flexibly shift attention (i.e., cognitive flexibility) or store and work with auditory information in mind (i.e., phonological working memory). Parents reported children's weekly digital media use (television programs/DVDs, electronic games/apps, and console games) and participation in individual or team sports. Moderate- to vigorous-intensity physical activity (MVPA) was measured by 7-day accelerometry (ActiGraph GT3X+). Linear regression models examined associations, accounting for preschool-level clustering and adjusting for socio-demographic characteristics (age, sex, suburb-level socio-economic status, parental education, and cultural background). Results: Lower levels of total digital media use (hours/week) (β = -0.016; 95% confidence interval [CI] -0.02, -0.009), and television viewing (β = -0.015, 95% CI -0.02, -0.009) were associated with higher shifting scores. Lower levels of total screen time (β = -0.002, 95% CI -0.002, -
0.001), and television viewing (β = -0.002, 95% CI -0.002, -0.0001) were associated with higher phonological working memory scores. Participation in individual sports was associated with higher shifting scores (β = 1.61, 95% CI 2.50, 0.73). MVPA, team sports and other types of digital media were not associated with shifting and phonological working memory (p>0.05). Conclusions: Limiting television exposure and supporting participation in individual sports may be beneficial for the development of executive functions in early childhood, although these cross-sectional findings need confirmation in longitudinal and experimental studies to better understand the causal nature of associations.

ASSOCIATIONS OF MATERNAL AND CHILD SUGAR INTAKE WITH CHILD COGNITION
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Purpose: Sugar consumption among Americans is above recommended limits, but little is known about the impact on child cognition. The primary purpose of this study was to examine the associations of maternal sugar consumption (i.e. sucrose) during pregnancy and offspring sugar consumption, with child cognition at early and mid-childhood. The secondary purposes were to examine maternal and child consumption of sugar-sweetened beverages (SSB), other beverages (i.e. diet sodas), and fruits with child cognition. Methods: We examined 1234 mother-child pairs enrolled from 1999-2002 in Project Viva, a pre-birth cohort study. We assessed consumption of sugar, beverages, and fruits via validated semi-quantitative food-frequency questionnaires during pregnancy (1st and 2nd trimester average) and early childhood (median 3.3 years, completed by mothers), and child cognition using the Peabody Picture Vocabulary Test (PPVT-III) at early childhood, the Kaufman Brief Intelligence Test (KBIT-II) and Wide Range Assessment of Memory and Learning (WRAML) at mid-childhood (median 7.7 years), and Wide Range Assessment of Visual Motor Abilities (WRAVMA) at early and mid-childhood. We used multivariable linear regression adjusting for maternal age, pre-pregnancy BMI (or child BMI z-score for child exposures), parity, education, fish intake and smoking during pregnancy, income, and child sex, and race/ethnicity. Results: Maternal sucrose consumption (mean 49.6 grams/day; SD 15.1 grams) was inversely associated with children's KBIT-II non-verbal scores (-1.5 per 15g/day; 95%CI -2.8, -0.2) and WRAML scores (-0.5 per 15g/day; 95%CI -0.8, -0.1) at mid-childhood. Additionally, maternal SSB consumption was inversely associated with verbal and non-verbal KBIT-II scores at mid-childhood, and diet soda was inversely associated with WRAVMA scores at early childhood and KBIT-II verbal scores at mid-childhood. Child consumption of SSBs was inversely associated with KBIT-II verbal scores (-2.7 per serving/day; 95%CI -4.6, -0.7) while fruit consumption was positively associated with PPVT-III and WRAVMA scores at early childhood and KBIT-II verbal scores at mid-childhood. There were no associations between juice intake and cognition. Conclusions: Sugar consumption, especially consumption of SSBs during pregnancy and childhood, and maternal diet soda consumption may adversely impact child memory and learning, while child fruit consumption may lead to improvements. Interventions and policies that promote healthier diets may prevent adverse effects on childhood cognition.

EFFECTS OF IN-LINE SKATING PROGRAM IN CHILDREN WITH AUTISM SPECTRUM DISORDERS
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Purpose: To assess the effectiveness of an in-line skating training program lasting 12 weeks on motor skill proficiency and executive function in boys with autism spectrum disorders (ASD). Methods: The participant inclusion criteria were: (a) current age between 6 and 12 years; (b) a diagnosis of ASD based on DSM-IV-TR criteria at a high-functioning level; (c) the ability to follow directions and perform requested motor skill proficiency and executive
function measures; and (d) no history of reading disabilities according to parents. Parents enrolled 24 children with ASD in our study. The children were randomly assigned to one of two groups (experimental group [EG], n=12; control group [CG], n=12) on the basis of age, disability type, and comorbidity. The in-line skating program was 80 min in length and held twice per week for 12 weeks. It consisted 10 min of the warm-up period, 40 min of the in-line skating training, 20 min of group games, and 10 min of the cool-down activity. The Bruininks-Oseretsky Test of Motor Proficiency-2 (BOT-2), and the Stroop Color and Word Test were used before and after the intervention. To assess the effects of the in-line skating program, we conducted analysis of variance (ANOVA) with a 2 (time: pretest versus posttest) x 2 (group: ASD EG versus ASD CG) mixed-model factorial design. We followed up with the test of simple main effect, with a significant interaction effect. The level of significance was set at p Results: Main findings revealed that (a) the EG performed significantly better on the strength and agility (52.33 vs. 44.42, F=6.72, p Conclusions: Our study contributes to the still scarce, but emerging evidence that physical exercise training may effectively promote the motor and executive functions in ASD population. Supported by Taiwan MOST grant 103-2410-H-017-026-MY3.

THE COMBINED IMPACT OF DIET, PHYSICAL ACTIVITY, SCREEN TIME AND SLEEP ON ACADEMIC ACHIEVEMENT: A PROSPECTIVE STUDY OF ELEMENTARY SCHOOL STUDENTS IN NOVA SCOTIA, CANADA

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Objective Few studies have investigated the independent associations of lifestyle behaviours (diet, physical activity, sleep, and screen time) and body weight status with academic achievement. Even fewer have investigated the combined effect of these behaviours on academic achievement. We hypothesize that the combined effect of these behaviours will have a higher impact on academic achievement than any behaviour alone, or that of body weight status. Methods In 2011, 4,253 grade 5 (10-11 years old) students and their parents were surveyed about their diet, physical activity, screen time and sleep. Students’ heights and weights were measured. With parental consent, students’ survey data was linked to their achievement on provincially standardized exams in mathematics, reading and writing. Academic achievement was provided as a binary variable of ‘meets expectations’ and ‘does not meet expectations’ for each subject. Lifestyle behaviours were dichotomized into meeting and not meeting established health recommendations. We determined the independent and combined effects of all lifestyle behaviours with mixed effects logistic regression, adjusting for gender, household income, parental education level, region of residence, and caloric intake. Results Meeting dietary recommendations was associated with increased likelihood of meeting academic expectations for each of math, reading and writing. Meeting recommendations for screen time and sleep was associated with meeting expectations for writing. For all three subjects, meeting additional lifestyle behaviour recommendations was associated with improved likelihood of meeting expectations on exams. Children who met 7-9 lifestyle behaviour recommendations had greater than three-times the odds of meeting expectations for reading compared to those who met 0-3 recommendations (OR: 3.07, 95%CI: 2.09, 4.51). Body weight status was not associated with academic achievement. Conclusions We found that lifestyle behaviours, not body weight status, strongly influence student academic performance. Promoting compliance with established healthy lifestyle recommendations is likely to improve both the health and educational outcomes of school-aged children. School-based health promotion initiatives that target multiple lifestyle behaviours may have a greater effect on academic achievement than those that focus on a single behaviour.

THE 3-YEAR LONGITUDINAL IMPACT OF SEDENTARY BEHAVIOUR ON THE ACADEMIC ACHIEVEMENT OF ADOLESCENTS

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Objective: The impact of sedentary behaviour (SB) on academic achievement in today's technologically advanced society is unclear because previous research has been primarily cross-sectional and focussed on television viewing only. Therefore, the objective of this study was to comprehensively examine how time spent in different types of SB (e.g., screen-based SB, communication-based SB, and homework) impacted academic achievement over a 3-year
period. Methods: Longitudinal data from 4408 students participating in year 1 (2012-2013), year 2 (2013-2014), and year 3 (2014-2015) of the COMPASS study (Ontario, Canada) were used. Sedentary behaviour (screen-based SB: watching/streaming TV shows/movies, video/computer games, surfing the internet; communication-based SB: texting, messaging and emailing, talking on the phone; and doing homework) and academic achievement (overall math and English marks) were self-reported each year via the COMPASS Student Questionnaire. SB variables were categorized into quartiles (Q) with Q1 being the reference group. To predict the likelihood of surpassing provincial standards (>80% course mark), generalized linear regression models accounting for school clustering, repeated measurements, and potential confounders were used. Results: Holding time constant, participants shifting from Q1 to Q3 of watching/streaming TV shows/movies (OR=0.73; 95%CI: 0.61 to 0.87) and Q2 of surfing the internet (Q2: OR=0.87; 95%CI: 0.78 to 0.97) were significantly less likely to surpass provincial English standards. Similar findings were observed when shifting from Q1 to Q2 of communication-based SB (OR=0.90; 95%CI: 0.82 to 0.99) and surpassing provincial math standards. In contrast, shifting from Q1 to Q3 (OR=1.18; 95%CI: 1.02 to 1.37) or to Q4 (OR=1.43; 95%CI: 1.21 to 1.68) of watching/streaming TV shows/movies significantly increased the likelihood of surpassing provincial math standards. Similar findings were observed when shifting from Q1 to Q4 of doing homework (OR=1.16; 95%CI: 1.02 to 1.31) and surpassing provincial English standards. No other SB variables were significantly associated with academic achievement. Conclusion: The majority of screen-based SB variables had null or detrimental relationships with academic achievement; whereas, time spent doing homework was either null or positively related to academic achievement. Therefore, it appears that specific types of SB should be targeted when trying to improve specific areas of academic achievement over time.

IS COGNITIVE PERFORMANCE INFLUENCED BY SEDENTARY EXPOSURE OR PHYSICAL ACTIVITY? RESULTS FROM A 6-YR PROSPECTIVE STUDY OF YOUTH.

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Objective: Few studies are available to prospectively examine associations between sedentary time and physical activity with cognitive performance among youth. Primary aims of this study were to: 1) examine associations between sedentary time and physical activity at 9 yrs with cognitive performance at 15 yrs and 2) examine associations between the change in sedentary time and physical activity from 9 to 15 yrs with the change in cognitive performance over the same duration. Methods: Participants from the Study of Early Child Care and Youth Development (1991 – 2007) completing an accelerometer-monitoring protocol and cognitive performance assessment at 9 and 15 yrs were included for analysis. Among participants with valid accelerometer data (≥ 3 wkdays with ≥ 600 min·day−1; ≥ 1 weekend day with ≥ 480 min·day−1), an average daily estimate of sedentary time (≤ 100 counts·min−1) and moderate-to-vigorous physical activity (MVPA ≥ 2296 counts·min−1) was calculated. Cognitive percentiles were available for picture vocabulary, verbal analogies, passage comprehension and applied problem tasks. For each study aim, generalized linear models were used to report unstandardized B (95% CI) coefficients. Significance was set at P ≤ 0.05. Results: After adjusting for cognitive performance at 9 yrs, higher levels of sedentary time at 9 yrs predicted higher verbal analogy, passage comprehension, and applied problem percentiles at 15 yrs (B = 0.030, 0.031, and 0.053, respectively) (P ≤ 0.05) (N = 587; 48% boys). From 9 to 15 yrs, a greater increase in sedentary time predicted improvements in picture vocabulary, passage comprehension, and applied problem performance (B = 0.068, 0.065, and 0.063, respectively) (P ≤ 0.05) (N = 215; 52% boys). Associations involving the change in sedentary time with the change in cognitive performance from 9 to 15 yrs were adjusted for levels at 9 yrs. Within both aims, associations involving MVPA did not reach statistical significance. Conclusions: Although the findings reveal some benefit from sedentary time, additional research is necessary to understand the role of specific sedentary behaviors on cognitive performance. While mixed findings have been reported regarding MVPA, results from this study suggest MVPA does not impair cognitive performance.

O.28 Gamification of physical activity / sedentary behavior (Lecture Theatre)

EFFECTIVENESS OF AN INCENTIVE-BASED MHEALTH INTERVENTION TO INCREASE PHYSICAL ACTIVITY: A
EXERCISING MOTIVATIONS AS PREDICTORS OF FITNESS APP FEATURE USE

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Objective: Fitness wearables, activity trackers and fitness apps provide users with quantified information about their activities. To date, it remains unknown to what extent the different features present in these apps match users' motivations to exercise. This study addressed this question, by examining whether the use of particular app features (self-regulatory, social interaction, social sharing and gamification features) is driven by particular exercising motivations (physical, social, achievement, psychological). Methods Early 2016, an online survey was distributed under Belgian runners via social media channels, local running groups and communal 'start-to-run' initiatives. Runners of at least 16 years of age were eligible for participation. A final sample of 360 runners who use a running app was collected. An SEM model assessed the relation between running motivations and feature categories. Results The model demonstrates that fitness app users with particularly physical motivations make more frequent use of self-regulatory features, while runners with social motivations will more often use features that afford them to share activities with online peers. Achievement oriented runners will use the whole spectrum of available features. No relation was found between any of the feature categories and psychological motivations for running. Conclusions Running apps appear to attract mainly achievement oriented runners, whom see their needs addressed in the currently available feature categories. This implies that when designing or implementing fitness apps or interventions, there may be a niche for less achievement oriented platforms that accommodate the needs of purely recreational athletes, with, e.g., a stronger focus on social or gamification features with less emphasis on performance. This may make these platforms more appealing to a broader public and more applicable to less competition-oriented activities, such as nutrition intake tracking and moderately intensive physical activities such as recreational walking. A modular approach, where interfaces can be tailored to user motivations, may be preferable than the generic profiles that are now available on most apps. This may, e.g. imply that gamification features focused on competition between users could be ‘turned off’ if these are not of interest to the user.
GOTTA CATCH’EM ALL; INCREASED WALKING TIME AND SITTING TIME AT WEEKENDS IN POKÉMON GO USERS COMPARED TO NON-USERS.
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Purpose: Pokémon Go is a free-to-play, location-based augmented reality game that was released globally in July 2016. Popular media has anecdotally reported increased physical activity with one empirical study estimating that Pokémon Go has added a total of 144 billion steps to physical activity in the US (Althoff, White and Horvitz, 2016). To the authors’ knowledge, these hypotheses are untested. The purpose of this investigation was to determine whether playing narrative game could increase exercise identity and intrinsic motivation. Methods: In this randomized controlled pilot trial, 40 sedentary, overweight adults (aged 47.8 ± 12.55, BMI 33.32 ± 12.40, 5 male) were randomized to a 12-week game intervention or a wait list control. The game intervention consisted of provision of a mobile device with the narrative game "Zombies, Run!" and weekly brief self-regulatory counseling. To play the game, participants listened to an audio narrative on a mobile device while walking at their own pace. Assessments occurred at baseline and 12 weeks using Likert-type self-report scales. Exercise identity was measured as role identity and exercise beliefs by the Exercise Identity Scale (responses between 1 – 7). Intrinsic motivation was measured using the Behavioral Regulation in Exercise Questionnaire-2 (responses between 0 – 4). Data were analyzed using analyses of covariance controlling for baseline values and using the intent to treat principle. Results: At 12 weeks, participants in the narrative game intervention group reported significantly greater intrinsic motivation (2.73 ± 1.16 vs. 1.91 ± 1.19, p = .015), role identity (3.42 ± 1.67 vs. 2.13 ± 1.17, p = .003), and exercise beliefs (3.79 ± 1.76 vs. 2.77 ± 1.36, p = .008) as compared to the wait list controls. Conclusions: Our pilot results suggested that playing a narrative video game on a mobile device can increase both exercise identity and intrinsic motivation. Additional studies are needed to determine whether these changes persist over time and ultimately impact sustained physical activity behavior.
BEAT THE STREET – HARNESSING TECHNOLOGY AND GAMIFICATION FOR POPULATION LEVEL CHANGES IN PHYSICAL ACTIVITY

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Objectives Intelligent Health delivers 'Beat the Street' with the aim to get a whole community more physically active. Beat the Street turns the town into a real-life game where players register their walking and cycling journeys by tapping a smartcard on RFID readers called 'Beat Boxes' placed on lampposts around the town. Players monitor their progress via a website where they can see their own and their team's progress, and the overall target. Methods During registration, participants complete a questionnaire which includes a single item physical activity question, follow up surveys take place at the end of the game and up to 8 months later. Pre-intervention/post-intervention comparisons are completed based on survey responses and in-depth analysis is completed based on data from each player's activity by tapping their card on beat boxes. Results: In 2015, Intelligent Health delivered 11 Beat the Street projects, engaging 170,000 participants and collected baseline survey data from 45,136 adults. In 2016 prior to September, Intelligent Health delivered 15 Beat the Street projects, and reached the milestone of 500,000 people engaged and collected baseline survey data from 53,234 players. In 2015, across all Beat the Street projects the proportion of people reporting 0 or 1 days of physical activity decreased from 14% before Beat the Street to 8% after. The proportion meeting WHO guidelines increased from 43% to 48%, and the proportion of people walking for 15+ minutes on 5-7 days per week increased from 54% to 63%. In 2016, across all Beat the Street projects the proportion of people reporting 0 or 1 days of physical activity decreased from 8% before Beat the Street to 1% after. The proportion meeting WHO guidelines increased from 46% to 57%, and the proportion of people walking for 15+ minutes on 5-7 days per week increased from 47% to 61%. Conclusions Intelligent Health's analysis from the 26 completed Beat the Street projects to-date suggests that the concept of turning a whole community into a game leads to immediate changes in population levels of physical activity.

O.29 Dietary interventions in preschoolers (Sidney)

PRESCHOOL NEIGHBORHOOD SOCIOECONOMIC STATUS AND PRESCHOOL FOOD PRACTICES IN FINLAND

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Purpose: Most preschools, as well as the catering, are municipality driven in Finland. At high SES neighborhoods there might be higher qualified early educators, or higher educated parents that are more interested in children's food intake at preschool which may influence food practices at preschool. The study examines whether preschool neighborhood SES is associated with food practices in preschool groups. Methods: The cross-sectional DAGIS study (Increased health and wellbeing in preschools) was conducted 2015-2016 in eight municipalities in Southern and Western Finland. Participating preschools were 66 (RR 56%), and altogether 159 groups. Early educators, n=378 (RR 78%) including 146 contact persons (one per group, RR 91%) filled in questionnaires. Observation data on lunchtime practices was collected (135 lunches observed). A map grid database on preschool neighborhoods, 1 km radius, was used to determine neighborhood SES. The SES data included education, employment, and income of the population in the neighborhood. Associations between neighborhood SES and food practices were examined with logistic regression analysis and Kruskal-Wallis tests. Results/findings: About 60% of early educators ate the same lunch as the children five days/week, 23% knew the fruit and vegetable intake recommendation for children. In 30% of the groups children served themselves vegetables. Birthday foods outside the normal menu was served by 61%, and 95% of the groups had at least one early educator sitting at a table with the children. Neighborhood SES was positively associated with early educators eating the same lunch as children at least once a week versus never (OR 2.49, 95% CI 1.36-4.59), and negatively associated with having foods outside the menu available on birthdays (OR 0.32, 95% CI 0.13-0.79). Early educators in high SES neighborhoods used more popular food as a reward for eating vegetables more often than early educators in low SES neighborhoods (OR 2.77, CI 1.49-5.16). Conclusion: This study found associations between high preschool neighborhood SES and health promoting food practices in
preschool. Since this was among the first studies to examine these associations, further research should examine similar associations in other contexts, like in other countries.

THE EFFECT OF DEVELOPMENTALLY APPROPRIATE, CHILD-CENTERED NUTRITION PHRASES ON PRESCHOOL CHILDREN’S PREFERENCE FOR AND CONSUMPTION OF HEALTHY FOODS
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Purpose: Repeated exposure (RE) was compared to repeated exposure with developmentally appropriate Child-Centered Nutrition Phrases (CCNP) on preschool children’s preference for and consumption of healthy foods. The phrases, which help children make food/body connections, were developed by a team of university experts in child feeding and nutrition. Methods: The within-subject experimental design study involved 65 children, ages 3-6, attending an early education program. Children rated their preference for the four study foods (bell peppers, tomato, lentils and quinoa) using a 5 point facial response scale. A group snack trial measured individual intake of the four study foods at pre-, post, and one month after the treatment. Each child was randomly assigned a RE, CCNP and two no-treatment (NT) foods. The six week treatment involved two weekly taste and rate sessions. The RE or CCNP food were alternately presented on different days. In the CCNP condition, the phrase was repeated by a trained research assistant twice during the interaction. A repeated measures ANOVA was conducted to compare preference ratings and intake of the RE, CCNP and NT foods. Results: There was a significant increase in the consumption of the CCNP [F(2,58)=15.295; p Discussion: Results suggest repeated exposure increases children’s preference and consumption of a healthy food, but their preference and consumption is even greater when repeated exposures is paired with a child-centered nutrition phrase that explains how the food helps the child’s body perform. The frequent use of consistent nutrition messaging to accompany food from a variety of food groups in the early education and family contexts may increase children’s preference and consumption of nutritious foods.

FOODS, NUTRITION PRACTICES, AND POLICIES OF FAMILY CHILD CARE HOMES IN MISSISSIPPI BY PARTICIPATION IN THE CHILD AND ADULT CARE FOOD PROGRAM
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Purpose: Family child care homes (FCCHs) are the second largest provider of care for U.S. children Methods: Cross-sectional data were from a random, stratified sample of 134 FCCHs that enroll 3-5 year olds. Providers completed a modified version of the Environment and Policy Assessment and Observation tool by mail. Providers reported on beverages/foods offered to 3-5 year olds at lunch on the day they completed the tool, and their nutrition practices and policies. Differences in offerings, practices, and policies by CACFP participation were calculated using Chi-square, Fisher’s Exact Test, and Generalized Linear Models. Results: Of the 134 homes, 56 were CACFP-participants. About 4±3 children ≤5 years old were enrolled and most were Black or White. Nearly all homes complied with the requirement to provide milk (90%), however, more CACFP-participating homes provided low-fat milk (62% versus 45%, p=0.04). Regardless of CACFP participation, most homes offered fruits (75%), vegetables (82%), bread (67%), and meats (86%) at lunch. At >25% of the homes, the food selections were high in sugar (fruit canned in syrup) and refined grains. Healthful practices (sitting with children at meals, encouraging children by telling them fruits/vegetables taste good, teaching, and talking with children about healthy eating) were reported more often (p Conclusions: Interventions and trainings are needed to support healthy nutrition environments, particularly in non-CACFP homes. This is important given the exceptionally high child obesity rates in southern states and because FCCHs are more likely to be utilized by lower-income children at greater obesity risk.

IMPACT OF A FAMILY CHILD CARE HOME (FCCH) INTERVENTION ON DIET QUALITY IN PRESCHOOL-AGE CHILDREN
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Building Food Parenting Skills to Reduce Solid Fat and Added Sugar Intake Among Low-Income Preschoolers: The Food, Fun, and Families (FFF) Intervention

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Purpose: Intakes of solid fat and added sugar (SoFAS) among preschool aged children far exceed recommended levels and believed to promote excessive energy intake. This research evaluated the efficacy of a theoretically-informed food-specific parenting intervention to reduce low-income preschool aged children's intake of solid fat and added sugar (SoFAS). Food, Fun, and Families used basic research on parenting around children’s eating behavior to help mothers develop skills to offer child-sized portions of lower SoFAS foods and beverages. Methods: A randomized controlled trial was conducted in a clinical setting over 12 wk with 119 low-income mothers of children 3-5 years who were recruited primarily from Women, Infants, and Children program offices in a large US city. Mothers were randomized to either the FFF (N=59) or to a no treatment control (N=60). FFF used facilitated dialogue and behavioral change techniques in a group setting to build parenting skills around feeding children at meals and snacks. The primary outcome was child SoFAS intake measured by 3, 24 hr dietary recalls collected at baseline and at the end of 12 wk. Results: Children were 55% female and 92% Black/African American. Among mothers, 78% were single, 39% were educated beyond high school, and 54% were unemployed. At 12 wk, total reported daily energy intake was lower among children whose mothers participated in FFF than those in control (mean (SD) =1208 (286) kcal/d vs. 1367 (383) kcal/d, pSpecifically, mothers in FFF reported 24% lower daily SoFAS intake in their child at 12 wk compared to the control group (mean (95%CI) =307 (273, 340) kcal/d vs. 403 (371, 435) kcal/d, p Conclusions: Findings demonstrate initial efficacy of a food-specific parenting intervention to reduce reported SoFAS and daily intake among low-income preschoolers. FFF holds promise for reaching populations at elevated risk for obesity during early childhood. Research is needed to evaluate FFF in community settings and its impact on child growth outcomes.
Objective: To examine the association between the school nutrition environment and children's dietary intake and weight status in an observational sample of 5,138 U.S. children ages 4-15 years recruited from 130 communities in the Healthy Communities Study. Methods: The study includes information obtained on school characteristics (school participation in state and federal nutrition programs, school wellness committee and coordinator, and district food-related school wellness policies), measurements of children's dietary practices (dietary screener and dietary behaviors related to child obesity), and measured child height and weight to calculate BMI z-score. Hierarchical statistical models were generated to relate school nutrition policies and programs to dietary outcomes and BMI z-score, adjusted for individual-level covariates (e.g., child race/ethnicity, household income, maximum parent education, maximum parent employment), community covariates (e.g., region, minority status, urbanicity), and school and community level clustering. Results: Children in schools where wellness committees were more active, i.e. met at least once in the past year, compared to children in schools where wellness committees were less active, i.e. met less than once per year, children had 0.10 lower BMI z-scores (95% CI: -0.17, -0.02; P=0.02) and consumed breakfast on 0.14 more days/week (95% CI: 0.02, 0.25; P=0.02). Schools with farm to school programs compared to schools without such programs had children with a lower frequency of intake of energy dense foods by -0.19 times/day (95% CI: -0.33, -0.05; P=0.01). The presence of the USDA's Team Nutrition Initiative also was associated with an increase in children's intake of 0.14 servings/day of fruits and vegetables (95% CI: 0.00002, 0.14; P=0.05) compared to schools that did not have the program. In pair-wise comparisons (at a 5% procedure-wise error rate), schools with wellness committees that met more than once in the past year compared to schools with wellness committees that did not meet, children had significantly lower added sugar intake (-0.78 tsp/day) and significantly lower sugar intake from sugar-sweetened beverages (-0.43 tsp/day). Conclusions: Overall, improved child diet and weight outcomes were found when schools had an active wellness committee, involvement in a farm to school program, and/or participated in the USDA's Team Nutrition Initiative.

Purpose: A school garden project is an experiential learning approach with beneficial effects on primary schoolchildren's knowledge of and attitudes towards fruits and vegetables. However, there is a lack of research on teachers' and children's perceptions towards a school garden. This qualitative study examines the implementation of a school garden and the perceptions of teachers/responsible persons and children towards the implementation of their school garden. Methods: A phenomenology approach was used. Twelve interviews with 14 teachers/responsible persons and five focus groups with 38 children from fifth or sixth grade (10-12 years old) were conducted in four primary schools in Ghent (Flanders, Belgium). The interviews and focus groups were analyzed in NVivo, using thematic analysis. Results: School gardens were initiated to involve children in nature. Although teachers and children perceived positive effects on knowledge of and attitudes towards eating vegetables, they did not perceive effects on vegetable consumption. The practical use (e.g. the start-up, guidance during gardening, courses on gardening and use of the harvest) of the school garden was similar in the four schools and overall, teachers/responsible persons and children were very positive about having a garden at school. However, teachers/responsible persons experienced some problems in implementing the school garden, as external help is needed during the startup and someone internal needs to take responsibility for the garden. Furthermore, all schools experienced difficulties with the maintenance of the garden during summer holidays and the integration of the school garden in the core curriculum. Another problem was that the school gardens were too small to offer enough possibilities for all children to work in the garden and to use the harvest for feeding all children. Conclusions: While school gardens can be initiated to involve children in nature, it is important to raise awareness...
on the potential positive effects on vegetable consumption in children. Furthermore, offering solutions to diminish the informational and organizational burden for teachers is needed. Finally, it may be important to involve parents in school gardening projects during the entire process of the school garden, since they play a major role in children's health behavior.

A THREE-YEAR LONGITUDINAL EVALUATION OF FRUIT AND VEGETABLE PREFERENCES OF STUDENTS TAKING PART IN THE NORTHERN FRUIT AND VEGETABLE PROGRAM

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Purpose: To assess fruit and vegetable (FV) preferences within the Northern Fruit and Vegetable Program (NFVP), as funded by the Ontario Ministry of Health and Long-Term Care. The NFVP runs from January to June (20 weeks), in which participating schools (geographically remote) receive weekly deliveries of two servings/student of primarily Ontario grown FV from the Ontario Fruit and Vegetable Growers' Association in combination with healthy eating and physical activity education. The NFVP began in Porcupine (2006-07) and expanded to Algoma (2007-08) and Sudbury (2014-15). Methods: During May (2014, 2015, and 2016), grade 5-8 students from schools under the catchment areas of Algoma, Porcupine, and Sudbury & District Health Units in Northern Ontario, Canada were invited to complete an online/paper-based survey regarding FV preferences. Ten fruit (7 offered as part of the NFVP) and 10 vegetables (7 offered as part of the NFVP) were assessed on a scale of 0 (never tried) to 4 (love), with an option for allergies. Preferences were assessed using a linear mixed model (controlling for gender, grade, ethnicity, and region) to account for students who were tracked over time. Results/findings: Among the participants (2014=1,552; 2015=1,617; 2016=1,582), preferences for fruit (2014=2.85, 2015=2.95, 2016=2.97, p Conclusion: Providing two servings of FV in schools located in geographically remote areas of Northern Ontario, Canada increased preferences for FV over the three-year study. Further research is needed to clarify how and if the increase in preferences was associated with increasing FV intakes.

INCREASING THE IMPLEMENTATION OF A MANDATORY STATE-WIDE SCHOOL HEALTHY FOOD POLICY: RESULTS OF THREE RANDOMISED-CONTROLLED TRIALS

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Objective: Despite healthy school canteen policies being mandated by many jurisdictions in Australia and internationally, uptake has been limited. Without population wide implementation, the potential benefits of school policies will not be realised. Research investigating interventions to facilitate the implementation of health innovations, however, is limited. The aim of this paper is to assess the effectiveness of three randomised trials, of varying intensity, in supporting schools implementation of a healthy canteen policy mandated by the NSW Government. Methods: Three randomised trials, with over 200 primary schools, were undertaken within the Hunter New England Region of NSW between February 2014 and June 2015. Implementation strategies varied across the three trials including such strategies as; executive support, training, resources, audit and feedback, communication strategies and ongoing support. The primary outcomes for the three trials were the proportion of schools with a canteen menu that did not contain foods or beverages (‘red’ and ‘banned’) restricted for sale under the policy; and the proportion of schools where healthy canteen items (‘green items’) represented more than 50% of listed menu items. Implementation of the policy was measured by menu audits at baseline and post-intervention (9-12 months following baseline) by dietitians, blinded to group allocation. Results: A dose-response relationship between implementation support and policy implementation was found. Results varied across the three trials from non-significant improvements for the primary trial outcomes to absolute improvements greater than 60%. Conclusions: Increasing schools' implementation of mandatory nutrition policies is possible however requires proactive implementation support strategies.

8013
COMPARATIVE COST-EFFECTIVENESS OF INTERVENTIONS TO IMPROVE SCHOOL IMPLEMENTATION OF A HEALTHY CANTEEN POLICY

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Objective: Interventions delivered in schools targeting foods provided or available for sale have considerable opportunity to improve child public health nutrition and impact on child obesity trends. The comparative cost effectiveness of high, medium and low intensity implementation strategies has not previously been reported. Given this evidence gap, a study was conducted to i) assess the average and incremental costs of three strategies to increase compliance with a State-based healthy canteen policy, and ii) identify the most cost-effective strategy to improve policy compliance. Methods: Three randomized controlled trials of varying implementation support intensity, aimed at enhancing the implementation of a government healthy canteen policy in primary schools, were conducted in New South Wales (NSW), Australia. The primary outcome for all three trials was compliance with a healthy canteen policy, measured through menu audits conducted at baseline and follow-up. The economic study adopted a health service perspective and was based on the direct costs of delivering the interventions. Intervention set up costs and research related costs were excluded. A comparative cost-effectiveness analysis was conducted to provide incremental cost effectiveness ratios (ICERs) for each trial compared to usual practice. Uni- and multivariate sensitivity analyses were conducted to test plausible variation in the analysis parameters compared to base case ICERs. Results: Schools receiving high or medium implementation support were more likely than control schools to have menus compliant with the healthy canteen policy. The ICERS, representing the additional cost per percentage point change in proportion of compliant schools at follow-up, for the three trials was $2,982 for the high intensity support, $2,627 for the medium intensity support, and $4,730 for the low intensity. Conclusion: Of the three trials, the findings suggest from a cost and cost-effective perspective, that medium intensity implementation support, including evidence based strategies, is the preferred approach to improve canteen practices consistent with a healthy canteen policy.

O.31 Nutrition and physical activity Interventions in adults (Saanich 1)

EXAMINING THE EFFECTIVENESS OF A COMMUNITY-WIDE PHYSICAL ACTIVITY PROGRAM: APPLYING THE HIERARCHY OF EFFECTS MODEL

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Purpose: A hierarchical sequence of behaviour change (i.e., the hierarchy of effects model [HOEM]) has been advocated in the evaluation of community-wide interventions. The purpose of this research was to expand the HOEM to include implicit cognitions when trying to understand the effects of a community-wide physical activity (PA) program. It was hypothesized there would be sequential relationships among proximal (awareness, including attentional bias), intermediate (implicit and explicit attitudes), and distal factors (PA behaviour). Furthermore, it was hypothesized those who were aware of UWALK would show attentional bias toward the UWALK brand. Methods: Participants (N = 127) were recruited from the UWALK website and communities in Alberta, Canada. Data were collected online and included a measure of awareness of UWALK, a visual dot-probe task (measuring attentional bias), a Go/No-Go task (measuring implicit attitudes), and questionnaires to measure explicit attitudes toward PA and demographics. Data were analyzed using hierarchical linear regression with PA regressed onto demographics and HOEM factors and interactions between the awareness and attitudes. A repeated measures ANOVA (RM ANOVA) was used to determine if the those who are aware of UWALK would show attentional bias and positive implicit attitudes toward PA compared to those who are unaware of UWALK. Results: All the steps except for the last step of the regression model were significant (total R2 = .24, adjusted R2 = .16, p = .005). PA was significantly predicted by awareness (β = .19), implicit attitude (β = .24), and explicit affective attitudes (β = .19). Those who had unprompted awareness of UWALK showed attentional bias toward UWALK images (p = .001) and
positive implicit attitudes toward PA (p = .003), compared to those who were not aware of UWALK. Conclusions: There were positive associations among proximal (i.e., awareness), intermediate (i.e., attitudes), and distal (i.e., PA) factors. There were positive associations between program awareness and implicit cognitions (attentional bias and implicit attitudes toward PA). This research highlights that online measures of implicit cognitions can be incorporated into evaluation of health promotion interventions and that those who are unaware of a program may not attend to campaign elements.

MECHANISMS OF ACTION IN GROUP INTERVENTIONS (MAGI) STUDY: A FRAMEWORK FOR DESIGNING AND DELIVERING GROUP-BASED HEALTH INTERVENTIONS
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Purpose: Groups have been used to promote personal psychological and behavioural change for over a century. There are a multitude of research studies and theories on group dynamics and change processes in groups. However, this knowledge is dispersed across different disciplines and seems rarely used to design, deliver and evaluate group-based behaviour-change interventions. The aims of the Mechanisms of Action in Group Interventions (MAGI) study were (1) to develop a conceptual framework of change processes in group-based behaviour-change interventions, and (2) to identify practical strategies for designing and delivering group-based diet and physical activity interventions. Methods: Concepts and processes helpful in understanding how groups work and how they influence individual change were identified from reviews of: (1) theories of group dynamics and change in groups, (2) qualitative studies on group participants’ experiences, (3) existing taxonomies of behaviour change techniques, and (4) assessment tools to measure group processes. This was supplemented by consultations with researchers and practitioners working with group-based interventions, and participants and facilitators of group programmes. Moreover, intervention manuals and 38 transcripts of group session recordings from three recent trials of group-based diet and physical activity interventions were coded to identify examples of group processes and specific strategies used to design group-based interventions and to facilitate group change processes.

Findings: A conceptual framework of change processes in group-based health interventions was developed. Specific, theory-based group processes were categorised into: (1) group dynamic and development processes, (2) inter-personal change processes, and (3) intra-personal change processes in groups. Examples of practical strategies to facilitate and manage these processes were identified and categorised into: (1) group design elements, (2) group set-up tasks, (3) group facilitation strategies, and (4) group closure tasks. Conclusions: There is a need for better understanding of mechanisms of change in behaviour-change interventions delivered in groups. The presented framework integrates a large body of literature on change processes in groups, and provides examples of practical strategies for design and delivery of group-based diet and physical activity interventions that can be used to instigate and facilitate change processes in groups.

PORTRAYING ROLE MODELS TO PROMOTE STAIR CLIMBING IN A PUBLIC SETTING: THE EFFECT OF MATCHING SEX AND AGE
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Purpose: The aim of this study was to evaluate the impact of portrayed others on stair climbing in a train station. Methods: On each of five observation days, we observed stair climbing behavior during six periods: a no-intervention period (the control condition) and five stair climbing intervention periods. These intervention periods consisted of five different conditions to promote stair climbing. During one intervention condition, we displayed a health message. During the other four intervention conditions, we portrayed the same health message together with one of four life-sized role models varying in sex and age: a young male model, a young female model, an older male model and an older female model. In total, 1500 passersby were observed. Results: Introducing a health message without a role model yielded a significantly higher proportion of stair climbers compared with the no-intervention period (21.7% vs. 15.0%). Adding a portrayed role model resulted in an even higher proportion of stair
climbers compared with the control condition (25.9%), but this proportion was not significantly different from the health-message only condition. However, the proportion of stair climbers was significantly higher among passersby who matched with the role model in terms of their sex and age than among passersby who did not match with the role model (37.2% vs. 21.5%). Conclusions: These findings demonstrate that adding a portrayed role model to a health message positively affects stair climbing in a public setting, but only when this portrayed role model matched the sex and age of the passersby. Future research should therefore take into account the sex and age of role models to promote physical activity.

Influence of a Community-Based Lifestyle Modification Intervention on Participants' Family and Friends' Body Weight
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Purpose To examine the influence of a community-based lifestyle modification intervention program on participants' family and friends' body weight. Methods We enrolled 194 overweight and sedentary women 40 years and older in a six-month community randomized trial in sixteen medically underserved rural towns in Montana and New York. Eight towns received the Strong Hearts, Healthy Communities (SHHC) intervention, consisting of strength training, aerobic exercise, nutrition education, and civic engagement. The other eight towns received an education-only minimal intervention, Strong Hearts, Healthy Women (SHHW). Participants' family and friends completed a survey at baseline and outcome, where we collected data on weight, height, social support for healthy eating and physical activity (PA), and sociodemographic characteristics. Linear and logistic regression models were conducted using SPSS version 22. Results Of the 327 friends and family (F&F) respondents, 61% were referred by SHHC participants and 39% were referred by SHHW participants. Most respondents were female (81%), about half were family members and the rest were friends, coworkers, or acquaintances. Mean weight difference from baseline to outcome between SHHC and SHHW F&F members was -4.04 pounds, equating to a BMI difference of -1.422 units (p=0.023). This was similar to the measured weight and BMI difference between SHHC and SHHW participants from baseline to outcome, which was -4.08 pounds and -0.663 BMI units (p=0.007), respectively. Examining F&F respondents separately, a significant reduction in weight of -4.501 pounds for SHHC versus SHHW, equating to a BMI difference of -1.063 units (p=0.101), was only observed for family members. Friend support for PA increased significantly among SHHC participants and SHHC F&F (p=0.007 and p; however, there was no difference between SHHC and SHHW F&F. Friend support for healthy eating also increased for both SHHC participants and SHHC F&F, and there was no difference between SHHC and SHHW F&F in this measure. Family support for PA and healthy eating did not change significantly among participants or F&F. Conclusions Our findings provide preliminary support for a beneficial impact of lifestyle modification interventions on participants' social networks, in terms of BMI change and social support for healthy eating and physical activity.

Impact of a 3-Month Intervention on Body Weight, Blood Pressure, Lipids, and Physical Activity: The IMAGINE Trial
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Purpose: To examine 3-month changes in weight, blood pressure, lipids, and physical activity (PA) in the Inflammation Management Intervention (IMAGINE) study: a 12-month diet (informed by the Dietary Inflammatory IndexTM), PA, and stress management intervention trial. Methods: Adults were recruited to participate in a self-selection trial where participants could opt to receive the intervention (n=59; weekly classes for 3 months, monthly classes through 12 months) targeting systemic inflammation reduction or to a control condition (n=34; weekly email cancer screening newsletters for 3 months, monthly newsletters through 12 months). Intervention classes included participatory cooking, stress management lessons, and exercise demonstrations. Dietary recommendations focused on consuming a predominantly plant-based diet rich in foods identified as being highly anti-inflammatory (spices, vegetables, etc.). Participants were encouraged to achieve a minimum of 150 min of moderate or 75 min of vigorous exercise per week. Three-month changes in body weight, blood pressure, lipids, and PA (SenseWear® armband) were analyzed using baseline observations carried forward for missing data. Results: There was no
differences in attrition (15%) or demographics between groups with the exception of age (52.6±10.8 y intervention; 38.4±15.7 control; F2 intervention; 38.2±6.6 control; P=0.03); therefore, models were adjusted for baseline age and BMI. Participants (38% Black; 62% White) were mostly female (81%) and had an 84% completion rate at 3-months. Means ±SE are presented. The intervention group lost significantly more weight (-2.9±0.5 kg) than did controls (-0.99±0.7 kg; P=0.04). They had greater decreases in diastolic blood pressure (-4.8±1.0 mmHg vs. -0.9±1.3 mmHg in controls; P=0.02). Changes in systolic blood pressure and lipids favored the intervention group, but were not statistically significant. The intervention group had significantly greater increases in steps/day (+308±182 vs. -507±248 in controls; P=0.01), minutes of moderate PA/day (+8.1±3.6 vs. -4.5±4.9 in controls; P=0.05), and greater decreases in sedentary time (min/d) (-31.1±9.5 vs. +10.9±13.0 in controls; P=0.02). Conclusions: The IMAGINE study 3-month outcomes demonstrate short-term improvements in weight, PA, and blood pressure outcomes—all of which are important for reducing cardiovascular disease, diabetes, and cancer risk. One-year outcome data will be collected in March and will be presented as well.

### O.32 Process evaluation of physical activity and dietary interventions (Saanich 2)

**FINDINGS FROM THE PROCESS EVALUATION OF ‘HEALTHY LIFESTYLES PROGRAMME’ (HELP) CLUSTER RANDOMISED CONTROLLED TRIAL: A SCHOOL-BASED OBESITY PREVENTION INTERVENTION FOR 9-10 YEAR OLDS**


Objective: To conduct a mixed-methods process evaluation to assess intervention uptake and fidelity (to content and quality of delivery) and whether the Programme worked in accordance with the logic model. Background: HeLP was developed using intervention mapping, combining evidence, theory and stakeholder views. A logic model showing the relationship between context, delivery techniques, mediating behaviours and outcomes was produced. A process evaluation ran alongside the cluster randomised controlled trial of HeLP and was conducted in accordance with the UK MRC guidance for process evaluations of complex interventions. Methods: We captured data on school context, engagement of schools, children and families, fidelity of intervention delivery and experience of HeLP across all 16 schools receiving the Programme. Data were collected through focus groups (n=35) with ‘engaged’ and ‘less engaged’ children, interviews with parents (n=52) and teachers (n=28), observations and field notes. A mediation analysis was conducted using a validated, bespoke questionnaire on all children (n=1324) to assess knowledge, motivations and cognitions at baseline and 12 month follow up. Qualitative data was thematically analysed blind to trial outcome. Results: Data from the process evaluation showed that HeLP was delivered as designed in all sixteen intervention schools, with high uptake and very high levels of engagement for schools, children and their families across the socioeconomic spectrum. Effectiveness results from the trial showed no impact on weight status or physical activity behaviours at follow up; however there was evidence of a significant between group difference in the consumption of energy dense snacks and negative food markers (equating to approximately half a portion a day). The data suggests that HeLP worked in accordance with the intervention’s logic model by changing children’s self-reported levels of knowledge, cognitions and behaviours. However, there was evidence suggesting children found it hard to achieve their goals particularly if they felt unsupported by their family to make these changes. Conclusion Despite HeLP being an intensive, theoretically derived intervention, developed with extensive stakeholder consultation, the lack of effectiveness leads us to suggest that it is unlikely that school-based interventions are able to affect the home environment sufficiently to affect weight status.

### EFFECTIVENESS AND COST EFFECTIVENESS OF THE ‘HEALTHY LIFESTYLES PROGRAMME’ (HELP) CLUSTER RANDOMISED CONTROLLED TRIAL: A SCHOOL-BASED OBESITY PREVENTION INTERVENTION FOR 9-10 YEAR OLDS

Objective: To determine the effectiveness and cost effectiveness of the Healthy Lifestyles Programme in preventing obesity in 9-10 year olds. Background: Approximately one third of children in England leave primary school overweight or obese. There is little evidence of effective obesity prevention programmes for this age group. Methods: We carried out a pragmatic, superiority cluster randomised controlled trial with blinded outcome assessment, allocating schools (1:1) to either the HeLP intervention or usual school practice. Participants were children in Year 5 (aged 9-10 years) at recruitment and Year 7 (aged 11-12 years) at 24 month post baseline follow up. The intervention ran over the Spring term of Year 5 into the Autumn term of Year 6 and included four phases: building a receptive environment; a drama-based healthy lifestyles week; 1:1 goal setting and reinforcement activities. The primary outcome measure was BMI SDS at 24 months post baseline measures. Secondary outcomes included waist circumference SDS, percent body fat SDS, proportion of children overweight and obese at 18 and 24 months, accelerometry assessed physical activity and self-reported dietary behaviour at 18 months. Results: We recruited 32 schools, 14 of which had ≥ 19% pupils eligible for free school meals (the national average for England in 2012) and 1324 children. We had 94% follow up for the primary outcome. No difference in BMI SDS was found at 24 months (mean difference -0.02 (95% CI: -0.09, 0.05)) or 18 months (mean difference -0.02 (95% CI: -0.08, 0.05)) between children in the intervention and control schools. No difference was found between intervention and control groups in waist circumference SDS, percent body fat SDS or physical activity levels. Significant differences (equating to approximately half a portion a day) were seen in self-reported consumption of Energy Dense Snacks and negative food marker, in favour of the intervention. The intervention was not cost effective compared to control. The Programme was delivered with high fidelity and engaged children, schools and families across the socioeconomic spectrum. Conclusions: The Healthy Lifestyles Programme is not effective or cost effective in preventing overweight or obesity in 9-10 year olds.

A MIXED METHODS PROCESS EVALUATION OF THE FARM FRESH FOODS FOR HEALTHY KIDS (F3HK) PROGRAM

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Objective: In response to the dearth of process evaluations for complex interventions, we evaluate the reach, dose delivered, dose received and fidelity of Farm Fresh Foods-for Healthy Kids (F3HK), a behavioral and food systems intervention, from the perspective of multiple stakeholders, including parents, educators, and site coordinators. Methods: F3HK was designed based on Social Cognitive Theory to improve low-income families’ access to and consumption of fruit and vegetables. The intervention includes a 50% subsidized, weekly Community Supported Agriculture (CSA) produce share and nine family-friendly lessons designed to build the skills and self-efficacy needed to make use of the share and form healthy household eating habits. In 2016, a 2-arm RCT of the program was initiated at eleven sites across four U.S. states. Families were randomized 1:1 at each site. Data were collected using mixed methods: study recruitment and enrollment records captured reach; CSA pick-up logs and lesson sign-in sheets captured intervention participation (“dose delivered”); post-lesson participant surveys captured families’ use of the CSA and perceptions of lesson utility (“dose received”); and post-lesson educator surveys and site coordinator audits captured fidelity. Semi-structured interviews with educators (n=9) explored site-specific factors impacting intervention fidelity and participation (“dose delivered”). Themes were identified using template analysis. Results: Per the Medical Research Council’s recommendation in BMJ 2015;350:h1258, we report our process data prior to analysis of trial outcomes to avoid biased data interpretation. Reach: Of 471 families screened, 381 were eligible, and 200 (52.5%) enrolled. Dose delivered: 68.3% of families attended at least one lesson; only 4% attended all nine. Educators cited families’ inconsistent schedules as one factor. We are unable to report CSA sales due to insufficient pick-up log submission. Dose received: 83.3% of attendees found lesson activities to be useful. Fidelity: All audited pick-up sites functioned appropriately. Only one of nine educators taught the curriculum as written. Educators reported adapting lesson order and content to accommodate participants’ schedules and preferences. Conclusions: Researchers and practitioners involved in the design, implementation, and evaluation of complex food systems interventions may find the results useful in informing both program and process evaluation design.
PROCESS EVALUATION OF A NATIONAL WORKPLACE PHYSICAL ACTIVITY INTERVENTION IN CANADA: UPnGO WITH PARTICAPATION

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Objective: Process evaluation is critical to maximizing an intervention's impact and informing program improvement. However, how programs are modified based on such evaluations is rarely reported in workplace physical activity (WPA) interventions. This study presents the process evaluation results of the UPnGO pilot intervention and describes how these informed program modifications. Methods: UPnGO is an on-going, national WPA program designed to increase steps and reduce sitting time among employees. The 6-week program consists of 1) an on-platform component: a web-based and mobile application for self-monitoring daily steps by using a wearable device and activities related to action planning and 2) an off-platform component: onsite activities organized by an external activation team and real-life challenges. A two-phase pilot study was used to inform program development. The phase one pilot involved 1038 participants from six organizations located in British Columbia (female=74%; mean age=42±32.7 years). The key process evaluation indicator was defined as the extent to which the intervention components of UPnGO were carried out as planned (levels of implementation). We used web-based systems to track participants’ on-platform engagement; participant and stakeholder surveys and interviews to assess program feasibility. Results: Data from different sources consistently indicated that participants and stakeholders valued the UPnGO program. However, the average level of implementation was 38%, which is considered as sub-optimal (i.e., 60%). Besides technical issues, participants and stakeholders suggested that the sub-optimal levels of implementation were likely due to lack of clarity of program objectives, inadequate communication regarding program tasks and insufficient involvement of organization personnel. Through iterative discussions, the program development team made the following modifications to the implementation protocol in phase two: 1) revised communication materials to clarify program objectives, 2) the addition of a soaking-period to familiarize participants with the program structure, UPnGO platform features, device synching and activity tracking, 3) replaced the external activation team with organizational staff as change agents to drive organizational engagement and ownership. Conclusions: Rigorous process evaluation of UPnGO identified the need for program refinement. An on-going process evaluation will investigate how modifications impact implementation levels and program effectiveness of phase two of UPnGO.

PROCESS EVALUATION OF A COMMUNITY-BASED PROGRAMME FOR ENGAGING INACTIVE ADULTS IN SPORT AND PHYSICAL ACTIVITY

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Purpose Adult participation in sport and physical activity remains low. This paper presents a process evaluation of Leicestershire’s ‘Get Healthy Get into Sport’ programme which aimed to increase sport and physical activity participation in inactive adults. Methods Participants were offered six one-to-one mentor sessions, a subsidised six month leisure pass and community-based activities. The process evaluation assessed recruitment and retention; implementation, participation and participant satisfaction. Data were collected using one-to-one interviews (total n=102) which were conducted annually with project partners (n=48), mentors (n=9) and participants (n=45) and three focus groups. Participation was monitored via leisure passes and attendance registers. Participant satisfaction was assessed in the 3 month follow-up survey. Qualitative data were analysed thematically and descriptive analysis undertaken for quantitative data. Results Overall, 533 inactive adults were recruited from two communities within Leicestershire who were female (69.5%), white (86.7%), aged 30-59 (61.9%) and unemployed (51.6%). Word of mouth, posters, flyers and local events were most frequently utilised to recruit participants. Partners reported challenges in recruitment, retention, strategic planning, community engagement and implementation. They indicated more time was needed prior to commencing programme delivery to allow for partnership development, community insight and engagement, and marketing. Participants reported significant barriers to participation including fear and anxiety, lack of confidence and knowledge, finance and travel. Participants engaged in an average
of 2.8 (±2.0) mentoring sessions; less than 20% completed all six sessions. A high proportion (89.8%) rated their mentor sessions as ‘excellent/good’, and 52.2% agreed they would not have engaged in physical activity without mentor support. A total of 8,989 leisure centre visits were recorded; 5,594 (62.2%) were visits to the gym. Participants reported a range of benefits including increased physical activity, improved diet, greater confidence, development of friendships and improved overall wellbeing. Conclusions Delivering community-based programmes requires strong partnerships, clear strategies for recruitment, retention and implementation and time to undertake initial insight and engagement work. Inactive individuals have significant barriers for sport and physical activity participation and intensive support may be necessary to enable them to begin and sustain long-term behaviour change. Future programmes should prioritise retention as well as recruitment.

O.33 Physical activity and dietary interventions in cancer patients and survivors (Esquimalt)

OVERCOMING KNOWLEDGE GAPS ON THE LINKS BETWEEN WEIGHT, DIET, PHYSICAL ACTIVITY AND CANCER RISKS: LESSONS FROM THE ‘1 IN 3 CANCERS’ PREVENTION CAMPAIGN

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Objectives: One-third of Australian cancer cases are preventable each year. However, awareness of increased body weight, unhealthy diet, alcohol consumption and low physical activity as cancer risk factors is low, with less than 50% of the community identifying that cancer is a consequence of these behaviours. The 1 in 3 Cancers campaign was created to empower people to take action to reduce their risk of cancer. This presentation aims to explain the campaign development process and evaluate campaign effectiveness in increasing awareness that one in three cancer cases are preventable through healthy lifestyle choices. Methods: The campaign was underpinned by significant research. Eight focus groups, three online forums, an online survey (n=677) and 12 consumer interviews guided the development and creative testing of the campaign. The campaign was integrated, and included television and Facebook advertisements, a website with interactive risk quiz, social media strategy and online advertising. A specific focus on healthy weight and reducing red meat and alcohol consumption aimed at increasing knowledge of these risk factors. Post campaign launch, 600 interviews with the target audience (adults aged 33-55 years) were conducted evaluating the campaign’s reach, impact and public response. Results: Qualitative formative research confirmed that there is disbelief among some that cancer can prevented, and there was a low awareness that body weight, diet, physical activity and alcohol are risk factors for cancer. Post-launch evaluation showed the television and online advertising was successful in reaching the target audience. The campaign was believable, trustworthy and increased awareness of what people can do to prevent cancer. More than 80% of participants were able to identify each of the nutrition/physical activity factors that impact cancer risk. Nearly 9,000 people completed the risk calculator and accessed tailored information on how they could maintain a healthy weight, eat a healthier diet or increase physical activity. Conclusions: The 1 in 3 Cancers Campaign is clear, compelling and informative, leading to increases in knowledge. Investing in extensive formative research, an engaging, personalised tool and credible, evidence-based content were key to these successful results. The campaign sets a strong foundation to influence behaviours in future years.

EVALUATING THE FEASIBILITY OF A NOVEL APPROACH TO INCREASING PHYSICAL ACTIVITY LEVELS IN BREAST CANCER SURVIVORS: A RE-AIM ANALYSIS

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Purpose: Translating interventions from controlled research trials into community practice is critical for improving population level health. Project MOVE, a physical activity (PA) intervention that used a combination of microgrants and financial incentives, is an innovative ‘real world’ approach to increasing PA levels in breast cancer survivors (BCS) by providing them with the opportunity to develop and implement a PA program that meets their specific needs and preferences. The purpose of this presentation is to describe the feasibility of Project MOVE by utilising
RE-AIM, a process evaluation framework. Methods: A mixed-methods design was used to inform each RE-AIM dimension (Reach, Effectiveness, Adoption, Implementation, Maintenance), via questionnaires (N=88), focus groups (n=10) and interviews (n=10). Reach was evaluated by the proportion of targeted individuals recruited. Effectiveness was evaluated by perceived change in PA. Adoption was evaluated by perception of process and acceptability. Implementation was measured by barriers and facilitators to implementing the program as intended. Maintenance was evaluated by participant retention, continued group engagement in PA at 6 months, as well as confidence in being regularly active over the next 6 months. Assessments occurred at baseline and 6 months. Results: In terms of Reach, 80% of participants were BCS; Effectiveness, 66.7% felt that Project MOVE motivated them to start being active and 65.3% felt Project MOVE helped increase PA levels; Adoption, intervention was a simple and easy process to adopt, 81.9% reported Project MOVE was highly appropriate for the BCS population and was accepted by 82% of BCS; Implementation, focus on fitness rather than disease was important for engagement, leaders with breast cancer and fitness expertise was essential to accommodate population specific barriers, additionally inclusion of other health education (e.g., nutrition) resources are warranted; Maintenance, retention at 6 months was 87%, only 43% reported they still engaged in PA together as a group, however many individuals indicated they continue to be active on their own, and 85% were confident they will continue to be regularly active post intervention. Conclusions: This program evaluation will provide evidence based recommendations for program refinement and future program dissemination.

IDENTIFYING OPTIMAL EXERCISE PRESCRIPTIONS TO IMPROVE QUALITY OF LIFE AND PHYSICAL FUNCTION IN PATIENTS WITH CANCER DURING AND POST TREATMENT: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS.

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Objective: Optimizing exercise for patients with cancer in terms of timing, duration and mode of intervention delivery and exercise frequency, intensity, type and time (FITT-factors) may improve benefits for quality of life (QoL) and physical function. This meta-analysis was an investigation into the effects of exercise on QoL and physical function among cancer patients and into differences in effects between cancer types and different intervention and exercise-related characteristics. Methods: We searched electronic databases to identify RCTs investigating the effects of exercise on QoL and physical function in adult patients with cancer. We assessed the methodological quality of these RCTs using Cochrane’s risk of bias tool. We calculated pooled effects (Hedges’ g) using Comprehensive Meta-Analysis software and conducted subgroup analyses based on cancer type, intervention timing, duration and delivery mode and exercise FITT-factors. Results: Of 73 eligible studies, 64 study arms were included in the current meta-analysis. Exercise significantly improved QoL (g=0.15, 95%CI=[0.09;0.20], n=59 study arms) and physical function (g=0.20, 95%CI=[0.15;0.26], n=50 study arms) compared to controls. Supervised exercise had significantly larger effects on QoL (g=0.20, 95%CI=[0.13;0.26]) and physical function (g=0.26, 95%CI=[0.19;0.33]) compared to unsupervised exercise (QoL: g=0.40, 95%CI=[-0.06;0.13], physical function: g=0.09, 95%CI=[-0.01;0.19]). Meta-regression analysis showed that the effects of unsupervised exercise on physical function was significantly larger for exercise interventions with a higher weekly energy cost. No further significant differences in effects were found regarding cancer type, exercise timing, intervention duration, or exercise FITT-factors. Conclusions: Exercise, and supervised exercise in particular, has small but significant beneficial effects on QoL and physical function in patients with cancer. In the case of unsupervised exercise, patients should be encouraged to increase weekly energy cost when aiming to improve physical function. However, the optimal combination of weekly exercise volume and exercise intensity for unsupervised interventions is still unclear. Regarding supervised exercise, no evidence was found that the exercise effects differed by cancer type or intervention and exercise-related characteristics.
Objective: Physical activity (PA) is known to be beneficial in improving negative physical and psychological effects of cancer and cancer treatment. The increasing number of cancer survivors emphasizes the importance provide low cost, easy accessible PA programs. Computer-tailored interventions have the potential to reach a large population and can thus be a cost-effective option to increase PA. We developed OncoActive: a computer-tailored PA intervention for prostate and colorectal cancer patients and survivors. This study aims to assess short-term effects.

Methods: Intervention effectiveness was studied in an RCT. Prostate and colorectal cancer patients and survivors were recruited from 17 hospitals and randomized to the OncoActive group (N=249), or a usual-care waiting-list control group (N=229). Intervention participants received tailored PA advice three times during four months, both Web-based via an interactive website and with printed materials, and a pedometer. Participants wore an Actigraph at baseline and six months, and completed a questionnaire on self-reported PA (SQUASH), PA determinants and health-related outcomes at baseline, three and six months. Effects on PA (i.e. weekly days and minutes of moderate-to-vigorous PA (MVPA)) and fatigue were studied using regression analyses. Results: Three months after baseline the intervention was effective in increasing total days (Bdays = 0.85; p = .000) and minutes of PA (Bmin = 140; p = .03) based on self-report. Six months after baseline self-reported data revealed that total days of PA and minutes of PA increased even further (Bdays = 0.93; p = .000; Bmin = 258; p = .000). Analyses with objective accelerometer data revealed that at 6 months the intervention group significantly improved in MVPA (Bmin = 35; p = .03). Fatigue decreased significantly at three (B = -4.37; p = .01) and six months (B = -3.64; p = .04). Conclusions: The OncoActive intervention was effective in increasing PA and decreasing fatigue in prostate and colorectal cancer patients and survivors three and six months after baseline. Follow-up measurements at twelve months are currently conducted to examine the sustainability of the effects. Future analyses will also address health-related outcomes and relevant moderators or mediators and preliminary results will be presented.

LONG-TERM EFFECTIVENESS AND COST-EFFECTIVENESS OF HIGH VERSUS LOW-TO-MODERATE INTENSITY RESISTANCE AND ENDURANCE EXERCISE AMONG CANCER SURVIVORS

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Purpose: To study the long-term effectiveness and cost-effectiveness of high intensity (HI) versus low-to-moderate intensity (LMI) resistance and endurance exercise on physical fitness, fatigue, and health-related quality of life (HRQoL) in cancer survivors. Methods: 277 cancer survivors participated in the Resistance and Endurance exercise After ChemoTherapy (REACT) study and were randomized to 12 weeks of HI (n=139) or LMI exercise (n=138), that had similar exercise types, durations and frequencies, but different intensities. Measurements were performed at baseline (4-6 weeks after primary treatment including chemotherapy), 12 (i.e., short-term) and 64 (i.e., longer-term) weeks after randomization. Outcomes included cardiorespiratory fitness (peakVO2), muscle strength (hand-grip strength and 30-seconds chair-stand test), self-reported fatigue (MFI), HRQoL (EORTC-QLQ-C30), Quality-Adjusted Life Years (QALYs) and societal costs. Linear mixed models were conducted to study (a) the difference in effects between HI and LMI at longer-term; (b) within-group changes in outcomes from short-term to longer-term; and (c) the cost-effectiveness from a societal perspective. Results: At 64 weeks, intervention effects on role function (βbetween-group difference=5.9, 95%CI=0.5;11.3) and social function (βbetween-group difference=5.7, 95%CI=1.7;9.6) were larger for HI than LMI exercise. Between-group differences for physical fitness and fatigue were not significant. Furthermore, no significant within-group changes were found for peakVO2 and HRQoL in both HI and LMI exercise, indicating that intervention-induced benefits were maintained between week 12 and 64. Whereas, significant within-group changes was found for fatigue, such that it returned to baseline values between
week 12 and 64 in both groups. From a societal perspective, the probability that HI exercise was cost-effective compared to LMI exercise was 0.91 at €20,000/QALY gained and 0.95 at €52,000/QALY gained, mostly due to significant lower healthcare costs in HI exercise. Conclusions: At longer-term follow-up, we found a larger intervention effect on role and social function for HI than LMI exercise. Exercise-induced benefits in peakVO2 and HRQoL were successfully maintained between short- and longer-term, but not for fatigue. Furthermore, HI exercise was cost-effective for QALYs compared to LMI exercise. Hence, the current findings advocate the implementation of supervised exercise as part of standard cancer care, and if possible HI exercise.

Jun 10, 14:00 - 15:10: Oral Presentation

O.34 Physical activity and food environments (Colwood 1 & 2)

ASSOCIATIONS BETWEEN AFTER SCHOOL PHYSICAL ACTIVITY AND THE PHYSICAL ENVIRONMENT

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Objective: The use of objective measurements is now becoming common practice in research focusing on physical activity (PA) and relationships with the physical environment. However, to date, results from these studies are mixed. This may be related to the fact that PA consists of several contextual domains (e.g., sports or active transport) and that relationships with the physical environment may be context-specific, both in time and location. Studies that integrate information about these contextual domains into a strong theoretical approach may be able to investigate how features of the physical environment influence context-specific PA. Results from these studies may also be easier disseminated into future interventions. For example, filtering after school PA from daily PA using school's schedules is a first step towards more plausible and specific environmental determinants in children. Therefore, we executed a series of studies aimed at objectively measured after school PA. Based on an ecological model of PA, the objective of this series of studies was to investigate relationships between after school PA and contextually matched features of the physical environment. Methods: We used combined accelerometry, Global Positioning Systems (GPS), and Geospatial Information System data (GIS) to investigate children's mobility patterns and exposure to specific features of the physical environment. In addition, standardized audits were performed to assess the quantity and quality of PA affordances in the neighborhood. We also examined the moderating mechanism of distinct time-periods after school and distance from children's school to their residence. Results: Children from schools with higher audit-scores performed more light PA and moderate-to-vigorous PA in the first two hours after school, especially among children who lived within 800 meters from their school. Greater distance from children's residence to their school and the audited area, weakened the association between audit-scores and after school PA. Conclusions: These studies demonstrate that relationships between features of the physical environment and after school PA can be revealed and made plausible with increasing specificity in time and distance. Combining accelerometry, GPS- and GIS data enables researchers to provide person-specific data on exposure to the environment, where relationships with context-specific PA behavior can be investigated.

ADOLESCENTS’ PERSPECTIVES OF THE ACTIVITY FRIENDLINESS OF THE ENVIRONMENT: A CONCEPT MAP

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Objective: Adolescents spend a large amount of their time sedentary, and many do not meet the physical activity guidelines. Current evidence regarding behavioral determinants is primarily based on researcher-identified determinants. Knowledge on adolescents' perspectives on environmental determinants of physical activity is currently lacking. Therefore, this study aimed to explore adolescents' perspectives on the activity friendliness of the environment. Methods: Concept mapping meetings were conducted with eight groups of 13-16 year old students.
(n=84) from two secondary schools. During an individual and a group brainstorm session, students generated ideas towards the statement: ‘Can you think of different aspects that make an environment activity friendly?’ For each school, ideas were combined and similar ideas were removed or combined, resulting in a total of 98 and 97 unique ideas, respectively. The students individually sorted the ideas – based on self-perceived similarities between ideas – and rated their importance, using a five-point Likert-scale. Using multidimensional scaling and hierarchical cluster analyses two concept maps were created, one for each school. The researchers determined and named the final amount of clusters best representing students’ ideas. Results: The concept maps depicted 11 and 13 clusters, respectively, of which nine clusters appeared in the maps of both schools i.e.: an activity friendly environment needs to be/have: 1) clean, well-kept, and attractive; 2) easily accessible; 3) sufficient facilities, e.g. food and water available; 4) sports/play equipment; 5) varying activities; 6) free of entrance or payable; 7) challenging, e.g. new activities, gaming aspects; 8) the opportunity to be active together; and 9) should not provoke sedentary behavior, e.g. no screen activities. The determinants rated as most important were ‘variation: original and challenging activities’ (school 1) and ‘an adequate physical environment: e.g. sufficient space, appropriate surface type, and maintenance’ (school 2). Conclusions: Most of the determinants were in the physical domain, however, adolescents also appointed determinants concerning the social domain. The interaction between these physical and social determinants, and the combined influence on adolescents activity behavior needs to be examined in future studies.

UNDERSTANDING THE CONTEXT FOR URBAN FORM CHANGES: A CONCEPT MAPPING EXERCISE AMONGST STAKEHOLDERS IN THREE CITIES

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Objective: A better understanding of context facilitates interpretation of intervention success or failure. Perceptions of context may differ across stakeholders. We used concept mapping in case studies of three imminent urban form interventions (a public bike share program in Vancouver, British Columbia; a city-wide cycling network in Victoria, British Columbia; a bus rapid transit system in Saskatoon, Saskatchewan) to uncover stakeholders’ perceptions of factors that influence the success or failure of urban form interventions. Methods: We recruited intersectoral stakeholders (NGOs, policy makers/government, private business, members of the public) involved in each case study. We conducted the concept mapping online using Ekogito software. In the first phase, participants responded to the prompt: "from your perspective, factors that impact the success or failure of [intervention] are....". In the second phase, participants sorted retained items into groups, and ranked them in terms of importance and feasibility. We analyzed data using multi-dimensional scaling and hierarchical cluster analysis, assigned preliminary cluster names, and conducted subgroup analysis to determine whether the concepts varied based on stakeholder groups. Results: In the bike share case study, 28 participants generated 30 unique items which resulted in 6 clusters: helmet legislation, bicycle design, station locations/design, user experience, marketing, and financial considerations. In the cycling network case study, 24 participants generated 40 items resulting in 5 clusters: network design, political leadership, evaluation, stakeholder engagement and support, and public engagement. In the bus rapid transit case study, 19 participants generated 41 items resulting in 6 clusters: reliability and ease of use, funding, urban design, stakeholder engagement, cost, and equipment and service quality. Across sites, common themes included the broader political context (financial commitment, legislation, stakeholder engagement) and intervention specifics (design, technology, user experience). Differences across sites included the importance of evaluation in Victoria, and the helmet legislation in Vancouver. Conclusions: Concept mapping can describe contextual factors of urban form interventions, highlight the diverse perspectives of stakeholder groups, and refine implementation, or research design. In our next phase, we are leading discussions of concept maps and specific item rankings with stakeholders at each site.

PLANNING FOR WALKABILITY WITH PUBLIC HEALTH ASSESSMENT MODELS

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Purpose: This presentation documents the development of two tools for scenario planning: (1) the California Public Health Assessment Module (CPHAM), developed to support analysis of physical activity gains within
UrbanFootprint; and (2) the National Public Health Assessment Model (NPHAM). Both were developed to support transportation and land use planning by extending scenario planning tools such as UrbanFootprint, Envision Tomorrow, and CommunityViz to health. Methods: CPHAM and NPHAM are health assessment tools containing quantitative statistical models that predict physical activity based health outcomes from changes in the built environment. For development, built environment data was combined with individual records from California statewide travel and health: the California Household Travel Survey (CHTS) and the California Household Interview Survey (CHIS). CPHAM was modeled at a 150x150 meter grid-level using parcel level data provided by UrbanFootprint. Models are stratified by age (children, youth, adult, and senior); adult models are stratified by income. CPHAM has been validated against the National Household Travel Survey and other waves of surveys used for model development. NPHAM was modeled at the Census Block Group level using NED variables as inputs. Outcomes include transport walking; general health; obesity related outcomes; and mental health outcomes. Additional NPHAM outcomes such as diabetes and cardiovascular disease are under development. Results: CPHAM contains equations for over 90 modeled outcomes such as predicted daily minutes of walking, biking, recreational physical activity, and auto transport; BMI (continuous and categorical); high blood pressure, heart disease, and diabetes. An example of application of CPHAM illustrates how CPHAM can be applied to a regional transportation planning process. Southern California Association of Government’s 2016 Regional Transportation Plan applied CPHAM; the adopted plan will increase adult, all-income walking minutes by 33% and biking minutes by 26%. This translates into predicted percent reductions in prevalence: obesity (1.3%), hypertension (1.2%), heart disease (1.0%), and diabetes (1.0%). Conclusions: Both CPHAM and NPHAM are cutting-edge tools that allow planning agencies to understand the health implications of planned land use and transportation investments.

THE DEVELOPMENT OF A NATIONAL BUILT, NATURAL & SOCIAL ENVIRONMENTAL INDICATOR DATABASE
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Purpose: This presentation discusses the development of a National Environmental Database (NED). NED is a set of standardized built, natural and social environmental indicators believed to be the best predictors of health outcomes. Initiated by the Robert Wood Johnson Foundation (RWJF), the NED provides consistent data nationally at the block group level. NED will support analyses on a widespread set of environmental indicators as part of RWJF’s Culture of Health initiative. Methods: The selection of data for inclusion in NED was guided by a multi-disciplinary advisory council. Additionally, data had to (1) describe some element of the built, natural, and social environment; (2) be available across the U.S.; and (3) publically and routinely updated. In some cases, data was transformed using standard GIS methods to convert it into Census block group geography. For example, NED includes several 1km network distance-based proximity measures for selected destinations. Data has been aggregated and summarized for Census metro areas (MSAs and μSAs). It is currently complied into a single PostgreSQL database spanning entire conterminous US. Results: NED contains a wide variety of indicators including: demographic data from the U.S. Census Bureau; population density, transit accessibility, jobs/housing balance, land use/employment entropy, auto ownership from the EPA SmartLocation Database; Tree canopy, natural land cover, developed open space from the National Land Cover Database; bicycle infrastructure; distance to farmer’s markets, business, and bikeshare docking stations; and Smart Growth zoning supportive ordinances. Conclusions: The database provides evidence to help decision makers identify deficiencies and to spatially target programmatic and physical infrastructure investments in local environments to encourage healthy lifestyles.

WHAT'S NEXT FOR ENVIRONMENT AND POLICY RESEARCH RELATED TO BEHAVIORAL NUTRITION AND PHYSICAL ACTIVITY? A RESEARCH AGENDA
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Purpose: Our environments, in part shaped by policy, contain important upstream drivers of unhealthy behavior and health. Research that address environmental characteristics as upstream determinants of behaviors and health receive increased recognition but options for funding are limited and decreasing. Prioritization of research is thus necessary. Input and clarity is required from the field to align what should be done next; in order to reduce overlap, support faster progress, and ultimately provide better targets to improve population health. Alignment requires
that research communities come together and reach consensus regarding the most important, relevant, promising and timely issues that need to be addressed. The Policies and Environments special interest group (SIG) of the International Society of Behavioral Nutrition and Physical Activity (ISBNPA) therefore aimed to jointly create a research agenda to help determine and focus future directions and advances in the field of environmental-and policy determinants of behavioral nutrition, physical activity and sedentary behavior. Methods: During the 2016 annual meeting of the ISBNPA, researchers from the Policies and Environments SIG went through the first two steps of a four-step Delphi-based consensus procedure. The four steps consisted of 1) defining initial key research questions to be answered in the next 5 years, 2) ranking and reducing key questions 3) arranging these questions in themes and confirming and/or complementing them with the full SIG using a web-based survey, and 4) (re)confirming and ranking the final set of questions with the full SIG. Results/findings: Around 80 researchers from various disciplines initially generated 71 research questions. Ranking and reduction resulted in a total of 34 unique research questions with varying focus, covering a range of themes (i.e. Diet and food environment, Physical activity environment, Policy environment, Children/schools, and Miscellaneous/other). In general, the questions ranked as most important and relevant had a more 'macro' or fundamental research character (e.g. 'is the obesogenic environment reversible?'), and often related to the modifiability and levers for change as well as to implementation of environmental approaches. Questions regarding the environmental impact on populations - rather than the identification of single environmental characteristics in relation to individuals were highlighted.

O.35 Physical activity and dietary interventions in children (Saanich 1)

TURN UP THE HEAT (HEALTHY EATING AND PHYSICAL ACTIVITY) IN SUMMER DAY CAMPS: FIRST YEAR PHYSICAL ACTIVITY OUTCOMES

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Purpose: To evaluate a multi-component, competency-based intervention designed to increase the percentage of children meeting the 60 min/day of moderate-to-vigorous physical activity (MVPA) guideline for summer day camps (SDCs). Methods: Twenty SDCs serving 1,830 children (7.9 yrs-old, 46.1% girls) participated in this pre-post quasi-experimental study. Children’s wrist-placed accelerometer derived physical activity (PA) levels were collected on four nonconsecutive, unannounced days at baseline (July 2015) and outcome (July 2016). Following baseline, SDCs were assigned to receive professional development to increase children’s PA (n=10 intervention) or healthy eating (n=10 attention control). In May-June of 2016, SDCs in the PA intervention received the STEPs (Strategies To Enhance Practice) intervention. STEPs is a capacity-building approach grounded in the Theory of Expanded, Extended and Enhanced Opportunities (TEO) where program leaders receive training to expand (e.g., introduction of PA breaks and active field trips), extend (e.g., scheduling a minimum of 3 hours/d for PA opportunities) and enhance (e.g., increase the amount of MVPA children accumulate during schedule PA using the LET US Play principles) PA opportunities. SDCs in the healthy eating condition received support for improving the types of foods and beverages served. Multilevel logistic and linear regression models estimated changes in MVPA. Implementation of TEO components was evaluated using direct observation. Results/findings: At outcome, boys and girls attending intervention SDCs were 2.04 (95CI=1.10,3.78) and 3.84 (95CI=2.02,7.33) times more likely, respectively, to meet the 60 min/day of MVPA guideline than boys and girls attending comparison SDCs. This corresponded to increases of 10.6% (78-88.7%) and 12.6% (69.4-82.0%) in the percentage of boys and girls meeting the guideline in intervention SDCs, respectively. Boys in comparison SDCs increased by 1.6% (81.0-82.6%) and girls decreased by 5.5% (76.1-70.6%). Observational data indicated intervention SDCs successfully extended and enhanced PA opportunities, but were unable to expand PA opportunities, when compared to control SDCs. Conclusions: Children accumulated substantial amounts of MVPA at baseline in both intervention and control SDCs, but not all children were accumulating 60 min/day of MVPA. This intervention demonstrates that, with support, SDCs have the potential to provide a substantial proportion of attendees with their daily recommended amount of MVPA.
IN-LINE SKATING TRAINING FOR CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

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Purpose: This study examined the effectiveness of a in-line skating training lasting 12 weeks (two times a week for 80-min periods) on motor skill proficiency and executive function in boys with attention deficit hyperactivity disorder (ADHD). Methods: Twenty-four boys with ADHD, aged 6–12 years, participated in the study. All of the children with ADHD were matched based on age (within 6 months) and coexisting ADHD symptoms, and were randomly assigned into either a in-line skating exercise intervention (n=12) or an ADHD non-training control groups (n=12). The Bruininks-Oseretsky Test of Motor Proficiency-2 (BOT-2) and the Stroop Color and Word Test were conducted before and after the intervention. To assess the effects of the in-line skating training program, analysis of variance (ANOVA) with a 2 (time: pretest versus posttest) x 2 (group: ADHD training versus ADHD non-training) mixed-model factorial design was conducted. The Tukey’s post hoc test was performed if significant group differences emerged. The test of simple main effect was followed up with a significant interaction effect. The level of significance was set at p = 0.05. Results: The main findings revealed that (a) the ADHD training group exhibited significant improvements on the total motor composite (54.00 vs. 61.08, F=16.04, p < 0.05), (b) for total motor composite, there was a significant group by time interaction (F=4.39, p < 0.05), and (c) for the BOT-2 manual dexterity sub-scale, there was a significant interaction effect (F=4.82, p < 0.05). Conclusions: A structured in-line skating training may have clinical relevance in the functional adaption of children with ADHD. Supported by Taiwan MOST grant 103-2410-H-017-026-MY3.

THE EFFECTIVENESS OF SIT-TO-STAND DESKS TO REDUCE SITTING TIME WITHIN A PRIMARY SCHOOL CLASSROOM: AN 8 MONTH CONTROLLED TRIAL

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Objective: This study evaluated the effectiveness of the long term use of sit-to-stand desks in reducing classroom sitting time in a deprived area of Bradford, UK. Methods: A controlled trial was conducted over an 8 month period (November-July 2015/16) in two year 5 classrooms from different primary schools; every child in the intervention class received an Ergotron LearnFit sit-to-stand desk while the control class continued to use their traditional desks. activPAL inclinometers were worn for 7 days at baseline and at 4 and 8 months follow-up to measure sitting. Total sitting time and sitting time accumulated in different bout lengths across different periods of a school day were explored. A two-way mixed model ANOVA was used to compare sitting variables between each class across the three measurement periods. A one-way within measures ANOVA was used to determine differences within each group between the measurement periods. Data are presented as mean [SD]. Results: Thirty-five children (19 girls; age: 9.4 [0.5] years; 69% South Asian) provided valid activPAL data across all measurement periods (intervention: 15, control: 20). A significant group by time interaction for class time sitting (P<0.05) and prolonged sitting (P<0.05) in the control group. Post hoc comparisons revealed significant reductions (P<0.05). Conclusions: This study is the first to assess the long-term effectiveness of sit-to-stand desks within a UK primary school. The intervention appeared to successfully reduce total classroom sitting time and time spent in prolonged bouts over an 8-month period, with no apparent evidence of compensation occurring after school. These encouraging findings should be confirmed in a larger randomised-controlled trial.

OPTIMISING INTERVENTIONS BY INVOLVING STAKEHOLDERS IN FORMATIVE RESEARCH: AN EXAMPLE FROM THE PEER-LED PHYSICAL ACTIVITY INTERVENTION FOR ADOLESCENT GIRLS (PLAN-A) FEASIBILITY STUDY.

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Purpose: The PLAN-A project adapted an effective smoking cessation programme to develop an intervention to increase adolescent girls’ PA. In PLAN-A, Year 8 girls (12 – 13 years) nominate influential female peers in their year
Process Evaluation of a Smarter Lunchrooms RCT Comparing School-Selected Cafeteria Changes with Assigned Changes

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Purpose Results from previous years of the Smarter Lunchroom Movement (SLM) RCT in New York State middle school cafeterias highlighted lack of food service staff buy-in as a barrier to implementation of research protocols. The purpose of this study was to conduct process evaluation of the final iteration of the SLM RCT, redesigned to examine effectiveness of environmental changes promoting students’ fruit, vegetable, and unsweetened milk consumption in schools that self-selected intervention components, compared with schools that were assigned an intervention protocol. Methods Participating middle schools were randomly assigned to receive no intervention (control schools, n = 4), a six-week intervention in which staff selected protocol items from a pre-determined list of SLM changes (self-selection schools, n = 3), or an assigned protocol mirroring that of a self-selection school with similar sociodemographic characteristics (matched schools, n = 5). An adapted RE-AIM framework guided process evaluation designed to monitor fidelity to intervention protocols, determine the extent to which protocols were maintained post-intervention, and identify facilitators and barriers to successful implementation and maintenance. Using data from cafeteria audits, fidelity scores were calculated at baseline, during the intervention, and post-intervention. Additional measures included training documentation, school nutrition environment assessments, and post-intervention interviews; these data were analyzed qualitatively to identify factors impacting implementation. Results Environmental assessments revealed preexisting nutrition activities that may have impacted intervention effectiveness. Implementation fidelity scores increased in all treatment schools during the intervention period, and modest maintenance post-intervention was observed. Non-compliance was associated with restrictive serving line structures, limitations in food offerings, and changes to staff routines that proved difficult to maintain in busy serving periods. There were no differences in scores among self-selection and matched schools, suggesting the self-selection design did not meaningfully impact fidelity. Participating staff were more motivated than staff in previous years. This motivation, along with effective training and intervention support, served to facilitate successful implementation. Conclusions While self-selected protocols did not enhance fidelity, leveraging staff motivation and providing support for managing barriers to implementation proved effective compared with previous years. Results will inform analyses of forthcoming study outcomes and may prove valuable for other environmentally-focused interventions in school cafeterias.
HEALTH LITERACY IN A MULTIMODAL ONLINE DIGITAL MEDIA LANDSCAPE: HOW PAEDIATRIC PATIENTS WITH OBESITY EXPERIENCE ONLINE WEIGHT-, FOOD-, AND HEALTH INFORMATION.

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Purpose The aim of the study was to explore online media and information health literacy competencies among adolescents undergoing treatment for obesity. How the adolescents search for and select online information about food, body weight, and health, and how they experience this information was also explored.

Methods Individual interviews were conducted with adolescent patients with obesity (N=20) age 13-16 years, enrolled at Swedish university hospital. Participants used a laptop with Internet access to demonstrate search procedures and online information sources they used. The interviews were audio recorded and search activities on the computer were recorded via screen capture software. Qualitative content analysis was used to categorize the transcribed interview material.

Findings The participants expressed that they mainly searched for fun and easy ways to lose weight. Participants expressed that they were exposed to a wealth of food content in their online social networks which could be inspiring but it could also be alluring and negative for weight management. Adolescents' described variation in search and evaluation competencies. Some participants evaluated the trustworthiness of information by comparing different sources while others selected sources based on convenience and visual appeal. The participants described experiences such as finding social support with others with obesity that had lost weight but described being discouraged by unattainably successful fitness models. The participants also described disengagement in weight management due to deceptive commercial information.

Conclusions Social media proved to be a source for inspiration, information and social support but required critical thinking and literacy skills. The traditional separation between media- and information literacy is becoming distorted with more complex social media communication taking place. Commercial content was often perceived as personalized (e.g. persuasive marketing), and personal information as mediatized (e.g. food marketing transmitted by peers in online social networks). To guide paediatric patients in how to independently manage their diet and weight management, it is thus imperative to focus on adolescents' ability to evaluate online health information and to develop their critical media literacy skills.

O.36 Physical activity and sedentary behavior in older adults (Saanich 2)

EXAMINING THE RELATIONSHIPS OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR WITH SLEEP QUALITY IN LATER LIFE: A CROSS-SECTIONAL STUDY

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Background: Sleep is a pillar of healthy aging, however many older adults report having poor sleep. The consequences of poor sleep include an increased risk of cognitive impairment, type 2 diabetes mellitus, and mortality. Epidemiological data suggests high physical activity (PA) and low sedentary behaviour (SB) are associated with better sleep quality; however these findings are based on 1) self-reported PA, SB, and sleep-quality data; and 2) study samples under the age of 55 years. Thus, we examined the association of PA and SB with sleep quality in older adults.

Methods: We recruited 147 community-dwelling adults (aged 55+) for this cross-sectional study. At study entry, we surveyed participants for general health and demographic information by questionnaire, and assessed subjective sleep quality using the Pittsburgh Sleep Quality Index (PSQI). We then objectively measured PA, SB, and sleep quality (i.e., duration, efficiency, and fragmentation) for 14 days using the MotionWatch® (MW8). We performed bivariate correlations to determine associations between age, PA and SB characteristics, and objective and subjective measures of sleep quality. In addition, we performed multiple linear regressions to determine whether PA and SB were associated with either subjective or objective measures of sleep quality.

Results: Participant mean age was 71.24 years (SD= 7.24) and 66.67% were female. The average score on the PSQI
was 7.23 (SD= 4.01) and average sleep duration measured by MW8 was 401.14 minutes. Bivariate correlations determined older age was associated with lower PA ($r= -0.32$, $p= 0.03$), and increased sleep fragmentation ($r= 0.26$, $p= 0.03$); however neither PA nor SB was associated with objective sleep quality (i.e., duration, efficiency or fragmentation). Conclusions: Greater amounts of PA and lower SB may be important for subjective sleep quality in older adults; however higher PA and lower SB may not provide a substantial benefit to objective sleep quality.

WHICH PSYCHOLOGICAL, SOCIAL AND PHYSICAL ENVIRONMENTAL CHARACTERISTICS PREDICT CHANGES IN PHYSICAL ACTIVITY AND SEDENTARY BEHAVIORS DURING EARLY RETIREMENT: A LONGITUDINAL STUDY
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Objective: In the context of healthy ageing, the transition to retirement is an important opportunity to implement health interventions to develop an active lifestyle. Before such health interventions can be developed, the psychological, social and physical environmental determinants of physical activity and sedentary behaviors during early retirement should be identified, ideally with longitudinal studies. The aim of this study was first to examine whether psychological, social and physical environmental factors at the start of retirement predict longitudinal changes in physical activity and sedentary behaviors during the first years of retirement. Second, moderating effects of gender and educational levels were examined. Methods: This longitudinal study was conducted in Flanders, Belgium. In total, 180 recently retired (>1 month, Results: Higher perceived residential density ($p$ Conclusion: Walkability characteristics and self-efficacy at the start of retirement are the most important predictors of longitudinal changes in active transportation and leisure-time physical activity. Few moderating effects were found, so health interventions at the start of retirement focusing on both individual and environmental factors could be effective to increase physical activity in recently retired adults. No firm conclusions can be drawn on the importance of the examined predictors to explain change in car use and screen time, possibly other factors like the home environment, or automatic processes and habit strength are more important to explain sedentary behaviors.

THE IMPACT OF PHYSICAL ACTIVITY AND SITTING TIME ON FRAILTY FREE LIFE EXPECTANCY
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Objective: Low levels of physical activity and high levels of sitting time are risk factors for development of frailty. However, their impact of frailty-free life expectancy has not been estimated. Methods: Data were from 10,434 women from the 1921-26 cohort of the Australian Longitudinal Study on Women’s Health were used. Self-report data were collected on frailty (score of 4-5 on the FRAIL scale), physical activity (low=0-599, high=600+ MET minutes/week) and sitting time (low=0-7.99, high=8+ hours/week). Mortality was determined by linkage to the National Death Index. Total life expectancy, frailty-free life and years spent with frailty were estimated for each risk factor using estimation of life expectancies using continuous-time multi-state survival models (ELECT). Results: At age 75, average life expectancy for women was 14.4 years of which 7.1 years will be lived with frailty. The mean proportion (95% confidence interval) of life expectancy that will be lived with frailty is higher in women with high sitting time compared to women with low sitting time: 57.3 (55.5, 59.1) vs 47.2 (46.0, 48.5)%. Women with high physical activity can expect to live less years with frailty compared to those with low physical activity: 5.7 (5.4, 6.1) vs 8.5 (8.1, 9.0) years. Conclusions: Increasing physical activity and reducing sitting time may reduce the number of years women live with frailty.

OLDER ADULTS’ RESPONSE TO PARTICIPATING IN A PROVINCIAL, CHOICE-BASED PHYSICAL ACTIVITY INTERVENTION: CHOOSE TO MOVE
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Objective: Despite strong evidence for the health benefits of physical activity (PA), older adults are among the least active and most sedentary Canadians. With British Columbia Ministry of Health as partners we engaged two
community-based organizations to deliver and evaluate a scalable choice-based PA intervention, Choose to Move (CTM), across British Columbia. In this presentation we describe participant responsiveness to CTM as reflected by PA choices they made and through capturing their experiences in CTM. Methods: We utilize a mixed-methods approach to this process evaluation. Data were gathered from a subset of participants (low active ( Results: Twenty-one participants (n=8 male; n=13 female) participated in interviews and surveys. At baseline, CTM participants expected to improve aspects of health, receive guidance on PA and gain social connections from the intervention. As part of their PA action plans, the majority of participants (81%) chose organized activities and all participants chose some non-organized activities. Mid-intervention, participants most enjoyed social aspects of CTM (e.g., sharing experiences, learning from each other) and participating in their chosen activities. Participants felt motivated and supported to achieve their PA goals. Post-intervention, participants were more engaged in PA and more aware of PA options, felt more socially connected, and appreciated their activity coach’s guidance. Participants reported high levels of satisfaction with CTM (90% either satisfied or very satisfied) and frequently listed increased energy, social connections and flexibility as key benefits of participating in CTM. Conclusions: To deliver community-based PA programs at scale is a central goal of behavioral medicine, and understanding participants’ choices and experiences is a critical first step. Using this information, models can be adapted to meet the needs of a diverse group of older adults. The proportion of older adults who selected organized PA programs speaks to the need for presenting structured PA options that older adults enjoy.

RECENT TRENDS IN POPULATION LEVELS OF SITTING TIME IN AUSTRALIAN ADULTS
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Objective Even though sedentary behaviour is increasingly recognised as an important health-related behaviour, surveillance data are scarce. This study aims to explore the trend of population levels of sedentary time in Australian adults between 2007 and 2015, as well as the associations between socio-demographic and health-related characteristics and sedentary time. Methods This study used data from the 2007/08, 2011/12 and 2014/15 Australian National Health Surveys. In each survey, persons aged ≥ 15 years from a randomly selected nationally representative sample of private households were interviewed. Respondents reported sitting time at work and during leisure on a usual weekday, which was summed to calculate daily sitting time. Sitting ≥ 7 hours/day was defined as high sitting. The data were weighted to reflect population demographics and probability of being sampled, and the age and gender distribution of the samples were standardised to the 2014/15 sample. Data from the three surveys were combined with an indicator variable for the year of survey and a continuous ‘year’ variable for linear trend analysis. Associations between socio-demographic and health-related characteristics and high sitting were analysed using logistic regression models. Results Almost 49,000 respondents were included in the analyses. The proportion of respondents that accumulated ≥ 7 hours of sitting time/day was 37.6% in 2007/08, 38.5% in 2011/12 and 42.2% in 2014/15. This upward trend was statistically significant. Men, participants aged 25-34 and 45-54 years, who were not married, achieved a university degree or above, belonged to the two highest income quintiles, rated their health as good, fair or poor, and were overweight or obese consistently showed statistically significant higher odds ratios of high sitting across the three surveys. The strongest associations were found for income and educational level. Conclusions Over one third of Australian adults shows levels of sitting time associated with an increased risk of all-cause mortality. We observed a statistically significant increase in sitting time. High education level and high income were most strongly associated with high sitting time. These results demonstrate the need for interventions and policies aiming to decrease levels of (occupational) sitting time, especially in adults with a high socio-economic status.

ARE OLDER ADULTS INFLUENCED BY A SCALE-UP OF A PROVINCE-WIDE PHYSICAL ACTIVITY STRATEGY IN BC, CANADA?
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Objective: Despite strong evidence supporting the health benefits of physical activity (PA), 85% of older adults in Canada do not meet PA guidelines. With BC Ministry of Health as a partner, we engaged two community-based organizations to deliver and evaluate a scalable, evidence-based PA intervention for low active (Methods: Choose to Move (CTM) is a 6-month choice-based PA intervention for older adults delivered across BC, Canada. Participants received one-on-one support from an Activity Coach (personalized Action Plan; in person or telephone check-ins) and participated in Motivational Group Meetings. We assessed PA and social connectedness (social exclusion, social interaction and loneliness) at baseline and 6 months via questionnaire and satisfaction with CTM via questionnaire. We evaluated age and sex-related differences at baseline using Wilcoxon rank-sum tests and the change in outcome variables (baseline to follow-up) using t-tests. We compared program satisfaction (satisfied/very satisfied vs. neutral/dissatisfied) between younger and older participants using Chi-square tests. Results: In both age groups, approximately 75% of participants were women. There were no differences in PA or social connectedness between men and women at baseline. Social interaction was higher in older participants compared with younger participants at baseline (p=0.03), but there were no differences in PA, social exclusion or loneliness. On average, PA increased 1.2 days/week (95% CI 0.8, 1.7) from baseline to follow up; PA change was greater in younger compared with older participants (difference +0.8 days/week, 95%CI 0.1, 1.6). There was no effect on social connectedness in either age group. Program satisfaction was high on average (87% satisfied/very satisfied) and did not differ by age or sex. Conclusions: A scalable choice-based PA model may be one strategy to enhance PA in previously low active older adult populations. Age-related differences in PA outcomes suggest that further investigation into the determinants of change is needed. Our social connectedness findings suggest a ceiling effect; thus, alternate recruitment strategies may be required to ensure that those with low social connectedness are represented.
RUN TO QUIT: AN EVALUATION OF THE EFFECTIVENESS OF A PHYSICAL ACTIVITY-BASED SMOKING CESSATION INTERVENTION

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Purpose: To evaluate Run to Quit, a national initiative targeting physical activity and smoking behaviours, through group-based running clinics. As a multiple health behaviour intervention, it was hypothesized that physical activity would increase and smoking behaviour would decrease. Methods: The Run to Quit intervention is multi-layered, and consists of several evidence-based approaches, combining cessation support with physical activity through running, group-based curriculum, self-help materials, and involvement of social supports as "quit buddies". Adult male and female smokers (N=161) took part in running clinics in 21 Running Room locations across Canada. Implementation of the program was investigated using a mixed methods approach and a pre-post design. Participants completed questionnaires assessing physical activity, running frequency, and smoking at week 1, 3, and 10 in the 10-week program. Carbon monoxide (CO) testing at week 1 and 10 provided an objective indicator of smoking status. Post-program and 6-month follow-up interviews were conducted with participants and coaches. Results: Of the initial 161, 70 participants completed the program. 50.8% of participants in attendance at week 10 quit smoking by end of program (intent-to-treat = 19.6%) and there was a significant decrease in CO from beginning to end of program (p = .001). There was a significant increase in physical activity (p = .013) and self-reported running frequency (times/week) from baseline (M = .52, SD = 1.05) to end of program (M = 1.52, SD = 1.27), p = .000. Suggesting maintenance of behaviour, results of the 6-month follow-up indicated that 39.8% of participants contacted self-reported not smoking (intent-to-treat = 19.6%) and 43.2% of those contacted were still running regularly (M = 3 times/week; intent-to-treat = 20.8%). Conclusions Short-term quit rates of this intervention were comparable to those reported in systematic reviews of combined pharmacotherapy and behavioural interventions for smoking cessation. Concurrent increases in physical activity were also found and this may lead to additional health benefits beyond smoking cessation. However, attrition was high and future program refinement is required to minimize dropout. Overall, Run to Quit demonstrates some potential as a multiple health behaviour change intervention that is also scalable at a national level.

THE EFFECTS OF AN EXERCISE INTERVENTION DURING PREGNANCY ON POSTPARTUM DEPRESSIVE SYMPTOMS: A RANDOMIZED CONTROL TRIAL.

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Purpose: Maternal depression is among the most common complications of the pregnancy and postpartum periods affecting women worldwide. While efforts have been mainly devoted to improve postpartum depression identification, not much research investigating the role of prevention strategies on the burden of the disease exist. The aim of this study is to assess the efficacy of an exercise intervention during pregnancy for the prevention of
Objective. Overweight and obese Australian health insurance members with osteoarthritis, cardiovascular disease or type 2 diabetes have successfully achieved an average 7% weight loss on an 18-week telephone-based, lifestyle coaching program incorporating meal-replacement products. Congruent with increasing policy and public health interest, a financial incentive intervention based on behavioural economic concepts might be considered useful in maintaining weight loss. However, little is known about participant perceptions of financial incentives in healthy lifestyle programs. We explored attitudes and views of program participants about the acceptability and usefulness of different types of financial incentives to motivate weight maintenance and a healthy lifestyle. Methods. A mixed method approach comprised focus group discussions and a survey of focus group participants. Sydney-based health insurance members who had completed the program in the past year were invited to attend focus groups about financial incentive utility. Where possible, groups were stratified by gender and location. Audio recordings of group interviews were transcribed verbatim, and thematic analysis undertaken. Survey responses were analysed descriptively and demographic information matched to focus group responses. Results. Six focus groups were conducted in city (n=5) and suburban (n=1) locations (n=28 participants). Most participants were ≥ 65 years (64.3%) and from advantaged socio-demographic areas (82.1%). While 78.6% of participants would be motivated by non-cash rewards and 53.6% by cash rewards, they would prefer the reward linked to discounted insurance premiums or weight-loss products. Participants did not support deposit (0%) or matched deposit contracts (14.3%) and lotteries (14.3%). The sole use of financial incentives was poorly received; although demographic differences may be apparent. Personal responsibility for health was considered important and a matter of pride for many who felt that social or peer support opportunities and networks could provide ongoing motivation for weight loss maintenance. Conclusions. Financial incentives alone may be insufficient for sustained behaviour change. Combining acceptable cash or non-cash rewards with a social support network is potentially more acceptable and useful to older Australians with a chronic disease. This formative research can inform planning of a financial incentive intervention with an older population in a health insurance setting.
MEDIATORS OF BEHAVIOUR CHANGE MAINTENANCE IN PHYSICAL ACTIVITY INTERVENTIONS: A SYSTEMATIC REVIEW.

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Purpose: Regular physical activity (PA) is important for maintaining physical and mental health, and in the prevention and control of chronic disease. Health benefits are optimised when PA is maintained long-term yet little is known about what causes behaviour to be maintained. Understanding mediators (intrapersonal, social and environmental constructs) of PA maintenance can help unpick causal mechanisms and inform future interventions. This review investigated mediators of PA behaviour maintenance. Methods: Six databases were searched (Medline, EMBASE, PsycINFO, CINAHL, Cochrane Database of Systematic Reviews, Web of Science). Eligibility criteria included: adults (mean age 18-65 years); non-clinical populations; validated measure of PA behaviour collected at baseline and at least 6 months post-baseline (maintenance); control/comparison group; reported mediators of PA behaviour change. Mediators were examined according to: i) intervention effects on mediators; ii) mediator association with PA outcome; iii) formal mediation tests. Results: From 5,032 articles, 26 were eligible. At six months or later, there were few formal mediation tests (n=8/26 included studies). The most promising mediators in formal mediation tests and tests of necessary conditions for mediation included ‘Revitalisation’ (significant findings for twelve out of twelve tests of the construct; n=12/12) and ‘PA integrated in the self-concept’ (n=5/5). There was a lack of support for social (n=13/59) and environmental (n=7/39) mediators. Conclusions: Examined mediators were mainly at the intrapersonal level with a dearth of evidence regarding social and environmental factors. Future research must ensure intervention components for PA maintenance are purposefully incorporated from the outset. Mindful of the limitations of the evidence base, interventionists could positively impact on PA maintenance by: considering preference-based rather than prescription-based PA targets, with participants self-selecting exercise intensity level (promoting revitalisation); helping participants to self-identify as a physically active person (i.e. integration of PA in the self-concept). Development of a systematic approach to conducting mediation analyses, driven by theory, should improve understanding of how PA interventions promote behaviour change maintenance. Interventions should consider social and environmental components as mediators and how they interact with individual variables in determining PA behaviour maintenance.
MEAL SHOPPING FOR A ‘LAST MINUTE SURPRISE’ GUEST: HEALTH CONSCIOUS BRAZILIANS’ FOOD CHOICES
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Purpose: In countries such as the USA and the UK the high amount of moderate/highly processed food purchases has been linked to the convenience of these products by those who have a high workload or feel time pressured. This study investigates the food selection of High Health Conscious (HHC) Brazilian consumers in the supermarket, where convenient foods are freely available, when they are put under time pressure. Methods: Twenty-six HHC individuals were given the following scenario in-store: ‘imagine a friend had just informed you that they are calling by for a meal this evening. Please select all the items you need for preparing this meal for two. The food items chosen were photographed and categorized according to level of processing determined by the Food Guide for the Brazilian Population: (1) fresh or minimally processed (meat, vegetables, rice); (2) culinary ingredients (oil, butter, sugar, salt); (3) processed (preserves, canned fish or vegetables, cheese), and ultraprocessed (instant sauces, ready to eat meals, crisps). After the task, participants were interviewed and asked to describe the planned meal and factors influencing their choices. Results: Participants’ mean age was 35.5 years (25-47), 61% female, 45% highly educated. A total of 335 food items were selected, of which 80% were fresh/minimally processed and 4% ultraprocessed (instant sauces, ice cream, condensed milk, sliced bread, cream cheese). Interviews revealed that most participants (77%) chose to prepare a salad as part of the meal, and those who planned to serve a desert chose fruits as ingredients. The main course chosen by the majority of individuals (62%) was either pasta with a protein source or risotto. Reasons behind the choices were healthfulness, convenience and personal preference. Conclusion: Results suggest that even under the stress of having to prepare a last-minute meal for two, HHC participants chose significantly more fresh and minimally processed food and did not resort to choosing frozen ready-to-eat ultraprocessed meals. This demonstrates that supermarkets can be a place where healthy choices can be made effectively, even when the availability of ultraprocessed food is high. The next steps will explore the behaviours of low-health-conscious individuals in similar conditions.

THE DEVELOPMENT OF A VIRTUAL REALITY FOOD COURT TO ENABLE HEALTHIER FOOD CHOICES.
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Purpose: In many Western countries adolescents and young adults have the poorest diet quality of any age group. Their dietary patterns include regular consumption of fast foods with sugary drinks and other food prepared outside home. The aim of this research was to develop a virtual reality food court (VRFC) that could be used to test food environmental interventions, such as taxation, and ultimately facilitate healthier food choices. Methods: Fourteen food courts in Sydney, Australia were selected to include those in the city centre and in suburbs of high and low socioeconomic status. Researchers visited the courts to collect information on number and type of food outlets, all menu items for sale, cost of foods and beverages and sales promotions. Photographs of all displays were taken. This information was used to assemble 14 food outlets typically found in food courts and representative menus were compiled. A database was created for all menu items using the Australian Food Nutrient database and commercial websites, to provide information on energy, macronutrients and micronutrients. The Unity® gaming platform was used to design a VRFC that could be used with HTC Vive® goggles. One hundred and sixty four participants navigated the VRFC using the head-mounted display, keyboard and mouse and selected a lunch meal, including food and beverage. A validated questionnaire on presence within the VRFC and system usability was completed at the end of the session. Constructs assessed included sense of control, engagement, realism, involvement and distraction. Questions were rated on a scale from 1 (worst) through 7 (best). Results: Ninety six percent of participants (mean age of 22.5 years (SD 3)) completed the survey. The median score for sense of control in the VRFC was 5 (interquartile range 4 – 6). Sixty two percent ranked the engagement as ≥ 5 and 58% ranked it as realistic. Thirty nine percent were distracted while playing the game but 63% scored involvement ≥ 5. Usability was rated highly by 70% of participants Conclusions: Virtual reality shows promise as a tool to test interventions to inform policy and practice and enable better food choices in food courts.
RELATIONSHIPS BETWEEN BARRIERS TO HEALTHY FOOD ACCESS, HOUSEHOLD INCOME AND COOKING AND EATING BEHAVIOR

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Purpose: Lack of access to healthy food is a significant barrier to healthy eating, particularly in low-income neighborhoods. More frequent cooking at home is associated with better diet quality. The relationship between food access, household income and cooking behavior is currently unknown. Methods: We designed and fielded a nationally representative online survey of adults in the United States aged ³18 years (n=1,112) in April 2015. We asked respondents to rate the frequency with which they face barriers obtaining healthy food (distance to store, transportation, physical disabilities, store hours, time, selection of items, quality of items, price) on a five point Likert scale from 1=never to 5=always. We used descriptive statistics to show barriers to obtaining healthy food stratified by household income (low: Results: Overall, adults who more frequently encountered barriers to healthy food access were younger, Hispanic or Non-Hispanic Black, less educated, and lower-income. Time to shop and the price, selection and quality of items available were common barriers to obtaining healthy foods among all income groups, but were particularly prevalent among lower-income households. While there were few differences in frequency of cooking meals by income level, lower income households used packaged/boxed products more often (low vs. high income: 1.66 vs. 1.16 times/week, p=0.01; mid vs. high income: 1.46 vs. 1.16 times/week, p=0.02). Similarly, those who at least sometimes encountered barriers in accessing healthy foods cooked using packaged/boxed products and frozen products more often than those who never (packaged/boxed products: 1.60 vs. 1.27 times/week, p=0.04; frozen products: 2.51 vs. 2.10 times/week, p=0.02) or rarely (packaged/boxed products: 1.60 times/week vs. 1.23 times/week, p=0.01; frozen products: 2.51 times/week vs. 2.12 times/week, p=0.01) encountered barriers. Conclusions: Household income and barriers to healthy food access are related to cooking and eating behaviors important for diet quality and healthy eating. Targeted interventions to address time available to shop, and the price, selection and quality of healthy foods, are necessary, particularly among low-income populations.

POLICY MATTERS: EXPLORING THE INFLUENCE OF PROVINCIAL NUTRITION GUIDELINES ON THE FOOD ENVIRONMENT IN PUBLICLY FUNDED RECREATION AND SPORT FACILITIES.

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Purpose: We explored the influence of voluntary provincial nutrition guidelines on food and beverages sold in publicly funded recreation and sport facilities. Methods: Audits of food and beverages for sale in randomly sampled vending machines and in food service outlets were conducted in 49 facilities across four Canadian provinces (n= 32 facilities in 3 guideline provinces and 17 facilities in a non-guideline province) . All packaged foods offered in the food service outlets and vending machines were assigned a guideline category based on nutrient content and quality. Categories and recommendations established in British Columbia were used and included: 0% of Do Not Sell (DNS), 50% of Sell Sometimes (SS) and 50% Sell Most (SM). Food service outlets were also scored using a reduced item version of the Nutrition Environment Measures Survey–Restaurant (rNEMS-R); a higher rNEMS-R score suggests a healthier food environment. For the food service outlets, the proportion of packaged foods and beverages in each guideline category, rNEMS-R scores and marker foods were compared between guideline and non-guideline provinces. Additionally, the proportion of foods and beverages in each guideline category in vending machines were compared between guideline and non-guideline provinces. Results/findings: The profile of packaged foods offered in food service outlets did not differ between guideline and non-guideline provinces but the average rNEMS-R score was higher in guideline provinces (mean score of 16.0 versus 8.4; F= 11.83, p=.001). Guideline province facilities were significantly more likely to have fruit, vegetables, healthy mains and salads for sale. Vending machines in guideline province facilities had a significantly lower proportion of DNS (mean of 68% versus 83%; F=15.03, p Conclusions: Recreation and sport facilities in provinces with voluntary nutrition guidelines had healthier food environments than facilities in provinces without guidelines. However, overall the health profile of food and
beverage products across facilities did not achieve the guideline recommendations.

**SPATIAL ACCESSIBILITY OF FAST FOOD OUTLETs IN RELATION TO OBESITY IN ADULTS – THE SPOTLIGHT PROJECT**

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Objective: The food environment is considered as an important upstream driver of obesity, but evidence for the pathways through which residential neighbourhood food environments affect obesity is mixed. This may be due to a number of factors, including varying definitions of ‘exposure’ to the food environment, lack of focus on underlying pathways, or residential self-selection bias. We hypothesized that availability and spatial accessibility of fast food outlets in the neighbourhood would be associated with obesity, via perceived availability and use of fast food outlets, and the consumption of fast food. Methods: We analysed data from 5,084 participants of the SPOTLIGHT survey, residing in five European urban regions. Participants reported on socio-demographics, fast food consumption, weight status, and perceptions related to the neighbourhood environment. A virtual neighbourhood audit using Google Street View was conducted to geolocalize fast food and other types of food outlets. Associations between spatial access to fast food outlets, perceived availability and use of fast food outlets, fast food consumption, and self-reported weight status were explored using multilevel logistic and multinomial regression analyses, examining both direct associations and mediating pathways. Results: 34% of the individuals reported that fast food outlets were available in their neighbourhood and indicated that they used them, 6% of the participants reported consuming fast food at least once a week, and 13% were obese. After adjustment for socio-demographic characteristics, density of other food outlets and residential self-selection, living in a neighbourhood with higher spatial access to fast food outlets was associated with increased perceived availability and use of fast food outlets (RRR=3.30, 95%CI=1.71; 6.34), but not with fast food consumption or obesity. Perceived availability and use of fast food outlets were associated with greater reported fast food consumption (OR=1.55, 95%CI=1.05; 2.28). Conclusions: Spatial access to fast food outlets was not directly associated with obesity, but we did find an association between objective and perceived availability. Perceptions of availability were related to fast food consumption. These results emphasize the complexity of individual and environmental influences on lifestyle behaviours and weight status and highlight the importance of collecting both objective and subjective measures of environmental exposure.

**SO.03 Physical activity and nutrition in children (Oak Bay 1 & 2)**

**PHYSICAL ACTIVITY IN CHILDREN AND THEIR MOTHERS STRATIFIED BY GESTATIONAL DIABETES RISK: A 7-YEAR FOLLOW-UP**

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Purpose: Gestational diabetes (GDM) risk factors are increasing worldwide, and therefore it is essential to increase knowledge about long-term effects of the risk factors on women’s physical activity (PA) as well as on their children’s PA and body composition. We investigated whether the absence of GDM risk factors in the beginning of pregnancy was associated with 1) higher self-reported PA levels from pre-pregnancy to 7-year follow-up, and 2) higher levels of children’s objectively measured PA and/or healthier body composition at 6.5 years of age. Methods: The data from
the Finnish NELLI-study was collected between 2007-2016, and this study included 199 mother-child dyads. The mothers’ GDM risk factors was screened by: body mass index (BMI) ≥25 kg/m²; age ≥40 years; family history of diabetes; GDM or any signs of glucose intolerance or newborn’s macrosomia (≥4.500g) in any earlier pregnancy. Mothers’ PA was assessed with a validated self-report at 8-12 weeks’ gestation (pre-pregnancy PA), and at 7-year after delivery. Children’s PA was assessed during waking hours over 7 days using the waist-worn triaxial Hookie AM20-accelerometer. Body composition was measured by TANITA (MC-780MA). Adjusted linear regression models were applied. Results: The women without GDM risk factors increased their self-reported light-intensity PA by 90 min/week (p=0.012), moderate-to-vigorous PA by 24 min/week (p=0.094), and total PA by 130 min/week (p=0.009) from pre-pregnancy to 7-year follow-up compared to women with GDM risk factors. Among women with GDM risk factors, light-intensity PA from pre-pregnancy to 7-year follow-up increased by 34 min/week, moderate-to-vigorous PA decreased by 30 min/week and total PA increased by 30 min/week. Regarding to children’s PA and body composition, the differences between the groups were non-significant. However, out of GDM risk factors, higher maternal pre-pregnancy BMI was associated with higher BMI, percent fat mass and fat mass index at 6.5 years of age in boys (n=80). Conclusions: Women without GDM risk factors were able to increase their PA over the 7-year follow-up. Therefore, health promotion should be targeted to reducing the risk factors, in particular maternal pre-pregnancy overweight, in order to support women’s PA in long-term and their children’s healthy body composition.

ORGANIZATIONAL CHARACTERISTICS IN EARLY EDUCATION SETTINGS RELATED TO EDUCATOR NUTRITION PROMOTION AND MEALTIME PRACTICE: A QUALITATIVE EXPLORATION

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Purpose: The purpose of this qualitative study was to understand and describe organizational characteristics evident in narratives of early childhood educators (ECEs) influencing mealtime and nutrition promotion practices. This study used an Implementation Science framework, i-PARIHS, to consider how contextual factors beyond the individual related to uptake of supportive or unsupportive practices by ECEs. Methods: Stratified random sampling was used to select and recruit 28 educators to balance across educator role (lead vs. assistant), agency type (Head Start vs. state-funded), and obesity prevalence in the community. In-depth interviews lasting approximately one hour were transcribed verbatim and analyzed in Nvivo. A factist perspective employing a semantic approach was used to complete thematic content analysis, which began with an a priori template of codes based on the extant literature on mealtime practices in childcare settings. Unanticipated, recurring codes were incorporated into the coding schema. Thus, we employed a hybrid of deductive and inductive approaches. Results/findings: Three primary themes in organizational characteristics were identified relative to both Supportive and Unsupportive Practices: Mealtime Structures, Resources, and Context. Mealtime Structures associated with Unsupportive Practices included cafeteria meals and rigid schedules. Mealtime Structures associated with Supportive Practices included classroom meal service where ECEs sit and eat with children. Resources associated with Unsupportive Practices included limited funding (e.g., to support nutrition curricula). Resources associated with Supportive Practices included meals paid for ECEs, and food experiences in the classroom. Contextual factors associated with Unsupportive Practices included perceived poor food offerings (either in taste or health value) and policies that conflicted (e.g. allowing children to bring a meal from home while also requiring service of school meal). Contextual factors associated with Supportive Practices included clarity around meal service rules and healthy food offerings. Based on the narratives in our study, an individual ECE was likely to exhibit both Unsupportive and Supportive Practices related to context which combined to create an overall mealtime atmosphere. Conclusions: While training and professional development opportunities for ECEs became apparent, results of this study highlighted that it may be difficult for an ECE to adopt and maintain best practices under certain organizational conditions.

ECONOMIC EVALUATION OF A GROUP RANDOMIZED CONTROLLED TRIAL ON HEALTHY EATING AND PHYSICAL ACTIVITY IN AFTERSCHOOL PROGRAMS

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Purpose: Costs of delivering and receiving an intervention need to be considered so interventions are not only effective but also within the financial resource availability of the end-user. This study reports the costs associated with the delivery of a healthy eating and physical activity intervention in afterschool programs. Methods: Intervention delivery inputs (IDIs, hourly wages, travel) associated with a group randomized, delayed treatment controlled trial involving 20 ASPs serving over 1,700 children (5-12yrs) were catalogued prospectively in real-time across 2-years. In year-1, 10 ASPs (immediate group) received an initial August training, 4 on-site booster sessions, and ongoing technical assistance via phone and email. In year-2, the remaining 10 ASPs (delayed group) received the full intervention delivered as in year-1, while the immediate group received the initial August training, only 2 booster sessions, and TA. IDIs were expressed as increases in per child per week enrollment fees based on a 34-week school year in US$. Interviews were conducted with ASP site leaders to determine willingness-to-pay.

Results/findings: Total IDIs for year-1 were $15,058 (+$0.58/child/week enrollment fee). In year-2, total costs were $13,828 (+$0.52/child/week) for the delayed group and $7,916 (+$0.30/child/week) for the immediate group, respectively. Site leader and staff hourly wages represented 11-17% and 45-46% of initial August training costs; travel and trainer wages represented 31-42% and 50-58% of booster costs. Overall, a one percent increase in children accumulating 30mins/d of moderate-to-vigorous physical activity ranged from $0.05 to $0.26/child/week for boys and girls across treatment groups, while a 1-day increase in serving a fruit/vegetable or water, or not serving sugar-added foods or beverages ranged from $0.16 to $0.87/child/week. Site leaders indicated IDIs were reasonable, but passing on costs to parents was dependent upon enrollment size, the ability to increase weekly enrollment fees more for ASPs serving higher income children to pay for the intervention in ASPs serving lower income children, and pre-negotiated contractual enrollment fees with school districts. Conclusions: Costs associated with implementing the intervention are minimal and result in meaningful improvements in healthy eating and physical activity. Additional efforts to address cost sharing and improve intervention effectiveness, however, are necessary.

NAP SACC UK: FEASIBILITY CLUSTER RANDOMISED CONTROLLED TRIAL AND PROCESS EVALUATION OF AN ENVIRONMENTAL INTERVENTION IN NURSERIES AND A WEB-BASED HOME INTERVENTION TO INCREASE PHYSICAL ACTIVITY, ORAL HEALTH AND HEALTHY EATING IN CHILDREN AGED 2–4 YEARS

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Purpose: The Nutrition and Physical Activity Self Assessment for Childcare (NAP SACC) programme aims to improve child nutrition and physical activity through changes to the nursery environment. Feasibility and acceptability have been demonstrated through Randomised Controlled Trials (RCT) in the USA. This study examined the feasibility and acceptability of adapting the NAP SACC intervention for the UK. Methods: A feasibility cluster RCT in 12 nurseries with 2-4 year olds in the southwest region of England. Focus groups and interviews with Health Visitors (community children’s nurses), nursery staff and parents informed adaptation of the intervention for the UK. The intervention comprised: two staff workshops on physical activity and nutrition; Health Visitor support to review nursery practices, set goals and make changes; a digital media-based home component. Measures were assessed at baseline and post-intervention: zBMI, accelerometer-measured physical activity and sedentary time, diet, child quality of life, health care usage, parental and nursery staff mediators and quality of nursery environment. Fidelity and acceptability were assessed through observation and interviews analysed via thematic analysis. Results: Formative work resulted in the following adaptations: inclusion of an oral health component; changes to comply with UK guidance; workshops led by local experts; and development of the home component. 169 (37%) eligible children were recruited from 12 nurseries. Interviews were completed with four Health Visitors, 17 nursery staff and 20 parents. The intervention was implemented with high fidelity, with two exceptions: one nursery did not implement the intervention due to staff workload; and the digital home component was used by just 12/82 (15%) parents. Intervention acceptability was high. A mean of seven staff per nursery attended each workshop. Workshops and Health Visitor contact were highly valued. Mean number of goals set was eight. Nursery changes included: menu modifications, reducing portion sizes and sugary snacks, role modelling activity and healthy eating, and active story telling. The trial design and methods were highly acceptable. Descriptive analysis of the outcomes will be available by February 2017. Conclusions: NAP SACC UK is feasible and acceptable, with the exception of the
home component, and its effectiveness should be tested through a full-scale RCT.

**VALUING SPORT-FOR-ALL TO PROMOTE PHYSICAL ACTIVITY BEHAVIOUR CHANGE: AT WHAT COST?**

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Purpose: The Global Advocacy for Physical Activity (GAPA) placed sport-for-all and active recreation as one of the seven best investments for physical activity. Quantification of its economic and social contribution to society has since become critical for governments and policy makers at all levels. A plethora of conflicting methods for quantification have been applied at the population level. Despite this, no methodological reviews or guidelines for best-practice have been developed. Our aim was to conduct the first comprehensive review of previous and current methods utilised, producing a roadmap for the development of pragmatic guidelines for assessing value creation through investment in sport and active recreation. Methods: Economic and social value areas that were theorised included: physical, mental, economic, community and other benefits. Harm areas that were theorised included: individual physical/mental; individual economic; detrimental sponsorship/marketing exposure; anti-social behaviour; other negative impacts. A relevant search term matrix was applied to: PubMed, OVID, SCOPUS, Science Direct and established grey literature databases. Results/findings: Our literature search yielded 6,788 potentially relevant articles, 475 were retained after screening and separated into value/harm streams for thematic analysis and data extraction. Six distinct methods were conceptualized and then categorized based on conservatism: 1- Financial reporting method; 2- Market valuation method; 3- Official statistics method; 4- Market valuation, social impact survey, economic multiplier method; 5- National Accounts method; 6- Economic modelling method. Conservative estimates have historically ranged from a $2.50 to $4 (USD) return for society for every $1 invested in sport and active recreation. However, with the majority of methods excluding known benefits in the mental, community, and social domains, these figures are likely under-estimates of real value. Conclusions: Our review is the first of its kind in producing a conceptualized framework and critical analysis of the methods available for quantifying the social and economic value derived from sport and recreation at the population-level. The development of sport economics is therefore a critical unmet need for endorsing multi-sectoral investment in sport and recreation-based physical activity. This framework provides a reference point for developing the final tool necessary to inspire value-driven policy changes for population-level physical activity behaviour change.

**RECREATION AND SPORTS FACILITY FOOD ENVIRONMENTS: CURRENT AND POTENTIAL CONTRIBUTIONS TO THE HEALTH OF CHILDREN AND YOUTH**

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Purpose: There is a ‘built environment’ that sustains recreational and competitive sport and physical activity. This built environment may be a public or private ‘sport club’ or a ‘publicly funded recreation and/or sport facility’ (RSF). An important aspect of these facilities that can influence health is the food environment. The aim of this presentation is to present: a framework for RSF food environments, an overview of the literature to date and current data from the baseline of an ongoing trial, ‘Eat, Play, Live’, evaluating the impact of provincial level policy (guidelines) and capacity-building interventions (CBI) on RSF environments across 4 Canadian provinces. Methods: We are using a mixed-method concurrent triangulation design incorporating a randomized comparison trial and measuring organizational capacity, policies, food environment (services, vending and food-based marketing) and food purchasing patterns across 4 jurisdictions at baseline and 18 months. Participating facilities in 3 provinces with guidelines have been randomized to: i) guidelines plus CBI (n=17), or ii) guidelines only (n=15). A third comparison
group (n=17) has been recruited in a non-guideline province. The CBI includes an online resource toolkit, seed grants, training, technical support and cross-site sharing. Preliminary analysis of baseline vending, marketing and facility capacity measures have been calculated to illustrate the RSF food environment context. Results: Overall 75% of snacks and beverages (range 61.6 – 85%) for sale through RSF vending were categorized as ‘Do Not Sell’ using British Columbia Provincial guidelines. Facility capacity was low ranging from 17-30.5% of an ideal score. Food based marketing was present in all but one of the facilities. Only 6/49 facilities had a written policy or Council recommendation guiding their food sales, 12 were under development. Conclusions: Addressing the RSF food environment is important to enabling healthier choices by children and youth participating in those facilities. Few facilities in our study or others were meeting guidelines for the sale of foods and capacity for addressing the food environment was low. Scalable capacity-building supports are necessary to facilitate action in this setting, as dedicated local resources for managing the food environment are limited. More cross-jurisdiction and implementation research is needed.

THEORIZING HOW THE UK SOFT DRINKS INDUSTRY LEVY COULD IMPACT POPULATION LEVEL DIET AND HEALTH: DEVELOPMENT OF A MULTI-SECTORAL SYSTEMS MAP

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Purpose The successful implementation of fiscal policies, including the anticipated Soft Drinks Industry Levy (SDIL) in the UK, is likely to be context dependant, reflecting actions and reactions by government, civil society, industry, health sector and consumers. However, there has been little development of specific public health theories that allow for understanding causal influences within the wider social, economic or political context in which policy interventions are implemented. Such theories have the potential to guide comprehensive evaluation, ground multi-method data analysis and interpret results. This project aimed to use concept mapping and consensus methods to guide the development of a system map theorising how the SDIL could impact on population diet and health.

Methods A system map was developed in two phases: a concept mapping workshop with the study team (8 content experts from a range of academic disciplines) where generation and structuring of an initial system map was guided by a set of predefined questions and iterative consensus building. A modified online Delphi survey was used to further refine the map through collection of perspectives with equal representation from stakeholder groups: academic, public health professional, government, civil society and industry. Analysis of Delphi responses included level of agreement with map components/connections, synthesis of qualitative feedback related to disagreements and revision of the system map. Results The concept mapping workshop resulted in an initial system map including 36 factors with multiple connections and feedback loops, distributed across five sectors (consumer behaviour, industry and government actions, public acceptability and discourse, and actions of other sectors) represented as interrelated sub-systems. Preliminary results of the online Delphi survey showed a range of agreement with the initial map (20-60%) depending on subsystem, with specific suggestions for additional concepts and connections. Conclusion The development of a public health theory of how the SDIL could impact on diet and health resulted in the elucidation of a complex set of factors and pathways of influence across a range of sectors. These complexities were reinforced by the stakeholder feedback, which supported the refinement of the systems map and informed design of a system level evaluation.

CHILDREN’S OBESOGENIC BEHAVIORS DURING SUMMER VERSUS SCHOOL: A WITHIN-PERSON COMPARISON

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Objective: Evidence consistently shows U.S. children gain 3-5 times more weight during summer vacation (~2.5 months) compared to the 9 month school year. Notably, this trend is more pronounced in children of ethnic/racial minority.. Few studies have used a within-person design to examine children’s obesogenic behaviors during summer and how these compare to school. The purpose of this study is to examine differences in physical activity (PA),
Objective Internationally, there are no data available that quantify children’s exposure to food and beverage marketing across the full range of media and settings in which children live. This research determined the frequency and nature of children’s exposure to food and non-alcoholic beverage marketing in real-time, documenting differences by ethnicity and deprivation. Methods A random sample of 169 children (11-13y) from 16 randomly selected New Zealand schools wore cameras that took pictures automatically every 7s, and a GPS recorder for four days. Images were annotated for food marketing. All foods were classified as either permitted (healthy) or not permitted (unhealthy) to be marketed to children based on the WHO Regional Office for Europe Nutrient Profiling Model. Data were analysed for mean frequency and compared by demographic factors. The GPS and image data were linked to map children's food marketing exposure. Results Children in this study were exposed to over twice as much unhealthy food marketing as healthy food marketing. The unhealthy food marketing occurred most frequently at home, school and on shop fronts. Product packaging and signs were the most common marketing mediums for unhealthy food. Conclusions This study suggests that children live in an environment where the majority of food marketing is for unhealthy food. This research supports the call by the WHO Commission on Ending Childhood Obesity for urgent reductions in unhealthy food marketing to children, for monitoring and compliance mechanisms with clearly defined sanctions and for the promotion of healthy food environments for children, including at home and school.

Purpose: Leveraging industry best practices can strengthen public health efforts. Marketers rely on copy tests to inform ad optimization and gauge performance in market. Copy tests use a consumer panel to measure ad engagement, message communication, and persuasion compared to norms established by testing ads for diverse products. This study copy tested one ad from a social marketing campaign (You’re the Mom) designed to empower and motivate moms to choose healthier options for their children when eating in restaurants. Methods: In September 2016, ChildObesity180 at Tufts University commissioned a copy test of one You’re the Mom campaign ad. Participants (N=300) were a diverse sample recruited from an existing consumer panel and met the following
POSTS, PICS OR POLLS? WHICH POST TYPE GENERATES THE GREATEST ENGAGEMENT IN A FACEBOOK PHYSICAL ACTIVITY INTERVENTION?

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Objective: The translation of web-based physical activity intervention research into the real world is lacking and becoming increasingly important. This study aimed to compare the effectiveness of a traditional Web 1.0 web-based intervention to a more interactive Web 2.0 (including social networking) web-based intervention in real-world web-based settings. Methods: 3,480 people signing-up for the freely-available 10,000 Steps website indicated interest to participate. They were randomised to the 10,000 Steps website (Web 1.0) or the newly developed Walk 2.0 website (Web 2.0). Physical activity (Active Australia Survey), quality of life (RAND 36) and BMI were assessed at baseline, 3 months and 12 months. Website usage was measured continuously. ANCOVAs were used to assess change over time in continuous outcome measures. Multiple imputation was used to deal with missing data. Results: 1,328 people completed baseline assessments. Only 3-month outcomes (224 completers in total) were analysed due to high attrition at 12-months (77 completers). Participants in the Web 2.0 group increased physical activity 92.8 minutes per week more than those in the Web 1.0 group (95%CI=28.78,156.77;p=0.005); they also decreased their BMI more (-1.03;95%CI=-1.63,-0.43;p=0.001). There were no differences in quality of life between groups, with exception of the 'physical functioning' domain which improved more in the Web 2.0 condition (3.63;95%CI=1.74, 5.52;pppp=0.586). Only 22% of participants were still using either website after 2 weeks (n=292 summed for both groups), 7% after 10 weeks (n=87). Conclusions: The results indicate that a website that provides more interactive and social features is more effective in improving physical activity in real world conditions. While the Web 2.0 website was visited significantly more, non-usage attrition and intervention engagement were nevertheless problematic in both groups. Further research is needed to examine how to attract and engage people to web-based physical activity interventions in uncontrolled conditions.
Purpose Social networking websites have attracted considerable attention as a delivery platform for physical activity interventions; however, current evidence highlights a need to enhance user engagement in order to actualise their potential. The present study sought to determine which post types generate the most engagement from participants in a physical activity intervention delivered via Facebook. Methods This study is a sub-analysis of data from the intervention condition of a randomised controlled trial designed to test the efficacy of an 8-week beginners’ running program. The group moderator posted a new message to the private Facebook group each day of the program. The posts were predesigned and prescheduled, and aimed to provide information, motivate participants and facilitate social interaction. Participants were able to comment on posts, "like" posts, or create new posts. The posts were categorised into type: moderator-initiated running program, multimedia, motivational, polls or discussion questions and participant-initiated experience shares or questions. Engagement was determined by calculating the mean number of likes, comments and votes (in the case of polls) for each post type. One-way ANOVA was performed to determine if engagement differed by post types, with Tukey-Kramer test to determine post-hoc differences. An independent samples t-test was conducted to determine whether engagement differed between participant-initiated posts and moderator-initiated posts. Results Posts received a mean of 6.6 (SD 5.5) interactions, most commonly in the form of "likes" (mean=3.5, SD=2.8), and least commonly in the form of photo posts (mean=0.1, SD=0.3). ANOVA analyses revealed that total engagement varied between types of posts (F(7,110) = 10.38, pp=0.01). Conclusions Polls and posts requiring simple responses appear to generate the highest levels of engagement, and may therefore enhance intervention efficacy by aiding participant engagement and retention. Moderators should seek to facilitate familiarity between members at the outset of the intervention, in order to encourage participant-initiated posts, and engagement with participant-initiated posts.

Objective. The 'MyMovez'-research project aims to develop a method for effective campaign implementation by targeting young people’s social networks via social media. Social forces (i.e., classmates and friends) are used to enhance campaign effects on physical activity, eating and drinking behavior, because the social environment plays a crucial role in message processing among youth. After identifying the most influential social agents and their influence mechanisms (Phase I), campaign message strategies are developed and tested with the influence agents (Phase II). Methods. The project also develops the 'Wearable Lab': a highly innovative smart phone-based research application connected to an activity tracking bracelet. It enables data collection on daily randomized and planned time points, and allows the implementation and evaluation of health campaigns via social media. The Wearable Lab gathers data by: -short surveys; -photo questions; -activity tracking (steps/intensity) and cycling (via GPS)); -sociometric queries about class or school year level (to detect influential agents for different behaviors); -social beacon network (i.e., smart phones detect via Bluetooth when and which other participants are nearby); -the SocialBuzz, a chat environment on individual and class level. In addition, it is possible to include follow-up or feedback loops based on answers or activity, send jokes/memes, riddles or MyMovez-news flashes, and the participants can play a game (5 min./hour) and adjust their own avatar. During a period of 5 years, a large-scale cross-sequential cohort study is conducted (N = 1,500; 9-15 y/o) together with several other randomized control trials (pilot studies) and smaller experimental studies. Results. The Wearable Lab keeps most young people motivated to participate in longitudinal research because of its modern and fun research method. Importantly, measurement innovations (e.g., social beacon network, activity tracking, GPS coordinates, chats, photo’s) are accompanied by new challenges for data management procedures and safety protocols as well as ethical and legal regulations. Experiences, solutions and implications concerning these issues are discussed during this presentation. Conclusions. The Wearable Lab collects data successfully for social network implemented health campaigns. It is important to exchange knowledge about innovative measures and research methods for future research.
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Objective: Pokémon GO becomes the most rapidly downloaded mobile application in history. The game encourages players to walk. This study aimed to determine the physical activity (PA) of a group of young adults, who played Pokémon GO, and the change in the use of Pokémon GO and PA over time. Methods: An observational study was conducted. PA participation was measured by using the Global Physical Activity Questionnaire (GPAQ) at baseline (phase 0), 1 month (phase 1) and 3 months (phase 2) post-Pokémon GO download. The changes in PA from phase 0 to phase 1 as well as from phase 1 to phase 2 were analysed using Wilcoxon Signed Ranked test. The trend (3-point analysis) of PA from phase 0, phase 1 to phase 2 was analysed using Friedman’s test. Patterns of and reasons for playing Pokémon GO and game-related injuries were documented. The relationships between PA and time spent gaming were analysed by using Spearman’s rank correlation. Results: Twenty-six participants (19 males and 7 females) participated in the study. The mean age was 22.04±1.70 years. There were no statistically significant difference in PA between phase 0 and 1 (p=0.93), as well as phase 1 and 2 (p=0.80). The 3-point analysis of PA from phase 0, 1 to 2 did not show any significant change (p=0.45). Eleven participants (42.3%) were still playing Pokémon GO 3 months after download. The most frequently reported reasons for playing game were ‘have fun’ (phase 1: 84.6%, n=22/26 and phase 2: 54.5%, n=6/11). The most common commuting mode to play the game was walking (phase 1: 88.5%, n=23/26 and phase 2: 100%, n=11/11). More than half (61.5%, n=18/26) in phase 1 and 45.4% (n=5/11) in phase 2 rode a car while playing game. There was no correlation between PA and time spent gaming. There were no game-related injuries reported in this study. Conclusions: This study did not find an increase in PA among Pokémon GO players over a three-month period. Exercising was not the main reason for playing Pokémon GO. Playing Pokémon GO on its own did not promoting PA among young adults.

FACTORS ASSOCIATED WITH USE OF PHYSICAL ACTIVITY APPS IN SMARTPHONE AND TABLET OWNERS IN CHINESE: FINDINGS FROM HONG KONG JOCKEY CLUB FAMILY PROJECT

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Purposes Health Apps for tracking physical activity such as steps walked are increasingly used to promote physical activity. We investigated associated factors of physical activity Apps use among Chinese adults in Hong Kong, where smartphones/tablets and Internet access are among the most prevalent in the world. Methods A territory-wide population-based dual (landline and mobile) telephone survey (Family and Health Information Trends survey) was conducted in 2016. Among respondents who had smartphones or tablets, types of health Apps function were recorded including those tracking physical activity. Logistic regression was used to assess the adjusted odds ratio (aOR) and 95% confidence interval (95% CI) of physical activity Apps download for age (6 categories: 18-24, 25-34, 35-44, 45-54, 55-64 and 65+), education (3 categories: primary or below, secondary, tertiary or above), monthly household income (5 categories: HK$ 1=HK$7.8), physical activity (moderate physical activity per day in a week) and chronic diseases (yes vs. no). Results Among 4129 smartphone or tablet owners (81.3% of 4038 landline and 1042 mobile respondents), 646 (15.6%) had downloaded physical activity Apps. Overall, younger age (aOR=1.37 (95% CI 1.25, 1.49) per category increase), having higher education (aOR=1.93 (95% CI 1.58, 2.36) per category increase), and household income (aOR=1.15 (95% CI 1.06, 1.25) per category increase) were significantly associated with physical activity Apps download. Compared with physically inactive people, more people who did moderate physical activity ≥1 day/week downloaded physical activity Apps (aOR=1.06 (95% CI 1.02, 1.11) per day increase). More respondents with chronic diseases downloaded physical activity Apps (aOR=1.48 (95% CI 1.16, 1.89)). Conclusion Physical activity Apps are underused in Hong Kong compared to the US. Whether such use has health benefits should be evaluated, and if so, more promotions are needed, particularly for disadvantaged groups.
SYSTEMATIC REVIEW OF THE RELATIONSHIPS BETWEEN PHYSICAL ACTIVITY AND HEALTH INDICATORS IN THE EARLY YEARS (AGED 0 TO 4 YEARS)

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Objective: Harmonisation strategies for physical activity surveillance are needed to describe the variation in physical activity (PA) in the early years (aged 0 to 4 years), despite the fact this is a period of rapid growth and development. The purpose of this systematic review was to examine the relationships between objectively and subjectively measured PA and health indicators in the early years. Methods: We did a systematic review, including six databases (PubMed, PsycINFO, Embase, Web of Science, Sport Discus, and Scopus) to identify PAN-European and national data sets on physical activity and sedentary time assessed by accelerometry in youth (10.0 y) were used to compare overall physical activity levels, and intensity specific physical activity levels between countries and regions. Results: Preliminary results show substantial differences in overall physical activity between countries. In the youngest age-group difference between the least active population (Portugal) and the most active (Norway) was 22 % (570 vs. 734 CPM). In those aged 10-18 years even larger differences (34%) were observed between the most (Estonia) and least (Malta) active countries. Similar differences between countries were obtained when examining time (min/day) spent in MVPA and sedentary time as the outcomes. Moreover, the results suggested a significant north-south gradient (p Conclusion:
Substantial country differences exist for physical activity and sedentary time in European youth. Northern European youth are more active than their Southern peers.

ASSOCIATIONS OF SLEEP DURATION, TIMING, QUALITY, AND REGULARITY WITH ADIPOSITY AND METABOLIC RISK IN 8-TO-12 YEARS OLD OBESE CHILDREN

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Objective: To examine associations of sleep duration, timing, regularity and quality with adiposity and metabolic risk in a diverse sample of obese children. Methods: 189 obese children ages 8 to 12 years (57% female; 27% White, 50% Hispanic/Latino, 2% African American, 10% Pacific Islander/Asian, 11% Multi-Racial/Other) wore accelerometers for a mean ± standard deviation 7.0 ± 1.4 days and nights to provide objective measures of sleep duration, nocturnal sleep onset, and morning awakening (sleep offset), and were measured for height, weight, waist circumference, resting blood pressures, and fasting blood lipids, glucose, insulin, and hemoglobin A1c. Parents reported child sleep duration, bedtime, wake time, and quality. Linear regression analyses were adjusted for age, sex, and race/ethnicity. Results: Objective measures found a mean ± standard deviation sleep onset at 10:22PM ± 50 minutes, sleep offset at 7:29AM ± 50 minutes, and duration of 548 ± 41 minutes. Later sleep onset on weekdays and weekend days, later sleep offset on weekdays, and irregular sleep patterns on weekdays were associated with higher percent overweight, BMI, and waist circumference (P'sP'sP's Conclusions: These results suggest that objectively measured sleep onset, offset, and regularity are related to adiposity and metabolic risk more than total sleep duration. Earlier bedtime, earlier wake time and consistent sleeping patterns may help control adiposity and metabolic risk in obese children.

INTERVENTIONS THAT STIMULATE HEALTHY SLEEP IN SCHOOL-AGED CHILDREN: A SYSTEMATIC LITERATURE REVIEW

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Objective: Healthy sleep behavior among children has significant social, physical and mental health benefits. Its strong relation with physical exercise, nutrition behavior and weight development makes it a particularly vital element in efforts to prevent obesity. As most of today's children do not meet the healthy sleep recommendations, effective interventions are urgently needed. This systematic review summarizes the characteristics and effectiveness of interventions aiming to stimulate healthy sleeping in a general population of school-aged children.

Methods: The search engines PubMed, Embase, Web of Science, PsycInfo and the Cochrane Database Library were systematically searched up to March 2016. We included all studies evaluating interventions targeting healthy sleep duration and/or bedtime routines of children aged 4–12 years. All steps in this systematic review, i.e. search, study selection, quality assessment and data extraction, were performed following CRD Guidelines and reported according to the PRISMA Statement (PROSPERO database review registration number CRD42014015346).

Results: Eleven studies were included, of which only two were of strong quality. The interventions varied in terms of targeted determinants and intervention setting. Overall, no evidence was found favoring a particular intervention strategy. One intervention that delayed school start time and two multi-behavioral interventions that targeted both the school and home setting showed promising effects in terms of increasing sleep duration. Conclusions: Due to few high quality studies, evidence for the effectiveness of any particular intervention strategy to stimulate healthy sleep in children is still inconclusive. However, the more effective interventions in stimulating healthy sleep duration and adherence to regular bedtimes were mostly multi-behavioral interventions that included creating daily healthy routines and combined intervention settings (e.g. home and school). In conclusion, high-quality studies evaluating systematically developed interventions are needed to move this field forward.

REPORTING AND ANALYSIS OF EQUITY EFFECTS OF CHILDREN’S PHYSICAL ACTIVITY INTERVENTIONS: A SYSTEMATIC SCOPING REVIEW

Objective: Differential effects of physical activity (PA) interventions across population sub-groups may contribute to inequalities in health. This systematic scoping review explored the analysis of equity effects within children's PA interventions. The aim was to synthesize and assess the availability of evidence on differential intervention effect analyses across gender, BMI, socioeconomic status, ethnicity and place of residence. The collation of evidence within this review will be valuable in providing an overview of the literature and identifying where evidence gaps exist. Methods: Using a pre-piloted search strategy, six electronic databases (ERIC, EMBASE, SCOPUS, PsycINFO, Medline, SPORTDiscus) were searched for controlled intervention trials (both main outcome and associated analyses) aiming to increase PA in children, limited to those measuring PA objectively. Reporting of differential effect analyses by interaction or subgroup analysis were summarized for each equity characteristic. Following, logistic regression analyses were run to investigate which intervention characteristics were associated with the reporting of equity effects. Results: The literature search identified 13 052 articles. Following a duplicate screening process 113 intervention trials were included. Although the majority of trials collected equity characteristics at baseline, few reported differential effects analyses across the equity factors. All 113 included interventions reported gender at baseline with 46% of non-gender targeted interventions (N=98) reporting differential effect analyses by gender. Respective figures were considerably smaller for BMI (19%), socioeconomic status (12%), ethnicity (2%) and place of residence (33%). There was an increased likelihood of studying differential effects in school based interventions compared to interventions in other settings; larger studies; and where a main intervention effect on objectively measured PA was reported. Conclusions: Despite frequently collecting relevant equity information at baseline, most controlled trials of PA interventions in children do not report analyses of differences in intervention effect. Consequently, there is a scarcity of evidence concerning the equity effects of these interventions, particularly beyond gender, and a lack of understanding of subgroups that may benefit or be further disadvantaged by interventions. Further evidence synthesis and primary research is needed to effectively
Purpose: The family environment is important in shaping adolescent health behaviours. Parents can influence these behaviours directly through specific strategies (e.g., rules or routines), known as parenting practices. Further research is necessary to explore the extent to which parents use more positive/supportive parenting strategies with respect to influencing health behaviours. We used qualitative methods to explore parenting practices in relation to adolescent health behaviours (physical activity (PA), nutrition, and screen-time behaviours). Methods: We conducted 28 semi-structured interviews with parents of grade 7 students (March-May 2016) in Surrey, British Columbia, Canada [68% mothers; ethnicity diverse: 11% Chinese, 32% South Asian, 14% Southeast Asian, 25% White; 54% had income Results: Parenting practices predominantly related to structure and control were observed across all health behaviours; differences also emerged across health behaviours. For PA, adolescent behaviours were structured using practices such as co-participation, modeling, and access/availability. In some cases, parents controlled their child's PA by pressuring them to enroll in activities that they were not interested in. Other parents were responsive to their child and used practices such as encouragement, involvement, and autonomy support to influence their child's activity. In contrast, screen time and nutrition behaviours were structured through expectations (e.g., rules). As parents experienced difficulty in achieving certain behaviour for screen time, they sometimes resorted to controlling practices such as bribes or discipline. With nutrition, we identified more permissive practices. Parents acknowledged certain expectations around eating, but noted difficulty in maintaining these expectations both for their child and themselves. Conclusions: Our findings suggest that parenting practices differ across adolescent health behaviours. They provide insight into the complexity of ensuring that parents utilize supportive practices—an aspect that needs to be emphasized in current interventions to encourage healthy behaviours.

INFLUENCE OF PHYSICAL ACTIVITY, SEDENTARY BEHAVIOUR AND DIET QUALITY IN CHILDHOOD ON THE INCIDENCE OF INTERNALIZING DISORDERS DURING ADOLESCENCE: A POPULATION-BASED COHORT STUDY

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Objective: Studies among children and adolescents suggest that physical inactivity, sedentary behaviours and poor diet quality are associated with poor mental health. Very few population-based studies have investigated these relationships longitudinally. The objective of the current study was to examine the association between physical activity, sedentary behaviours, and diet quality in childhood and the incidence of internalizing disorders throughout adolescence. Methods: We linked health behaviour data from a population-based lifestyle survey conducted in schools in 2003 among grade 5 students who are primarily 10 to 11 years old in Nova Scotia, Canada with their administrative health care data between 2003 and 2011. Students' diet quality was assessed using the Harvard Food Frequency Questionnaire. Physical activity and sedentary behaviours were self-reported. Internalizing disorders were diagnosed by a physician. We applied Cox regression models to examine the associations of physical activity, sedentary behaviour, and diet quality with the incidence of internalizing disorders between 2003 and 2011. Results: A total of 5517 students received parental consent to participate in the study, 5200 students completed the survey, and 4861 (93%) provided valid health card numbers and were successfully linked with their administrative health care data. Nearly a quarter (23.7%) of students had a diagnosis of internalizing disorder within the follow-up period. We observed that students who reported participating in physical activities with a coach 4 or more times a week had a lower incidence rate of internalizing disorders relative to students who reported never participating in physical activities with a coach (HR=0.82, 95% CI: 0.68, 0.99). We also observed that increased time spent using
EFFECTS OF MATERNAL EMOTIONAL RESPONSES ON CHILD HEALTH BEHAVIORS: A STRONG KIDS STUDY
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Purpose: Parents’ responses to children’s emotions can influence children’s emotion regulation capacities and health behaviors. However, few studies have explored how parents’ responses to children's negative emotions affect health behaviors in early childhood. The aim of this study is to examine whether responses to children's negative emotion characterized by maternal distress are related to health behaviors (picky eating, dietary intake, outdoor physical activity) in preschool-aged children.

Methods: Mothers (n = 260) of preschool-aged children completed panel surveys at two waves when children were about 37 months (SD = 6.94; Wave 1) and 57 months (SD = 8.32; Wave 2) old, as part of the STRONG Kids Project. Surveys included validated questionnaires measuring maternal distress responses (Coping with Children’s Negative Emotions Scale), children’s weekly outdoor physical activity (PA; Sports, Play, and Active Recreation for Kids-Parent Survey), picky eating behavior (Oregon Research Institute Child Eating Behavior Inventory), and weekly dietary intake (Children’s Nutrition Behavior Questionnaire). Correlation analyses and multinomial logistic regression were used to examine associations between maternal distress responses and children's weekly outdoor PA, parental perception of children's picky eating behavior, and healthy and unhealthy dietary intake.

Results: Maternal distress responses (M [SE] = 2.56 [0.04]) were correlated positively with picky eating, and negatively with healthy dietary intake. Maternal distress responses at Wave 1 were associated with higher odds of the child being perceived as a picky eater at Wave 2 (OR= 2.73; 95% CI: 1.13 – 6.48), controlling for Wave 1 picky eating. Additionally, maternal distress responses at Wave 1 were marginally associated with lower odds of healthy dietary intake at Wave 2 (OR= 0.69; 95% CI: 0.24 – 1.03), controlling for Wave 1 healthy dietary intake. There was no association between maternal distress, children's weekly outdoor PA, or unhealthy dietary intake. Conclusion: Dysregulated maternal emotional responses may play an important role in the development of young children’s eating behaviors, but not for their physical activity behaviors. These findings suggest that research on maternal emotional well-being may aid intervention efforts to improve child eating behaviors.

THE HEALTHY PRIMARY SCHOOL OF THE FUTURE
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Objective: Schools can play a critical role in health promotion. However, in Dutch primary schools (4-12 year old children) health and well-being is not yet integrated in the school system, but dealt with in separate programs/interventions whose implementation often conflicts with the specific characteristics of the school system. ‘The Healthy Primary School of the Future’ (HPSF) program uses a contextual participatory approach to integrate health and well-being in all levels of the school system, e.g. free healthy lunch, inclusion of health education elements in all lessons, creating a health promoting social and physical environment, and improving school health policies. To create a process in which research and practice complement each other a combined top-down bottom-up approach is applied. The aim of this paper is to describe the contextual analysis that was conducted as one of the first steps of the contextual participatory approach.

Methods: The contextual analysis was conducted among 4 project leaders, 683 children, 385 parents, and 74 teachers of four Dutch schools participating in the HPSF program. Data on health problems and behaviors were collected using accelerometers, anthropometry, and questionnaires. Interviews were held to assess the attention for health and well-being in the schools. Questionnaires completed by implementers (N=117) and minutes of meetings were used to assess the presence of potential barriers for implementation of the innovative program in the school system. Results: Main health problems and risk behaviors included overweight, low fruit/vegetable consumption and high soda consumption. Current attention of schools for
health was limited and primarily focused on physical activity. Lack of time and anticipated complexity of health promoting activities were perceived potential barriers for implementation, together with limited teacher involvement and low feelings of responsibility for health promotion. Significant differences were identified between the four schools in main risk behaviors, attention for health, as well as presence of potential barriers for implementation. Conclusions The contextual analysis enabled next steps in the contextual participatory approach. The differences between schools indicate that each school is a system on its own within the broader 'school system'. This underlines the importance of a context specific health promotion approach.

SO.08 Sedentary behavior in adults (Saanich 2)

HEALTH COACHING TO ENHANCE PHYSICAL ACTIVITY AND PREVENT FALLS IN COMMUNITY-DWELLING PEOPLE AGED 60 YEARS AND OVER: STUDY PROTOCOL FOR THE CHANGE CLUSTER RANDOMISED CONTROLLED TRIAL

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Objective Physical inactivity and falls in older age are major public health issues that can substantially impact health and independence. Physical activity has many health benefits, however promoting physical activity among older people without specific fall prevention advice may actually increase fall rates (Ebrahim, Thompson, Baskaran, Evans, 1997 and Lawton, Rose, Elley, Dowell, Fenton, Moyes, 2008). The Coaching for Healthy AGEing (CHanGE) trial primarily aims to establish the impact of a combined physical activity and fall prevention program compared to a healthy eating program on physical activity and falls among people aged 60+ years. Methods A cluster randomised controlled trial involving 60 groups of community-dwelling people aged 60+ years will be conducted. Participating groups will be randomised to: a) a physical activity and fall prevention intervention (30 groups), involving an in-person fall risk assessment, tailored fall prevention and physical activity advice, provision of an activity tracker, telephone-based health coaching and written information; or b) a healthy eating intervention (30 groups) involving telephone-based health coaching and written information. Primary outcomes will be objectively measured physical activity (Actigraph) at 12 months post randomisation and prospectively measured falls over 12 months (monthly calendars). Secondary outcomes will include: the number of fallers, the proportion of people meeting physical activity guidelines, body mass index, mobility goal attainment, mobility-related confidence, quality of life, fear of falling, risk taking behaviour, mood, wellbeing, self-reported physical activity, disability, eating habits and health system and community service utilisation. The between group difference in the number of falls per person-year will be analysed using negative binomial regression models. For the continuously-scored primary and secondary outcome measures, Gaussian GEE regression adjusted with their corresponding baseline scores will assess the effect of group allocation. Exchangeable correlation structures will account for correlation between individuals within the clusters. Analyses will be pre-planned, conducted while masked to group allocation and will use an intention-to-treat approach. Conclusions This trial will address a key gap in evidence regarding physical activity and fall prevention for older people and will evaluate two healthy ageing programs that could be directly implemented within Australian health services. Trial registration: ACTRN 12615001190594.

SEDENTARY BEHAVIOR IN THE FORM OF TELEVISION VIEWING MOST STRONGLY RELATED TO CARDIOVASCULAR DISEASE RISK: RESULTS FROM A POPULATION DECISION TREE ANALYSIS

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Purpose: Emerging evidence suggests that sedentary behavior may be a determinant of cardiovascular disease (CVD) risk, even after adjusting for physical activity and other known determinants. This study sought to test this hypothesis in the context of a large population sample and to examine which of television viewing, recreational computer use or driving, as forms of sedentary behavior, related most to CVD risk. Methods: Baseline data from the UK Biobank Cohort Study (N=320,889) were used in a classification tree analysis to model the relationship between the 30-year Framingham CVD risk score and sedentary behavior. The risk score is a composite of sex, age, systolic blood pressure, hypertension treatment, body mass index, current tobacco use and diabetes, and was modeled as a dichotomous outcome variable (low/moderate vs high). Self-reported physical activity, fruit and vegetable consumption, alcohol consumption, body fat percentage, sleep duration and sleep timing were included as additional independent variables. Results/Findings: Most participants were White (93.1%) and female (55.5%). Over half the sample were classified as high CVD risk (57.5%). On average, participants reported 2.68 hours of daily television viewing (SD=1.56), 1.10 hours of recreational computer use (SD=1.36), and 0.80 hours of driving (SD=1.26). At the bivariate level, computer hours were not associated with high CVD risk, while television viewing and driving were (p=3 hours of TV per day; =40. Conclusions: Television viewing may be a particularly salient determinant of high CVD risk. Observational prospective studies are needed to replicate these findings. Interventions to address sedentary behavior and test effects on CVD risk are also urgently needed.

SEDENTARY BEHAVIOR AND MUSCULOSKELETAL PAIN: A FIVE-YEAR LONGITUDINAL ICELANDIC STUDY
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Despite knowledge on unfavorable health effects of sedentary behavior (SB), there is limited knowledge about its effects on the musculoskeletal system. Objective: to study the association between SB and the risk of musculoskeletal pain over a five-year period in an Icelandic population. Methods: Data was obtained from the Health and Wellbeing of Icelanders survey conducted in 2007 and 2012. Subjects aged 18-79 years that reported no musculoskeletal pain in 2007 and participated in 2012 were included (N=737). Sedentary behavior was categorized into low SB (0-3 h/day), moderate SB (4-7 h/day), and high SB (8+ h/day). Chi-square tests and multivariable logistic regression analyses were used to examine relationships between SB and musculoskeletal pain. Results: At baseline, 22.5% of participants reported low SB, 48.7% moderate SB, and 22.8% high SB. Pain in back or shoulders was most common, affecting 33.5% of participants, while frequent headaches were least common, affecting 6.9%. High prevalence of SB was observed in younger age groups, those with higher education and income, and lower physical activity. Unadjusted odds ratios were increased for high SB compared with low SB for headache (OR=2.78; CI:1.15-7.75) and muscle inflammation (OR=1.70; CI:1.03-2.83). In adjusted models, this relationship became non-significant, even though the odds were still increased with high SB. Conclusion: In this study there were indications that more hours of SB were associated with increased likelihood of developing musculoskeletal pain. Objective measures of SB may provide opportunities to study this subject further.

EXPECTATIONS AND EXPERIENCES OF SUBSTITUTING SITTING FOR STANDING IN NORMALLY-SEATED MEETINGS
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Purpose. Prolonged sitting poses a health risk. Office workers are at especial risk, because many spend the majority of their worktime seated. One sitting-reduction strategy often proposed is for workers to stand during meetings. Several studies suggest office workers find the idea of standing in meetings acceptable, but no study has yet explored acceptability among people who have tried voluntarily standing in meetings where others are sitting. Workers’ experiences of standing in meetings can reveal potential barriers to uptake and maintenance of standing, so informing development of strategies to better support standing. This study documented expectations and experiences of standing in normally-seated meetings, and factors affecting its acceptability, among office workers. Methods. 27 office workers were each recruited from one of three UK universities. Each participant identified three group workplace meetings that they were already scheduled to attend (small: 3-10 attendees, medium: 11-19;
THE ACUTE EFFECTS OF BREAKING UP SEATED OFFICE WORK WITH STANDING OR LIGHT-INTENSITY WALKING ON CONTINUOUSLY-MEASURED INTERSTITIAL GLUCOSE CONCENTRATION: A RANDOMISED CROSSOVER TRIAL

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Objective: The aim of this randomised, three-period, three-treatment crossover trial was to examine the acute effects of regularly breaking up seated office work with short bouts of standing or light-intensity walking on continuously-measured interstitial glucose concentration. Methods: Seventeen office workers (9 women and 8 men; mean age ± SD, 52.4 ± 5.1 years; and mean BMI ± SD, 28.0 ± 4.5 kg/m2) performed three five-hour trial conditions at their workplace in a random order: 1) uninterrupted sitting; 2) sitting interrupted by two minutes of standing (95% CI, 73.6 to 27.9%; p = 0.438). Conclusions: Breaking up prolonged sitting with two minutes of standing lowers postprandial glucose concentration compared with after uninterrupted sitting.

SO.09 Implementation and evaluation of health promotion programs (Esquimalt)

ADAPTATION OF AN EVIDENCE-BASED PHYSICAL ACTIVITY AND NUTRITION PROGRAM FOR RURAL LATINAS

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Purpose: To adapt an evidence-based physical activity and nutrition program to reflect the needs of rural Latinas. Methods: Using a community-based participatory approach, we followed an intervention mapping process, involving eight specific steps, to identify and adapt a physical activity and nutrition program, partnering with a
highlighting the critical role of the public in evaluating interventions in increase PA in adolescents. Identifying research priorities will ensure the ongoing cluster-stakeholders in developing GoActive study materials, increasing acceptability of measurement methods process evaluation of the main trial -designed intervention materials, and filmed a further 20 activity videos for the intervention (an idea proposed by a teacher on our Trial Steering Committee). Adult public involvement also features heavily in the GoActive evaluation. We have conducted meetings and deliberative dialogue workshops with key stakeholders, including parents, schools, county councils, and charities and government departments focused on education and sport. These discussions focused on identifying research questions that will have the most impact and are of the most interest to stakeholders. Further, they helped to ensure that evaluation methods are acceptable and useful to the relevant agencies. Conclusions: Involving stakeholders in developing GoActive study materials, increasing acceptability of measurement methods and identifying research priorities will ensure the ongoing cluster-RCT is relevant, appropriate and impactful. This work highlights the critical role of the public in evaluating interventions in increase PA in adolescents.
UWALK: A RE-AIM EVALUATION OF A COMMUNITY-WIDE E-HEALTH AND M-HEALTH PHYSICAL ACTIVITY PROGRAM

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Objectives The translation of evidence-based programs into community settings is an important aspect of physical activity promotion. The Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) framework presents a useful tool to evaluate the success of these programs in natural settings. Therefore, the objective of this study was to use the RE-AIM framework to evaluate UWALK which is an e- and m-health physical activity promotion program targeting the general population throughout Alberta, Canada. Methods UWALK was introduced in April 2013 and in September the same year a responsive website (www.uwalk.ca) was launched. The design ensured optimal accessibility and m-health interaction across a range of devices. The program was funded until March 2016. For each of the RE-AIM measures, data were collected using computer-assisted-phone-interviews (CATI) in Alberta adults and online data collection methods, including the UWALK database, Google analytics, Vimeo and YouTube. Results In terms of Reach, there were 339,845 session based visits to the UWALK website, 16,060 registered UWALK members, and awareness of the program throughout the province was 8.2% in 2015. For effectiveness, physical activity levels among Alberta adults significantly improved between 2013 (46.6%) and 2014 (56.6%; adjusted-OR = 1.58, 95% CI 1.31-1.92); however, no differences in physical activity levels based on awareness were found. In terms of adoption, there were 616 communities and 1,282 teams registered on the website. Within communities 38.6% identified as workplaces, 25% of which ran a physical activity challenge on the website. For implementation, 2,541 interactive website challenges were conducted, 14 weeks was the most frequently selected challenge duration. For maintenance, Albertan physical activity levels remained higher in 2015 compared to 2013, although this could not be attributed to the UWALK program. The majority of UWALK members...
(70.6%) returned to the website and logged in on more than one occasion. Conclusions Though the program demonstrated potential for dissemination to the general public, awareness was limited and further research is needed to provide support for the effectiveness of the program to improve physical activity levels.

COST-EFFECTIVENESS ANALYSIS OF A SCHOOL-BASED HEALTH PROMOTION PROGRAM IN CANADA: A LIFE-COURSE MODELING APPROACH
Ekwaru Jp1, Ohinmaa A1, Tran Bx1, Setayeshgar S1, Johnson Ja1, Veugelers Pj1. 1University of Alberta, Edmonton.

Purpose: To evaluate the cost-effectiveness of the Alberta Project Promoting active Living and healthy Eating in Schools (APPLE Schools), a school based program that has been recognized as a “best practice” in preventing childhood obesity. The cost-effectiveness evaluation will help inform public health decision makers on its economic implications. Methods: We developed a state transition model for the lifetime progression of body weight status comparing elementary school students attending APPLE Schools and control schools. This model quantified the lifetime impact of APPLE Schools in terms of prevention of excess body weight, chronic disease and improved quality-adjusted life years (QALY). Both costs and health outcomes were discounted to their present value using 3% discount rate. Results: The incremental cost-effectiveness ratio (ICER) of APPLE Schools was CA$33,421 per QALY gained, and CA$1,555, CA$1,709 and CA$14,218 per prevented person years of excess weight, obesity and chronic disease, respectively. These estimates show that APPLE Schools is cost effective (ICER < CA$50,000) in preventing excess weight, obesity, chronic disease and per QALY gained. In probabilistic sensitivity analysis, where uncertainty was incorporated in various model parameters, APPLE schools was cost effective (ICER < CA$50,000) more than 96% of the time for prevention of excess weight, obesity and chronic disease and more than 64% per QALY gained. With a threshold of ICER.

Jun 09, 12:20 - 13:00: Short-Oral Presentations

SO.10 Perinatal health behaviors and weight management (Colwood 1 & 2)

DETERMINANTS OF BREASTFEEDING INTENTION: A THEORY OF PLANNED BEHAVIOR ANALYSIS
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Purpose: Breastfeeding intention is one of the strongest predictors of exclusive breastfeeding, a common behavioral target of many early life obesity prevention trials. While the theory of planned behavior (TPB) specifies antecedents of intention, limited research has documented these relationships specific to breastfeeding. The current study tests for associations between breastfeeding intention and breastfeeding attitudes, normative beliefs, and behavioral control. Methods: Data are from 430 baseline interviews of non-Hispanic black, pregnant women participating in the "Mothers & Others: Family-based Obesity Prevention for Infants" trial (M&O). Breastfeeding intention (dependent variable) was measured using the Infant Feeding Intention Scale. Independent variables included items assessing behavioral beliefs (attitude toward the behavior), normative beliefs (subjective norm), and control beliefs (perceived behavioral control). Separate multivariable logistic regression models were run for each independent variable, adjusted for sample characteristics associated with breastfeeding intention in bivariate analyses. Significance was set at P Results: All independent variables were significantly associated with higher breastfeeding intention, even after adjustment for maternal education, marital status, primiparity, depression, WIC enrollment, household size, and a global measure of general social support from family. Odds of high breastfeeding intention were greatest among women reporting high confidence in breastfeeding after returning to work or school (Odds ratio [OR] = 3.72, 95% Confidence Interval [CI]: 2.38, 5.81), belief that their study partner supports them in breastfeeding after returning to work or school (OR = 3.46, 95% CI: 2.22, 5.39), belief that the baby's father is highly supportive of breastfeeding (OR = 3.39, 95% CI: 2.11, 5.43), and belief that their study partner supports exclusive breastfeeding for the first 6 months (OR = 2.82, 95% CI: 1.71, 4.66). Conclusions: These findings provide support for
the application of TPB to breastfeeding research, as all TPB antecedents were significantly associated with breastfeeding intention, a powerful predictor of postpartum breastfeeding behavior. Future breastfeeding interventions may be more efficacious if they incorporate behavioral change techniques that have demonstrated ability to improve attitudes, subjective norms, and perceived behavioral control. Individually tailoring interventions based on TPB assessments may also prove efficacious.

**DIET QUALITY DURING AND AFTER PREGNANCY: DO MATERNAL FACTORS MATTER?**

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Objective: To explore if changes in diet quality between pregnancy and the postnatal period differ by maternal sociodemographic and health characteristics. Methods: Using data from the prospective Infant Feeding Practices II cohort, we examined sociodemographic characteristics, dietary intake, and health characteristics of healthy mothers 18-43 yrs. who responded to the validated National Cancer Institute Diet History Questionnaire in the third trimester of pregnancy and again at 4-months postpartum (n=847). We used meeting the USDA recommendations for vegetable intake (≥2.5 servings per 2000 calories) as a proxy measure of dietary quality and examined maternal characteristics among 4 groups of mothers: not meeting recommendations at both time points (n=370), meeting recommendations pre- but not postnatally (n=123), meeting recommendations post- but not prenatally (n=121), and meeting recommendations at both time points (n=233). Descriptive characteristics and age and BMI adjusted ANOVA's using Tukey adjustment for post-hoc comparisons (p

Results: Sociodemographic and health characteristics differed among the 4 groups of mothers. Mothers who didn't meet recommendations for vegetable intake at both time point were younger (28.7 vs. 30.4 years), with lower percent of poverty-income levels (2.6 vs. 3.1), smoked more cigarettes during pregnancy (1.1 vs. 0.4 per day), had lower dairy intake (0.12 vs. 0.11 servings) and reported breastfeeding their infants for less time (24.5 vs. 29.2 wks) than those who met recommendations at both times. Mothers who only met recommendations prenatally, had increased intake of sugar vs. those who met recommendations at both time points (0.8 vs. -0.3 grams per day). Women in all groups were similarly likely to receive information about diet from a health professional (80-84%) and had similar participation rates in WIC.

Conclusions: Even with receiving dietary information and participating in WIC, some women continue to be at higher risk for inadequate maternal diet both during and after pregnancy. Future interventions might consider targeting younger women in lower socioeconomic categories in hopes to improve their dietary intake prior to pregnancy, as this has implications for the health of the mother and the infant.

**THE DEVELOPMENT OF THE GLOWING INTERVENTION TO FACILITATE COMMUNITY MIDWIVES IMPLEMENTATION OF WEIGHT MANAGEMENT GUIDELINES**

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Purpose: UK guidelines for weight management during pregnancy focus on women’s diet and physical activity(1). Health professionals report multiple barriers to implementation of these guidelines, and GLOWING aims to facilitate the implementation into midwifery practice. Development of the GLOWING intervention followed a four-step approach specifically designed for interventions to change clinical practice. This involved identification of 1) what needs to be changed by whom; 2) barriers and enablers to behaviours; 3) intervention components and modes of delivery; 4) measurement of behaviour change(2). Methods: (Steps 1-2) Guideline recommendations relevant to community midwives were broken down, defined as Target, Action, Context, and Time (TACT), and grouped into behavioural themes. A systematic review of barriers and enablers identified modifiable determinants of the behavioural themes and informed selection of a behaviour-change theory. (Step 3) Another systematic review of interventions targeting health professionals' behaviours relating to weight management in pregnancy aimed to identify intervention components and modes of delivery. (Step 4) Questionnaires were developed to measure midwives' routine practice (TACT-defined behaviours) and theoretical mediators of behaviour change. Results: (Steps 1-2) Twenty-eight TACT defined behaviours were grouped into six themes: weight communication, risk communication, nutrition, physical activity, weight management, and referrals. The systematic review of behavioural determinants(3) prioritised weight communication, weight management, and referral behaviours.
Social Cognitive Theory (SCT) was identified as the most relevant theory to address the barriers to practice. (Step 3)
The second systematic review did not identify any relevant existing interventions(4). Alternative sources of evidence informed intervention components and modes of delivery including SCT methods, Cochrane Reviews, and
behaviour change technique taxonomies. This evidence was systematically mapped onto the barriers and enablers identified in steps 1-2. (Step 4) Questionnaires for midwives included self-reported TACT-defined behaviours and the SCT constructs of self-efficacy, outcome expectancies and intention to perform these behaviours.
Questionnaires for pregnant women included reports of their midwives behaviours for comparison with midwives’
self-reports. Conclusions: Using this intervention mapping approach has facilitated the development of an evidence-
based, transparent and replicable intervention to change midwives’ clinical practice.

IS SELF-TRACKING OF WEIGHT GAIN DURING PREGNANCY ASSOCIATED WITH WEIGHT OUTCOMES AT 6 MONTHS
POSTPARTUM?
Olson C.m.1, Strawderman M.s.1, Graham M.I.1. 1Division of Nutritional Sciences, Cornell University, Ithaca, NY.

Purpose: Childbearing is recognized as a risk factor for weight gain. Among non-pregnant individuals, frequent self-
weighing is positively associated with better weight outcomes. Little is known about self-tracking of weight gain
during pregnancy and its relationship to postpartum weight outcomes. This study investigated the association of
consistent self-tracking of weight gain during pregnancy with weight retention outcomes at 6 months postpartum.
Methods: This study included 870 women in the intervention arms of a randomized controlled trial assessing the
effectiveness of an integrated online and mobile phone behavioral intervention to decrease weight gain associated
with childbearing. Consistent self-tracking of weight gain was defined as entering a weight in each 45 day interval of
study participation. Weight retention at 6 months postpartum was operationalized in three ways: proportion of
women returning to early pregnancy weight; proportion who weighed ≥ 3 kg more at 6 months postpartum than they
did in early pregnancy (major weight retention); and the difference in weight (kg) between early pregnancy
and 6 months postpartum. Data were analyzed using modified Poisson and linear regression approaches. Results:
Overall 28.2% of women were consistent weight gain trackers during pregnancy. Consistent tracking varied by
income: 17.1% among low income (Medicaid eligible) and 35.2% among not-low income women. Among not-low
income women, consistent weight gain tracking was significantly associated with an increased likelihood of
returning to early pregnancy weight (RR 1.25; 95% CI: 1.01 to 1.60; p = 0.04), a reduced risk of major weight
retention (RR 0.74; 95% CI: 0.57 to 0.96; p = 0.03), and 1.1 kg less weight retention (95% CI: -2.0 to – 0.3 kg; p
Conclusions: Among not low-income women, self-tracking of weight gain during pregnancy appears to be an
important component of behavioral interventions focused on decreasing the major weight gain that is often
associated with childbearing. More research is needed on effective components of interventions for low income
women.

PRENATAL THEORY-BASED LIFESTYLE INTERVENTION EFFECTIVELY PROMOTES POSITIVE BEHAVIOR CHANGE AND
APPROPRIATE WEIGHT GAIN
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PURPOSE: To improve mental well-being and prevent excessive gestational weight gain via a lifestyle intervention
(LI). Self-Determination Theory (SDT) framework was used to measure how motivation and motivational
interviewing (MI) strategies can help explain changes in volitional behavior. This is the first study to utilize a SDT-
based LI during pregnancy. METHODS: Twenty-seven healthy, sedentary/low-active pregnant women were
randomized prior to their 14th week of gestation to usual care (UC) or the LI (individualized meal plan, >10,000
steps/day) with monthly one-on-one visits with a registered dietitian from enrollment to delivery. SDT principles
and MI strategies were used during the monthly visits to facilitate goal setting and behavior change. Perceived self-
efficacy, competence, motivation and barriers to control gestational weight gain were measured across pregnancy
(1st, 2nd, and 3rd trimester). Multivariate repeated measures ANOVA analyses were used to determine if the
groups differed over time and by group. Chi-square analysis was used to assess appropriate weight gain at 3rd
trimester. RESULTS: A significant time by group interaction effect was found in perceived competence for weight gain during pregnancy and maintenance of a healthy diet (F(1,25) = 5.71, p=.025, η2=.186) and physical activity competence (F(1,25) = 6.003, p=.022, η2=.194), with an increase over time for women in the intervention during their 2nd trimester. The intervention group had increased self-efficacy for exercise (F(1,25) = 6.41, p=.018), and diet across pregnancy (F(1,25) = 4.664, p=.041, η2=.157) compared to UC. Women in the intervention group reported high levels of satisfaction of all three psychological needs (autonomy α = .835, relatedness α = .60, competence α = .833) and were significantly more likely to gain within the recommended weight gain for pregnancy compared to the UC group (p=.014). Significant correlations were evident between need satisfaction with weight gain for the intervention group. Conclusions: An intervention utilizing SDT principles and MI techniques is effective at improving the perceived competence, self-determination, and self-efficacy related to diet and exercise in pregnant women. Future analysis will assess the effect of behavior change on appropriate gestational weight gain.

SO.11 Physical activity environments in adults (Oak Bay 1 & 2)

ARE OBJECTIVE NEIGHBORHOOD CHARACTERISTICS RELATED TO MEETING PHYSICAL ACTIVITY RECOMMENDATIONS?

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Objective. Worldwide, about 1/3 of the adult population does not meet physical activity recommendations. The (residential) environment has often been associated with physical activity behaviors. However, evidence on the relationship between objectively measured neighborhood characteristics and meeting physical activity recommendations is scarce. Methods. Accelerometers were used to determine whether participants (N = 305), aged 45 – 65 years, met World Health Organization (WHO) recommendations for physical activity (i.e. ≥ 150 minutes of moderate-vigorous physical activity per week). ArcMap was used to calculate for each participant the proportions of land use data (in %) within a 400 meter buffer surrounding the home address. Logistic regression models were used to assess the role of neighborhood characteristics in meeting physical activity recommendations. Analyses were adjusted for an extensive set of individual factors. Additional analyses were performed to assess whether relations were moderated by the amount of time adults spent within the neighborhood. Results. Higher proportions of large green space and blue space within the 400 meter buffer were associated with higher odds of meeting WHO physical activity recommendations, whereas higher proportions of recreational areas (e.g. zoo, picnic places) were associated with lower odds of meeting the recommendations. No moderating effect of time spent within the 400 meter neighborhood was found. Conclusions. Regardless of time spent within the neighborhood, an association was found between objectively measured neighborhood characteristics and meeting WHO physical activity recommendations. Integrating new forests or lakes within cities may not be feasible, but policy makers and urban planners could connect existing blue and green spaces to create (new) possibilities for adults to be sufficiently active.

8238

EXPLORING THE IMPACT OF A CANADIAN MUNICIPAL POLICY FOCUSED ON INVESTING IN RECREATION SPACES ON HEALTH AND HEALTH EQUITY

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Objective: The potential health and health equity impacts of a municipal revitalization policy designed to facilitate equitable access to community recreational facilities to support physical activity and healthy living were examined. Methods: A nonrandomized multi-method quasi-experiment was conducted in two communities with comparable service area and facility profile. Stage 1 involved a 12-minute pre-post random-digit-dial telephone survey on facility usage/frequency and motivation for use with a representative sample of ~1050 residents in each community. Stage 2 included a total of 22 pre-post focus groups that explored preferences for and barriers to facility use. Results:
Facility usage increased in three indoor facilities that underwent revitalization in the case community. For instance, 22.7% used the facility regularly in 2011; this increased to 43.8% after revitalization. There was a decrease in indoor facility usage in the comparison community over the same period. Demographic and health-related indicators were associated differently with the various indoor facilities. Focus groups revealed a number of facilitators (e.g., diversity of recreational opportunities) and barriers (e.g., high fees) that influenced usage in each community.

Conclusions: Revitalization of indoor recreation facilities had a positive impact on overall usage. However, barriers still preclude some groups from using indoor facilities more regularly. Residents' needs should be addressed to afford equitable opportunities for all people, regardless of age, place of residence, health status, etc. The results of this research have important implications for practice and policy as despite consensus about the need to promote healthy living and physical activity in communities, there is little evidence on the impact of significant investment into the revitalization of existing facilities for achieving this end. Given the difficulty of "starting from scratch" with investments in new infrastructure, revitalization might present a more attractive and viable option. Our findings have valuable implications for other municipalities seeking to undertake similar, cost-saving revitalization initiatives to promote community health, equity, and well-being.

PUT IT IN THE GROUND: A NATURAL EXPERIMENT EXAMINING THE EFFECTS OF TUNNELING A HIGHWAY ON PHYSICAL ACTIVITY, ACTIVE TRANSPORT AND HEALTH

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Objective In the city of Maastricht, The Netherlands, the highway that used to cross the city is in the process of being tunneled. This study examines whether the implementation of the Green Carpet, a 2.3 km linden avenue replacing the highway and accommodating a walking- and bicycle infrastructure, leads to increased physical activity (PA) levels, more active transport (AT), higher 'exchange-rates' of residents between neighborhoods bordering the intervention area by removing a natural barrier, improved perceived health and an increased perceived neighborhood walkability. Although numerous cross-sectional studies indicate associations between the built environment, PA and (mental) health, natural experiments are considered to be the best method to draw conclusions on causality. Methods This natural experiment distinguishes three groups of participants based on the degree of exposure to the intervention area: maximal exposure (N=250), minimal exposure (N=250) and no exposure (N=250). Participants are adults (≥18 years) who are able to walk independently and have a good command of the Dutch language. PA and AT are measured using a combination of accelerometers (Actigraph GT3X+) and GPS loggers (Qstarz BT-1000XT). The exchange-rate of residents between neighborhoods is determined using GPS only. Perceived health and perceived neighborhood walkability are assessed using questionnaires (EQ-SD and NEWS, respectively). All outcome measures are assessed before (T0) the implementation of the intervention, and will be assessed one year (T1) and three years (T2) after the implementation of the intervention. Short-term (T1-T0) and long-term (T2-T0) effects of the infrastructural changes on PA, AT, exchange-rate, health and neighborhood walkability will be determined. Results The infrastructural changes are being implemented as planned. The tunnel will officially open in February 2017, and this will be followed by the gradual implementation of infrastructural changes at the surface. Results of the ongoing baseline measurement will be presented in terms of levels of PA, AT and perceived health. Conclusions This study is expected to add to our knowledge of causal effects of the built environment on PA, AT and perceived health by focusing on a large scaled, longitudinal natural experiment using objective measurements for PA and AT in relation to infrastructural changes.

A QUASI-LONGITUDINAL RESIDENTIAL RELOCATION STUDY OF NEIGHBOURHOOD WALKABILITY AND PHYSICAL ACTIVITY IN CANADIAN ADULTS

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Objective: Studies taking advantage of residential relocation have found associations between changes in the built environment and physical activity. Compared with cross-sectional studies, longitudinal residential relocation studies can provide precise estimates of the built environment-physical activity relationship. "Quasi-longitudinal"
residential relocation studies, despite being less rigorous than prospective longitudinal residential relocation studies, can still provide relative measures of the magnitude and direction of physical activity change. This quasi-longitudinal residential relocation study compared within-person changes in self-reported transportation walking, transportation cycling, and overall physical activity during the past 12 months among adults who did and did not move to a different neighbourhood. Methods: In 2014, a random sample of adults from 12 Calgary neighbourhoods with varying urban form and socioeconomic status provided complete self-administered questionnaire data (n=915). Participants, some of whom moved neighbourhood during the past 12 months (n=95), reported their perceived change in transportation walking and cycling, and overall physical activity during that time period. The questionnaire also captured residential self-selection, and sociodemographic and health characteristics. Walk Scores® were linked to each participant's current and previous neighbourhood and three groups were identified, including walkability: "improvers"; "decliners", and; "maintainers". Perceived change in physical activity was compared between the three groups using propensity score covariate-adjusted Firth logistic regression (odds ratios: OR). Results: Pre-move mean Walk Score® was significantly (p Conclusions: Temporal changes in walkability resulting from residential relocation appear to be associated with reported temporal changes in transportation walking and cycling in adults. Our findings contribute to the expanding causal evidence for the built environment’s role in shaping physical activity.

STEP UP: EXPLORING SOCIAL NORM PERCEPTIONS IN RELATION TO STAIR USE AMONG ADULTS
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Objective: Social norms come in different forms, such as descriptive (i.e., what others are doing) and injunctive (i.e., what others approve of) norms. While a positive relationship between descriptive norms and physical activity has been found (e.g., Priebe & Spink, 2011), there has been a dearth of research examining how injunctive norms relate to physical activity engagement. Given that both types of norms are thought to motivate behaviour (Cialdini et al., 1990), examining both norms simultaneously in relation to physical activity engagement is warranted. As such, the purpose of this study was to examine the association between descriptive and injunctive norm perceptions on self-reported stair use. Methods: Participants (N = 233) recruited from social media completed an online cross-sectional survey consisting of descriptive and injunctive norm perceptions and self-reported stair use (ascending and descending). The average age of participants was 33 years (SD = 11.6 yrs), with the majority being female, residing in Australia or Canada. Results: A hierarchical regression model controlling for BMI found an overall significant effect for ascending [F(3, 232) = 25.8, p 2 = .25] and descending [F(3, 230) = 19.8, p 2 = .21] stair use, respectively. When looking at the full models, BMI was negatively associated with stair use (ascending, β = -.16, p β = -.14, p β = .37, p β = .35, p β = .23, p β = .18, p Conclusions: As both types of norm perceptions were positively related to individuals' stair use, results provide preliminary evidence to the norm literature that injunctive norm perceptions may be an important factor to consider when examining physical activity, in particular stair use. In order to provide practical implications for health promotion practitioners interested in enhancing stair use, future research should assess the effects of using social norm messages to motivate stair use.

SO.12 Dietary and physical activity interventions in children and youth (Salon C)

SCHOOL MEALS FOR WELLBEING: CHILDREN’S EXPERIENCES VIA EMPATHY-BASED STORIES WITHIN THE PROMEAL STUDY
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Objective Opportunities for health promotion are ample within the school, e.g. in association with school meals. The objective for this study was to explore children’s ideas and experiences of school meals and school canteens in Iceland, by using empathy-based stories. Methods This study was a part of the multidisciplinary project ProMeal
Purpose: Intervention noncompliance in randomized trials is important and understudied. Interviews and

MEALTIME ENVIRONMENT (HOM

PRESCRIBED DOSE OF INTERVENTION: ANALYSIS OF NONCOMPLIANCE IN THE HEALTHY HOME OFFERINGS VIA THE

A GLIMPSE INTO WHY PARTICIPANTS SIGN UP FOR OBESITY PREVENTION TRIALS BUT DO NOT ATTEND THE

CONSUMPTION OF FOODS HIGH IN FAT, SUGAR AND SALT: CHANGES IN NUTRITIONAL COMPOSITION OF CHILDREN’S

Neal Dudes programme, and their Follow

consumption were taken over four consecutive days from an Intervention school and a waiting Control school in

DISPLACING THE FOODS HIGH IN FAT, SUGAR AND SALT: CHANGES IN NUTRITIONAL COMPOSITION OF CHILDREN’S

MEALS AFTER THE FOOD DUDES HEALTHY EATING PROGRAMME IN UK SCHOOLS

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Abstract Purpose Even in developed countries, suboptimal childhood nutrition presents as an issue, with reports

that children often exceed daily requirements in total energy (calorie) consumption, leading to incidences of

overweight and obesity, whilst being deficient in key micronutrients. This highlights the importance of introducing

and evaluating healthy eating interventions. The Food Dudes healthy eating programme is a school-based multiple-

component intervention administered by teachers in pre-school and primary-school classes. Previous assessments

have indicated that this intervention is successful in promoting fruit and vegetable intake in 4-11-year old children.

The present controlled evaluation study utilised a full nutritional analysis of participants’ lunchtime consumption

following the programme, in order to identify any displacing effects that increased fruit and vegetable intake may

have had on the children’s consumption of high fat, sugar and salt food items. Methods Using a validated digital

photography method of nutritional data collection, we obtained a full nutritional analysis of children’s meals,

including school-provided dinners and packed lunches brought from home. We measured children’s fruit and

vegetable consumption, macronutrients, and select micronutrients. Measures of children’s (N=116) lunchtime food

consumption were taken over four consecutive days from an Intervention school and a waiting Control school in

Leeds, England. We recorded children’s Baseline consumption one week before the commencement of the Food

Dudes programme, and their Follow-Up consumption two months into the programme. Results Large and

statistically significant increases in fruit (250%), vegetable (13%), and vitamin C (280%) consumption, with

substantial decreases in calories (28%), fat (50%), saturated fat (62%), carbohydrate (15%), sugar (32%), and sodium

(21%) intake were observed in the Intervention school, but not in the Control school. Conclusion These results

indicate that the Food Dudes programme is successful in increasing fruit and vegetable consumption whilst reducing

the consumption of foods high in fat, sugar and salt, promoting numerous health benefits and potentially protecting

against nutrition related morbidity and mortality. (310 words)

A GLIMPSE INTO WHY PARTICIPANTS SIGN UP FOR OBESITY PREVENTION TRIALS BUT DO NOT ATTEND THE

PRESCRIBED DOSE OF INTERVENTION: ANALYSIS OF NONCOMPLIANCE IN THE HEALTHY HOME OFFERINGS VIA THE

MEALTIME ENVIRONMENT (HOME PLUS) STUDY

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Purpose: Intervention noncompliance in randomized trials is important and understudied. Interviews and surveys
were conducted to assess reasons for noncompliance to inform future research. Methods: The HOME Plus study enrolled 160 families in a community-based childhood obesity prevention randomized controlled trial focused on promoting family meals and healthful eating. Study retention was high (89%) over the 21-month period. Eighty-one families were randomly assigned to receive the intervention program, consisting of 10 monthly, in-person family sessions and 5 goal setting calls. Ten of twelve noncompliant families participated in a semi-structured interview and survey to assess barriers to compliance to the prescribed intervention and identify possible solutions for future research. Results/Findings: Most families (80%) cited conflicting activities (primarily work) as an attendance barrier, followed by program length (40%), lack of child care (20%), child disinterested in the program (20%), and the program did not serve culturally-relevant food (20%). Families reported feeling appreciative of session reminder calls and receiving the missed session material over the phone/mail. Families also expressed satisfaction with goal setting calls. Nearly all (80%) reported enrolling in the study to learn more about nutrition. Despite minimal attendance, noncompliant participants reported paying more attention to the nutrient quality of foods they were serving their family and the healthfulness of how the food was prepared. Strategies suggested for future trials include giving participants exact dates and times of intervention programming during recruitment so they can plan accordingly, having both weeknight and weekend options to allow for more flexibility around work schedules, and offering alternative options to in-person group sessions such as home visits, phone calls or online programming. Conclusions: Intervention efforts focused on initial motivation for participation, emphasis on program benefits, the availability of expanded/flexible opportunities for involvement, and reduction of logistical barriers could have promising positive effects on compliance in randomized controlled trials.

PROMOTING REGULAR BREAKFAST EATING AMONG CANADIAN ADOLESCENTS: WHAT ROLE DO SCHOOL BREAKFAST PROGRAMS PLAY?
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Purpose: School breakfast programs are intended to promote breakfast eating by providing youth with access to a morning meal/snack in school for little to no cost. Although many Canadian schools offer breakfast programs, breakfast skipping among youth remains pervasive. However, few Canadian studies have examined how school breakfast program availability is associated with breakfast skipping among adolescents. The purpose of the current study was to (i) examine whether the availability of school breakfast programs supports regular breakfast eating among secondary school students, and (ii) identify characteristics of breakfast skippers who are not using breakfast programs, as these students represent a target group being missed. Methods: This study used data from 30 771 students from 67 secondary schools in Alberta and Ontario, Canada participating in the COMPASS study that offer a breakfast program. Participants completed a questionnaire that assessed the frequency of breakfast eating and eating breakfast as a part of a school program in a typical school week. Participants were classified according to their breakfast eating (regular breakfast eater vs. breakfast skipper) and breakfast program use (program user vs. non-user). Logistic regression analyses were performed to examine characteristics of ‘breakfast skippers/non-program users’ relative to ‘program users’. Findings: Nearly one-third (32.5%) of participants were classified as a ‘breakfast skippers/non-program user’. While 16.2% of participants were program users, 40% of these individuals were also characterized as ‘breakfast skippers’. Several characteristics were significantly associated with a higher probability of program use, including a non-white ethnicity, travelling to school via public transit or a school bus, being bullied, and feeling of school connectedness. A desire to lose weight and a lack of involvement in school sports were associated with being a ‘breakfast skipper/ non-program user’. Conclusions: Breakfast program availability is insufficient to promote regular breakfast eating among youth, even among those that are actively engaged in these programs. Results demonstrate potential barriers to program participation (e.g., program timing, number of days programs are offered, and low school connectedness). Future research should evaluate how changes to breakfast program promotion and provision can encourage greater student engagement and regular breakfast eating among youth.

EFFICACY OF INTERVENTIONS PROMOTING CALCIUM OR DAIRY INTAKE IN ADOLESCENTS AND YOUNG ADULTS: A SYSTEMATIC REVIEW WITH META-ANALYSIS
Objective: Adolescence to young adulthood is a crucial time for attainment of peak bone mass. As young people gain independence from their parents, they often make lifestyle changes that result in poorer quality diets and they commonly fail to meet the recommended intakes of calcium and dairy foods. The aim of this systematic review was to investigate the efficacy of interventions promoting calcium or dairy in order to inform future interventions.

Methods: Systematic searches were conducted through eight databases from inception to identify relevant studies: Medline, PreMedline, Embase, Web of Science, Cinahl, The Cochrane Library, PsycINFO and PubMed to identify relevant studies. The inclusion criteria included those aged 14 to 35 years in an intervention promoting calcium or dairy intake. Risk of bias tools were used to assess the quality of individual studies and the GRADE system was used to determine the overall quality of the body of evidence. Results: Of the 21 studies (n=2989) that met the selection criteria, the mean length of intervention was 20.5±25.1 weeks, and ranged from three weeks to two years. The majority of the studies were conducted in a university setting and provided face-to-face delivery of information. Other methods included phone calls, text messaging, group emails and websites. Only six studies drew from theory-based constructs with an additional four incorporating behaviour change techniques such as goal-setting as part of their intervention. The overall quality of the body of evidence was low and nine studies had high risk of bias. Studies where the effect size could be pooled for meta-analysis calculated included seven studies for calcium (pooled effect size 0.42, 95% CI 0.20 to 0.65) and five studies for dairy (pooled effect size 0.35, 95% CI 0.16 to 0.54). Conclusions: The review revealed interventions show some success but overall effect size is small. Intervention features that appear to be particularly promising include the use of an electronic technology and the focus on a single behaviour. However, continued research is needed using higher quality study designs to better determine the efficacy for improving calcium or dairy intake in this age group.
that family meals on weekends are of particular importance. Fathers should be encouraged to take part in family meals.

PARENT FEEDING PRACTICES WITH SIBLINGS: A MIXED-METHODS EXAMINATION
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Objective: Research has shown that parent feeding practices (i.e., pressure-to-eat, restriction) are associated with childhood overweight status. However, little is known about how parents engage in feeding practices with siblings and whether parents tailor their feeding practices to different siblings in the home. The main objectives of this study were to: (a) quantitatively examine similarities and differences in parent feeding practices with siblings and examine whether parent feeding practices differ depending on sibling concordant (i.e., both siblings overweight or healthy weight) or discordant (i.e., one sibling healthy weight, one overweight) weight status; and (2) to qualitatively examine parents’ perspectives about how they engage in feeding practices with siblings and whether they adapt their feeding practices dependent on sibling characteristics (e.g., weight status, age). Methods: Cross-sectional, mixed-methods study. Two in-home visits were conducted by research staff with children and their families in Minneapolis/St. Paul, Minnesota. Surveys were conducted with parents and anthropometry was collected on parents and siblings during the first home visit. Qualitative interviews were conducted with parents during the second home visit. Children (n=88) ages 6-12 years (mean=10; sd=2), their parents (mean age=35; sd=7), and near-age siblings (mean age=10; sd=4) participated in the current study. Households were racially/ethnically diverse (65% African American) and primarily low-income (73% earned Results: Quantitative results indicated that within discordant weight status siblings, parents were more likely to use restrictive feeding practices with siblings who were overweight and pressure-to-eat feeding practices with siblings who were healthy weight. Qualitative results indicated that parents used child food preferences, in-the-moment decisions, and planned meals when deciding how to feed siblings. Additionally, the majority of parents indicated that they managed picky eating by making one meal or giving some flexibility/leeway to siblings about having other food options. Furthermore, parents endorsed using different feeding practices with siblings dependent on sibling’s weight status or age/developmental stage. Conclusions: Findings from the current study suggest that family-based childhood obesity interventions may need to assess for sibling status when researching the home environment and intervene with parents to avoid using restriction or pressure-to-eat feeding practices when siblings are discordant on weight status.

A PREDICTIVE MODEL FOR ADOLESCENTS’ HEALTHY SNACK INTAKE: THE IMPORTANT ROLE OF DESCRIPTIVE NORMS
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Purpose: Unhealthy snacking has become a major public health concern, especially among adolescents. It increases weight gain over time and is associated with lower intake of fruit and vegetables. Therefore, many health intervention programs focus on reducing unhealthy snacking by promoting healthy snack behavior, often with a focus on fruit and vegetables. For intervention programs to be effective it is essential to know which constructs actually precede healthy snacking in order to incorporate these constructs in the intervention design. To examine which constructs precede healthy snacking, an innovative integration of the theory of planned behavior (TPB) and self-determination theory (SDT) is tested in this study. Constructs from both theories are examined simultaneously in order to predict adolescents’ healthy snack intake over time. Methods: Longitudinal data were obtained from 739 adolescents between the ages of 9 and 15 years old (M = 12.01 ± SD = 1.34; 55.2% girls). Data collection took place in February 2015 (T1) and two months later (T2). Self-reports were used to assess adolescents’ self-efficacy, descriptive norms, injunctive norms, attitude, intentions, intrinsic motivation, and healthy snack intake. To examine whether these constructs predict adolescents’ healthy snack intake over time we tested the model with structural equation modeling using Mplus. Results: The model showed a good fit [χ² (df = 89) = 125.87, CFI = 0.99 and RMSEA = .02]. Findings revealed that, of all constructs, only descriptive norms at T1 directly predicted adolescents’ healthy snack intake at T2 (β = .27, p = .001). In other words, adolescents’ healthy snacking at T2 was predicted by how often they thought their peers and parents consumed healthy snacks at T1. Conclusion: The current findings imply that adolescents’ healthy snack intake is predicted by how often adolescents’ thought individuals in their social
BIDIRECTIONAL ASSOCIATIONS BETWEEN MOTHERS’ FEEDING PRACTICES AND CHILD EATING BEHAVIOUR AND WEIGHT

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Purpose: Parental feeding practices have been shown to influence child eating behaviours and weight but may also be in response to the child. Directionality of these relationships, particularly in early childhood, remains unknown. This study examined bidirectional relationships between maternal feeding practices and child food responsiveness, satiety responsiveness and BMI z-score from 2 to 5 years. Methods: Mothers randomised to the control group of the NOURISH trial reported their feeding practices and child eating behaviours (i.e. satiety and food responsiveness) when children were aged 2, 3.7, and 5 years (N = 207). Children’s weight and height was measured at each time point. Bidirectionality between maternal feeding practices and child eating behaviours and BMI z-score was examined using bivariate cross-lagged models. Results/findings: For the majority of models continuity among the constructs was seen across time but no significant cross-lagged path was found. However, food responsiveness at 3.7 years was associated with maternal feeding practices almost two years earlier. Satiety responsiveness showed a more complex pattern of results but strengths of paths indicated that satiety responsiveness largely influenced maternal feeding at the subsequent assessment point. BMI z-score at 2 years influenced maternal feeding at 3.7 years, which in turn influenced BMI z-score at 5 years. Conclusions: Both, maternal and child effects need to be considered early in life as targets of interventions to prevent development of obesogenic eating behaviours or childhood obesity.

PREVENTING CHILDHOOD OBESITY THROUGH A FAMILY-BASED PROGRAM—SEEDS

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Purpose: Childhood obesity rates are higher among low-income families. Research shows that increase in weight velocity between ages 2 and 5 is the strongest predictor of adult obesity. Our goal was to develop a childhood obesity prevention program for a high risk population, specifically low-income families with preschoolers. SEEDS is a family-based prevention program based on self-determination theory. The program focuses on two childhood outcomes: increasing the self-regulation of caloric intake and increasing children’s willingness to try new foods. For each week of this seven-week program, groups of mothers attend a session with a parent educator, children attend a session with two preschool teachers, and the mother and child participate in a family session. Methods: The program is currently being evaluated in a low-income, Latino sample through a randomized, controlled trial design at two sites (Houston, TX and Pasco, WA) with assessments obtained at pre-, post-, 6 months post-, and 12 months post-program. Child assessments include taste preferences, caloric compensation, and Eating in the Absence of Hunger. Parent assessments include parent reports of feeding, acculturation, child eating behaviors, child food preferences, and child intake. Height and weight are also measured. To date, a total of 188 families (98 prevention and 90 control participants) have participated in the program. Programs and data collection will continue at each site through 2016. Results: Preliminary analyses on pre- and post-test assessments showed promising results. Parent-reported responsiveness during feeding (being responsive to their child’s individual differences) was significantly improved from pre-test to post-test for prevention parents compared to controls. Parent-reported monitoring, autonomy promotion, promoting internal control of eating, and offering new foods were also significantly or near significantly improved for prevention parents. In addition, parent-reported pressuring the child to eat was significantly reduced for prevention parents. Discussion: Few comprehensive obesity prevention programs currently exist that focus on child self-regulation of eating, the exploration of novel foods, and the role that parents play in the socialization of child eating behaviors. The SEEDS program is one such prevention program.
The final results for the efficacy trial with Latino families will be available for conference presentation.

**SO.14 Methods in nutrition and physical activity (Sidney)**

RELATION BETWEEN CHANGES IN MODERATE-TO-VIGOROUS INTENSITY PHYSICAL ACTIVITY AND CHANGES IN ADIPOSEITY DURING CHILDHOOD AND ADOLESCENCE USING QUANTILE REGRESSION.  
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Purpose: Examine differences in associations between changes in moderate-to-vigorous intensity physical activity (MVPA) and changes in adiposity by weight status across childhood and adolescence. Methods: Participants were recruited as part of the longitudinal Gateshead Millennium Study. The Gateshead Millennium Study is a contemporary cohort which is socio-economically representative of North-East England. Physical activity and body composition measures were taken at age 7y (n=502), 9y (n=506), 12y (n=420) and 15y (n=306). Participants wore an ActiGraph GT1M and accelerometer epochs were classified as MVPA when recorded counts were \( \geq 574 \) counts/15s. Time spent in MVPA was calculated as hours spent in MVPA. Weight and height were measured using standardised methods and fat mass was measured using bioelectrical impedance. Body mass index (weight/height\textsuperscript{2}; BMI) and fat mass index (fat mass/height\textsuperscript{2}; FMI) were calculated. Associations of changes in time spent in MVPA with changes in BMI and FMI were examined by weight status using quantile regression analysis. Results: BMI and FMI increased and MVPA decreased with age across all percentiles. Participants classed in the lower percentiles of BMI increased their BMI by less than those in the highest percentiles (14.5; 15.1; 16.4; 18.3 kg/m\textsuperscript{2} in 10th percentile versus 20.01; 22.2; 25.4; 28.6 kg/m\textsuperscript{2} in 90th percentile at age 7, 9, 12 and 15y respectively). An increase in MVPA was associated with decreased FMI for all percentiles and in BMI at the 50th, 75th and 90th percentile, independent of sex and sedentary time. The association between change in MVPA and change in BMI was stronger in the higher than lower percentiles (e.g. increasing MVPA by 1hr/day was associated with a decrease in BMI of 0.94kg/m\textsuperscript{2} and 2.73kg/m\textsuperscript{2} over the 8 year period at the 50th and 90th BMI percentile, respectively). Discussion and Conclusions: In this study increased MVPA was associated with decreases in FMI and with BMI at higher BMI percentiles. The association between adiposity and MVPA was stronger at higher percentiles. This study highlights an important target population, children in the higher adiposity percentiles at age 7y, for intervention studies to focus on and reduce the impact of age-related changes in MVPA on adiposity.

**6473**

THE IMPACT ON ESTIMATION ERROR OF AN AUGMENTED REALITY TOOL TO GUIDE THE SERVING OF FOOD  
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Purpose: Accurate estimation of recommended food serving sizes is a difficult task, with visual cues considered important mediators of portion size. Technology-based aids may assist consumers when serving and estimating food portions. The current study evaluated the usability and impact of a novel augmented reality food serving tool, ServAR, on the estimation error of standard food servings. Methods: Participants were randomised into one of three groups: 1) no information or aid (control); 2) Verbal information on standard serving sizes; or 3) ServAR, an aid which overlayed virtual food servings over a plate using a tablet computer. Participants served standard servings of nine foods (broccoli, carrots, cauliflower, green beans, kidney beans, potato, pasta, rice, and sweetcorn) using validated food replicas. Wilcoxon signed-rank tests compared median served weights of each food to reference portion weights. Percentage error was used to compare the estimation accuracy between the three groups. All participants completed a usability test on ServAR by using the tool to guide the serving of one randomly selected food. Results: Ninety adults (78.9% female; 25.9±4.3 years; BMI 24.2±4.8 kg/m\textsuperscript{2}) completed the study. The median servings were significantly different to the reference serves for eight foods in the information only group and seven foods for the control group, compared to five foods for the ServAR group. A greater number of estimations made using ServAR were within \( \pm 10\% \), \( \pm 25\% \), and \( \pm 50\% \) of the reference portion (30.7%, n=83; 65.2%, n=176; 90.7%, n=292).
either a paper logbook, a Web 1.0 (10,000 steps), or a Web 2.0 (WALK 2.0) physical activity intervention, all younger ($M$) adults had more access to and engagement with Web 2.0 intervention features when compared to younger adults. Therefore the aim of this study was to compare interventions with traditional Web 1.0 features. The percentage of older adults using Web 2.0 applicat

Objective Web

DIET@NET project aims to provide a central resource where researchers can identify, compare and access appropriate dietary assessment tools (DATs), through the Nutritools.org website. The purpose of this study was to identify validated DATs that can be used in UK population studies to be eligible for inclusion on Nutritools.org. Methods: A systematic review of systematic reviews was conducted searching 7 electronic databases. To be included, systematic reviews had to have a comparative analysis on validated DATs that measured some aspect of food or nutrient intake. DAT papers were reviewed to determine eligibility. Data on the identified DATs were extracted from the original papers. Cross-checking with other resources was conducted to ensure no validated DATs were missed. If not provided, results for comparison were calculated based on the published data. Results: From 51 systematic reviews identified, 63 UK validated DATs were eligible for Nutritools.org. Additionally, >1500 non-UK papers were found, which will be reviewed in the future. The majority of the UK DATs were FFQs ($n = 25$), with 45 of the DATs being validated in adults and 13 in children. DAT comparison proved challenging due to the different analytical approaches used. Forest like plots have been produced to allow for visual comparison of statistical data between the DATs. For example, comparing the statistical data for 9 DATs validated for energy intake in children demonstrates moderate variation in mean difference between the DAT and the reference tool (range: $-172$ to $255$ kcal difference), however the limits of agreement for most of the DATs are at least $+/-500$kcal. Conclusion: The review has collated validation evidence on DATs identified from the systematic reviews into one place, which when provided online, will be a useful resource for researchers to compare available DATs. The analysis has developed new approaches to compare DATs and has presented this visually for the first time. This could be a useful aid to researchers in selecting suitable DATs.

THE EFFECTIVENESS OF A WEB 2.0 PHYSICAL ACTIVITY INTERVENTION IN OLDER ADULTS – A RANDOMISED CONTROLLED TRIAL

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Objective Web-based physical activity interventions with advanced interactivity and connectivity through Web 2.0 features (e.g. social networking and blogs) have much potential to improve engagement when compared to interventions with traditional Web 1.0 features. The percentage of older adults using Web 2.0 applications is lower than younger adults, but is quickly rising. It is likely that older adults will engage differently with both Web 1.0 and Web 2.0 intervention features when compared to younger adults. Therefore the aim of this study was to compare younger (Methods As part of the larger WALK 2.0 trial, 504 Australian adults were randomly assigned to receive either a paper logbook, a Web 1.0 (10,000 steps), or a Web 2.0 (WALK 2.0) physical activity intervention, all
participants received a pedometer. The Web 2.0 intervention included a personalised homepage, social networking, newsfeeds and blogs. Moderate to vigorous physical activity (MVPA) were measured using Actigraphs at baseline 3, 12 and 18 months. Website usage, satisfaction, and usability were also measured. Generalised linear models and linear mixed models were used to test for interactions between intervention groups, age groups. 

Results Participants spent longer on the Web 2.0 compared to the Web 1.0 intervention from baseline to 3 months and this difference was greater in the older age group (older adults' between intervention difference in minutes per week=9.0, 95% CI= 3.6-14.3, p=.047) Further, the Web 2.0 program was more effective in terms of physical activity changes from baseline to 3 months, and this difference was greater in older adults (older adults' between intervention difference in minutes per day=11.9, 95% CI= 3.8-19.9, p=.006). Conclusions Results demonstrated that the Web 2.0 intervention was more engaging and effective than the Web 1.0 intervention, particularly in older adults. Future web-based interventions targeting older adults should include Web 2.0 features to improve website usage and physical activity outcomes.

THE IMPACT OF TRANSPORT MODE SHIFTS ON TRANSPORT-RELATED PHYSICAL ACTIVITY: A SIMULATION STUDY BASED ON RANDOM FORESTS

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Background: Physical inactivity is widely recognized as one of the leading causes of mortality. This study develops a simulation approach to evaluate the potential impact of transport mode shifts on physical activity estimated by accelerometer data. Methods: Based on the Global Transport Survey (2010, n = 21332) and on the RECORD GPS Study (2012–2013, n = 229) from the French region of Paris. The mode shifts included promoting walking, biking, or public transport and discouraging private motorized modes. Random forest models were used to evaluate the impact of the transport mode shifts on physical activity. Results: Promoting walking and discouraging private motorized modes were the most effective mode shifts, with a gain of 6 minutes of moderate to vigorous physical activity (MVPA) per day for the most ambitious scenarios. Shifts towards biking or public transport was less effective (3 minutes of MVPA), due to a low prevalence of biking trips and reverse effects of public transport replacing walking trips. Conclusions: Successful transport interventions may contribute to increase physical inactivity in adults. The simulations suggest that public transport should be explicitly promoted as an alternative for private motorized transport, to limit reverse effects.

SO.15 Physical activity and sedentary behavior environments in children (Salon B)

THE RELATIONSHIP BETWEEN OVERWEIGHT AND OBESITY IN 10-11 YEAR OLDS AND THE OUTDOOR ENVIRONMENT IN NORTH EAST ENGLAND.

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Purpose: Relatively little is known about neighbourhood-level health associations in young people England. While rates of childhood obesity appear to have stabilised in recent years, over a third of children are currently overweight or obese. This study – Children’s Neighbourhood Environment Study (CNES) aimed to identify physical environment correlates and mediating factors of PA, dietary intake and resultant weight outcomes. Methods: CNES employed a cross-disciplinary, mixed methods approach comprising focus groups, participant-reported PA and diet behaviours, participant and parent reported neighbourhood environment perceptions, objective and subjective neighbourhood environment measurement and appraisal. Findings: Physical activity showed a positive association with park and green space access and aspects of street/road measurement, but inverse association with mixed land uses. Association with other neighbourhood features did not reach statistical significance. Dietary intake showed no
statistically significant positive association with neighbourhood environment. Elevated weight status was associated with mixed land use and a lack of cycling facilities, but no other associations. Conclusions: While some findings were equivocal CNES does implicate the neighbourhood environment in enabling and disabling PA behaviours and weight outcomes. Dietary behaviours require more consideration. CNES identifies strategic areas for health intervention at this age and supports the call for 'whole systems approaches' to tackle obesity.

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IS THE PERCEIVED OR OBJECTIVE NEIGHBOURHOOD ENVIRONMENT ASSOCIATED WITH PHYSICAL ACTIVITY AND SEDENTARY TIME IN NZ ADOLESCENTS?

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Background: Evidence is constantly accumulating of associations between neighborhood built environments and physical activity (PA) in adults, but few studies have investigated associations with PA and sedentary time (ST) in adolescents. Objectives: We estimated the strength of association of GIS-determined and perceived walkability components of individual residential buffer zones with accelerometer- assessed moderate-to-vigorous physical activity (MVPA) and ST. Methods: The Built Environment and physical Activity in New Zealand adolescents (BEANZ) study was conducted in two cities (Auckland and Wellington) in New Zealand during the 2013-2014 academic school years. The exposure measures were GIS-based and perceived walkability components for residential buffers of 250 m to 2 km radii. Data were analyzed using Generalized Additive Mixed Models in R. Results: Data were analysed from 522 participants (aged 15.78 ± 1.62; 45% male). Participants accumulated ~1.9 hr/day of MVPA and ~5.9 hr/day of ST during accelerometer wear-time (13.8 hr/day). There were significant positive associations with the composite subjective (perceived land use mix-diversity, street connectivity and aesthetics) and objective (residential density and number of parks within 2 km distance from home) environmental indices of activity-friendliness with MVPA. No significant objective environmental correlates of ST were found. The composite subjective environmental index of non-sedentariness, consisting of perceived land-use mix-diversity, street connectivity, aesthetics, pedestrian/automobile traffic safety, minus values of perceived physical barriers to walking was linearly negatively related to ST. Conclusions: There is stronger evidence to indicate a positive association between both perceived and objective neighbourhood environment features with adolescent MVPA compared to associations with ST.

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URBAN MOVEABILITY AND PHYSICAL ACTIVITY IN THE TRANSITION FROM CHILDHOOD TO ADOLESCENCE.

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Purpose Physical activity (PA) is one of the major protective behaviors to reduce the risk for non-communicable diseases. Positive effects of the urban built environment are well investigated, although evidence of this association is mostly based on cross-sectional studies. The present study aims to investigate the longitudinal associations between the built environment and PA of children and adolescents using data of the IDEFICS / I.Family cohort. Methods Spatial data were collected in six study regions of three countries, Germany, Italy, and Sweden. In these regions, 791 children and adolescents aged 2 to 16 years old participated in this sub-study, who provided at least two accelerometer measurements from baseline and first follow-up (IDEFICS study) or second follow-up (I.Family study) with in total 1,471 observations. In network-dependent neighborhoods, a moveability index was calculated including residential density, land use mix, street connectivity, and availability of public transport and public open spaces (POS). Trajectories of moderate-to-vigorous physical activity (MVPA) as well as light physical activity (LPA) were modeled using linear mixed models accounting for repeated measurements nested within individuals by
means of a random intercept and random linear slope for age (centered at 9 years). Environmental variables were included as fixed effects and interacting with age. All models were stratified by sex and adjusted for BMI z-score, maximum ISCED level of parents, valid wear time, season, and region. Results: Estimated trajectories revealed a decline of 30% and 45% in MVPA and of 52% and 55% in LPA over age for boys and girls, respectively. Trajectories for highly moveable areas showed slightly smaller decline for MVPA and LPA in boys (16.9%, 1.2%) and in girls (2.8%, 4.4%) compared to low moveable areas. Comparing trajectories for high and low scores, street connectivity showed a protective effect on MVPA and LPA in boys (30.2%, 4%) and girls (16.2%, 6.7%). POS availability positively influenced MVPA in boys (47.2%), while land use mix inversely affected MVPA (25.7%) and LPA (26.2%) in girls. Conclusion: Built environment characteristics are important determinants of PA and revealed a supportive effect that attenuates the reduction of PA in the transition from childhood to adolescence.

EFFECTS OF ACTIVATING SCHOOLYARDS: CHILDREN’S PERCEPTIONS OF THEIR RENEWED SCHOOLYARDS

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PURPOSE: There is no consistent evidence to guide schoolyard interventions promoting physical activity. The Activating Schoolyards Study is a quasi-experimental schoolyard intervention study aimed at investigating the impact of renewed schoolyards on 10-15-year-old children’s recess physical activity. The effect of the interventions on physical activity was assessed objectively and subjectively. Previous studies have used objective measurements to evaluate schoolyard interventions, yet there is a need to evaluate these interventions by employing a combination of subjective and objective measures to get a broader knowledge base. Drawing on our qualitative dataset, the aim of this study was to investigate children’s perceptions of the effect of their renewed schoolyards.

METHODS: Drawing on a phenomenological approach data was collected through ten focus groups at five Danish intervention schools. Two gender-segregated focus groups at each school, including in total 57 fourth to eight graders (28 girls), were conducted. The focus groups included go-along interviews in the schoolyard, and a post-it note activity. The data was collected between April and June 2016 (six months after intervention). The children’s recess behavior was observed before and after intervention (510 minutes of recess were observed). A content analysis of the post-it notes was used and verified by a thematic analysis of transcripts from the go-along interviews. FINDINGS: Most children perceived the intervention as positive for their schoolyard as it provided more variation in play facilities and improved the appearance. However, at most schools the children experienced that the renewed schoolyards were dominated by the youngest children (under 10-year-old). To minimise crowding some schools had formally restricted access to the renovated areas for older children and allowed them to leave the school area during recess. Furthermore, most of the children felt that the renewed schoolyard areas were far from their classrooms. CONCLUSIONS: Renewing the schoolyard is not enough to stimulate physical activity. Schools have to support the older children’s recess physical activity on an organisational level by encourage them to use the schoolyard and renewing schoolyard areas close to their classrooms. This follow-up study of children’s perception of the renewed schoolyards can aid development of future schoolyard interventions.

CONTEXT MATTERS! SOURCES OF VARIABILITY IN WEEKEND PHYSICAL ACTIVITY AMONG FAMILIES: A REPEATED MEASURES STUDY

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Purpose: There is limited research detailing the characteristics of weekend physical activity (PA) among families. This study used a repeated measures design and multiple data sources to explore the variability and characteristics of weekend PA among families. Methods: Families (including a ‘target’ child aged 9-11 years, their primary caregiver(s) and siblings aged 6-8 years) were recruited through primary schools in Liverpool, UK. Participants completed a paper-based PA diary and wore an ActiGraph GT9X accelerometer on their left wrist for up to 16 weekend days. ActiGraph .csv files were analysed using the R-package GGIR version 1.1-4. Mean minutes of moderate-to-vigorous PA (MVPA) for each weekend of measurement were calculated using linear mixed models, and variance components were estimated for participant (inter-individual), weekend of measurement, and residual
error (intra-individual). Intraclass correlation coefficients (ICC) were calculated from the proportion of total variance accounted for by inter-individual sources, and used as a measure of reliability. Diary responses were summed to produce frequency counts. To offer contextual insight into weekend PA among family units, demographic, accelerometer, and diary data were combined to form two case studies representative of low and high active families. Results: Twenty-five participants from 7 families participated, including 7 'target' children (mean age 9.3 ± 1.1 years, 4 boys), 6 siblings (mean age 7.2 ± 0.7 years; 4 boys) and 12 adults (7 mothers and 5 fathers). There was a high degree of variability in target children's (ICC = 0.55), siblings (ICC = 0.38), and mothers' MVPA (ICC = 0.58), but not in fathers' MVPA (ICC = 0.83). Children's weekend PA was mostly unstructured in nature and undertaken with friends, whereas a greater proportion of parents' weekend PA was undertaken alone in structured settings. The family case studies demonstrated that in the selected cases MVPA levels and variability across weekends were contingent on mode of PA participation. Conclusions: These novel findings enhance understanding of the variability and characteristics of weekend PA among family units. The study demonstrates the utility of PA diaries in conjunction with accelerometers to provide understanding of the mode and contexts of out-of-school and family-based PA.

SO.16 Physical activity in preschoolers (Saanich 1)

RELATIONSHIP BETWEEN PHYSICAL ACTIVITY, SELF-REGULATION AND COGNITIVE SCHOOL READINESS IN PRESCHOOL CHILDREN
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Purpose: Evidence of the beneficial effect of physical activity on neural and cognitive functioning has been found in adults and older children. However, there is limited evidence on how physical activity affects cognitive development during early childhood. The current study investigates the potential benefits of physical activity on self-regulation and cognitive school readiness in young children in Perth, Western Australia. Methods: Participants (56 preschoolers 3-5 years) were recruited from the Play Spaces and Environments for Children's Physical Activity (PLAYCE) Study. Physical activity was measured using 7day accelerometry and classified into mean mins/day of total physical activity and MVPA. Self-regulation was measured using the Head Toes Knees and Shoulders (HTKS) task and cognitive school readiness was measured using the Bracken School Readiness assessment (3rd Edition). Multivariate regression analyses adjusting for child age, sex, SES and clustering at the childcare centre level were conducted. Results: After adjustment, total mins/day of physical activity was significantly associated with self-regulation (1-β=0.2, p Conclusions: Physical activity, especially MVPA, was positively associated with self-regulation and cognitive school readiness in preschool children. The pathway between young children's physical activity and cognitive school readiness may be mediated by self-regulation. These findings provide evidence that physical activity may have a beneficial influence on self-regulation and cognitive school readiness in preschool children and highlight the importance of physical activity for other behavioural and developmental outcomes in young children. Further research is required to understand the causal pathways between physical activity, self-regulation and executive function in children.

A PROGRAM EVALUATION OF THE SUPPORTING PHYSICAL ACTIVITY IN THE CHILDCARE ENVIRONMENT (SPACE) INTERVENTION
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Objective: The SPACE intervention aims to improve the physical activity (PA) levels of young children in centre-based childcare. The SPACE study is the first Canadian study to modify outdoor playtime during childcare hours to include shorter, more frequent outdoor periods. A process evaluation was conducted to assess the feasibility of the SPACE intervention. Methods: The 8-week intervention included: 1. PA-related training for early childhood
MATERNAL REPORTED PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR IN INFANTS (3-12MONTHS): PATTERNS, CORRELATES AND PREDICTORS IN A SOUTH AFRICAN POPULATION.

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Objective: Rapid urbanization in South Africa has resulted in physical inactivity and a high prevalence of overweight and obesity in children; yet there is little research examining physical activity and sedentary patterns in infants. Methods: 124 infant and mother pairs were recruited through the Chris Hani Baragwanath antenatal clinic in Soweto, Johannesburg. Infants were 3 (n=40), 6 (n=22), or 12 (n=62) months old. Infant height and weight were measured, and mothers were asked a series of previously validated questions regarding their infant's physical activity and sedentary behaviour; beliefs about physical activity; and access to play equipment in the home environment. Data were stratified by age, and associations were tested using linear and multiple regressions. Results: There were no sex differences and data was therefore pooled. Mean weight was 6.12(0.72)kg at 3mo, 7.93(1.11)kg at 6mo, and 9.19(1.47)kg at 12mo. Only 9% of infants met the prescribed recommendation of no TV time per day. Mean TV time was 82min/day, 86min/day, and 98/min/day at 3, 6, and 12mo, respectively. Time spent restrained in a chair or stroller was high (301min/day at 3mo, 376min/day at 6mo, and 286min/day at 12mo); as was time spent strapped to mother's back (52min/day, 66min/day, and 109min/day, respectively). Time spent free to play (outside and on the floor) was 128min/day, 370min/day, and 340min/day, respectively. At 3mo, access to play equipment was associated with sedentary time (β=−27.0, p=0.02); while at 6mo maternal concerns about the safety of floor play (β=−217, p=0.06) showed a trend towards predicting sedentary time. At 12mo, weight positively (β=171, p=0.02) and height negatively (β=−37.0, p=0.02) predicted sedentary time. No factors predicted active time at any age. Conclusion: In conclusion, infants in this study spent a significant amount of time sedentary or restrained, and were not meeting the zero screen time recommendation. However, time spent active and unrestrained was also high. Maternal beliefs and access to play equipment was associated with sedentary time, but not active time. The first year of life could thus be a critical period for maternal education interventions in order to prevent setting up unhealthy sedentary behaviours and weight gain trajectories in children.

AN INTERVENTION TO FACILITATE THE IMPLEMENTATION OF OBESITY PREVENTION POLICIES AND PRACTICES IN CHILDCARE SERVICES: A RANDOMISED CONTROLLED TRIAL

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Purpose Supporting childcare services to implement policies and practices which encourage children to eat healthily and be physically active can contribute to a reduction in the health burden of excessive weight gain in childhood. Few trials, however, have been conducted to examine the strategies that may be most effective in improving the implementation of healthy eating and physical activity policies and practices in this setting. The aim of this study was to assess the effectiveness of a multi-component intervention in increasing the implementation of obesity prevention policies and practices by childcare services. Methods A randomised controlled trial was conducted in 128 childcare services. The 12-month intensive intervention included the following strategies: securing executive support and staff consensus, staff training, academic detailing, tools and resources, support staff, monitoring and feedback, and communications strategies. Intervention effectiveness was assessed via telephone surveys with service managers conducted at baseline and post-intervention. Child dietary intake and physical activity levels were also assessed via direct observation in a random sub-sample of services at follow-up. Results/findings Post-intervention, 44% of intervention group childcare services reported implementing all seven of the targeted obesity prevention policies and practices, which did not significantly differ from control group childcare services (37%, p=0.44). Relative to the control group, a significantly larger proportion of intervention group services reported having a written nutrition and physical activity policy (p=0.05) and providing adult-guided activities to develop fundamental movement skills (p=0.01). There were no significant differences between groups at follow-up on measures of child dietary intake or physical activity. Conclusions The study contributes important information evidence on the effectiveness of intervention strategies to facilitate population-wide implementation of obesity prevention policies and practices in childcare services. Key learnings included the difficulty of implementing multiple changes to childcare services environments simultaneously. Further, there is a need for sound measures of implementation constructs to enable the development of more efficient and effective interventions.

INTERVENTIONS TO INCREASE PHYSICAL ACTIVITY IN 0-5 YEAR OLD CHILDREN: A META-ANALYSIS AND REALIST SYNTHESIS

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Objective: Over the past decade, many intervention programs have been implemented in an attempt to increase young children’s (birth-5 years old) physical activity levels. Yet there is little overall understanding of how effective these programs are and which components are the most efficacious. The present study systematically reviews the evidence on the effectiveness of physical activity interventions for children 0 - 5 years of age. The meta-analyses will determine the overall effectiveness of the interventions conducted to date, whilst the realist synthesis will provide evidence on ‘what works, for whom, why, and in what circumstances’. Methods: A systematic search in Embase and EBSCOhost was conducted in August 2016. Inclusion criteria were: published in a peer-reviewed English language journal; randomised or controlled trial design; aim to increase children’s physical activity levels; report on physical activity in children between 0 and 5.9 years at baseline and post-intervention; report objectively assessed physical activity (any intensity or steps) as an outcome measure. Meta-analyses were conducted using Review Manager V5.3 and included those studies reporting changes in light-intensity physical activity (LPA) and moderate- to vigorous-intensity physical activity (MVPA). The realist review was conducted following Realist And MEta-narrative Evidence Syntheses: Evolving Standards (RAMESES) procedures. Results: The meta-analyses comprised 19 studies for MVPA and 7 studies for LPA. Preliminary analyses found a small but significant intervention effect for MVPA (Z = 3.93, p

The realist review (n=28 studies) identified a number of key strategies (e.g., skill training, ongoing support from professionals) and mechanisms (e.g., changing physical activity supportive practices of caregivers) that appeared beneficial for improving young children’s physical activity levels. Conclusions: Early years physical activity interventions conducted to date have been effective at increasing MVPA, but not LPA. Researchers, policy makers and practitioners should consider the efficacy of different intervention strategies for different populations groups when designing and implementing intervention programming.
SO.17 Weight management in adults (Saanich 2)

THE EFFECTS OF BREAKFAST CEREAL CONSUMPTION ON OBESEITY RISK OVER 12 YEARS AMONG MID-AGED WOMEN IN THE AUSTRALIAN LONGITUDINAL STUDY ON WOMEN’S HEALTH

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Purpose: The obesity rate among Australian women was 27.5% in 2012. Breakfast cereal consumption is believed to be protective against obesity but the evidence available to support this belief is limited. Therefore, this longitudinal study aimed to investigate the effects of breakfast cereal consumption on the risk of developing obesity (BMI≥30kg/m2) over 12 years among women in the mid-age cohort of the Australian Longitudinal Study of Women's Health (ALSWH). Methods: Data from Survey 3 (S3) to Survey 7 (S7) inclusive, from the 1946-51 born ALSWH cohort were analysed. Dietary data (DQESv2 FFQ) were available at S3 and obesity incidence at S4-S7. Women were excluded if: dietary data were incomplete; they reported existing overweight and obesity cases; or if total energy intake was 20,000kJ. Logistic regression models with survival analyses investigated the association between breakfast cereal intake (yes or no) and incident obesity over 12 years longitudinally. Models were adjusted for: income, area of residency, physical activity, smoking, hypertension, a discrete measure of time and dietary intakes (total energy intake (kJ/day), fibre intake (g/day) and other breakfast cereal consumption). Results/findings: A total of 4143 women were included in the analyses. There were 308 (7.4%) incident cases of obesity. Breakfast cereal intake, regardless of type, was not associated with incident obesity (OR: 0.92; p=0.68; CI: 0.63, 1.35). All-Bran (0.67; p=0.02; CI: 0.48, 0.94), muesli (0.57; p=0.00; CI: 0.43, 0.75) and oat-based breakfast cereal (OR: 0.71; p=0.01; CI: 0.55, 0.90) consumption were associated with a strong and significant reduction in the risk of developing obesity. No other breakfast cereals were associated with a significant reduction in obesity risk. Conclusions: Among mid-age Australian women, All-Bran, muesli and oat-based breakfast cereal consumers, but no other breakfast cereal intake, was associated with a significant decrease in the odds of developing obesity. This effect may be due to a particular profile of All-Bran, muesli and oat-based breakfast cereal consumers that we have not been able to fully adjust for, but these relationships warrant further investigation.

MODIFIABLE RISK FACTORS OF MATERNAL POSTPARTUM WEIGHT RETENTION: AN ANALYSIS OF THEIR COMBINED IMPACT AND POTENTIAL OPPORTUNITIES FOR PREVENTION

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Objective: Postpartum weight retention in the childbearing years can substantially alter a woman’s weight gain trajectory, with several potential contributing factors identified. Most research has relied on women’s recall of pre-pregnancy weight during pregnancy or later, and not considered risk factors in combination. Using measured pre-pregnancy weight, this study aimed to examine the associations of maternal postpartum weight retention with parity, pre-pregnancy BMI, excessive gestational weight gain (GWG), maternal serum vitamin D concentration and dietary Glycaemic Index in early and late pregnancy and breastfeeding duration, including analysis of the combined impact of potentially modifiable risk factors. Methods: The Southampton Women's Survey (SWS) is a prospective cohort of 12583 non-pregnant women aged 20-34 years in Southampton (UK) who were assessed prior to pregnancy, with those who subsequently became pregnant (N=3158) followed up in early and late gestation, and
after delivery. The exposure variables of interest were examined in relation to postpartum weight retention at six months through univariate and mutually-adjusted multivariate linear regression models (backward elimination stepwise regression), adjusting for potential confounding variables. Modifiable risk factors found to be independently associated with postpartum weight retention in the mutually-adjusted multivariate models were also examined as a risk factor score using linear regression. Results: Compared with pre-pregnancy weight, 73% of women retained some weight at six months [mean (SD): 3.5 (6.2) kg]. In the adjusted multivariate model (n=1564), women who were primiparous, had a lower pre-pregnancy BMI, excessive GWG, lower early pregnancy vitamin D concentration and breastfed for less than six months had greater weight retention six months postpartum (p<0.05). Each additional modifiable risk factor (excessive GWG, low vitamin D concentration in early pregnancy (and short breastfeeding duration (risk factor score 0-3), women retained an additional 2.49 kg (95% CI: 2.16, 2.82; p). Conclusions: Having a greater number of modifiable risk factors was associated with greater weight retention six months postpartum. Primary prevention initiatives supporting women to target these risk factors in the years prior to, during and after pregnancy could impact on their weight gain trajectory and later risk of adverse weight related outcomes.

**Impact of Timing of Food Intake on Energy Intake and Weight Loss in Different Weight Loss Responders**

**Introduction:** The timing/distribution of food intake is implicated in obesity and weight loss success. Objective: This study aims to assess the associations among timing/distribution of food intake, energy intake and weight loss in overweight/obese individuals who experienced different levels of weight loss. Methods: A pooled cohort of obese/overweight individuals (n=97; aged 39.0±8.6 years; BMI 33.1±3.6 kg/m²; weight loss -3.8±2.9 kg) who participated in a 12-16-week energy restriction intervention (500-700 kcal/d) were included in this study. Men and women were categorized into tertiles of weight loss [i.e., high (-6.8±1.8 kg), medium (-3.7±0.9 kg) and low (-0.5±1.7 kg) weight loss]. Energy intake and distribution of food intake were assessed using a three-day food record at baseline. Group differences for baseline characteristics, anthropometric variables and dietary intakes were assessed using Chi-square and general linear model in men and women separately. Pearson’s correlations were used to assess the association between timing/distribution of food intake from three periods of the day (i.e, morning: breakfast and morning snack; midday-afternoon: lunch and afternoon snack; evening-night: dinner and evening/night snack) with weight loss and total energy intake. Results: Percent energy intakes from the three periods of the day were not associated with weight loss in both men and women. No difference was observed in the timing/distribution of energy intake among weight loss groups in both men and women. However, in the low weight loss group, percent energy intake from dinner and evening snack was positively associated with total energy intake in women (r=0.53, P=0.02), but not in men. Percent energy from dinner and evening snack was unrelated to total energy intake in the medium and high weight loss groups. Conclusions: The positive association between evening energy intake and total energy intake in women who lost less body weight suggests that consuming foods earlier in the day may be of benefit, particularly in those resistant to weight loss. Other studies are needed to evaluate if an earlier distribution of food intake could improve appetite control and reduce energy intake among weight loss resistant individuals.

**How do men with varied success in long-term weight control talk about the role of other people in their attempts to maintain long-term weight loss?**

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Purpose: Attempts to lose weight and maintain weight loss long-term happen within social environments. It is important to understand how people’s attempts to maintain behaviour changes long-term following weight management interventions are influenced by those around them. Football Fans in Training (FFIT), a weight management and healthy living programme for men aged 35-65 with BMI ≥28 kg/m², includes strategies to encourage participants to draw on social support to make and maintain lifestyle improvements. In a 3.5-year follow up of participants in a randomised controlled trial (RCT) of FFIT, 32.0% had sustained ≥5% weight loss. In this paper we investigate what men with varied success in long-term weight control said about the role(s) of others in their attempts to sustain weight loss. Methods: As part of a mixed methods longitudinal cohort study of RCT participants, qualitative interviews were conducted with 70 men purposively selected to reflect different long-term weight trajectories. Interviews were transcribed verbatim and analysed thematically using a systematic framework approach. Results: Regardless of success in long-term weight control, men’s accounts revealed the importance of family members, other FFIT participants, friends and work colleagues in their continued efforts to maintain a healthy lifestyle. Most spoke about other people’s influences in positive ways, describing helpful practical (e.g. reminding them how to eat healthily) and emotional (e.g. providing motivation or giving compliments) acts of support. Men also spoke about ways in which the behaviour changes they had made positively affected those around them, such as motivating family/friends/colleagues to adopt healthier lifestyles and spending more time being active with children/grandchildren. A minority of men, often those less successful in long-term weight control, described how a lack of support from family and others had undermined their attempts to manage their weight long-term. Conclusions: Multiple sources of social support can help alleviate the continued challenges inherent in maintaining behaviour changes to manage weight long-term. Further research should investigate how the social environment of participants in weight loss interventions exerts influence over behaviour change processes, and how they can develop strategies to access the social support they need.

CLUSTERS OF MULTIPLE LIFESTYLE-RELATED BEHAVIOURS ASSOCIATED WITH EXCESS BODY WEIGHT IN EUROPEAN ADULTS: A PROFILE REGRESSION APPROACH
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Purpose: Weight status is associated with various lifestyle-related behaviours, and these behaviours are potentially intercorrelated. This study aimed to investigate the clustering of a large set of lifestyle-related behaviours with overweight in adults using a profile regression approach. Methods A cross-sectional survey (n=6037) was conducted in 60 urban neighbourhoods in 5 European regions (in Belgium, France, Hungary, the Netherlands, and United Kingdom) between February and September 2014. Self-reported data were collected on socio-demographics, weight, height, sleep duration, smoking status, alcohol consumption, eating habits (frequency of consumption of fruit, vegetables, sweets, fast-food, sugar-sweetened beverages), sitting time (while travelling, watching television, using a computer and doing other leisure time activities) and transport-related and leisure time physical activity. A Bayesian profile regression approach was applied to overcome the analytical difficulties created by multiple correlated lifestyle-related behaviours. In this approach, both lifestyle-related behaviours and overweight are used jointly to form the clusters and each cluster is associated via a logistic link to overweight taking into account risk factors/confounders (e.g. gender, age, educational level). Results The sex ratio (female/male) was 1.3, mean (SD) age was 51.8 (16.4) years, and 46% of the adults were overweight (BMI≥25 kg/m²). Significant correlations were observed between lifestyle-related behaviours, with the highest correlation found between fruit and vegetable consumption (r=0.42, p Conclusions Examining the joint effect of lifestyle-related behaviours on overweight led to the identification of several risk clusters. The data indicated that various combinations of lifestyle-related factors
are related to a same outcome. These findings emphasize that a comprehensive approach, taking into account multiple lifestyle-related behaviours, is important to tackle obesity.

SO.18 Physical activity and sedentary behavior in people with chronic disease (Esquimalt)

“BAD GENES LOAD THE GUN, BUT LIFESTYLE PULL THE TRIGGER”: VIEWS ON FOOD, ACTIVITY AND RISK OF TYPE 2 DIABETES AMONG UK BLACK CARIBBEANS IN THE FOODEY STUDY

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Purpose: There is a three-fold excess risk of type 2 diabetes among Black Caribbeans in the United Kingdom (UK) compared to the majority population. Prior to designing effective culturally tailored prevention activities to address this disparity, underpinning work is needed to understand the social context of peoples' beliefs and values relating to food and physical activity (PA). The few existing studies in this area lack diversity within samples and focus on those who already have diabetes. The aim of this study was to explore views on diet and PA behaviours and risk of type 2 diabetes among UK Black Caribbeans. Methods: The Food, Diabetes and Ethnicity (FOODEY) study included 49 Black Caribbean men and women aged 24-90 years, with those born abroad originating from five Caribbean islands. Thematic analysis of transcripts from six focus groups and three one-to-one interviews, based on an interpretative phenomenological approach, was used to identify emergent themes. Results/findings: Rich descriptions of food habits highlighted some continuity of 'traditional' Caribbean food culture. Alongside food habits common to the general population, participants' diets regularly included dishes such as rice & peas with fried chicken, or for post-retirement participants' individual foods such as plantain. While family history was considered a key risk factor, "West Indian" food habits were viewed as detrimental in the British setting and there was a clearly articulated view of the interaction between "bad genes" and unfavourable dietary and PA habits. The perception that diabetes risk was greater in the UK than in home countries was widely held, contributed to by the lack of physical activity, cold weather and stress due to racism experienced in the UK. The Caribbean where "you don't have the same environment, it's not the same" was deemed a suitable setting for consuming traditional foods and high sugar intakes, for example, mitigated by active living, organic vegetable consumption, and the hot climate. Conclusions: Complex lay explanatory models for the role of food and PA habits in diabetes risk, some aspects of which aligned with biomedical models while others differed, have implications for interventions addressing type 2 diabetes among UK Black Caribbeans.

TRAJECTORIES OF IMPLEMENTATION FIDELITY SCORES OF A PHYSICAL ACTIVITY PROMOTION PROGRAM IN REHABILITATION CARE

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Purposes: The aims of the study were: 1) to identify groups of rehabilitation institutions with similar implementation fidelity trajectories over a three-year implementation process of a physical activity promotion program, 2) to determine which institutional and professional characteristics are associated with the identified groups and 3) to investigate whether changes in patient outcomes (physical activity behavior) are different between these groups. Methods: Rehabilitation professionals in seventeen institutions filled in three surveys about the implementation of the physical activity promotion program within their institution (T0: 2013, N=69; T1: 2014, N=59; T2: 2015, N=66). Fidelity scores were calculated based on survey questions about the main elements of the program. A hierarchical cluster analysis based on Ward’s method was conducted on the implementation fidelity scores at different time points. Mann-Whitney-U tests were performed to determine differences in institutional and
professional characteristics between identified groups of institutions. Similarly, regression analyses were conducted to determine differences in patient outcomes between identified groups. Results: Three fidelity trajectories were identified: group 1: 'Stable high fidelity' (N=9), group 2: 'Moderate improving fidelity' (N=6), group 3: 'Instable fidelity' (N=2). 'Stable high fidelity' institutions were in general 'smaller', 'early adopters' and integrated the program more often as a standard part of the rehabilitation treatment. At the start and end of the implementation process, support from physicians, physiotherapists, sports therapists, professionals' appreciation about the program and program's compatibility were rated more positive by professionals working in 'stable high fidelity' institutions compared to the 'moderate improving fidelity' institutions (p Conclusions: This study illustrates a new and unique approach to gain insight into heterogeneity of the implementation fidelity of a physical activity promotion program in rehabilitation institutions over time. By using this approach, we were able to distinguish institutions that implemented the program with high and moderate fidelity and showed that these institutions differed in institutional size, adoption process, program's compatibility and level of professional's support. However, differences in implementation fidelity scores were not associated with differences in changes of patients outcomes.

GPS-MEASURED TIME WALKING OUTDOORS AND INSULIN RESISTANCE IN ADULTS WITH TYPE 2 DIABETES

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Objective Development of interventions to increase physical activity in people with type 2 diabetes (T2D) require understanding of how daily physical activity is currently achieved. The purpose of this study was to describe outdoor physical activity and insulin resistance in adults with T2D. Methods Participants with newly diagnosed T2D (n=88) in the STAMP-2 (Sedentary Time and Metabolic Health in People with Type 2 diabetes) study wore an accelerometer (Actigraph GT3X+) and GPS receiver (QStarz BT-Q1000XT) for seven days, and provided fasting blood samples for measurement of metabolic parameters. Downloaded accelerometer and GPS data were time-matched, and each 10 second epoch classified as moderate-to-vigorous physical activity (MVPA) if above 325 accelerometer counts, and coded as "indoors" or "outdoors" using satellite signal strength. Hidden Markov models were used to identify outdoor walked journeys from the accelerometer/GPS data. Homeostatic model assessment (HOMA) was used to assess insulin resistance (HOMA-IR) from fasting glucose and insulin concentrations. Linear regression analyses examined the cross-sectional associations between GPS-determined walking and HOMA-IR, adjusting for age, sex, and body mass index. Results Participants (56% male; 58.9 ± 8.1 yrs; BMI 32.1 ± 5.8; HOMA-IR 2.7 ± 1.5) recorded 59.5 ± 19.8 hours of matched accelerometer/GPS data, of which twenty-six percent (15.6 ± 10.0 hours) were outdoors. Nineteen percent (3.0 ± 2.1 hours) of time outside was classified as walking, 21% (3.2 ± 3.2 hours) in vehicles and the reminder was sedentary/low active. Two hours of the walking time was MVPA (70% of total MVPA), with negligible contribution to MVPA from the other outdoor modes. Every additional 30 minutes of walking outdoors was associated with approximately 2.7% lower HOMA-IR score (B: -0.068, 95%CI -0.135, -0.002; p=0.045). No association was seen between time spent sedentary/low active outdoors and HOMA-IR. Conclusions Walking outdoors is associated with higher levels of MVPA in adults with T2D and with greater insulin sensitivity. People in this sample had chosen to walk outside as their main source of MVPA suggesting that promoting walking outdoors was associated with approximately 2.7% lower HOMA-IR, with negligible contribution to MVPA from the other outdoor modes.

EFFECTS OF SUPERVISED AND HOME-BASED EXERCISE PAIRED WITH BEHAVIOURAL SUPPORT IN LUNG CANCER SURVIVORS: A PILOT RANDOMIZED CONTROLLED TRIAL

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Objective: There is a paucity of research investigating the potential of exercise training and behavioural support to improve health-related fitness, quality of life, and exercise participation in lung cancer survivors (LCS). The purpose of this study was to investigate the effects of a novel short-term supervised and home-based exercise program designed to improve muscular strength and facilitate adoption of exercise in LCS. Methods: Sixteen LCS were
recruited from the state cancer registry and randomly assigned to either 12-weeks of supervised and home-based exercise (n=10) or usual care control (n=6). The intervention included twice-weekly supervised aerobic and resistance exercise training, home-based walking, and gradual incorporation of home-based resistance training using a Gymstick. The intervention included a behavioral support pack based on the theory of planned behavior designed to address specific functional, psychosocial, disease-related issues for LCS. Outcomes assessed at baseline and 12-weeks included muscular strength (1-repetition maximum (1RM) for leg press and seated row), functional capacity (6-Minute Walk Test), body composition (DXA scan), fatigue (FACIT-Fatigue), quality of life (Short-Form 36 Health Survey), and self-reported physical activity level (Godin Leisure-Time Exercise Questionnaire). Outcomes were compared between groups using the Mann-Whitney U test and intention to treat analysis was employed. Results: On average, participants were 67 years old (SD 5.9) and 4.1 (SD 2.2) years from diagnosis. The majority had early stage disease (93%), received surgery (93%), and were male (63%). Average adherence to supervised exercise, home-based resistance training, and home-based aerobic exercise was 96%, 63%, and 57% respectively. Post intervention changes in 1RM for leg press (p=0.012) and seated row (p=0.006), as well as self-reported minutes of resistance-exercise training (p=0.048) favoured the exercise group. There were no significant between group differences in functional capacity (p=0.748), lean and fat mass (p's>0.239), fatigue (p=0.067), quality of life (p's>0.097), or self-reported aerobic exercise (p=0.497). Conclusion: Supervised and home-based exercise training was successful at improving muscular strength and home-based resistance exercise participation in LCS. However, lack of changes in functional capacity, body composition, and quality of life suggest that the intervention was not sufficient to improve other aspects of health-related fitness in this population.

PARTICIPATORY CO-DEVELOPMENT OF AN EVIDENCE-INFORMED PHYSICAL ACTIVITY REFERRAL SCHEME FOR INDIVIDUALS WITH HEALTH CONDITIONS

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Purpose. There are >600 exercise referral schemes (ERSs) in the UK, which allow health professionals to refer inactive individuals to a 12-week exercise programme. Equivocal evidence exists in support of ERSs to improve health-related outcome measures. This is in part due to the challenges of conducting controlled trials in “real-world” environments, where policy-maker, practitioner and service-user needs are central. Considering the growing importance of evidence-based practice, alternative research methods are required to ensure ERSs reflect stakeholder needs whilst drawing on appropriate evidence to improve clinical effectiveness. This paper reports on the participatory co-development of an evidence-based ERS (focused on physical activity (PA) behaviour change) for individuals with health conditions. Methods. A PA referral intervention was iteratively developed by a multidisciplinary stakeholder group (commissioners, managers, practitioners, service-users, academics) through a series of meetings and informal communications. Researcher reflections, audio-recordings of meetings and visual resources (e.g. white board notes) were analysed to explore i) factors that must be considered when translating evidence to practice in an ERS setting and ii) facilitators and challenges of conducting participatory research involving multiple stakeholders. Findings. A number of challenges arose when considering how to move away from the traditional “exercise-based” ERS to a holistic intervention that supports PA behaviour change. Interactive discussions focused on who would hold accountability for patient safety, who would provide behaviour change support and how this could be delivered within the current (limited) capacity and resources. Whilst the inclusion of multidisciplinary stakeholders led to disagreements at times, the participatory process allowed crucial problem-solving to take place through which evidence-based components could be “shaped” for feasible implementation in practice. Conclusion. The participatory approach gave ownership to local stakeholders and highlighted process issues that may not otherwise have become apparent. Specifically, findings raised questions about how ERS quality assurance frameworks might shift focus to a broader PA behaviour change approach and how behaviour change support might feasibly be integrated within a cash-strapped public health climate. This study has important applicability to wider public health settings, where there is a need for feasible, cost-effective and sustainable interventions.
Early Career Researcher Invited Talks

Valerie Carson,
University of Alberta, Canada

Chair: Ryan Rhodes

An integration of physical activity, sedentary behaviour, and sleep: New children and youth guidelines and associations with health indicators

Through 2014-2016, a team of Canadian and international experts, in partnership with the Canadian Society for Exercise Physiology, Healthy Active Living and Obesity Research Group, the Conference Board of Canada, the Public Health Agency of Canada, and ParticipACTION, developed the first Canadian 24-Hour Movement Guidelines for Children and Youth: An Integration of Physical Activity, Sedentary Behaviour, and Sleep. These new guidelines emphasize the combined health effects of all behaviours that fall on the movement continuum in a 24-hour period (i.e., light, moderate, and vigorous physical activity, sedentary behaviour, and sleep) and they are the first in the world to take this approach. Therefore, the guidelines represent a paradigm shift around using integrated versus segregated approaches for the promotion of healthy 24-hour movement patterns. This talk will provide a high-level summary of the evidence that informed the new guidelines including four systematic reviews and novel compositional analyses. A detailed overview of the guidelines will also be provided. Furthermore, findings on the proportion of Canadian children and youth meeting the guidelines and associations of meeting the guidelines with health indicators in a large representative sample will be presented. Finally, next steps and future directions will be discussed.

Samantha Harden,
Virginia Tech, USA

Chair: Paul Estabrooks

Research-Practice partnerships for physical activity and dietary health promotion: What, why, how...and does it work?

To have a broad public health impact, effective interventions need to be widely adopted and sustained. In community settings, this translational approach requires buy-in from potential delivery personnel. Delivery personnel consider a number of factors during the decision-making process for intervention adoption and delivery. Rather than a linear approach that assumes interventions previously tested in other conditions will be attractive to intended delivery personnel, an iterative and inclusive approach is recommended. An integrated research-practice partnership (IRPP) is one such approach. An IRPP allows research and practice team members to match interventions with the mission, values, and resources of delivery personnel within a targeted setting. One example of delivery personnel that have a broad reach and are community-based is the Cooperative Extension System (CES). CES is federally funded in the United States, and exists in every state and territory. The CES leverages expertise of Master’s trained
community-based health educators to reach populations of need (e.g., older adults, rural residents, families from low income households). For physical activity and fruit/vegetable consumption efforts in Virginia Cooperative Extension, an IRPP is employed. Through this IRPP, research and practice members engage in a group dynamics principles: interaction and communication, goal setting, establishment of roles and responsibilities. These principles ultimately lead to a sense of cohesion regarding the reach, effect, adoption, implementation, and maintenance of physical activity programs. Successes and pitfalls of this approach will be shared.

**Student Invited Talks**

Jelle Van Cauwenberg  
Ghent University, Belgium

Chair: Greet Cardon

**E-bikes: contributors to active ageing**

E-bikes, bikes with a battery-driven motor providing supporting power only when the cyclist exerts power onto the pedals, are very popular in several countries around the world. E-bikes are particularly popular among older adults (≥ 65 years) with e-bike trips constituting 25% of all Belgian older adults’ bike trips. Despite their popularity, few studies have examined e-bikes’ contribution to active ageing. We aimed to (1) compare older e-bikers’ and conventional bikers’ socio-demographics and health characteristics, (2) examine e-bikers’ purchase motives, purposes of e-bike use and substitution effects of e-bikes and (3) compare e-bikers’ and conventional bikers’ cycling levels. Participants were recruited through a variety of channels and completed an online or an interview-administered survey.

The questionnaire was completed by 1,146 Flemish older adults (84.2% online and 15.8% interview) and 31.2% were e-bikers. Women (OR= 1.75, 95% CI= 1.30-2.37) and those with a higher BMI (OR= 1.05, 95% CI= 1.02-1.09) had higher odds of being an e-biker. Main motives to purchase an e-bike concerned overcoming typical cycling barriers (i.e., health problems, long distances and hills). E-bikes were used for transportation as well as recreational purposes and substituted active and passive trips. Compared to conventional bikers, e-bikers had 2.58 times (95% CI= 1.94-3.47) higher odds of having biked for transport in the past week. This relationship was stronger among participants with a higher BMI. Among those who had biked for transport in the past week, e-bikers had biked 35% (95% CI= 1.17-1.56) more minutes. E-bikers had 2.83 times (95% CI= 2.15-3.74) higher odds of having biked for recreation in the past week. Among those who had biked for recreation in the past week, e-bikers had biked 30% (95% CI= 1.07-1.58) more minutes. However, this relationship was only significant among women and among those being slightly limited to bike, not among men and those not limited.

Our findings suggest that e-bikes contribute to active ageing, especially among those known to be at risk for physical inactivity. Future research should examine e-bikes’ effects on total physical activity and health outcomes using objective measures in longitudinal and experimental designs.

Melissa Horning,  
University of Minnesota, USA

Chair: Jayne Fulkerson

**Food purchasing among families and low-income adults: Factors in grocery shopping and shopping at mobile markets**

High rates of obesity and poor dietary intake continue to be of great public health concern. Healthy
foods in the home are linked to healthier dietary intake, and therefore, food purchasing behaviors may be important targets for intervention. This presentation will briefly showcase three projects within a program of research aiming to promote health behaviors and reduce health disparities around nutritional intake and weight outcomes for families and low-income individuals. Two of the projects highlighted in this presentation will discuss results of a systematic review on the affordability of healthy diets in the United States for low-income Americans and cross-sectional research assessing how influences on the food purchases of families associate with the availability of fruits and vegetables at home. The third project highlighted will showcase an on-going, innovative, community-based participatory research project with the Twin Cities Mobile Market. The Twin Cities Mobile Market is a one-stop mobile market food delivery model that brings staple items and healthy choices from all food groups to under-resourced, low-income, and low-grocery access (e.g., food desert) communities and sells these foods at or below the cost of grocery stores. Preliminary customer intercept survey and sales findings will be presented. Although preliminary findings are exploratory, results are positive and suggest one-stop mobile market shopping may help customers shift purchasing patterns in healthy directions.
P1.01 SIG: Theories of motivation and socio-economic inequalities

P1.01.1
SOCIAL COGNITIVE MEDIATORS OF DIETARY AND PHYSICAL ACTIVITY IN THE “HEALTHY HABITS, HEALTHY GIRLS – BRAZIL” SCHOOL-BASED RANDOMIZED CONTROLLED TRIAL FOR ADOLESCENT GIRLS LIVING IN LOW-INCOME BACKGROUNDS

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Purpose: To identify social cognitive mediators of diet and physical activity in the "Healthy Habits, Healthy Girls – Brazil" study. Methods: A randomized controlled trial with 253 adolescent girls [M=15.62(SE 0.05) years] assessed at baseline, 6- and 12-month. The girls attended 10 public schools located in areas of high vulnerability in agreement with the social economic level of the city of São Paulo. Self-reported, validated and reliable questionnaires were used to assess dietary and physical activity profiles and hypothesized mediators. Statistical analyses were performed PROCESS add on for SPSS. Single mediator models that included all of the hypothesized mediators were calculated for the dietary and PA outcomes with significance level of 0.05. Results: Intervention effects on dietary outcomes and hypothesized mediators were statistically significant: fruits with intention [β (SE) 0.06(0.04), 95%CI 0.00 to 0.15], behavioral strategies [0.06(0.04), 0.01 to 0.17] and outcome expectations [0.03 (0.03), 0.00 to 0.11]; vegetables with self-efficacy [0.03(0.03), 0.00 to 0.11], intention [0.04(0.04), 0.03 to 0.14] and behavioral strategies [0.04(0.03), 0.00 to 0.14]; sugar and sweets with intentions [0.06(0.04), 0.00 to 0.16], outcome expectations [0.05(0.03), 0.01 to 0.15] and outcome expectancies [0.05(0.03), 0.00 to 0.14]; oil and fats with behavioral strategies [-0.05(0.03), -0.14 to -0.01]; milk and dairy with self-efficacy [0.04(0.03), 0.00 to 0.11], and behavioral strategies [0.03(0.03), 0.00 to 0.12]; and beans and nuts and outcome expectancies [0.02(0.02), 0.00 to 0.08]. In relation to PA outcomes and hypothesized mediators there were statistically significance for: light PA with friends support [0.06(0.04), 0.01 to 0.16]; moderate PA with friends support [0.08(0.05), 0.01 to 0.19], behavioral strategies [0.15(0.07), 0.01 to 0.29] and outcome expectations [0.11(0.05), 0.03 to 0.23]; and vigorous PA with friends support [0.11(0.06), 0.01 to 0.24], behavioral strategies [0.18(0.09), 0.02 to 0.36] and outcome expectancies [0.11(0.05), 0.04 to 0.22]. Hypothesized mediators were associated with changes in dietary and physical activity profiles. Conclusion: Self-efficacy, intentions, friends' support and outcome expectations and expectancies might be the key factors to target on interventions strategies. Further research including more intensive parenting support and home environment are necessary to improve adolescent's health behaviors attending schools in middle and low-income countries.

P1.01.2
SOCIAL COGNITIVE MEDIATORS PREDICTS THE INTAKE OF THE BRAZILIAN FOOD GUIDE PYRAMID IN ADOLESCENT GIRLS ATTENDING THE “HEALTHY HABITS, HEALTHY GIRLS – BRAZIL”

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Purpose: To investigate the hypothesized mediators of adolescent girls dietary intake attending the "Healthy Habits, Healthy Girls – Brazil (H3G-Brazil)" intervention program. Methods: Baseline data from the H3G-Brazil were used for this study. Participated 253 girls [M=15.62(SE 0.05) years] from 10 public high schools in areas of high vulnerability in agreement of social economic level of the city of São Paulo. Self-reported, validated and reliable food frequency questionnaire and social cognitive theory (SCT) scales were used for assessment. Dietary intake was the servings from the eight food groups of the Brazilian Pyramid. SCT scales assessed nutrition-related self-efficacy, intention,
behavioral strategies, social support, home environment, and outcome expectations and expectancies. Statistical analyses were performed PROCESS add on for SPSS. Mediator models that included all of the hypothesized mediators were calculated for the dietary outcomes with significance level of 0.05. Results: The effects on dietary outcomes and hypothesized mediators were statistically significant for: rice group with behavioral strategies [β(SE) 0.05(0.03), 95%CI 0.01 to 0.13]; fruits with social support [-0.11(0.04), -0.20 to -0.05], behavioral strategies [-0.08(0.04), -0.18 to -0.02] and home environment [-0.09(0.05), -0.20 to -0.01]; vegetables with social support [-0.13(0.14), -0.24 to -0.06], behavioral strategies [-0.09(0.04), -0.18 to -0.02] and home environment [-0.07(0.04), -0.15 to -0.01]; milk and dairy with social support [-0.07(0.09), -0.16 to -0.02], and home environment [-0.04(0.03), -0.12 and -0.01]; meat and eggs with behavioral strategies [0.06(0.03), 0.01 to 0.15] and home environment [0.04(0.03), 0.00 to 0.12]; sugar and sweets with social support [0.09(0.05), 0.02 to 0.21], and behavioral strategies [0.08(0.04), 0.01 to 0.17]; and oils and fat with social support [0.08(0.05), 0.00 to 0.19]; behavioral strategies [0.09(0.03), 0.02 to 0.15] and home environment [0.04(0.03), 0.01 to 0.11]. Conclusion: Fruits, vegetables and milk and dairies groups had a negative effect, while rice, meat and eggs, oils and fats and sugar and sweets had a positive effect on social support, home environment and behavioral strategies constructs. Those constructs might be used to guide nutrition intervention strategies for adolescent girls living in middle- and low-income countries from disadvantaged communities.

P1.01.3
WHEN HIGHLY VALUED LEISURE GOALS CONFLICT WITH EXERCISE: A SOCIAL-COGNITIVE FORECAST

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Objective: Social cognitive theory (SCT) contends that concurrent management of multiple highly valued exercise and non-exercise leisure goals may challenge successful exercise self-regulation. Concurrent self-regulatory efficacy (CSRE), the confidence to concurrently manage multiple goals, has consistently predicted exercise. Despite theoretical contentions, intergoal conflict does not generally predict exercise. Previous study methodologies may not have examined truly conflicting goals, characterized as being highly valued in SCT. Further, research has overlooked the outcome expectation (OE) aspect of goal agency. The present study sought to address these limitations. The purpose was to examine whether CSRE, intergoal conflict, and positive exercise OEs predicted moderate-vigorous exercise over one month, beyond concurrent SRE, when concurrent conflicting goals were highly valued. Method: Adult exercisers (N = 87; Mage = 31.67 ± 10.90 years) pursuing highly valued exercise and non-exercise leisure goals (≥ 6 on a 1-9 value response scale) in the next month were participants. Using an online survey, CSRE, intergoal conflict, likelihood and value of OEs, and demographics were assessed. After one month, a second online survey assessed moderate-vigorous exercise. A three-step hierarchical multiple regression was used to predict exercise from: (1) demographics significantly associated with exercise (age and income); (2) CSRE; and (3) intergoal conflict and OEs. Results: The final regression model was significant; F (6, 80) = 5.48, p R2 adjusted = .24. CSRE (β = .20), intergoal conflict (β = -.23), and OE likelihood (β = .27) all predicted exercise (p's intergoal conflict and OEs accounted for an additional 13% of the variance (p Conclusions: Results support SCT contentions. Participants with higher CSRE, lower intergoal conflict, and higher likelihood of positive exercise OEs, also had higher moderate-vigorous exercise over one month. Findings provide the first evidence that when conflicting goals are highly valued, salient social cognitions are useful predictors of individuals’ concurrent pursuit of exercise with other valued but conflicting goals.

P1.01.4
FROM ALPINE CLIMBING TO WALKING AROUND THE BLOCK: WHAT BEING PHYSICALLY ACTIVE MEANS FOR RURAL PREGNANT WOMEN

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Objective: Physical activity during pregnancy has the potential to slow the rate of weight gain, provide psychological benefits, and improve obstetrical outcomes. Although pregnancy is commonly labeled as a "teachable moment" in which women are more likely to engage in healthy behaviours, such as physical activity, studies indicate that only 48-61% of women are moderately active during pregnancy, and many encounter various barriers to participation. This project explored rural women’s perceptions and experiences of being physically active during pregnancy.
Methods: A community-based participatory research approach was used to engage rural, pregnant and up-to-6-months postpartum women living in Southern Alberta. These women were facing difficult life circumstances – i.e., financial constraints, addictions, social and geographical isolation, and recent immigration to Canada. For these reasons, they were accessing a community-based perinatal program (CBP) across five diverse rural communities. The method of focused ethnography was used and involved 28 women in 5 focus groups, and observations of CBP activities. All generated data were analyzed using qualitative content analysis to inductively derive codes and categories. Results: Being physically active was commonly described as a key aspect of women’s social construct of health during pregnancy. Women discussed how "exercising" had to be safe for pregnancy, and fit into their busy routines and adverse life circumstances. Women in rural communities seemed unsure about what was adequate during pregnancy, and only did what made them feel comfortable. This created some stark contrasts among participants in what constituted safe and adequate physical activity while pregnant, with one participant describing no longer going alpine climbing without safety ropes. Overall, walking and usual household and non-sedentary work activities represented the most commonly described and feasible ways rural women used to remain physically active during pregnancy. Conclusions: Health care providers and CBPs can play an important role in fostering women’s understanding of and engagement in safe physical activity during pregnancy by providing various categories of social support: emotional, informational, and tangible. More importantly, health care providers and CBPs who serve rural women can help address their unique challenges, and adequately facilitate their participation in physical activity before and after birth.

P1.01.5
PARENTAL EDUCATION LEVEL AS A PROXY MEASUREMENT OF SOCIAL ECONOMIC STATUS: DOES IT PREDICTS HEALTH BEHAVIORS OF ADOLESCENT GIRLS FROM TWO DIFFERENT OBESITY PREVENTION PROGRAMS OF SÃO PAULO, BRAZIL?

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Purpose: To examine if parental school level predicts adolescent girls' dietary behaviors, sedentary behaviors and physical activity level from two-obesity prevention programs: Methods: The study analyzed baseline data from two randomized controlled trial with adolescent girls; "Healthy Habits, Healthy Girls – Brazil (H3G)" and "Brazilian New-Moves version (BNM)" previously adapted from Australia and USA. Both were conducted in 10 public schools located in areas of high vulnerability and low-socioeconomic status (SES) from São Paulo. Data assessed at baseline included parents/caregivers school level, dietary behaviors, sedentary behaviors and physical activity level. Mediation analysis using PROCESS MACRO for SPSS software (version 21.0) were performed with alpha levels at pResults: The average age from the H3G and BNM were respectively 15.6 (SE 0.06) and 13.4 (SE 0.04) years. Parental school level was more predominately in high school/undergraduate courses at H3G (72.6%) and elementary/middle school at BNM (60.2%). Significant differences between school level and groups of girls (H3G vs BNM) were found for moderate physical activity [β=0.86 (SE 0.09) p=0.00], TV hours/week [β= 1.31 (SE 0.31) p=0.00], Computer hours/week [β=0.73 (SE 0.15) p=0.00], servings of daily fruits [β=0.98 (SE 0.09) p=0.00] and vegetables[β=5.33 (SE 0.21) p=0.01]. Moreover, considering school level as a mediator, it was found a direct effect predicting vigorous physical activity [β=−0.87 (SE 0.09) p=0.00], TV hours/week [β= −0.84 (SE 0.10) p=0.00], TV hours/weekend [β= −0.87 (SE 0.09) p=0.00], Computer hours/week [β=−0.87 (SE 0.09) p=0.00], Computer hours/weekend [β=−0.86 (SE 0.09) p=0.00], servings of daily fruits [β=−0.74 (SE 0.11) p=0.00] and vegetables[β=−0.72 (SE 0.09) p=0.00]. However, the groups' effects and school level mediators were not statistically significant. Conclusions: Although both programs were conducted at public schools, it was noticed an unexpected difference in parental school level which were associated with some health behaviors. The SES should be considered as an important measurement, mainly in low and middle income countries. This factor is essential in the development of studies because it can influence adolescent’s health behaviors, and as well improve interventions adherence.

P1.01.6
CAN SOCIAL COGNITIVE THEORY EXPLAIN OCCUPATIONAL SEDENTARY BEHAVIOUR?

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Objective: Increasingly, the world’s workforce is employed in low activity occupations, with office workers identified as one of the most sedentary groups. Factors influencing sedentary patterns during work hours are complex. This study aimed to gain insight into these factors, and determine whether the key constructs of Social Cognitive Theory (SCT) could inform understanding of occupational sedentary behaviour (OSB) and how it may influenced. To date, no studies have examined the links between SCT and OSB. Methods: Twenty-one office workers were recruited. All received education (1hr presentation) about the health risks associated with sedentary behaviour and half also received hourly prompts on their computer reminding them to break-up their sitting at work. Focus groups were run with a sample from both groups (n = 13) to explore experiences of the study and factors that influence OSB. Focus groups were transcribed and the constructs of SCT used to conduct a thematic analysis. Results: Five themes informed by SCT were identified: Situation/environment: the physical environment of the workplace and tasks carried out within it impacted negatively on OSB. Expectations: participants placed value on the health arguments for changing OSB, but work pressures generally superseded motivations to make changes. Self-efficacy: most participants believed they did not have the ability to change their behaviour at work citing, work pressures, physical environment, and perceived lack of control, as barriers. Self-regulation: behavioural strategies already in use were task-, health- or emotionally-led. Some spoke of needing feedback on their behaviour in order to regulate it, whilst others felt that control lay with their employers Observational learning: emphatically, participants did not want to carry out a behaviour (standing) that everyone else was not doing. A culture of conformity was described; participants put value on having a role model who would facilitate change. Conclusions: SCT can explain motivations and barriers to changing OSB in an office environment. Future interventions to reduce OSB should focus on increasing individuals’ self-efficacy through changing social norms relating to OSB within the organisation’s culture.

P1.01.7
BORROWING FROM ECONOMICS TO UNDERSTAND TIME SPENT BEING ACTIVE

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Objective: The most popular reported barrier to physical activity is a lack of sufficient time. Just like most resources in economics are finite, so too is time within a day. This presentation will promote innovative approaches for applying economics and consumer science models to understand and intervene with how people are allocating time for physical activity. As a demonstration of the potential for applying economic models to understanding health behaviours, we conducted a study to test how people are fitting physical activity into the finite hours of the day and if this has an impact on their activity levels or perceptions of having a lack of time for physical activity. Methods: The study was designed based on a utility model from economics which divided daily time into the domains of sleep, leisure, occupation, transport, and household duties. Australian adults (N = 725 participants, 53.66% men) reported their time use throughout their day, perceived ‘lack of time’ as a barrier to activity, and physical activity. Cluster analysis and χ²-tests were used to test the study research questions. Results: People tended to either be entirely inactive (28.55%) or active while doing either leisure (17.93%), occupation (18.21%), transport (13.66%), or household (21.66%) activities. Those who were active during their leisure or transport time were most likely to be sufficiently active. There were no significant differences between clusters in how much people perceived that lack of time was a physical activity barrier. Conclusions: This study demonstrates that people allocate time to physical activity typically within one specific domain, although which domain it is differs between people a lot. With this knowledge, we can now shape interventions to help people fit physical activity within the day without having to add more time to the day. This study provides an illustration of how health behaviors may be better understood by accounting for daily time as a finite resource, similar to finite economic models. The presentation will introduce some relevant economic models and how they might be applied to health behavior interventions.

P1.01.8
EVALUATION OF THE FACTOR STRUCTURE OF A FOOD BEHAVIOR CHECKLIST FOR LOW-INCOME FILIPINOS

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Purpose: Filipinos in the US suffer from high rates of overweight and obesity. Nutrition education is one approach
used to promote healthy weight; however, validated tools in Tagalog for evaluation of educational programs are lacking. The purpose of this study was to examine the factor structure of a Tagalog-language food behavior checklist (FBC) for low-income Filipinos. Methods: Tagalog speakers (n=160) were recruited from community sites in Oahu, Hawaii. Participants provided demographic information and completed the 22-item Tagalog-language FBC. The FBC evaluates diet-related practices such as intake of fruit and vegetables, dairy, sweetened beverages, fast food, healthy fat, as well as food security and overall diet quality. Face validity was previously assessed. All responses are reported on a 4-point scale, with higher scores indicating more desirable behavior. Factor structure was examined using principal component analysis (PCA) with Varimax rotation. To assess the numbers of factors, Kaiser criterion (eigenvalues >1.0), scree plot, and parallel analysis were used. Any item with a factor loading of >0.50 was considered to load on the given factor. Factor solutions with different numbers of factors were examined, and the solution that generated the most comprehensible factor structure was selected. Results/findings: The average age of participants was 57 years (SD=20), and 98% of participants were born in the Philippines. PCA allowed for identification of eight sub-scales: 1) Fruit/vegetable quantity; 2) Fruit/vegetable variety; 3) Fast food; 4) Sweetened beverage; 5) Healthy fat; 6) Diet quality; 7) Milk/dairy; and 8) Food security. All items loaded on a factor except for the item on citrus fruit and juice consumption. Conclusions: Examination of the factor structure of the Tagalog-language FBC revealed that all but one item loaded on factors identified. Additional research is needed to evaluate the convergent and criterion validity of the tool. Based on the information on the factor structure, along with the additional data to be collected, it will be possible to determine which items should be eliminated from the tool. Upon completion of testing, the FBC may be used to evaluate the United States Department of Agriculture’s nutrition education programs for Tagalog speakers.

P1.01.9
MOTOR SKILL PROFICIENCY AND PHYSICAL SELF-PERCEPTION IN ADOLESCENTS WITH AND WITHOUT AUTISM SPECTRUM DISORDERS

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Purposes: To (a) compare motor skill proficiency and physical self-perception in adolescents with and without autism spectrum disorders (ASD), and (b) assess the associations among the two variables in each group. Methods: A total of 126 adolescent males with (n = 63) and without (n = 63) ASD aged 12-18 years completed the Bruininks-Oseretsky Test of Motor Proficiency-2 (BOT-2) and the validated Chinese translation of the Physical Self-Perception Profile (PSPP) measures. Independent group t tests were used to compare the PSPP components between adolescents with and without ASD. One-way multivariate analysis of variance (MANOVA) was performed to evaluate the statistical significance of differences between the groups for the BOT-2 results. For each group, Pearson correlation coefficients were computed to assess the relationship between the BOT-2 scores and the PSPP measures. Results: The main findings were that (a) adolescents with ASD had significantly lower scores on all motor proficiency measures (fine manual control, F = 31.53, p = 47.92, p = 15.68, p = 62.26, p = 60.67, p = 3.77, p = -3.45, p t = -3.19, p r = .41, p r = .36, p r = .37, p r = .42, p r = .39, p Conclusion: Specific interventions for maximizing motor skill proficiency and physical self-perception in adolescent males with and without ASD are urgently required. Supported by Taiwan MOST grant 103-2410-H-017-026-MY3.

P1.01.10
EVALUATION OF THE EFFECTIVENESS OF AN INTERVENTION TO PROMOTE HEALTHY DIET IN CHILDREN FROM SOCIALLY DISADVANTAGED FAMILIES: STUDY PROTOCOL OF THE PREGNANCY AND EARLY CHILDHOOD NUTRITION TRIAL (ECAIL)

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Background: There are great social inequalities in health in France, starting early in life. The community-based MALIN Programme has been implemented in six pilot sites based on an innovative and sustainable partnership between players from the associative, public and private sectors, to promote healthy feeding practices in young children from socially disadvantaged families. It includes 1) a nutritional accompaniment based on the National Nutrition and Health Programme, adapted to the targeted population, which seeks to build knowledge, skills and social support regarding feeding practices and diet in pregnant women and their babies, focussing on breastfeeding and complementary feeding; 2) fresh fruit and vegetable baskets made available at a reduced price from the third trimester of pregnancy until the toddler is aged 24 months; 3) the provision of follow-on formula and baby food vouchers from 6 to 24 months. Purpose: We aim to test the hypothesis that the three components of this Programme, delivered in the home, have an impact on diet and growth of young children from disadvantaged families. Methods: The ECAIL study is a randomised controlled trial. Women from disadvantaged backgrounds are recruited during pregnancy and followed up by dieticians at home, until the toddler is aged 24 months. Mothers/parents in the intervention arm (n=400) benefit from the three components of the MALIN Programme. Those in the control arm (n=400) receive usual care. Frequency of vegetable consumption at 24 months is the primary outcome; secondary outcomes include various aspects of feeding practices, diet and growth. Data are collected using face-to-face questionnaires and medical records. Weight and length are measured in children at different times of the follow-up. Intention-to-treat analyses will be used to assess differences in outcomes between trial arms. Process evaluation will include moderation and mediation analyses, along with assessment of Programme fidelity and adherence. Conclusions: The ECAIL study, co-designed with the various partners of the MALIN Programme, aims to validate its hypotheses, prior to its generalisation. It will also increase knowledge on the social determinants and mechanisms involved in early behavioural and growth trajectories, in at-risk populations that are often under-represented in epidemiological studies.

P1.01.11
THE RELATIONSHIP OF EXPPLICIT-IMPLICIT EVALUATIVE DISCREPANCY TO EXERCISE ADHERENCE IN MIDDLE-AGED ADULTS

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Objective: Automatically activated associations between exercise and health or appearance, which are common motives for exercise, may inform exercise adherence. Discrepant automatic associations and explicitly stated motives may result in dissonance and changes in behavior to try to reduce the dissonance. This research examined the relationship of exercise-related implicit-implicit evaluative discrepancies (EIEDs) to adherence to a year-long exercise intervention. Calculated discrepancies were between implicit health associations relative to explicit health motives (EIED health-health), implicit health associations and explicit weight motives (EIED health-weight), implicit appearance/body shape associations and explicit appearance motives (EIED appearance – appearance), and implicit appearance/body shape associations an explicit weight motives (EIED appearance – weight). Methods: Participants (N = 253; 69.2% female, M age = 48.36 years; M body mass index = 29.92) completed two Go/No Go Tasks that measured implicit associations of exercise with health or appearance/body shape, and questionnaire measures of health, appearance and weight motives for exercise at baseline, 3, 6, 9 and 12 months, while participating in a one year supervised exercise program. Relationships of demographic factors, implicit associations, explicit motives, and EIEDS to number of weeks in the program before dropping out were examined. Results: Compared to participants who finished the program (n = 98), participants who dropped out before three months (n = 71) had significantly higher EIED health-health scores, d = 0.47, and EIED appearance-appearance scores, d = 0.42. EIED health-health, $\beta = -0.160$, $p = .04$, and EIED appearance-appearance, $\beta = -0.160$, $p = .04$, were negatively related to number of weeks in the program whereas age, $\beta = -0.135$, $p = .03$, and income, 0.152, $p = .02$, were positively related. Conclusions: Early drop-outs may not have enjoyed exercising, which combined with dissonance, contributed to their quitting. The value of a benefit such as health is weighed against the self-regulation needed to perform a behavior; if the benefit is not valued and is discrepant from its automatic association with exercise, poor adherence may result. Intervention efforts should consider implicit exercise associations and their relationships to oft-cited motives such as appearance and health as discrepancies between them may inform adherence.
P1.01.12
CULTURAL AND LIFE COURSE INFLUENCES ON FOOD PROVISIONING AMONG LOW-INCOME, MEXICAN-ORIGIN MOTHERS WITH YOUNG CHILDREN IN THE U.S.

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Background: Major migration shifts worldwide emphasize the necessity of framing nutrition behavior in the context of culture and life course. In the U.S., Mexican-origin households disproportionately experience food insecurity, a condition associated with poor health outcomes. Government food assistance programs may not be fully accessible to the foreign-born, suggesting that food provisioning strategies may play a critical role in protecting households and children. Objective: To explore the influence of culture and life course on low-income, Mexican-origin mothers' food provisioning practices and strategies in the U.S. to identify potential targets for interventions. Methods: Ecological Systems Theory and Life Course Perspective guided this qualitative study. Investigators recruited and purposively sampled women 1) born in Mexico, 2) ≤ 10 years in the U.S., 3) residing in one of two New York State counties, 4) with at least one child ≤ 5 years old, and 5) with at least one child ≤ 5 years old. Results: Five themes emerged, each organized into one of three key life course perspective concepts: social context, transitions, and turning points. The first three themes were part of the social context of mothers' lives in Mexico: food insecurity experiences, agrarian experiences, and traditional foods and flavors. The fourth theme, motherhood, was a transition. The fifth theme, health events, was a turning point. All themes related to mothers' overall priority of providing home-cooked meals for their families, and demonstrated the cultural and life course influences shaping their food provisioning values and strategies in the U.S. Conclusions: Considering life course experiences and culture is important to creating effective, multi-level approaches to reduce food insecurity among Mexican-origin families in the northeastern U.S. Programs should include culturally-tailored household food and financial resource management education, alongside improved access, affordability, and availability to nutritious, culturally-appropriate foods.

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P1.01.13
CIVIC ENGAGEMENT CAPACITY AND HEALTH BEHAVIORS AMONG RURAL WOMEN

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Objective: Reports on civic engagement initiatives targeting health behavior change in rural populations are scarce. The present study explores the relationship between civic engagement capacity and health behaviors among rural women participating in a community-randomized trial. Methods: We enrolled 194 midlife and older women into a six-month community-randomized intervention trial targeting heart disease risk reduction in sixteen medically underserved towns in Montana and New York. Eight towns were randomized to the Strong Hearts, Healthy Communities (SHHC) 48-class intervention, consisting of strength training, aerobic exercise, nutrition education, and a civic engagement component. The remaining eight towns participated in a 6-class health education-only minimal intervention, Strong Hearts, Healthy Women (SHHW), which did not include civic engagement. Civic engagement (CE) capacity was defined as the knowledge, attitudes, motivation, self-efficacy, collective efficacy, and social ties needed to facilitate changes in local community environments. Participants completed a 38-item survey to assess the CE capacity constructs as well as assessments of dietary intake and physical activity. Linear regression models were used to compare differences in CE capacity between SHHC and SHHW participants, and to estimate associations between CE capacity and health behaviors among SHHC participants. Analyses were conducted using SAS v9.3. Results: Of the 134 participants who completed the CE survey, 96% were non-Hispanic white, 67% were married, and 57% were currently employed. SHHC participants reported significantly higher levels of CE capacity compared to SHHW participants (p Civic engagement capacity was significantly associated with daily fruit and vegetable consumption among SHHC participants (p=0.02). Associations between CE capacity and other diet or PA behaviors were not observed. Conclusions: These findings highlight the potential of integrated behavior change interventions to enhance rural women's CE capacity, and for these elements to potentially work synergistically in support of one another. Additional research is needed to assess whether enhanced CE capacity alone can catalyze health behavior change.

P1.01.14
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Hunting health-profit – protocol of an ongoing study. Purpose: Insufficient physical activity and unhealthy diet are among main behavioral risk factors for Non Communicable Diseases (NCDs), hence a large percentage of NCDs are preventable through increasing activity levels and eating healthier. The Norwegian health government has pivoted the direction of the Norwegian health politics from mainly treating diseases towards additional focus on preventing disease and promoting health. A part of this strategy has been establishing Healthy Life Centers (HLC). HLC offers support to people who need to change health behavior, in form of group education and individual guidance. The strive towards better health behavior is challenging, and effect of interventions aimed at increasing physical activity and improving diet is uncertain. The health profit crumbles if the health habit modifications are not sustained over time. Withering motivation tends to be one frequent explanation for giving up. The purpose of this presentation is to describe the scope, design and intervention of a study performed at a HLC. Self Determination Theory serve as a motivational framework for the study. Methods and design: The study has a mixed method approach in form of an explanatory sequential design; the qualitative phase follows the quantitative in order to explain or elaborate the quantitative data. Gathering of quantitative data is at baseline, 6 and 12 months ongoing until 120 participants are included. Data collected are self-reported demographics, dietary – and activity habits, scores on motivation, self-efficacy, anxiety- depression and self-esteem. Supervisors will conduct Health Related Physical Fitness tests, measure blood pressure and body composition. ActiGraph GT3X obtains data on daily activity levels. Based on development on these scores informants are selected for individual interviews to gather insight and understanding of the process and fluctuations in motivation, as well as experiences with participating in a HLC. Potential findings: This study has potential to elaborate understanding of changing health habits and enlighten these questions: What are significant predictors for success? How can we help prevent people from giving up? The answers might influence the quality of future services in HLCs.

**P1.01.15**

**INCOME INEQUALITIES IN BIKE SCORE AND BICYCLE TO WORK MODE SHARE IN CANADIAN CITIES**

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Objective: The purpose of this study was to examine income inequalities in Bike Score and cycle to work mode share at the census tract level in Canada. Methods: This ecological study examined associations between Bike Score and bicycle to work mode share (2011 National Household Survey Data), in 1306 census tracts in 9 cities in Canada (Calgary, Halifax, Moncton, Montreal, Saskatoon, St. John's, Toronto, Vancouver, Victoria). The outcomes of interest were Bike Score, its components, and bicycle to work mode share. Bike Score is comprised of three environmental components: Bike Lane Score (cycling infrastructure), Hill Score (topography), and Destinations and Connectivity Score (walkability). Quintiles of median income in the census tract, calculated using 2011 National Household Survey Data. We used linear regression with city level fixed effects to examine social inequalities. Results: The median Bike Score and cycle to work mode share across all census tracts were 73 (range 16-100) and 1.1 (range 0-34), respectively. The median income in the lowest income quintile was $19,838, compared with $43,643 in the highest income quintile. No income inequalities in the Bike Score, the Hill Score, or the Destinations and Connectivity Score were observed. In bivariate analysis, there were large and statistically significant income inequalities in the Bike Lane Score. The regression model including city level fixed effects showed that compared to the lowest income quintile, the fourth (coeff=4.1, 95% CI: 1.2 to 6.9) and highest income quintiles (coeff=3.2, 95% CI: 0.2 to 6.2) had significantly greater Bike Lane Scores compared to the lowest income quintile. Conclusions: Our results show that income inequalities are present in the availability and quality of cycling infrastructure (as measured by Bike Lane Score) in several Canadian cities. Inequalities also manifested in behaviour, as captured by bicycling to work.
WHAT BARIATRIC SURGERY RECIPIENTS NEED BEFORE, DURING, AND AFTER SURGERY FOR LONG-TERM HEALTH AND WELL-BEING: RECIPIENTS' PERSPECTIVES

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Purpose: Long-term success remains a challenge for many who have undergone bariatric surgery, which suggests there may be important, and as of yet, unmet needs of such recipients. The objective of this cross-sectional study was to gain an understanding of what bariatric surgery recipients perceive they need to best support their long-term health and well-being in the province (Ontario, Canada) and thereafter internationally. Methods: A questionnaire, taking 30-45 minutes to complete, was designed in concert with members of the target audience and distributed via support group administrators. Descriptive statistics of participants’ demographic/clinical background were analyzed for group comparisons using a chi square test and a two-sample t-test (p Results/findings: One hundred and nineteen (59 provincial; 60 international) respondents completed the questionnaire. Themes for what was most useful included encouragement from family, friends, bariatric team members, and peers. Access to immediate follow-up appointments after surgery for nutrition-specific and general post-surgery concerns was reported as needed but not received. Recommendations to address excess skin and creating a mentorship program were proposed. Conclusions: This study provides an understanding of the needs and experiences of bariatric surgery recipients, which may help clinicians to address gaps in bariatric programming, provide more effective treatment, and help prevent weight regain among surgery recipients for long-term health and well-being.

P1.01.17
DIET QUALITY IN A RURAL U.S. POPULATION

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Objective: Healthy dietary patterns are associated with decreased risk of chronic disease. Dietary patterns are best captured in the form of diet quality scores incorporating positive and negative aspects of the diet. The Healthy Eating Index-2010 (HEI-2010) is a 12-component diet quality measure based on recommendations from the Dietary Guidelines for Americans 2010. The HEI-2010 includes measures of adequate intake of fruits, vegetables, and whole grains, and measures of moderation for refined grains, sodium, and empty calories. Adults in Appalachia suffer disproportionately from chronic diseases related to diet, including heart disease and type 2 diabetes. Prior research has focused on specific dietary components related to specific health conditions, while no attention has been given to overall diet quality of persons in Appalachia. This study’s objective was to determine the diet quality of overweight and obese adults in the U.S. Appalachian region of five states (PA, OH, WV, VA, KY). Methods: Dietary intake was measured at baseline using a validated food frequency questionnaire. A diet quality score was calculated for each participant using the HEI-2010. Participants (N=661) were mostly female (70.5%), 55.7 + 12.8 y of age, and BMI = 33.2 + 6.4 kg/m2. Results: The calculated HEI-2010 score was 67.2 + 11.1 points (out of 100). Males (63.8 + 11.4) and females (68.5 + 10.7) differed (p2 of 0.129. Conclusions: Although findings suggest higher diet quality among adults in Appalachia compared to previous studies using the HEI, possibly due to the dietary assessment method used in this study, subgroup differences emerged. It appears that the most important targets for improved diet quality are younger obese males. Future studies are needed to validate these findings and identify opportunities for improving diet quality in this vulnerable population.

P1.01.18
DO PHYSICAL ACTIVITY AND DIETARY CHANGES MEDIATE EFFECTS OF A LIFESTYLE INTERVENTION ON GESTATIONAL WEIGHT GAIN AND GLUCOSE METABOLISM? FINDINGS FROM THE DALI RANDOMISED CONTROLLED TRIAL

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Objective: Evidence is needed for the relative effectiveness of different lifestyle intervention components during pregnancy in minimizing gestational weight gain (GWG) and improving antenatal glucose metabolism. The aim of this study was twofold: 1) to investigate the effect of the DALL lifestyle intervention on objectively measured physical activity and diet, and 2) to examine how these changes are related to GWG, fasting glucose and Homeostatic Model Assessment-Insulin Resistance (HOMA-IR). Methods: Women with a pre-pregnancy BMI ≥ 29 kg/m², from eleven European sites and without baseline gestational diabetes mellitus, were randomised into healthy eating (HE), physical activity (PA), combined (HE+PA) or usual care groups. Participants allocated to the intervention arms received five face-to-face and four optional telephone sessions by a lifestyle coach trained in motivational interviewing. At baseline (Statistical analyses included longitudinal linear multilevel regression and multiple mediation models. Results: A total of 436 women were included in the study, with 132 (30%) women providing valid physical activity data and 173 (40%) women providing dietary data at baseline and at either mid- or late-pregnancy. For physical activity, an effect on counts per min was found mid-pregnancy (β=53.1, 95% CI=0.2;105.9) in the PA group. For diet, overall dietary scores were improved in the HE group (β=6.8, 95% CI=2.0;11.6) and the HE+PA group (β=5.7, 95% CI=0.7;10.7). The intervention did not seem to have a mediating effect through physical activity and dietary changes on GWG and glucose metabolism. Conclusions: Irrespective of the use of stringent measurement methods, changes in physical activity and diet leading to a reduction in GWG might have been too subtle to detect in our study.

P1.01.19
ACCENTUATE THE POSITIVE: HOW BEGINNER RUNNING GROUPS MANAGE AFFECTIVE RESPONSES TO EXERCISE

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Objective: How people feel during exercise in laboratory studies predicts future exercise behaviour, however there is little research on how to improve how people feel during everyday exercise. Running is a simple, low-cost exercise with potential to improve public health, with increasing numbers of beginner running groups in the UK. The purpose of this mixed methods study was to investigate contextual factors influencing affective responses to exercise in adults joining beginner running groups. Methods: Participants were members of beginner running groups (n=69, 13 groups). This field study used go-along interviews (asking participants how they felt on a 'feeling scale', and why) combined with participant observation. Participants wore an audio recorder during usual outdoor group sessions, mostly using run-walk intervals. Participants were contacted six months later about their physical activity levels. Audio recordings were thematically analysed, with extra insights from field notes. Results: One major finding concerned the social dimensions of affect operating in this group context. Leaders and group members managed affective responses to exercise to help people cope with high intensity exercise. Specifically, they
enhanced positive emotions and created a positive social atmosphere. Run leaders often organised games or fun warmup drills, which seemed successful in distracting participants from discomfort. Some group members themselves also spontaneously adopted strategies to enhance joint affect. These included: liberal use of humour, celebrating achievements, friendly competition, and singing. Some of these concepts could be linked to Durkheim's 'collective effervescence' (a shared sense of excitement experienced by a group engaged in a joint activity). More successful group members (those still active six months later) also emphasised positivity, whether describing themselves as 'a positive person', or framing exercise as enjoyable and fun rather than painful. Conclusions: The theme 'accentuate the positive' extends lab-based findings on individuals' affective responses to exercise to outdoor group-based exercise. Given that emotions are strongly social, examining group exercisers yields new insights into potential methods of improving affective responses to exercise compared with studying socially isolated individuals in a laboratory. These results could improve training of beginner running group leaders and those teaching other outdoor types of group exercise, e.g. bootcamps.

P1.01.20
SOCIAL DETERMINANTS OF POOR DIET QUALITY IN AUSTRALIAN ADULTS: ANALYSIS OF THE NATIONAL NUTRITION AND PHYSICAL ACTIVITY SURVEY – 2011/12

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Purpose: Diet quality indices allow for the simultaneous assessment of consumption of beneficial and deleterious foods and nutrients and have been shown to be predictive of cardiovascular disease, cancer, obesity and all-cause mortality. This study aimed to determine the social determinants of diet quality in Australian adults to inform the development of behaviour change interventions. Methods: The Healthy Eating Index for Australians (HEIFA-2013) is a validated diet quality index based on the current Dietary Guidelines for Australians (2013), and is a modified version of the Healthy Eating Index (HEI-2010) for Americans to allow comparison between countries. The HEIFA's 11-component system includes one component for each of the five core-food groups (grain, vegetable, fruit, meat and alternatives and dairy products), one component for non-core foods, four components for nutrients (fatty acids, added sugar, sodium, and alcohol), and another component for water intake. Participants included adults aged 18 years old and over from the 2011-12 National Nutrition and Physical Activity Survey. Tests for differences (ANOVA) and associations (regression) between socio-demographics and HEIFA-2013 score were conducted. Those with energy intake to basal metabolic rate 2.67 were excluded from analysis. Results: The mean (SD) HEIFA-2013 score was 45.9 (15.1) out of 100 (n=6263) due to poor intakes of vegetables, fruit, grains, dairy and fat and high intakes of added sugar, sodium and discretionary foods. Lower mean HEIFA-2013 scores (SD) were found for males 43.9 (14.9), young-adults 41.1 (14.8), and those categorised as obese 44.0 (14.6), smokers 40.2 (14.7), low socioeconomic status 43.8 (15.4), or born in Australia 44.4 (15.0) (P Conclusions: The overall diet quality of the Australian population is poor. Targeted behaviour change interventions for young-adults, males, obese and those of lower socioeconomic status that address the specific barriers of achieving a high diet quality for each group are recommended.

P1.01.21
NEED SATISFACTION AND THWARTING ON PREDICTING STUDENTS' MOTIVATION AND PHYSICAL ACTIVITY LEVELS IN SECONDARY PHYSICAL EDUCATION

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Background: Previous studies based on self-determination theory have mainly focused on the brighter side of psychological need satisfaction on examining human functioning, yet studies on the impact of need thwarting (the darker side) were scarce. Particularly, the association between need thwarting and physical activity levels (PA) in PE (measured by objective measure) has not been investigated. Objective: This study aims to explore both need satisfaction (brighter side) and need thwarting (darker side) experiences in secondary physical education (PE) on predicting students' motivation and PA levels in PE. Methods: Around 720 participants (360 males & 360 females) aged 12 to 15 years old from 6 coeducational secondary schools of Hong Kong will be recruited to complete questionnaires on their need satisfaction and thwarting and motivation in secondary PE classes. Approximately half
of these students will be randomly selected to wear accelerometers for measuring their PA levels in two PE classes. Multiple regression analysis will be conducted to examine how need satisfaction/thwarting relate to students' motivation and PA. The influence of a number of independent variables (need satisfaction/thwarting of competence, autonomy and relatedness) on the dependent variables (motivation and PA) will be examined. Results: to be reported Conclusion: This study will complete in March 2017. It would shed new lights on understanding how need satisfaction and thwarting in secondary PE predict students' motivation and PA levels in PE for future planning on pedagogical and instructional strategies in PE teaching.

P1.01.22
PRESCOL CHILDREN'S CONTEXT-SPECIFIC SEDENTARY BEHAVIORS AND SOCIOECONOMIC STATUS

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Purpose: Little is known about the possible socioeconomic differences in preschool children's sedentary behaviors (SBs) over the course of the week. The aims of this study were to examine the associations of parental socioeconomic status (SES) a) on preschool children's objectively measured sedentary time (ST) over the course of the week, and b) on preschool children's screen time and reading time at home. Method: Data from 864 Finnish children, aged 3-6 years, and their parents enrolled in the DAGIS survey conducted between years 2015 and 2016 were analyzed. Children's accelerometer data (N=822) was transformed into average ST minutes per hour in different contexts (preschool, before and after preschool, weekend, whole week). Parental-reported children's screen time (TV viewing, computer use, DVD/video watching, tablet and smart phone use) and reading time were daily weighted averages in minutes (N=768). All the SES indicators (maternal and paternal education and family income) were grouped into three categories, and the highest group was treated as a reference. Linear regression analysis with municipality, research time, and children's gender and age as covariates was used. Confidence intervals were adjusted for clustering at the preschool level. Results: Children with low maternal (β=17.21, 95% CI: 9.61, 24.81) and paternal (β=10.54, 95% CI: 0.94, 20.13) education as well as with low family income (β=9.82, 95% CI: 0.86, 18.78) had more screen time than their more advantaged counterparts. Children with low maternal education (β=-2.66, 95% CI: -5.19, -0.13) had less reading time compared to those with high maternal education. Children having fathers with middle (β=-1.15, 95% CI: -2.05, -0.25) educational level had less weekend ST than children of fathers with high educational level. Otherwise parental SES tended to be unrelated to objectively measured ST. Conclusion: The daily screen time was higher among children with low SES background despite the SES indicator used. Developing strategies aiming to diminish screen time among low SES children are therefore worthwhile. The results of this study highlight the importance of having both objective and reported data to understand how parental SES influences on children's SBs.

P1.01.23
SELF-CRAFTING VEGETABLE SNACKS TO INCREASE CHILDREN'S VEGETABLE CONSUMPTION: A TEST OF THE IKEA EFFECT

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Objective – To test whether the IKEA effect (Norton et al., 2012) -a better liking for self-crafted products than for identical products crafted by others – can be exploited to increase liking and consumption of vegetable snacks in children. Although the IKEA effect has been demonstrated in adults, this is one of the first studies evaluating the IKEA effect in children and as a means to increase liking for a generally disliked product in this target group, i.e. vegetables. Methods – A between-subjects experiment was conducted at an after school care facility. Eighty-six children aged four-to-six either crafted a peacock with vegetables or with non-food objects following an example. After the task, children ate snack vegetables ad libitum, and rated their liking for the vegetables and pride in crafting the peacock. Results – No significant main effect of the vegetable snack creation on consumption and liking was observed. Also, perceived pride did not mediate the effect of self-crafting vegetable snacks on consumption of and liking for vegetables. Conclusions – Vegetable consumption did not differ between children who were either simply exposed to vegetable snacks while crafting or those who were crafting the vegetable snacks themselves. The IKEA effect could thus not be replicated under these more stringent conditions, where the experimental set-up
enabled disentangling exposure and crafting effects. This might suggest that simple exposure is sufficient to improve liking and consumption, but more research is needed comparing self-crafting and exposure to a condition where there is no initial exposure to vegetables.

P1.01.24
USING PEDOMETERS FOR SELF-MANAGEMENT OF PHYSICAL ACTIVITY- PARTICIPANTS’ EXPERIENCES FROM SOPHIA STEP STUDY- A PHYSICAL ACTIVITY PROMOTION INTERVENTION IN PRE- AND TYPE 2 DIABETES

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Objective Using pedometers and a digital platform for self-monitoring of physical activity is a brief, low demanding, intervention to support self-management of physical activity in diabetes. When evaluating a behavior change program it is vital to explore the view of the participants. Yet, few studies have evaluated participants’ experiences of pedometer interventions in diabetes care. The purpose of this study was to report a sub-analysis of a qualitative evaluation of participants’ experiences of the two-year physical activity promotion intervention Sophia Step Study. The sub-analysis aims to further explore the use of pedometers and a digital platform for self-monitoring of physical activity in diabetes self-management. Methods Participants with pre- and type 2 diabetes were recruited to the intervention Sophia Step Study from two health care services in central Stockholm. Semi-structured face-to face interviews were conducted with compliers to the intervention program (registering steps for two years, n=13). The interviews aimed to explore experiences of participating in the intervention. A qualitative manifest content analysis with an inductive approach was applied to analyze the transcribed text material. A further sub-analysis was made to elaborate on the experiences of using the pedometer and monitoring steps onto a web-page. Results The pedometer with the accompanying web-page to monitor steps was mentioned in three of the initial five subcategories: external resources supporting motivation to engage in physical activity, a new approach to physical activity and to overcome barriers to physical activity. The pedometer was an appreciated tool assisting in reflecting on the own physical activity behavior, encouraging increased physical activity, raising conscious about being the one in charge of the own health and in problem solving. The pedometer that was offered in the study (Yamax 200) was considered somewhat “old fashioned”, with some drawbacks and it was suggested to use more modern devices that are available nowadays. Conclusions Pedometers and digital platforms for self-monitoring of physical activity are valued by patients with pre-and type 2 diabetes. Step-counters combined with a digital tool can assist in raising consciousness and establish new routines and are promising for future use to support self-management of physical activity.

P1.01.25
FROM GYM INSTRUCTOR TO PHYSICAL ACTIVITY COUNSELLOR: REFLECTIONS ON “TRAINING” EXERCISE REFERRAL PRACTITIONERS TO DELIVER A NEEDS-SUPPORTIVE PHYSICAL ACTIVITY BEHAVIOUR CHANGE INTERVENTION

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Objective. Autonomous motivation is important in physical activity (PA) behaviour change, with guidance emerging on how practitioners can support participants to feel more autonomous, competent and related in their PA behaviour. Yet previous efforts to train PA practitioners to implement needs-supportive practices has proved challenging. This paper reflects on the experiences of training a group of exercise referral practitioners (ERPs) to deliver a needs-supportive PA behaviour change intervention for individuals with health conditions, exploring factors that influence the implementation of needs-supportive practices. Methods. Six ERPs took part in group workshops, one-to-one sessions and informal interactions with research staff over a three-month period prior to commencing intervention delivery. Sessions were underpinned by Self-Determination Theory (SDT) and motivational interviewing to support the behaviour change of ERPs over time. Reflections on interactions with ERPs were recorded in a reflective log by the first author and in reflective conversations with the research team. Observations of one-to-one exercise referral consultations were audio-recorded and qualitatively coded against needs-supportive and non-needs supportive behaviours at baseline and after several weeks of intervention delivery. Results. Although ERPs were open to the ideas presented and keen to improve delivery, the needs-
supportive approach challenged personal beliefs about behaviour change (e.g. seeing themselves as gym instructors with a role to prescribe exercise, risk of client saying "no", emphasis on immediate action). ERP perceptions of delivery often varied from observations, and prior assumptions of the research team were challenged (e.g. interpretation of "needs support", knowledge of PA guidelines, readiness to change in individual practitioners). Time and investment in activities to enhance self-awareness (e.g. one-to-one interactions, practice demonstrations) facilitated the process of behaviour change. Conclusions. If SDT-based PA interventions are to be effective, it is crucial practitioners understand, internalise and are able to implement needs-supportive behaviours. For traditionally-trained gym instructors, this approach deviates from established working practices. "Training" interventions need to be viewed as behaviour change interventions in their own right, coming from the practitioner’s perspective, investing time and resources to enhance self-awareness and helping practitioners understand how their existing knowledge and expertise can be applied within a needs-supportive approach.

P1.01.26
HOW EFFECTIVE ARE BEHAVIORAL NUDGES FOR INFLUENCING HEALTHY FOOD CHOICES?

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Objectives: Discuss how the design of supermarkets, cafeterias and restaurants stimulate consumers make healthier choices. The growing obesity rates are causing concerns all over the world. Policy makers, professional experts and food providers are not yet aligned on measures for preventing overweight and obesity. It has been suggested that behavioral interventions focused on the contexts where consumers actually make food choices could be an important for enabling healthy choices. This paper reviews the scientific literature and discusses how effectively behavioral nudges influence healthy food consumption. Methods: A rapid literature review of how contextual factors in food retail outlets influence consumers' healthy choices, focused on supermarkets, buffets and cafeterias. Findings: The results show that a high number of studies have investigated how changes in food contexts influence food choices. However, there is a great variation in the quality of the studies. Five main decision architecture factors seem to "nudge" food choices: Price, Positioning, Prompting, Portioning, and Priming. Across contexts, the availability and variety of healthy options tend to increase consumption. Prices influence the choices of healthy and unhealthy options, depending on how the price level and -changes are framed by consumers. In some cases, small additions can sway consumption significantly; in other cases only large differences (40-50%) seem to matter. The effects of food labeling are mixed; labels that promote taste increase attractiveness, but health-signals or nutrition labels do not consistently promote healthy choices. Conclusions: Food providers can stimulate healthy consumption by adjusting the decision architecture of the retail outlets. We need to know more about how this approach can be implemented in profitable ways by food providers. More research is needed on how food policy makers can stimulate food providers to include healthy choices as part of their business and CSR strategies.

P1.01.27
DO TAXES REALLY PROMOTE HEALTHIER FOOD CHOICES? A BEHAVIORAL ECONOMICS PERSPECTIVE ON HOW STRONGLY TAXES INFLUENCE CONSUMPTION AT THE MOMENT OF CHOICE

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Objective: Discuss how strongly taxes as a component of product price can influence consumers at the moment of choice. The recent years regulators in several European countries have implemented taxation changes to sway consumption away from unhealthy and towards healthy food options. There is also an increasing interest in how policies inspired behavioral economics can promote better choices. We discusses if higher taxes can limit consumption of the least healthy options, and if price reductions stimulated by lower taxation can promote healthier consumption? Methods: A rapid literature review of how contextual factors in retail outlets influence consumers' choices. Qualitative observations of 10 Norwegian "food on the go" retail outlets to exemplify the nudges identified in the literature review. Findings: The literature review shows that five main decision architecture factors "nudge" food choices: Price, Positioning, Prompting, Portioning, and Priming. Viewed as a single factor, price has a mixed impact on food choices, depending on how the price levels and price changes are framed by
consumers. In some cases, small additions can sway consumption significantly, while in other situations only large differences (40-50%) seem to matter. The literature review suggests that Positioning and Portioning seem to have the most consistent effects. The qualitative observations suggest that spite of very high Norwegian sugar taxes, the price of unhealthy food options is lower than competing healthy alternatives. The four other "nudges" strongly enhance the attractiveness of unhealthy foods. Price is used to prompt consumers to select unhealthy varieties, but not the healthy ones. Conclusions: To promote healthier choices, taxation and price changes seem insufficient. They need to be accompanied by other changes in the decision architecture to work effectively at the moment of choice.

P1.01.28
A HEALTHY GENERATION, A PROGRAMME TO INCREASE PHYSICAL ACTIVITY AND PROMOTE A HEALTHY LIFESTYLE IN FAMILIES IN AREAS WITH LOW SOCIO-ECONOMIC STATUS


Objective: To evaluate the effects of the universal family intervention, A Healthy Generation, in children and their families in areas with low socio-economic status. Methods: Participants are 8 to 9-year-old children (n=67), their parents (n=94) and their siblings (n=14). In total, four different schools have been included in this controlled study (2 intervention/2 control) from a municipality outside Stockholm with low socio-economic status. The intervention families participate in the programme that runs over nine months. A foundation runs the programme in close cooperation with municipalities and local organisations where different physical activities are arranged for one hour, once to twice a week, on both weekdays and weekends. Participation is free of charge and equipment for the specific activity is provided on site. The activities take place at the local school or in the nearby surroundings and the entire family, including siblings are engaged. The sessions are followed by either a healthy hot meal or fresh fruit. The families in the control group will be offered to participate in the programme after the intervention, one year later. The primary outcomes are objectively measured physical activity and sedentary behaviour. Secondary outcomes are BMI, waist circumference, sagittal abdominal height, body composition, blood pressure, muscular strength, cardiorespiratory fitness, cardiovascular risk markers in blood and quality of life. Outcomes have been measured at baseline (August 2016) and will be measured directly after the intervention (June 2017). Group differences will be analysed with ANCOVA and regression analysis, adjusted for cluster, sex and baseline values. Results: We are currently analysing data and results from the baseline measurements will be presented. Conclusion: Assuming that the intervention shows positive results, is feasible and cost-effective, this study will be an important contribution to the further development of effective strategies to promote physical activity, reduce sedentariness and thus prevent chronic diseases. A broad implementation of this programme may not only improve public health but also lower inequalities in health.

P1.01.29
RISING FOOD SECURITY CONCERNS AMONG NEW ZEALAND ADOLESCENTS AND ASSOCIATION WITH HEALTH AND WELLBEING

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Objective: Household food insecurity poses a significant threat to the healthy development of children and young people. The aim of the current paper is to explore recent changes in the prevalence of food insecurity (between 2007 and 2012) among New Zealand adolescents and determine if food security concerns are associated with poorer indicators of health and wellbeing of young people. Methods: Data for the current study were collected as part of two nationally representative surveys of the health and wellbeing of high school students in New Zealand in 2007 (Youth’07) and 2012 (Youth’12). The associations between food security concerns and indicators of health and wellbeing (mental health, body mass index, school attendance) were examined with the 2012 dataset using multiple regression models, controlling for sociodemographic variables. Results: In 2012, 11% of young people reported food security concerns often or always, with an additional 33% reporting food security concerns occasionally or sometimes. The prevalence of food security concerns at both frequencies increased significantly from 2007 (8% and 28%, respectively) and consistently across many socio-demographic subgroups of young people. Young people with
Objective Household food insecurity is an important issue in Canada. While food insecurity is known to have detrimental effects on childhood development and academic achievement, there is little evidence evaluating the potentially confounding effect of low income or diet. This study aimed to characterize the association between food insecurity and children’s academic achievement independent of income and children’s diet quality. Methods Grade 5 (10-11 years) students and their parents were invited to participate in a population-based survey in Nova Scotia, Canada, in 2011. Parents completed surveys containing the short-form Household Food Security Survey Module and questions about household income. Children completed food frequency questionnaires to assess diet quality. These data were linked to children’s performance on standardized exams in reading, writing, and mathematics written in grade 6, with complete data acquired for over 4,000 students. Mixed effect multiple logistic regression was employed to assess the relationship between food security status and likelihood of meeting expectations on exams while adjusting for socioeconomic status, diet quality, and other relevant confounders. Results Low food security was reported by 9.2% of households, and very low food security was reported by 6.6% of households. Children who lived in households that reported experiencing very low food insecurity had 0.65 times the odds (OR: 0.65 [95%CI: 0.44, 0.96]) of meeting recommendations for reading performance and 0.62 times the odds (OR: 0.62 [95% CI: 0.45, 0.86]) of meeting recommendations for mathematics performance independent of all other covariates. Children who had the highest level of diet quality compared to the lowest had 1.54-1.73 times the odds of meeting expectations in all subjects compared to those with the lowest. Children whose household income was >$60,000CAD had 1.85-2.02 times the odds of meeting recommendations in all subjects compared to those whose household income was Conclusion This study fills an important gap in knowledge about the mechanisms by which food insecurity affects children’s academic achievement. This study provides support for interventions aiming to eradicate poverty and for school-based food programs, but also identifies the need to address the detrimental effects of food insecurity beyond the effects of income and diet.

P1.01.31
DOES BODY IMAGE SELF-PERCEPTION MATCHES REALITY IN ELEMENTARY SCHOOL CHILDREN?

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Purpose: Studies showed that many adolescents and adults misperceive their weight status. Few data exist on this topic regarding children. The objective of this study was to explore body image self-perception (BISP) and its association to actual weight status by age, gender, weight status groups. Methods: This study included 269 children (124 boys and 145 girls) aged between 6 and 13 years old (9.2±1.6 years) from Québec City’s metropolitan area.
Body mass index (BMI) was calculated and converted in BMI z-score (BMIZ) using the World Health Organization procedures. Weight status was classified as normal (BMIZ BMIZ ≥ 1 to) or obese (BMIZ ≥ 2). Children's body image self-perception assessment (BISP) was obtained using Collin's pictorial scale where the 7 body shapes identify the corresponding BMIZ from -3 (very thin) to 3 (very obese) so that the middle body shape representing an average child BMI was numbered a BMIZ of 0. Results/findings: BISP was smaller than BMIZ, independently of age, gender, weight status. Children were grouped according to their age (Conclusions: This study showed that most of the children perceive themselves smaller than their BMIZ. Younger obese children present a higher degree of misperception. Further studies should explore if the concept of BISP should be part of childhood obesity prevention programs.

P1.01.32
CONSUMERS’ PROMOTIONAL BUYING DECISIONS AROUND HEALTHY FOOD: AN APPLICATION OF THE THEORY OF PLANNED BEHAVIOUR

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Purpose: Recent evidence has reported that within Ireland two in three adults have been identified as either overweight or obese. Eating behaviours has been shown to have an important influence on not only weight but also health. Thus what consumers buy is important as it relates to what they eat. However, with economic and financial pressures, consumers increasingly rely on promotional food offers when grocery shopping. Understanding what encourages consumers to buy healthier foods on promotion requires an understanding of what influences their decision making. This is an under-explored area of the literature: previous research has focused on consumers' food type choice (healthy or less healthy) while little research has focused on what predicts promotional food decisions generally. The aim of this research is to explore the main drivers of consumers’ intentions around buying foods on promotional offer and their healthy food choices using the Theory of Planned Behaviour (TPB). Methods: A quantitative survey approach using the TPB was employed for this research. Each of the antecedents of intentions and behaviours were contained within the survey along with additional factors: impulsivity and health consciousness. An opportunistic sampling approach was undertaken (N=308). Statistical analyses were conducted using SPSS and AMOS. Results/findings: Overall, the results indicated that the TPB provide a good explanation in understanding the role of attitudes, subjective norm, perceived behavioural control in predicting consumers' buying decisions around promotional food offers. Additionally, both intentions and perceived behavioural control displayed a unique role in understanding consumers' promotional food choices and food types (healthy and less healthy). Innovatively both the factors of impulsivity and health consciousness were tested within the TPB in order to further expand its predictive utility. Conclusions: The main finding from this research is that the TPB is a valuable tool to employ as it provides a parsimonious approach to understand the buying decisions of consumers, and how this predicts the healthfulness or otherwise of their food choices. Additionally, the findings of this study provide evidence to inform and construct health marketing interventions; these interventions would be able to target not only consumers but also health professionals and educators.

P1.01.33
AN INVESTIGATION INTO THE PREVALENCE AND PEOPLE’S EXPERIENCE OF ‘FOOD POVERTY’ WITHIN A REGION OF NORTHERN IRELAND: SECONDARY ANALYSIS OF LOCAL AUTHORITY DATA

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Purpose: Food poverty (lack of access to an adequate quantity and quality of nutritionally satisfactory food) is becoming recognised as a public health emergency. No research study in Northern Ireland (NI) has considered food purchasing habits with social exclusion. Amidst calls for the routine collection and analysis of data to determine the extent of food poverty, this study investigates the existence and experience of food poverty in a local authority area, seeking to determine the affordability, accessibility and nutritional adequacy of food, and the social impacts of food poverty. Additionally, data were analysed to understand the possibility of categorising respondents by their reported affordability of various products/services. Methods: A household questionnaire was administered within a region of NI measuring the affordability and accessibility of food, and the social impacts of food poverty. Completed surveys (N=362) were analysed (SPSS and MPlus). Additionally, Latent Class Analysis (LCA) was used as a person-centred approach to identify a possible number of distinct groups within the sample data. Results/findings: Findings indicated that food affordability and accessibility proved important points of concern. Two in five (41%) respondents reported being unable to always comfortably feed themselves and their families three meals per day, and three in ten (31%) reported being forced to make a choice between food and other essentials. More than half (54%) reported some anxiety about whether their budget would fulfill their food needs. Almost half (46%) reported concern about the food they eat: 56% were wary that their diets were not healthy; 20% worried about poor diet quality; and 16% lamented the lack of variety. An important minority (13% – 40%) cited their inability to afford social activities that peers may take for granted. LCA analysed seven measures of affordability compared against a distal outcome of missing meals. A three-class solution was reported: Afforders (least likely to miss a meal) (58.38%); Budgeters (25.14%); and Non-Afforders (more likely to miss a meal) (16.48%). Conclusions: Policy makers and practitioners should consider these perspectives in devising evidence-informed and meaningfully-targeted interventions, while efforts must be ongoing to address the structural causes of food poverty for a truly sustainable solution.

P1.01.34
A CALL FOR A PRECISION BEHAVIORAL MEDICINE PERSPECTIVE IN PHYSICAL ACTIVITY PROMOTION AND MAINTENANCE

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Purpose: The medical community has accepted physical activity as an effective behavioral medicine for the prevention and treatment of a variety of diseases and chronic conditions. Concurrently, "Precision Medicine" has been gaining considerable attention as an approach to innovation and novel medical treatments involving attempts to target disease more directly than traditional methods while accounting for individual differences in human biology. It is our view that these two approaches should be integrated to form "Precision Behavioral Medicine" (PBM) to focus on factors that optimize treatment outcomes by enhancing behavioral interventions. PBM involves a holistic perspective for understanding and tailoring interventions in accordance with individual differences in self-regulatory skills for behavior change in an effort to maximize adoption and maintenance. Methods: To fully illustrate the problem and need for PBM, this presentation will highlight key inter-individual differences published within the extant literature that are consistently associated with exercise adherence and dropout—in supervised and unsupervised programs—which serve as barriers to participants' receiving their prescribed dose. These data will be further supported with our own systematic review and quantitative summary of randomized controlled exercise trials (peer-reviewed and published between 2000 and 2016 via PsychInfo, PubMed, CINAHL, Clinical Key, and SCOPUS) targeting one of three chronic conditions (i.e., cardiovascular disease, diabetes, or cancer). Findings: Together, these findings highlight the enormous variability and failure of many interventions to reach and impact patients in evidence-based exercise programs. Lastly, we will offer a theoretically-driven approach to facilitate early identification of these challenges and pragmatic solutions in the context of research and practice. Conclusions: Novel approaches are needed to screen and provide "mini interventions" to enhance self-regulatory capacity at the onset of intervention. Cognitive, motivational and mobility status will be discussed as focal points for future PBM approaches to physical activity intervention.

P1.01.35
DOES IT MATTER WHY THEY EAT?: TESTING LINKS BETWEEN MOTIVES FOR EATING AND WEIGHT-CONTROL STRATEGIES USING ORGANISMIC INTEGRATION THEORY
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Purpose: Grounded in Organismic Integration Theory (OIT; Deci & Ryan, 2017), the purpose of this study was to examine the role of motives for healthy eating in relation to use of reported weight-control strategies used by young adults living in the Philippines. Methods: Participants (N = 295; 55.7% female) were young adults aged 17 to 23 years old (M = 18.96±1.84 years) living in Quezon City, Philippines. Using a non-experimental research design, a survey was administered on a single occasion via an encrypted website. The survey contained the Regulation of Eating Behaviours Scale(Pelletier et al., 2004) to assess motives for healthy eating, plus additional items measuring consumption of daily fruit/vegetable intake (DFVI), frequency of skipping meals, and use of laxatives/vomiting as a weight-control approach. Results: Score reliability values in this sample ranged from 0.74 to 0.93 (M = 0.87±0.07). Hierarchical regression analyses using demographic variables on Step 1 and REBS scores on Step 2 produced a range of small effect sizes based on predicted variance in DFVI (R2adj. = 0.10), skipping meals (R2adj. = 0.07), and use of laxatives/vomiting to control weight (R2adj. = 0.09). Introjected regulation predicted each less DFVI (β = -.15, p

Conclusions: Consistent with OIT (Deci & Ryan, 2017), these findings underscore the important distinction between autonomous and controlled motives given the links noted in this study with healthy versus unhealthy weight-control tactics. Over-reliance on introjection may prompt unhealthy weight-control actions whereas assimilating healthy eating with the self may promote more adaptive eating behaviours in Filipino adults. Overall, this distinct motivational signature may prove useful for designing interventions to promote adaptive weight-control behaviours in Filipino adults.

P1.01.36
HOW CAN WE BETTER SUPPORT WOMEN TO BE HEALTHY IN PREGNANCY? EDUCATE LESS. ASK & LISTEN MORE

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Purpose: Healthcare providers (HCPs) are aware of the importance of discussing healthy gestational weight gain (GWG) with each pregnant woman, yet may avoid this conversation for fear of losing rapport. Healthy Conversation Skills (HCS), a communication technique, was trialed by a Registered Dietitian (RD) in a pilot RCT as an approach for HCPs to open a discussion about GWG and determinants. The aim of the study is to support and empower pregnant women to make healthy behavior changes and promote healthy GWG. This analysis explored the impact of HCS on women’s perceptions of behaviour changes made during pregnancy. Methods: Seventy low-risk pregnant women were randomized to an active control (AC) or intervention (INT) group and visited their respective RD for two visits at a mean gestational age of 16.2(+3.8) and 29.3(+1.2) weeks. Both RD’s administered lifestyle questionnaires and the INT RD created opportunities to discuss healthy behavior changes using HCS throughout the visits, while the AC RD did not. Women also completed a third lifestyle questionnaire via email at 34 weeks. Postpartum, women answered a questionnaire about perceptions of their prenatal experience. Differences between groups were assessed using t-tests or chi-square. Results: Maternal age, pre-pregnancy BMI, ethnicity, education, marital status, household income and parity did not differ between INT (n=33) and AC (n=37) groups. Between visit 1 and 2, INT women increased their diet quality score (28.9+7.7 to 34.2+7.2, p=0.0012), while the AC group did not (35.1+9.0 to 36.2+9.4, p=0.5370). At 34.4(+0.86) wks AC women reported being sedentary for 3 hours/week more than INT women (p=0.0073). Postpartum, INT women were more likely to strongly agree that participating in the study “improved at least 1 of my lifestyle habits” (p=0.008) and “was beneficial” (p=0.008) compared with AC women. INT women also were more likely to agree or strongly agree that their study RD "asked about things important to me" (83% vs 56%, p=0.038). Conclusions: When a HCP initiates a conversation about healthy lifestyles in pregnancy, women report positive outcomes. HCS appears to hold promise as an approach to for these conversations and could make a difference to improving maternal health.

P1.01.37
I EAT THE VEGETABLES, BECAUSE I HAVE GROW THEM WHITH MY OWN HANDS

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Objective: Involvement of children in gardening has the potential to increase liking of vegetables and consequently intake. The aim of this study was to evaluate the impact of a year round schoolgarden program on determinants of vegetable intake in primary school children from low socioeconomic neighborhoods in the Netherlands and to identify children’s perspectives on schoolgardening in relation to vegetable consumption. Methods: This study used a mixed methods design and took place in low socioeconomic neighborhoods in Amsterdam, the Netherlands. The intervention consisted of a one year schoolgarden program (25 lessons, 2 cooking courses and a farm visit). The control group did not participate in the program. The quantitative data included 405 children and was collected via questionnaires. The qualitative data were gathered through participant observations complemented with 10 interviews with children's and parents and a focus group discussion with the children. Results: The intervention group consisted of 254 children, the control group of 208 children. Preliminary results show that children who participated in the schoolgarden program reported to like more vegetables, help to cook more often at home, and are more often encouraged by their parents to eat vegetables than children who did not participate. No statistically significant differences in vegetable intake was found. Results from the participatory observations and interviews showed that the schoolgarden program changes the children’s attitudes towards vegetables, which stimulates them to eat more vegetables, but also to advocate the consumption of vegetables at home. Conclusions: This study is the first mixed method study designed to evaluate a schoolgardening intervention in children from low socioeconomic neighborhoods. The preliminary results found evidence to support the claim that schoolgardening can improve children's attitudes and consequently their vegetable intake, although qualitative and quantitative data are not congruent on this. Important, is the weekly harvest from the garden that resulted in an introduction of the intervention in the home environment of the children. This is a promising finding, since most school based intervention lack to reach this environment.

P1.01.38
SPORT NUTRITION KNOWLEDGE, BEHAVIORS AND BELIEFS AMONG HIGH SCHOOL SOCCER PLAYERS.

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Purpose: Limited data report sport nutrition knowledge (SNK), behaviors and beliefs in youth athletes, especially differences based on sex, ethnicity and socioeconomic status. This study examines the following question: Does SNK, behaviors and attitudes/beliefs differ in youth soccer players (YSP) based on sex, ethnicity (Latino/White) and participation in free/reduced lunch (FRL) program? Methods: YSP (n=535; 55% female; 14-18y) were recruited for a 2-y intervention that examined the impact of sport nutrition education on food choices/behaviors related to sport. Responses to a health/sport history and sport nutrition questionnaire were analyzed. Multivariate Poisson (SNK variables) and Logistic (behavior and attitudes/beliefs variables) Regression models were built to evaluate the research question. Result: Participants were White (51%)/Latino (41%), with more Latino males (48.7%) than females (35%). Participation in FRL was 40.6% (46.2% males; p=0.020); 80% of these were Latino. Overall, SNK was low (45.6%); 6% scored ≥75%. For YSP in the FRL program, Latino scored 23% higher than White (p=0.01). For supplement knowledge, females scored lower than males (16%; p=0.047) and Latinos scored lower than Whites (33%; p=0.001). Over, 55.7% reported eating breakfast daily; 46% reported regular supplement use and 30.1% reported using a protein shakes. Females were 50% less likely to eating breakfast than males (p=0.00). YSP in FRL were 40% less likely than non-FRL to eat breakfast (p=0.00). Latino youth were twice as likely to report regular supplement use compared to White (p=0.00). For protein shake use, females were less likely than males (p=0.02) and Latinos were twice as likely than Whites (p=0.03) to consume. Overall, 45% YSP reported their nutrient requirements were different than peers. Latinos were 45% less likely (p=0.03) to report that their diet met nutritional requirements compared to Whites. Latinos were 2.4 times more likely to report that nutritional
supplements were necessary for training (p=0.00). Conclusions: In YSP, SNK was low, especially in White FRL participants, thus, a need for SNK education. Sport nutrition behaviors need improvement, especially in females/Latino youth. YSP do not have accurate perception of nutrient and supplement needs for active youth. Educational materials/approaches should consider the unique needs based on sex, race and income.

P1.01.39
WALKING TO THE POST OFFICE IS NOT THE SAME AS A LABORATORY TREADMILL WALK: MIXED METHODS ANALYSIS OF AFFECTIVE RESPONSES TO EVERYDAY WALKING AND FUTURE PHYSICAL ACTIVITY BEHAVIOUR

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Objective: Research suggests a relationship between affective responses to exercise and future physical activity behaviour. For example, participants who feel better during treadmill walking report higher future physical activity levels. There is also evidence that people feel better when walking outdoors compared with treadmill walking. Therefore, one objective of this study was determining if affective responses to everyday outdoor walking were similarly related to future physical activity.

Methods: This was a mixed-methods longitudinal field study on New Year’s resolutions to walk more. Participants (n=55) were asked to walk outdoors for 15 minutes and record how they felt using the Feeling Scale (FS), a single-item 11-point bipolar scale. Recordings were before/after walking, and after 5 and 10 minutes walking. Most participants were recruited from workplaces so walks were usually near participants’ offices, e.g. walking to the post office. Six months after participants began self-selected New Year’s resolutions to walk more, they reported their physical activity levels via online questionnaire. 25 participants were also interviewed about their experiences of resolving to walk more. Results: Drawing on quantitative evidence, I argue that an ecologically-valid walking environment generally increases affective responses more than using a treadmill. This means that affective responses in everyday contexts are less strongly related to people’s future physical activity behaviour. Using qualitative evidence, I argue that the meanings people ascribe to walking are more important than affective responses, with ideas about ‘proper’ exercise and everyday walking being ‘boring’ or inconvenient influencing the outcome of people’s intentions to walk more. The participants who increased their activity levels the most were those who put in place effective strategies for becoming more active, not necessarily those who felt better during walking. Conclusions: A laboratory treadmill is associated with exercise, whereas popping out for a quick walk to the post office is not seen in the same way. Despite most people feeling better whilst walking outdoors, this does not automatically translate into increased physical activity levels. Perhaps environmental changes, (e.g. encouraging active travel) or helping people with physical activity strategies might have more impact on walking behaviour than focusing on the affective benefits of walking.

P1.01.40
FARMERS’ MARKET USE AMONG FOOD ASSISTANCE RECIPIENTS IN A COUNTY IN THE US

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Objective: Public health professionals in the US have invested in creating new farmers' markets and enabling farmers' markets to become authorized to accept Supplemental Nutrition Assistance Program (SNAP) benefit. SNAP is a $80 billion food assistance in the US that provides a monthly allotment to over 43 million low income Americans to spend at authorized food vendors. In an effort to increase access to fresh produce among low income residents and minorities. This study examines whether SNAP authorization of farmers' markets is associated with use of markets by SNAP recipients and assesses the use of markets by African Americans and Hispanics/Latinos in Cabarrus County, North Carolina. METHODS: Five farmers' markets were observed weekly between May and July of 2016. Market shoppers voluntarily completed a 21-question intercept survey that included questions to estimate the
percentage of SNAP recipients and identify shopping patterns and trends. To determine the racial/ethnic
distribution of customers, bihourly counts were taken during market hours. RESULTS: Out of the 272 surveys
collected, 13 participants (4.8%) reported receiving SNAP benefits. Only 1 survey participant had ever used SNAP
benefits at a farmers' market. Customer counts suggest that 8% of market shoppers are African American and 3% are Hispanic. CONCLUSION: While some SNAP recipients and African/Americans and Hispanics/Latinos are visiting the five farmers markets included in the study, their numbers are not proportional to their population sizes within the county. More research is needed to better understand barriers to shopping and use of SNAP benefits at farmers' markets.

P1.01.41
UNDERSTANDING THE POST-SURGICAL BARIATRIC EXPERIENCES OF PATIENTS WHO ARE TWO YEARS AND BEYOND

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Introduction: One year after bariatric surgery, follow-up clinical assessments become less frequent and surgical recipients must cope with weight management more independently. Moreover, up to 50% of recipients experience weight regain, shortly after (1.5 – 2 years after surgery). Purpose: The purpose of the study was to gain an overall understanding of the physical and psychosocial experiences of individuals who have undergone bariatric surgery at least two years ago, and to investigate the personal and clinical impact of bariatric clinic support and services on the long-term health and weight management of surgical recipients. Methods: Individual semi-structured interviews lasting approximately 60 minutes were conducted. Interviews were transcribed verbatim, read multiple times and then analyzed using inductive content analysis to identify emerging themes. The researchers compared responses to establish confirmability of the data and negotiated discrepancies in emerging themes until an agreement was reached. Methods were employed throughout to support data trustworthiness. Results: Participants (n=28) were primarily middle-aged (mean: 49.7 ± 12.7 years old), female (75%), and completed bariatric surgery more than 3 years ago (mean: 42.6 ± 8.4 months). Five themes emerged regarding recipients' physical and psychosocial experiences including (1) improved health status, (2) reduced quantity of medication(s), (3) increased energy, (4) increased confidence with some emotional challenges, and (5) adjustment to body dysmorphia. An additional five themes were revealed with regards to recipients' personal and clinical reflections on the impact of bariatric support and services, such as (1) concerns about excess skin, (2) receiving great bariatric support and services, (3) disparate marital dynamic outcomes, (4) adequate wait time before surgery, and (5) learning and understanding post-surgical eating habits. Conclusions: Generally, participants shared positive improvements in their physical and psychosocial state. However, many participants had personal and clinical concerns about their excess skin post-surgery, which they felt needed to be addressed to support their long-term health and weight management, two years and beyond. This study provides an understanding of what has led surgery recipients to their long-term health, weight management, or poorer than desired outcomes, and can provide clinicians with insight into longer-term and sustainable weight management support and services.

P1.02 SIG: E- & m-health / Cancer prevention and management

P1.02.1
DEVELOPMENT OF AN EVIDENCE-INFORMED BLOG TO PROMOTE HEALTHY EATING AMONG MOTHERS: USE OF THE INTERVENTION MAPPING PROTOCOL

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Purpose: Online interventions grounded in theory lead to increased effectiveness for health behaviour change; however, few theory-driven social media-based health promotion interventions have been described in the literature. The objective of this study was to describe the use of the Intervention Mapping (IM) protocol for developing an evidence-informed blog to promote healthy eating among French-Canadian mothers of children aged
2–12 years old. Methods: Preliminary work allowed the identification of women Internet users' perceptions with regard to their use of healthy eating blogs. After this needs assessment (Step 1), the following steps of the IM protocol were performed: (Step 2) formulating performance objectives; (Step 3) selecting theory-based intervention methods; (Step 4) designing the blog; and (Step 5) planning for the adoption, and (Step 6) the evaluation of the intervention. Results: Step 1: Two behaviours were selected, namely fruit and vegetable intakes and milk and alternatives intakes. Step 2: We formulated six performance objectives (e.g. planning for healthy meals) and targeted psychosocial determinants of fruit and vegetable and milk and alternatives intakes in adults (i.e. knowledge, beliefs about capabilities, beliefs about consequences, intention/goals). Step 3: We selected behaviour change techniques (e.g. modelling and goal setting) for the context of a dietary intervention delivered through a blog. Step 4: A 6-month intervention was then developed during which we aimed to address one performance objective per month in weekly blog publications written by a registered dietitian. Step 5: We sought to include engagement-promoting methods (e.g. peer and counsellor support) to promote mothers' use of the blog and adherence to the intervention. Step 6: A randomized controlled trial is underway to evaluate the effect of the blog on dietary behaviours of French-Canadian mothers (n=64; age = 37.0 ± 6.4y; initial fruit and vegetable intake = 5.0 ± 2.2 servings/d; initial milk and alternatives intake = 2.4 ± 1.3 servings/d). Mothers' acceptability of the blog will be assessed using focus groups at the end of the intervention. Conclusions: IM protocol allowed for effective decision-making in the development of a novel knowledge translation tool to increase adherence to dietary recommendations among mothers of young children.

P1.02.2
THE ROLE OF THE BUILT ENVIRONMENT IN A RANDOMIZED CONTROLLED TRIAL TO INCREASE PHYSICAL ACTIVITY AMONG MEN WITH PROSTATE CANCER: THE PROMOTE TRIAL

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Purpose: This study examined the association between the built environment and physical activity in prostate cancer survivors, as well as whether built environment factors (walkability and density of sports complexes) were effect modifiers of a physical activity intervention. Methods: Our study included 165 prostate cancer survivors residing in Edmonton, Alberta, from the PROMOTE Trial. The PROMOTE trial was a randomized controlled trial of a behaviour change intervention to increase physical activity and quality of life in prostate cancer survivors. In the PROMOTE trial, 423 prostate cancer survivors were randomly assigned to a: standard physical activity recommendation, self-administered implementation intention, or telephone assisted implementation intention group, and physical activity and quality of life were assessed at baseline, 1 and 3 months. To explore the role of the built environment, this study examined walkability and density of sport complexes. Results/Findings: Linear regression analyses revealed that the self-administered intervention group had a borderline significant increase in self-reported physical activity minutes/week (Beta= 145.0), however none of the built environment variables were found to be significantly associated with physical activity. The logistic regression showed that the self-administered intervention group had a significantly greater likelihood of meeting the physical activity guidelines (OR= 2.4), though no built environment variables were associated with physical activity levels. Conclusions: Our findings suggest that the built environment was not associated with physical activity, and was not an effect modifier in a physical activity behaviour change intervention for prostate cancer survivors. Further research is needed before clear conclusions can be generated.

P1.02.3
EFFECTICACY OF INTERVENTIONS THAT USE APPS TO IMPROVE DIET, PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR: A SYSTEMATIC REVIEW

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Purpose To systematically review the efficacy of interventions that use apps to improve diet, physical activity and sedentary behaviour in children and adults. Methods Systematic literature searches were conducted in five databases to identify papers published between 2006 and 2016. Studies were included if they used a smartphone app in an intervention to improve diet, physical activity and/or sedentary behaviour for prevention. Interventions could be stand-alone interventions using an app only, or multi-component interventions including an app as one of several intervention components. Outcomes measured were changes in the health behaviours and related health outcomes (i.e., fitness, body weight, blood pressure, glucose, cholesterol, quality of life). Study inclusion and methodological quality were independently assessed by two reviewers. Results Twenty-seven studies were included, most were randomised controlled trials (n=19; 70%). Twenty-three studies targeted adults (17 showed significant health improvements) and four studies targeted children (two demonstrated significant health improvements). Twenty-one studies targeted physical activity (14 showed significant health improvements), 13 studies targeted diet (seven showed significant health improvements) and five studies targeted sedentary behaviour (two showed significant health improvements). More studies (n=12; 63%) of those reporting significant effects detected between-group improvements in the health behaviour or related health outcomes, whilst fewer studies (n=8; 42%) reported significant within-group improvements. A larger proportion of multi-component interventions (8 out of 13; 62%) showed significant between-group improvements compared to stand-alone app interventions (5 out of 14; 36%). Eleven studies reported app usage statistics, and three of them demonstrated that higher app usage was associated with improved health outcomes. Conclusions This review provided modest evidence that app-based interventions to improve diet, physical activity and sedentary behaviours can be effective. Multi-component interventions appear to be more effective than stand-alone app interventions, however, this remains to be confirmed in controlled trials. Future research is needed on the optimal number and combination of app features, behaviour change techniques, and level of participant contact needed to maximise user engagement and intervention efficacy.

P1.02.4
DIGITAL HEALTH BEHAVIOUR CHANGE INTERVENTIONS IN CANCER SURVIVORS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Purpose: The number of individuals surviving a cancer diagnosis has risen substantially over the past four decades due to improvements in early diagnosis and treatment. There is now impetus on improving long-term outcomes for cancer survivors. Health behaviours such as physical activity (PA) and diet can reduce cancer-related and all-cause mortality, cancer recurrence and alleviate negative consequences of the disease and treatments. Digital behaviour change interventions (DBCIs) have the potential to reach large numbers of cancer survivors. No meta-analysis has assessed the efficacy of DBCIs in improving PA, diet and/or sedentary behaviour among cancer survivors. Methods: We conducted a systematic review and meta-analysis of relevant studies identified by a search of Medline, EMBASE, PubMed and CINAHL. Studies which assessed a DBCI among cancer survivor populations with measures of PA, diet and/or sedentary behaviour were included. Mean differences (MDs)/standardised mean differences (SMDs) were pooled across studies using random-effects models. Results: 15 studies were included in this review. Meta-analyses could be conducted for 7 studies of self-reported moderate-vigorous PA (MVPA) showing significant increases (MD = 42 minutes per week; 95% CI: 12, 71) and 4 studies of body mass index (BMI)/weight (SMD = -0.23; 95% CI: -0.41, -0.05). There was a trend toward significance for reduced fatigue (3 studies; SMD = -0.23; 95% CI: -0.51, -0.04) and no significant change in cancer-specific quality of life (QoL) (MD = 0.61; 95% CI: -1.83, 3.06). Meta-analyses were not possible for other cancer-related outcomes. Narrative synthesis revealed mixed evidence for effects on diet, generic measures of QoL and self-efficacy and no evidence of an effect on mental health. Two studies suggested improved sleep quality. No studies assessed sedentary behaviour as an outcome. Conclusions: Digital behaviour change interventions may improve physical activity participation among cancer survivors and there is mixed evidence for diet. The number of included studies is small and risk of bias and heterogeneity was high. Future research should address these limitations with large, high-quality randomised-controlled trials, with objective measures of PA and sedentary time.
P1.02.5
DEMOGRAPHIC, CLINICAL AND SOCIAL-COGNITIVE CORRELATES OF PHYSICAL ACTIVITY IN HEAD AND NECK CANCER SURVIVORS

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Purpose. Physical activity (PA) has large benefit on health and quality of life of cancer survivors. However, PA levels of cancer survivors, including head and neck cancer (HNC) survivors, tend to decrease during cancer treatment. Although they increase during the post-treatment period, they typically do not return to pre-treatment levels. Little is known about PA correlates in HNC survivors, and they may differ across cancer types. Understanding correlates of PA may aid the development of interventions promoting PA for this specific group of cancer survivors. Therefore, this study aimed to identify demographic, clinical and social-cognitive correlates of PA intention and behaviour in HNC survivors using the Theory of Planned Behavior (TPB). Methods. Data from two cross-sectional studies on correlates of PA in HNC survivors were pooled. Both studies used self-reports to assess PA and social-cognitive constructs. Demographic and clinical data were collected via self-report or medical records. Univariable and multivariable linear regression analyses were conducted to identify correlates of PA intention and PA behavior (z-scores). Path model analyses were conducted to study the full TPB model in one analysis, adjusted for relevant demographic and clinical covariates. Results. In total, 416 HNC survivors were surveyed. Their mean age was 66.6 (SD 9.4) years, 64% were men, and 78% were diagnosed with laryngeal cancer. Path analyses showed that PA intention was significantly higher in HNC survivors who completed treatment longer ago (β=0.502, 95%CI=0.092;0.937), and who had a more positive attitude (β=0.376, 95%CI=0.210;0.547), subjective norm (β=0.237, 95%CI=0.126;0.354) and perceived behavioral control (PBC, β=0.258, 95%CI=0.118;0.391). Patients with higher PA intention (β=0.006, 95%CI=0.002;0.009), higher PBC (β=0.004, 95%CI=0.001;0.009) and lower age (β=-0.025,95%CI=-0.037;-0.014) had higher PA behavior. The models explained 26.7% of the variance in PA intention and 13.6% of the variance in PA behavior. Conclusions. Although pathways of the TPB models were significant, a large proportion of the variance in PA intention and behavior remains unexplained. There is a need to improve existing behavior (change) models for explaining PA intention and behavior in cancer survivors.

P1.02.6
NEUROPSYCHOLOGICAL AND MICROBIOOM PROFILES OF ADHD AND AUTISM. THE BRAIN-GUT FEELING FOR NUTRITION

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Neuropsychological and microbiome profiles of ADHD and autism. The brain-gut feeling for nutrition. Dr. A.M.H.L. Serlier-van den Bergh1,2 & Drs B. Baumeister2 1. Maastricht University, Faculty Psychology and Neuroscience, department neuropsychology and psychopharmacology. 2.Clinical Neuropsychological Practice, High Tech Campus 41, Eindhoven. There is much evidence, based on rodent studies, that the gut microbiota is involved in various diseases. These findings have to be validated in humans before modulating the human gut microbiota for nutritional treatment benefits. The brain-gut relation is promising for intervention purpose. Neurobiological developmental disorders as attention-deficit/hyperactivity disorder (ADHD) and autism are subject of this study. Results of the gut-brain axis in association with ADHD and autism are reviewed to understand their mutual mechanisms. The hypothetical pathogenesis of autism is that most children who develop autism, have an immunologic defect related to either environmental toxins or genetic factors with an impact on their intestinal microbiome profile. Antimicrobials lead to ingrowth or overgrowth of species and lifestyle plays a major role in this phenomenon as well. Virulent factors may lead to damage of the brain-gut system. Key factors in the study are analysing resident and virulence factors. Many of the childhood disorders are becoming more prevalent and can continue through adulthood. Nutrition can dysregulation the brain-gut response as well as the immune system, stress system, and specific the gastrointestinal barrier function, which are all closely associated. We will report the
neuropsychological and microbiom profile-data of 18 persons with ADHD or autism. We compare microbiom profile differences in autistic persons with age range 6.4 to 49.6 and persons with ADHD, age range 10.1 to 55.1 compared to normal references. Microbiom analyses showed increased dysbiosis in both groups. Specific brain-gut differences between the groups will be discussed with respect to possible nutritional interventions. Keywords: Nutrition / Physical and Mental Health · Well-being, quality of Life · Cognitive function · Academic achievement. ADHD. Autism. Neuropsychology. Intestinal microbiom. Brain-Gut axis.

P1.02.7
TESTING OF A SMART-PHONE PLATFORM USING SOCIAL MEDIA AND GAMIFICATION TO IMPROVE VEGETABLE INTAKE IN YOUNG ADULTS: FOCUS GROUP FINDINGS

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Objectives: 18-30 year olds are the poorest consumers of vegetables among Australian adults. Modern communication mediums such as social media and smartphones are deeply embedded in young adult culture and could serve as an engaging medium for improving vegetable intake. This paper explored the acceptability and relevance of proposed components of a mobile phone-based program to promote vegetables using social media and mobile-gaming. The objective was to understand which features and functions were preferred. Methods: Five focus groups were conducted in October-November 2016. A mixed methods approach was applied. Participant demographics, usage of social media, gaming and health apps were collected by questionnaire. Participants' perceptions of a theory-based gamified self-monitoring app and social media posts were explored. Qualitative data arising from group discussion were analyzed by two researchers using NVivo software. A deductive approach allowed grouping of common ideas into themes. Results: 32 participants (14 males) attended the focus groups (mean age 23.1 (SD 2.7) years). All participants reported daily usage of social media, with Facebook ranked as most frequently accessed. Twenty participants indicated interest in using the self-monitoring app for improving vegetable intake. Qualitative analyses of open discussion revealed 2 major themes regarding preferred features of the smartphone app; (1) the use of visual guides for estimating quantities of vegetables and tracking progress, and (2) a simple interface. Gamification strategies such as earning badges or financial incentives were viewed more positively than use of a self-reward framework. Social media posts which presented food pictures and recipes were ranked most motivating, while awareness-raising posts received lower scores. Participants indicated preference for viewing but reluctance to post information onto social media. The use of an "authoritative" tone was preferred and associated with credibility. Young adults also ranked messages containing "Gen Y" language highly, with preference for those which were personally relevant. Conclusions: The proposed use of social media and mobile-gaming was seen as an acceptable approach for improving vegetable intake. Materials should be visually appealing, simply designed, credible, and personally relevant to appeal to this population. This feedback can inform future mobile-phone based interventions targeting improved nutrition in young adults.

P1.02.8
#SOCIALMEDIA: EXPLORING THE RELATIONSHIP OF SOCIAL NETWORKING SITES ON EATING BEHAVIOURS IN YOUNG ADULT MALES

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Objective: The aim of the present study was to investigate if total social networking site (SNS) time/day, problematic SNS use (i.e., degree of dependent relationship with SNSs), total SNS friends predicted eating behaviours in males. Methods: A sample of males (N = 68) completed an online survey; measuring social networking site (SNS) usage, problematic SNS use, and eating behaviours. Eating behaviour questions were taken from Project Eat-III survey (participants aged 20-31 years), to assess various aspects of eating behaviour (EB) (Larson, Neumark-Sztainer, Story, van den Berg & Hannan, 2011; Neumark-Sztainer et al., 2011; Neumark-Sztainer, Wall, Story, & Standish, 2012). Specifically, questions ask about both frequency and type of dieting/weight control behaviours. A binary logistic regression analysis was performed to examine time, problematic SNS use, and total number of friends (predictor variables) on the binary variable of dieting (dependent variable) among the sample. Secondly, a multinominal regression analysis was performed to examine predictor variables on participant's response to "are you currently trying to lose weight, stay the same weight, gain weight, not trying to do anything with my weight"
(dependent variable). Results: Participants ranged from 18 to 27 years, spending on average 2.9 (±2.8) hours/day on SNSs. Of the 68 males, 23(34%) reported some frequency of dieting in the last year, and 15(22%) of the males indicated they were currently trying to lose weight. In regards to the binary regression analysis, the Wald criterion demonstrated that being amount of time spent on SNS (p=0.026) increased the probability of dieting by > 1.0. The odds ratio (Exp(B)) for number of posts was 1.327 (95% CI [1.028, 1.310]), indicating that when time is raised by one unit (one hour) the odds ratio is 1.327 times as large. The multinomial regression analysis revealed those who spend more time on SNS are 2.16 times (95% CI [1.098, 4.261]) more likely to want to lose weight compared to do nothing to their weight, p Conclusion: Although, the findings presented in this study are correlational, they do suggest that spending time on SNS may have implications on eating behaviours of males.

P1.02.9
CHARACTERIZING ACTIVE INGREDIENTS OF EHEALTH INTERVENTIONS TARGETING PERSONS WITH POORLY CONTROLLED TYPE 2 DIABETES MELLITUS USING THE BEHAVIORAL CHANGE TECHNIQUE TAXONOMY

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Objective: The Behavioral Change Technique Taxonomy v1 (BCTTv1) is a comprehensive tool to characterize active ingredients of interventions and includes 93 labels that are hierarchically clustered into 16 overarching categories. To identify active ingredients in eHealth interventions targeting patients with poorly controlled type 2 diabetes mellitus (T2DM), we conducted a scoping review, using this taxonomy. Methods: Randomized controlled trials, studies with pre-/post- designs and quasi-experimental studies examining efficacy and effectiveness of eHealth interventions for disease management or the promotion of relevant health behaviors were identified by searching PubMed, Web of Science, and PsychINFO. Reviewers independently screened titles and abstracts for eligibility, using predetermined eligibility criteria. Data were extracted following a data extraction sheet. The BCTTv1 was used to characterize the active ingredients of the interventions reported in the included studies. Results: Of the 1404 articles screened, thirty-two fulfilled the inclusion criteria and reported results on the efficacy and/or effectiveness of interventions. Eighteen (56.3%) were web-based interventions delivered via PDA, tablet, computer and/or smartphones, seven (21.8%) were telehealth interventions delivered via landline, six (18.8%) made use of text messaging, and one of videoconferencing (3.1%). Of the 16 overarching categories of the BCTTv1, eleven were identified in interventions included in this review. Of the 93 individual BCTs, 31 were identified as active ingredients of the interventions. The most common BCTs identified were 'instruction on how to perform behavior', 'adding objects to the environment', 'information about health consequences', 'self-monitoring of the outcome(s) of a certain behavior' and 'feedback on outcomes of behavior'. Conclusions: Our results suggest that the majority of BCTs employed in interventions targeting persons with T2DM revolve around the promotion of self-regulatory behavior to manage the disease or to assist patients in performing the health behaviors necessary to prevent further complications of the disease. Detailed reporting of the BCTs included in interventions targeting this population may facilitate the replication and additional investigation of such interventions.

P1.02.10
EXPLORING THE ASSOCIATIONS BETWEEN PHYSICAL ACTIVITY AND QUALITY OF LIFE IN YOUNG ADULT CANCER SURVIVORS

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Purpose: To investigate the relationship between physical activity (PA) levels and quality of life (QoL) in young adult cancer survivors (YACS), a population that is underrepresented in the PA and cancer literature. Methods: Seventy-five YACS aged 18-44, who were recruited through social media and cancer support group websites and newsletters, completed an online survey, which assessed PA and QoL using validated measures (i.e., Leisure Score Index (LSI), Short Form-36 Health Survey (SF-36), and Functional Assessment of Cancer Therapy: General (FACT-G)). Results: Only 34.4% of participants (n = 26) met the public health PA guidelines of 150 minutes/week of moderate-to-vigorous PA. On average, participants reported 120.21 minutes/week of moderate-to-vigorous PA (SD = 136.47)
and low levels of resistance exercise (M = 30.27 minutes/week, SD = 63.67). Results indicated that moderate-to-vigorous PA was significantly correlated with the physical health score of the SF-36 (r = .325, p = .004) and was strongly correlated with the QoL score from the FACT-G (r = .200, p = .085). Additionally, moderate-to-vigorous PA was significantly correlated with vitality (r = .347, p = .002), bodily pain (r = .279, p = .016), and physical role functioning (r = .245, p = .034) on the SF-36, as well as physical wellbeing (r = .263, p = .022) on the FACT-G. Moderate-to-vigorous PA was strongly correlated with general health perceptions (r = .225, p = .053) and social role functioning (r = .205, p = .078), but they were borderline significant. Conclusions: YACS are not a highly active population, as few participants are meeting the recommended guidelines for weekly PA. This is unfortunate, as our results demonstrate that higher levels of PA are related to positive QoL benefits of survivors in this population. As reported elsewhere, YACS are interested in engaging in PA and feel capable of doing so. Thus, it may be beneficial for YACS to receive education about how to start a PA program and receive help in building motivation to engage in PA. It would be beneficial for future research to focus on developing effective interventions for improving the PA levels and QoL of YACS.

P1.02.11
SEDENTARY BEHAVIOUR IN YOUNG ADULT CANCER SURVIVORS

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Purpose: To explore sedentary behaviour (SB) in young adult cancer survivors (YACS). This topic has not yet been investigated in YACS, a population that is underrepresented in the cancer literature. Methods: Seventy-eight YACS aged 18-44, who were recruited through social media and cancer support group websites and newsletters, completed an online survey, which assessed SB using a validated measure (i.e., The SIT-Q). Results: Participants were mostly white (n = 71), married (n = 39), fully employed (n = 51), college graduates (n = 56), and female (n = 65). The average age was 33.14 (SD = 4.70), while the average age at diagnosis was 29.12 (SD = 4.78). The average body mass index for participants was 27.76 (SD = 5.90), which indicates that the average participant was overweight. Results indicated a high level of total weekly minutes of sedentary time (M = 770.13, SD = 270.19). Participants reported high levels of weekly minutes of sedentary time during screen time (M = 338.91, SD = 293.38), moderate levels during work (M = 130.91, SD = 127.34), meals (M = 84.67, SD = 81.12) and transport (M = 79.84, SD = 113.82), and low levels while reading (M = 48.17, SD = 60.80) and participating in other leisure activities (M = 51.31, SD = 104.35). Additionally, participants reported an average of 342.54 minutes of sleep per night (SD = 107.10). Conclusions: According to the findings of this study, YACS are a very sedentary population, reporting an average of nearly 13 hours of sedentary time per day. This is higher than the amount of sedentary time that has been reported for adults in the general public from previous studies, indicating that YACS may be exposing themselves to higher risks (e.g., increased risk of obesity, and an increased risk of developing chronic diseases, such as cardiovascular disease, type 2 diabetes, and a secondary cancer) in comparison to the rest of the population. This study adds to the limited research available on sedentary behaviour in YACS. It would be beneficial for future research to focus on developing effective interventions to reduce SB in YACS.

P1.02.12
RISETX: TESTING THE FEASIBILITY OF A WEB APPLICATION FOR REDUCING SITTING DURING TREATMENT FOR PROSTATE CANCER

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Purpose: To examine the feasibility of a web-based application for reducing sitting time via step counts for prostate cancer (PCa) patients undergoing androgen deprivation therapy (ADT) for prostate cancer. Methods: Forty-six PCa patients were recruited from prostate cancer clinics at two cancer centres in Toronto, Ontario, Canada between August 2015-October 2016. PCa patients were given a Jawbone, access to the website program, and provided with a goal of increasing walking by 1,000 daily steps above baseline, every two weeks, over a 12-week period. Briefly, the intervention provided a range of support tools that were progressively released to help PCa patients reduce sitting...
time (e.g., alerting device via the Jawbone to stand up; self-monitoring of steps) over a 12-week period. Step counts were calculated for each phase of the intervention (baseline phase and 5 additional phases) and categorized as: inactive (10,000 steps). Daily steps were compared across the phases using repeated-measures ANOVA. Results: The follow-up assessment rate was 91.3%, and adherence to the program was 89.1%. PCa patients had a Mage=73.2±7.3 years, MBMI=28.0±3.0 kg/m2, with 65.2% having localized prostate cancer, 63.0% having ADT administered continuously, and an average of 93.6±71.2 months since diagnosis. PCa patients spent 71.4% of their total time sedentary, 1.8% in moderate-to-vigorous PA, and had an average step count of 4,002 at baseline. Step counts significantly increased from baseline to post-intervention (1891 daily steps; p < 0.01). Conclusions: Preliminary analyses of step data collected by the Jawbone demonstrated that the intervention was successful in significantly increasing steps of PCa patients. The intervention was very well received by patients. Additional strategies may be needed for maintenance of step counts across all activity levels of PCa patients. The next step for RiseTx is to replicate these findings in a larger, randomized controlled trial that will have the potential for reducing sitting time among PCa patients.

P1.02.13

ASSOCIATION BETWEEN PHYSICAL FITNESS LEVEL AND CANCER MORTALITY IN ADULTS: A META-ANALYSIS OF PROSPECTIVE COHORT STUDIES

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Purpose: The purpose of this study is to examine the association of physical fitness and cancer mortality in health adults. Methods: Five databases (Pubmed, Medline, Embase, Cinahl, google scholar) and reference lists of relevant studies were searched up to November 2015. Pooled relative risks (RRs) with 95% confidence intervals (CIs) were calculated using random-effects models. Results: A total 1,777 articles were identified, of which 17 prospective studies were analyzed for the current meta-analysis. The analysis included 281,993 participants (range: 2,268 - 25,892) and 5,146 participants death for cancer, followed up over a period ranging from 6.4 to 33.7 years. The analysis showed that participants who have high level of fitness have 38.2% reduced risk of cancer mortality (95%CI: 0.546-0.700) compared with those who have low level of fitness. When association between cardiopulmonary fitness and the risk of cancer mortality was examined separately, participants with high level of cardiopulmonary fitness have 47.0% reduced cancer mortality (95% CI: 0.488-0.575, I²: 20.7, p < 0.01). Conclusion: Higher level of fitness level is associated with reduced cancer mortality. Therefore, maintaining good physical fitness plays a potentially important role in protecting against cancer mortality.

P1.02.14

THE USE OF OBJECTIVE PHYSICAL ACTIVITY DATA ROUTINELY COLLECTED BY SMARTPHONES IN LARGE COHORT STUDIES

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Objective Objective physical activity (PA) monitoring is known to be more accurate than self-report PA questionnaires in determining activity levels and accelerometers are increasingly used in population-based studies. However, costs, logistics, and participant’s unwillingness to wear such devices limit their use to smaller and selected subsamples. Consumer devices can routinely and continuously collect objective activity data i.e. step counts. In the case of some smartphones, the data is collected automatically avoiding over-representation of more motivated participants. We aimed to determine the feasibility of a simple approach of collecting routine step count data in the context of large population-based cohort studies. Methods Participants of the Singapore Population Health Studies (SPHS) undergoing revisits since September 8th 2016, were asked questions regarding step counts collected by their own devices. These questions determine if 1. participants have an iPhone that contains the health app, 2. they are willing to share their step count data over the past 7 days/past 30 days, 3. they wear their smartphone in pocket, bag etc., and 4. they use other trackers or apps to continuously monitor their activity. Information collected is presented descriptively. Results As of November 20th 2016, 1092 participants attended revisits. Of those, 239 (22%) used an iPhone with the health app. Other smartphone apps (N=52, 5%) or PA trackers (N=46, 4%) were used by participants to continuously monitor activity. Among iPhone and other app/device users N=136 (57%) and N=56 (58%) provided step count data, respectively. Among males, N=65 (84%) wore their iPhone in pocket or on belt.
Among females, only N=2 (4%) wore the iPhone in pocket or on belt, while N=45 (83%) wore their phone in a bag. We expect that about 8,000 additional participants will be revisited as part of the SPHS during 2017. Conclusions This initial experience shows that routine objective PA data from consumer devices can be collected with little effort in large population-based studies. The results demonstrate that such information could provide an additional layer contributing to improved PA assessments in population-based studies. However, validation of smartphone step count data and wearing location need to be considered to improve data quality.

P1.02.15
DOES ACTION PLANNING IMPROVE OUTCOMES IN A PHYSICAL ACTIVITY INTERVENTION FOR PREGNANT WOMEN?

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Objective: To assess impact on adherence, participant satisfaction and physical activity (PA) change of an action planning tool within a web-based PA intervention (Fit4Two) for pregnant women. Methods: Adherence was assessed by the number of action plans completed during the online intervention. Satisfaction with the action plans was measured using a five-point Likert scale (1=strongly disagree; 5=strongly agree). Chi-square analyses were used to compare those with a high satisfaction to those with a low satisfaction on adherence. Changes in PA were assessed using the Godin Leisure-Time Exercise Questionnaire. Repeated measures ANOVA’s were used to compare PA from baseline to post-intervention in those with a high adherence to the action plans (3-4 AP’s) to those with a low adherence (1-2 AP’s). Repeated measures ANOVA’s also compared changes in PA in those with non-specific action plans to those with specific action plans (day, type, duration, time and partner detailed). Results: Use of the action planning tool was high among the 27 participants, with 65% of the participants formulating at least three/four action plans. However, use of the action planning tool decreased as the intervention progressed (100% completed Action Plan 1 and 2, 60% completed Action Plan 3 and 30% completed Action Plan 4) and did not significantly influence the change in PA over time. Those participants (37%) who either agreed or strongly agreed that the action planning tool was useful were significantly more likely to complete 3+ action plans (p=0.045, x2=0.037). Participants who developed highly specific action plans significantly increased their PA from module 1 to 2 (p=0.005, F=9.48), but no other significant differences were found for other modules. Overall, almost half of the participants (48%) met or exceeded the amount of PA outlined in their action plans. Conclusions: While adherence to the action planning tool was high and may have helped participants to be active, or more active than they planned, many did not perceive the tool as useful, and it did not improve the overall efficacy of the physical activity intervention. Therefore more efforts are needed to make the tool more effective and engaging.

P1.02.16
THE RELATIONSHIPS BETWEEN NEUROCOGNITIVE PERFORMANCES AND BIOCHEMICAL MARKERS IN ADULTS WITH OBESITY

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The purposes of the present study were to explore the neurocognitive mechanism of executive control deficits in the adults with obesity, and to examine the relationships between neurocognitive performances and the biochemical markers. Twenty-six adults with obesity and 26 healthy-weight controls, categorized by body mass index and %fat as measured with dual-energy X-ray absorptiometry, completed a blood draw and performed a visuospatial attention paradigm with concomitant event-related potential recording. The obese group showed slower reaction times and smaller P3 amplitudes when performing the executive-control task. Even when controlling for the co-variable of cardiorespiratory fitness, the results still remained. In addition, the levels of leptin and C-reactive protein (CRP) were significantly higher in the obese group relative to the control group, but not IL-6 and TNF-α. Partial correlations adjusting for cardiorespiratory fitness showed that leptin and CRP concentrations in the obese group were negatively associated with poorer P3 amplitude performance. However, the regression analysis showed that only leptin was the sole predictor of such an electrophysiological performance in the obese group. These findings indicate that the individuals with obesity exhibited neurocognitive deficits when performing the visuospatial attention task, and leptin levels could be one of the influential factors.
A PHENOMENOLOGICAL STUDY ON EXERCISE PERCEPTION FOR COLORECTAL CANCER PATIENTS UNDERGOING ADJUVANT CHEMOTHERAPY

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Purpose: The purpose of the current study was to understand exercise perception of patients with stage 2-3 colorectal cancer undergoing adjuvant chemotherapy (FOLFOX). Methods: The qualitative data on exercise perception of fifteen colorectal cancer patients undergoing adjuvant chemotherapy was acquired through in-depth interviews and field note. The method proposed by Colaizzi(1978) was used to guide the process of data analysis. Results: Our qualitative analysis resulted in 61 meaningful statements, categorized into nine themes and three categories: constant struggle, barriers in exercise participation and positive exercise experience. First of all, colorectal cancer patients undergoing chemotherapy experienced chemotherapy associated physical and emotional difficulties which make them difficult in participating in exercise. Secondly, physical and emotional difficulties, negative experiences in treatment, lack of information on exercise were three most prevalent perceived barriers in participating in exercise during chemotherapy. Lastly, patients who participated in exercise during chemotherapy perceived physical and psychological benefit, which helped them to continue exercise. Our participants in general have a positive attitude toward exercise during chemotherapy. Conclusion: Our findings suggest that patients under chemotherapy experience physical and emotional difficulties, however, those who participated in exercise during chemotherapy perceived that exercise helpful to overcome these difficulties.

DEVELOPMENT AND EFFECTIVENESS VERIFICATION OF INPATIENT EXERCISE PROGRAM FOR HEMATOPOIETIC STEM CELL TRANSPLANTATION PATIENTS: DEVELOPMENT PROCEDURES AND STUDY PROTOCOL FOR A RANDOMIZED CONTROLLED TRIAL

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Purpose: Hematopoietic stem cell transplantation (HSCT) is primary treatment for hematologic cancers, but patients who undergo HSCT are at risk of suffering treatment-related problems. Moreover, limited mobility of patients in isolated bioclean room could result in loss of physical function, fatigue, psychological problems, and decrease of quality of life (QOL). These problems lead to delay in physical and psychological recovery, and discharge from hospital. On the other hand, exercise improves physical function, fatigue, depression, QOL, and immune function. Although previous studies examined the effect of exercise on the length of hospital stay and hematological parameters in HSCT patients, the results has been controversial. Additionally, evidence-based inpatient exercise program for HSCT patients was absent. Therefore, the purpose of this study is 1) to develop inpatient exercise program for patients who undergo HSCT, and 2) to examine the effect of exercise on the length of hospital stay and recovery-related parameters in HSCT patients. Method: The current study will be comprised of two phases including development of an inpatient exercise program and to test efficacy of exercise (randomized controlled trial) in HSCT patients. In phase 1, an exercise program will be developed through systematic procedure including literature review, observation of patients' condition, patient survey, pilot test and focus group interview, collecting experts' opinion, drafting the exercise program, expert group meeting, feasibility study, and completion of exercise program for Randomized controlled trial. In phase 2, a total of 50 patients undergoing HSCT will participate in this study. Participants will be randomly assigned to either an exercise or control group. Participants in the exercise group will perform developed exercise program during their hospital stay, and participants in the control group will undergo usual care. Primary outcome of the current study is the length of hospital stay, and the secondary outcomes are recovery-related parameters including hematological parameters, meal intake, physical functions and body composition.
Objective: Several reviews and meta-analyses demonstrate beneficial effects of exercise on Quality of Life (QoL) during and after treatment in cancer survivors. Previous studies showed that the exercise effect on QoL is mediated by increased cardiorespiratory fitness and reduced fatigue. However, these mediators could only explain 44-61% of the total variance in QoL, suggesting additional mechanisms may be involved that are not yet investigated. Therefore, we examined cancer survivors' perspectives of how a supervised exercise program improved their QoL.

Methods: Concept mapping meetings were conducted with eleven groups of 3-10 cancer survivors (n=60) participating in structured supervised exercise programs during or after cancer treatment. Participants were asked to generate ideas in response to the statement: 'How did participating in a supervised exercise program benefit your QoL'. Ideas of the groups were combined and similar ideas were removed, resulting in a total of 98 unique ideas. Next, participants were asked to cluster (based on similarities) and rate (importance) the ideas, by means of an online session. Using multidimensional scaling and hierarchical cluster analysis one concept map was created. Researchers determined the final amount of clusters best representing all ideas, provided cluster titles and interpreted the final concept map. Results: The concept map depicted 6 clusters, based on 37 completed online sessions. According to the participants, a supervised exercise program positively influenced their QoL as a result of: 1) social support from fellow cancer survivors (e.g. 'sharing experiences'), 2) supervision by a physiotherapist (e.g. 'exploring physical limits'), 3) maintained/improved physical fitness, 4) an individual approach (e.g. 'tailored to individual capacity and symptoms'), 5) increased ability to cope with the disease and treatment consequences, 6) (re)gaining self-esteem and confidence (e.g. 'not just a patient'). The most important ideas were related to 'maintaining/improving physical fitness' and 'an individual approach'. Conclusions: These results show that in addition to improved fitness, the effects of exercise on QoL may also be mediated by social support, an individual approach, the role of the physiotherapist, coping and self-esteem. Future intervention research is necessary to confirm the mediating role of these variables in the exercise effect on QoL.

P1.02.20
AN INNOVATIVE, ‘REAL WORLD’ APPROACH FOR INCREASING PHYSICAL ACTIVITY IN FEMALE BREAST CANCER SURVIVORS: PRELIMINARY FINDINGS FROM PROJECT MOVE

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Objective: Physical activity (PA) is an effective strategy to mitigate the health challenges of many breast cancer survivors (BCS). However, up to 70% of BCS are not meeting the minimum recommended PA (150 minutes of moderate to vigorous intensity) guidelines. Generic PA programs do not often address the specific needs of BCS, highlighting the demand for innovative, targeted programs. Project MOVE, a combination of a) Microgrants: funds ($2000) awarded to applicant groups to develop and implement a PA initiative and b) Financial incentives: a reward ($500) for increasing PA, was developed as a unique approach for increasing PA. This presentation reports on the preliminary findings of Project MOVE concerning PA behaviour change and program feasibility. Methods: This pre-post test, feasibility trial included groups (n=10) of self-identified female BCS (18yrs+), who were post-surgery and primary systemic chemo and radiation therapy, and living in the Okanagan Region of British Columbia, Canada. Recruitment occurred via meetings with relevant stakeholders, local print and radio media, social media, and posters distributed to community centres and medical clinics. PA data was collected using accelerometry at baseline and 6 months post baseline. Feasibility data was collected using focus groups, interviews, and questionnaire at 6 months. Mixed ANOVA was used to assess changes in PA and thematic analysis was used to analyse feasibility data. Results: Participants (n=69) had a mean age of 58.8 years (SD 8.67), an average BMI of 25.93 (SD 4.77), with 45% not meeting PA guidelines at baseline. Regarding PA behaviour, our findings indicated that those not meeting guidelines had significantly higher weekly PA at follow-up (M=116.51, SD=86.44) compared to baseline (M=74.93, SD=38.98, t(38) =-3.72, p=.001). Participants also highlighted key points concerning program feasibility, including; extending recruitment strategies to target oncology specialists, addition of resources concerning healthy eating and
proper exercise techniques, and the need for facilitators with expertise in exercise modification for BCS. Conclusions: These preliminary findings offer insight into the effectiveness of an innovative approach for increasing PA in BC survivors, and provide strategies to guide intervention refinement for further dissemination.

P1.02.21
BUILDING THE ALBERTA CANCER EXERCISE (ACE) PROGRAM

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Purpose With a growing number of cancer survivors, and abundant evidence on the physical and psychosocial benefits of exercise, here is a need to translate this research evidence into sustainable community-based exercise programs for cancer survivors. ACE is a 5-year hybrid effectiveness and implementation study in which we will evaluate the potential benefits of community-based exercise, as well as the implementation of a clinic-to-community based cancer and exercise model of care. Methods 1000 cancer survivors, up to 3-years post-diagnosis, will be enrolled in the 5-yr study. Eligible and consenting participants will be screened for exercise safety and following baseline testing, will be triaged to appropriate exercise programming in their community. An embedded RCT will investigate passive (poster/brochure and educational presentations) vs active (clinic direct referral to the certified exercise physiologist, CEP). Survivors will engage in a 12-week group-based exercise class, delivered twice weekly and including a personalized prescription for aerobic, resistance and flexibility training. Baseline and post-intervention assessments will include physical fitness, activity levels, quality of life and healthcare utilization measures. Results Initial work on ACE includes hiring of the primary CEPs in Calgary and Edmonton, development of triage models of clinic-to-community care, delivery of training for community-based fitness professionals, building active and passive recruitment strategies, and securing community partners. Community partners in Calgary and Edmonton for January 2017 starts include Wellspring Calgary and Edmonton, City of Calgary Recreation, and the YMCA Edmonton/Northern Alberta and Calgary. Rural sites are on-boarding for Spring 2017, including Red Deer and Medicine Hat, Alberta. Conclusions ACE is an evidence-based sustainable clinic-to-community model of exercise care for cancer survivors. ACE evaluation will utilize the REAIM framework to assess program research, effectiveness, adoption, implementation and maintenance. Supporting improved rates of exercise adoption and adherence to an active lifestyle among cancer survivors will enhance health outcomes for survivors in Alberta.

P1.02.22
IMPULSE PAL: APP-BASED TRAINING TO HELP PEOPLE MANAGE IMPULSIVE IN-THE-MOMENT EATING

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Background: Impulsive eating can often undermine peoples' attempts to maintain weight loss. Objectives: To develop an impulse management intervention to reduce unplanned, unhealthy snacking, and overeating. Methods: Intervention Mapping was used to systematically develop our ImpulsePal app. This involved: 1) A needs assessment involving a systematic review of effectiveness evidence and consultation with service-users and intervention design and delivery experts. 2) Specification of change objectives and determinants. 3) Selection of intervention strategies (mapping of change techniques to the determinants of change). 4) Creation of programme materials. 5) Specification of adoption, implementation and evaluation plans. The first stage of evaluation is a mixed methods feasibility study using two phases of action-research to refine the intervention in close collaboration with its intended users. Results: The developed smart-phone app includes a brain-training game (go-nogo stimulus conditioning), mindfulness techniques to help "control the moment", implementation planning and context-specific reminders. There is also an "Emergency Button" to provide support when temptation is strong. Findings from the first round of action research suggest strong engagement for many people with the content and features of the app and reasons for disengagement by some. The intervention group lost 0.9Kg more than controls at 3 months of follow up. Findings from round 2 will also be available for presentation in time for the conference. Conclusions: Addressing the impulsive processes which drive behaviour on a moment-to-moment basis may be a promising direction for weight management apps. The app and evaluation methods are feasible and acceptable and the intervention is now ready for evaluation in a full-scale trial.
P1.02.23
MIDDLE SCHOOL CHILDREN DESCRIBE COMPLEX, NUANCED USE OF ELECTRONIC COMMUNICATION PLATFORMS

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Purpose Public health strategies in the US increasingly utilize social networking services and electronic messaging applications ("communication platforms") for treatment and prevention of chronic disease. Middle school (grades 6-8, 10-14 years) is a critical period for health behavior development, however little is known about how these children engage with communication platforms and whether platforms can be successfully leveraged for nutrition-focused interventions. The purpose of this formative study was to describe communication platform use among middle-school-aged children and present implications for intervention. Methods Eligible participants attended a public middle school in New York State and were recruited by Cooperative Extension staff. In-depth, one-on-one interviews were conducted using a semi-structured interview guide. Participants were asked about their use of six common communication platforms and if there were other platforms they or their friends were using. Among platform users, device(s) used and frequency of use were collected. All participants were asked how they would prefer to receive messages about food and nutrition. Interviews were audio recorded, transcribed verbatim, and transcripts were analyzed using conventional content analysis. Results Interviews were conducted with 30 children, with diversity in racial-ethnic background, gender, socioeconomic status, and residential area. Twenty-six participants were platform users, engaging with an average of three platforms. The majority reported texting, emailing, and not using Twitter, while they were split regarding use of Facebook, Instagram, and Snapchat. Frequency of use varied, with increased frequency among more popular platforms. Nuanced platform behaviors were guided by factors grouped into broad categories of internal and external regulations. Internal regulations included self-imposed guidelines or internal justifications for platform behaviors driven by children’s preferences and attitudes. External factors were facilitators and barriers to platform use beyond participants’ immediate control, e.g., parental guidelines. Children recommended using text messages for future nutrition interventions. Conclusions This formative research contributes to a limited knowledge base for middle-school-aged children’s electronic communication behaviors, highlighting the complexity of access to and engagement with communication platforms. Importantly, this study provides descriptive accounts of youth platform use that help identify underlying rules guiding platform behaviors and includes participant-informed suggestions for future nutrition interventions.

P1.02.24
PATTERNS OF HEALTH APPS USE IN SMARTPHONE AND TABLET OWNERS IN CHINESE: FINDINGS FROM HONG KONG JOCKEY CLUB FAMILY PROJECT

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Purpose Health Apps are increasingly used and may have important implication on health. We investigated the pattern of health Apps use among Chinese adults in Hong Kong, where smartphones/tablets use and Internet access are prevalent but the usage of health Apps remains unknown. Methods A territory-wide population-based dual (landline and mobile) telephone survey (Family and Health Information Trends survey) was conducted in 2016. Among respondents who had smartphones or tablets, we assessed the download and use of health Apps including types of downloaded health Apps functions, the frequency of using health Apps, perceived effect of health Apps, as well as reasons for not using health Apps. Logistic regression was used to assess the associations of socio-demographic characteristics (age, education and household income) with health Apps download. Results Among 799 smartphone or tablet owners (79.5% of 500 landline and 505 mobile respondents), only 202 (25.3%) had downloaded health Apps, with 37.6% of them using health Apps at least daily. Health Apps were commonly downloaded for tracking physical activity (86.1%), recording health status (49.0%) and monitoring vital signs (38.1%). However, Apps for tracking calories for weight loss (27.7%) and helping to adopt healthy eating habits (10.4%) were less commonly downloaded. More than half of health Apps users (59.4%) reported that health Apps could help them improve health behaviors. Common reasons for not using health Apps were lack of perceived necessity (30.7%), interests (26.3%), and knowledge (16.6%). Overall, younger age, having higher education and household income were significantly associated with health Apps download (all P. Conclusion Health Apps are
underused in Hong Kong compared to the US, particularly for healthy eating Apps. As 60% thought that health Apps could help, further intervention studies are needed to test the effectiveness of using health Apps on health behaviors. If effective, promotion of health Apps use is warranted.

**P1.02.25**

**MEDIATORS AND MODERATORS OF CHANGE IN WEIGHT AND GLYCEMIC MARKERS IN AN E-HEALTH DIABETES PREVENTION PROGRAM**

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Objective: Alive-PD, an e-health diabetes prevention program, promotes changes in physical activity and eating habits through weekly interactions and goal-setting. A randomized controlled trial demonstrated significant treatment effects on diet and activity behaviors, weight, and glycemic markers. For HbA1c and glucose, weight loss is known to be an important factor mediating change. The objective of the present analysis is to examine additional mediators and moderators that may also have an effect on glycemic markers, as well as on weight change.

Methods: N=240 persons provided 6-month clinic and questionnaire data on diet, activity and psychosocial factors (97 Intervention, 143 Control). Mean age was 55.4 years (SD 8.7), 68% male, 69% white. Mediation/moderation was examined using the Hayes PROCESS macro. A single physical activity (PA) question assessed aerobic activities. Dietary variables (change in consumption of bread, pasta/rice, sweets, fruit excluding juice, and vegetables) were examined separately and also combined into a single dietary variable, "allDiet". Psychosocial variables such as self-efficacy were also examined. Change in weight, HbA1c, and fasting glucose were the outcome variables examined.

Results: In models of treatment effect on weight change with two mediators, both PA and allDiet were significant, their indirect effect representing (PA) 17% (95% CI 4.6-38%) and (allDiet) 22% (CI 4.3-47%) of total effect. In two-mediator models of effect on HbA1c, with weight change as one (always significant) mediator, several second mediators were also significant: improvement in allDiet representing 39% (CI 14-97%), decrease in bread/rice/pasta 16% (CI 3-46%), increase in fruit 17% (CI 1-54%), and increase in confidence to change diet 21% (CI 4-67%). In a serial model of effect on HbA1c, PA mediated weight change which in turn mediated HbA1c change. Baseline consumption of sweets moderated weight change (high sweet consumers had the least treatment effect), while gender and obesity were not significant moderators. Conclusions: Physical activity and dietary changes appear to independently mediate change in glycemic markers, in addition to their effect on weight loss. A dietary pattern of high sweet consumption offers a special challenge to intervention design. Attention to mediators and moderators may improve outcomes of e-health interventions.

**P1.03 Theories and determinants: Adults, older adults and all ages**

**P1.03.1**

**BARRIERS AND FACILITATORS TO FRUIT AND VEGETABLE CONSUMPTION AMONG RURAL INDIAN WOMEN OF REPRODUCTIVE AGE**

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Background Micronutrient insufficiencies are a serious public health problem among women of reproductive age in India, adversely affecting maternal health and economic productivity, and child growth and educational outcomes. Fruit and vegetables are important sources of micronutrients and consumption of these foods is low, particularly in rural areas. Our objective was to identify perceived barriers and facilitators to fruit and vegetable consumption among women in rural communities in Eastern Maharashtra, India. The majority of rural Indians rely on markets for access to fruit and vegetables so we also aimed to identify opportunities to intervene in supply chains to increase availability and affordability of these foods. Methods We held 9 focus group discussions and 12 one to one interviews with women of reproductive age (18-40 years) in villages surrounding Wardha. We also held one to one interviews with farmers, wholesalers and vendors in the local area. The data collection was stopped when no new information emerged. We used inductive thematic coding to analyse the data. Results The majority of women knew
that fruit and vegetables were beneficial to health and wanted to increase their intakes. Seven main themes were identified as being barriers or facilitators to fruit and vegetable consumption: 1) Household dynamics whereby women were the last to eat and had little control over which foods were prepared; 2) Workload and feeling too tired to eat; 3) Likes and dislikes; 4) Time pressures with preparing and eating food a low priority; 5) Environmental Factors such as space and water for kitchen gardens, lack of availability in summer; 6) Social and Cultural Norms including food taboos and gender role expectations; 7) Cost and affordability. On the supply-side, challenges included destruction of crops by wild animals and unpredictable weather; risk associated with unpredictable market value of produce and lack of storage and transport. Conclusion Most women would like to consume more fruit and vegetables. Several potentially modifiable factors affecting intakes were identified. It is important that the supply chains of fruit and vegetables in these communities are well understood in order to identify opportunities to intervene to increase consumption.

P1.03.2
WHAT ARE THE NATURALISTIC EXPERIENCES OF ADULTS USING NUTRITION MOBILE APPS FOR WEIGHT MANAGEMENT?

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Purpose: Mobile "apps" are an emerging support for nutrition behaviour change. Indeed, dietitians have identified that their clients are asking about or using nutrition mobile apps for behaviour change. Quantitative studies have revealed nutrition apps can be effective; however, findings are mixed and adherence to use is often poor. Few qualitative data exist on app use in naturalistic, as opposed to research-related settings. The purpose of this research was to characterize user experiences with nutrition mobile apps in naturalistic settings and to obtain suggestions to enhance future apps to better support dietary behaviour change. Methods: Twenty-four healthy adults ≥18 years of age (79% female; 63% 18–30 years of age) who used any nutrition behaviour change app for weight management for ≥1 week in the previous 3–4 months were recruited from Ontario and Alberta, Canada via Facebook, posters in public locations, and word of mouth. These participants completed an in-person, one-on-one semi-structured interview. Interviews were transcribed verbatim, the text was coded inductively using NVivo 10 (QSR International, Doncaster, Australia) and subjected to content analysis. A second researcher with qualitative research experience reviewed codes from 10% of transcripts and derived categories/subcategories to identify variations and reach consensus. Results: Participants used various nutrition apps, usually without accompanying professional support, MyFitnessPal® being the most commonly accessed. App use was reported over various time spans (range: one week to four years) both consistently and on-and-off. Five categories of experiences with apps emerged from the interviews: (a) food data entry (subcategories: database; data entry methods; portion size; complex foods); (b) accountability, feedback, and progress (subcategories: goal setting; accountability, monitoring and feedback); (c) technical and app-related factors; (d) personal factors (subcategories: self-motivation; privacy; knowledge); and (e) obsession. Participants provided several suggestions to enhance future apps, related to data entry, app design and feedback. Conclusion: Substantial excitement exists around nutrition mobile apps. This research provides insight into factors that affect app use, which may help professionals to better assist individuals to make positive nutrition behaviour change with these tools. Suggestions to enhance future apps have immediate relevance to designing the next generation of nutrition behaviour change apps.

P1.03.3
A TRIAL OF IMAGE-ASSISTED DIETARY ASSESSMENT TO MONITOR INTAKE AND IMPROVE DIETARY HABITS, KNOWLEDGE AND BEHAVIOURS IN ELITE ATHLETES

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Purpose: Traditional methods of dietary assessment used in sports nutrition are burdensome, prone to substantial error and resource-intensive, especially for the nutrition-professional if groups of athletes reside in different geographical areas. Therefore, new approaches to monitor dietary intake and provide nutrition care for athletes are
Poppe L.

THINK ALOUD INTERVIEWS
UNDERSTANDING USER’S PERCEPTIONS REGARDING EHEALTH

P1.03.5
for the behaviour change, before guiding them through action planning. They could make their own action plan, could imply that future interventions should focus first on motivating users. The fact that many users dropped out when people had to choose to make their own action plan to get more physically active, and when they had to complete the questionnaire. There were no significant predictors for baseline or intervention completion. However, older adults were significantly more likely to return to the follow-up than younger adults (OR= 3.09, 95% CI= 1.56-6.15). Conclusions: The high attrition rates during all intervention components, such as MealLogger, are the efficacy of using image-based apps, such as MealLogger, are an effective approach to monitor dietary intake and educate athletes against traditional approaches. Further research should compare the efficacy of using image-based applications to monitor dietary intake and educate athletes against traditional approaches.

P1.03.4
WHEN DO PEOPLE STOP USING AN ONLINE INTERVENTION? RATES AND PREDICTORS OF ATTRITION IN ‘MYPLAN 1.0’, A SELF-REGULATION-BASED EHEALTH INTERVENTION

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Purpose: EHealth interventions can reach large populations and are effective in increasing physical activity (PA) and fruit and vegetable intake (FI, VI). Nevertheless, the effects of eHealth interventions are overshadowed by their high attrition rates. This study investigates the pattern of attrition in a web-based intervention to increase PA, FI and VI, that consists of three modules. The baseline module, which is the most extensive module of the intervention, is the first acquaintance with the website and could be determinative for further use. The first aim is to describe attrition rates according to the components in the baseline module. A second aim is to investigate if certain user characteristics are important predictors for baseline completion, returning to a follow-up module and intervention completion. Methods: The sample consisted of 210 adults who participated in an online intervention to promote PA, called ‘MyPlan 1.0’. The baseline module of the intervention was divided into eight meaningful blocks, according to the different self-regulation techniques (e.g. action planning, coping planning, …), and attrition was described per block. To identify predictors of completion, logistic regression analyses were conducted, with gender, SES, age and BMI as possible predictors. Results: At the end of the intervention programme, there was an attrition rate of 78.2%. Although attrition occurred during all blocks, some critical points in the intervention could be identified. The largest amount of attrition occurred when people had to choose to make their own action plan to get more physically active, and when they had to complete the questionnaire. There were no significant predictors for baseline or intervention completion. However, older adults were significantly more likely to return to the follow-up than younger adults (OR= 3.09; 95% CI= 1.56-6.15). Conclusions: The high attrition rates during all intervention components inform us that interventions should be short and easy. The fact that many users dropped out when they could make their own action plan, could imply that future interventions should focus first on motivating users for the behaviour change, before guiding them through action planning.

P1.03.5
UNDERSTANDING USER’S PERCEPTIONS REGARDING EHEALTH INTERVENTIONS: AN IN-DEPTH ANALYSIS USING THINK ALOUD INTERVIEWS

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Purpose: EHealth interventions have shown to be effective in changing health behaviours, such as increasing physical activity (PA) and altering dietary habits. Nevertheless, these interventions are challenged by high attrition rates. Therefore it is recommended to make in-depth investigations about how users perceive eHealth interventions and what their preferences are in order to create interventions that are more adapted to their end-users. The presented study uses think aloud interviews to gain deeper insights in users’ perceptions and experiences while going through an online intervention. Methods: Users’ perceptions and experiences were explored using think aloud interviews. These interviews were taken while participants went through "MyPlan 1.0", which is a self-regulation-based eHealth intervention designed to increase PA and the intake of fruit and vegetables in adults. Forty individuals participated in the study (mean age = 53.45, 23 women). To simulate a realistic environment, data were collected during home-visits. Participants went through the website using their own computer and at their own pace. The interviews were transcribed verbatim and inductive thematic analysis was applied. Results: Many participants stated that they became more aware of their health behaviours, but that it took too much time to go through the website and answer all the questions. Consequently, the website was often described as a questionnaire rather than a tool that could help them to become more physically active or to eat more fruit and vegetables. Furthermore, many users expressed that they didn’t want to monitor their PA or their intake of fruit or vegetables since they perceived it as useless and too time-consuming. However, users often stated that a mobile application would help them remind about their goals and might make it easier to monitor their health behaviours. Conclusions: Think aloud interviews can offer in-depth information about users’ perceptions and preferences regarding eHealth and can guide adaptations to the intervention. This study showed that although users became more aware of their health behaviours, the website did not stimulate a large amount of the users to actually change these behaviours. Users’ ideas about health and behaviour change can form hindrances and should be taken into account.

P1.03.6
DIFFERENCES IN USER CHARACTERISTICS AND INTERVENTION USE FOR WEB-BASED AND PRINT-BASED PARTICIPANTS IN A COMPUTER-TAILORED PHYSICAL ACTIVITY INTERVENTION FOR PROSTATE AND COLORECTAL CANCER SURVIVORS

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Purpose: Physical activity (PA) is known to be beneficial in improving negative physical and psychological effects of cancer. The rapidly increasing number of cancer survivors, resulting from ageing and improved cancer care, emphasizes the importance to develop and provide low cost, easy accessible PA programs. Such programs could be provided by eHealth, but cancer survivors not familiar with Internet would then be excluded from such programs. Therefore, we developed a computer-tailored PA intervention for prostate and colorectal cancer survivors in which participants could choose their own preferred delivery mode (i.e. Web-based or print). The current study aims to assess the user characteristics related to delivery mode. Methods: We studied characteristics of participants using the Web-based and/or printed intervention materials in an RCT. Prostate and colorectal cancer survivors were recruited from 17 hospitals and randomized to OncoActive, a computer-tailored PA intervention, or the control group. OncoActive started with an assessment of participant characteristics, needed for the computer-tailored advice. Intervention group participants received both Web-based and printed materials. Responses to the baseline questionnaire and self-reported intervention material use were analysed using ANOVA, chi-square tests and logistic regression to study differences in user characteristics. Results: A majority (68.8%) of the intervention group participants (N=256; Mean age=66.4 ± 8.14) initially choose to participate online. According to univariate and multivariate analyses, participants were less likely to participate online with increases in age (p=.008) and subjective fatigue (p=.013). Low (compared to high) educated participants were less likely to participate online (OR=.520, p=.046). With regard to self-reported intervention material use, 79% of the participants used at least some online materials. Logistic regression regarding user characteristics did not reveal any significant differences between print-only users and users who did use online materials. Conclusions: The majority of participants initially chose to participate online and used (some of the) online materials, indicating that even in an older population eHealth may be feasible. Nevertheless, a substantial part (21%) only used printed materials. Although this may be a temporary phenomenon (e.g. rapid technology development, ageing of adults more familiar with Internet), it is currently
P1.03.7 PRELIMINARY FINDINGS OF A COACH-TRAINING PROGRAM TO INCREASE MODERATE-TO-VIGOROUS PHYSICAL ACTIVITY DURING ORGANIZED YOUTH SPORT: A PILOT GROUP RANDOMIZED CONTROLLED TRIAL

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OBJECTIVE: There is a need to investigate effective methods for increasing moderate-to-vigorous physical activity (MVPA) in organized youth sport (OYS). This study evaluated the impact of a coach-training (CT) program that was designed to train coaches on evidence-based strategies to increase MVPA and decrease inactivity during basketball practices. We hypothesized that CT, relative to a standard-care control, would increase the percentage of time (%time) players spent in MVPA during practices over the course of an 8-week OYS basketball season. METHODS: Youth recreational basketball participants wore an accelerometer for the duration of a baseline practice and post-test practice. After baseline, 16 OYS teams (8 girls and 8 boys teams) were randomized within sex to receive coaching from a coach who attended a single hour-long CT or a standard-care control group. Two teams were excluded because there were mixed random effects models, with team and day as random effects, and child age and baseline MVPA as covariates. RESULTS: The intervention-by-time-by-sex interaction approached significance (F= 4.47, p= 0.052). The %time spent in MVPA increased for girls intervention teams (baseline mean [95% CI]= 33.3% [29.0–37.7%]; post-test mean= 44.3% [39.7–48.9%]) compared to girls control teams (baseline mean= 30.8% [24.9–36.6%]; post-test mean= 33.7%, [27.4–39.9%]). Boys intervention (baseline mean= 33.5%, [28.7–38.3%]; post-test mean= 42.4%, [37.5–47.4%]) and boys control (baseline mean= 34.7%, [30.3–39.0%]; post-test mean= 50.6%, [46.0–55.2%]) teams both increased their %time spent in MVPA. CONCLUSION: Preliminary evidence suggests a brief one-time CT program can increase the %time spent in MVPA during practices of girls teams compared to control. The intervention was not effective for boy teams, likely due to a substantial increase in %time in MVPA by two of the control teams in this small sample. Nevertheless, the majority of youth participate in OYS and CT designed to increase MVPA could have major public health implications. These preliminary results suggest that future research examining the impact of CT with adequate power and a representative sample is warranted.

P1.03.8 DO GENDER DIFFERENCES IN PHYSICAL ACTIVITY VARY BY COUNTRIES’ HUMAN DEVELOPMENT INDEX?

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Purpose: The aims were to describe absolute and relative gender differences in physical inactivity among adults from 142 countries, and to examine relationships between these differences and Human Development Index (HDI), an indicator of national socio-economic status. Methods: Prevalence (P) data were extracted from the World Health Organization Data Repository. Physical inactivity was defined as not meeting guidelines (150 minutes/week). Absolute gender differences in prevalence were calculated as Pmen–Pwomen and relative differences as Pmen/Pwomen. Relationships between differences and HDI for country were examined using Spearman correlation and Chi square statistics, and equiplots were used for graphical display. Results: Women were more inactive than men in all except eight countries. Women were most inactive in Colombia (73%, high HDI), Saudi Arabia (69%, very high HDI) and Kuwait (64% very high HDI), and least inactive in Nepal (4%), Mozambique (6%) and Lesotho (7%) (all low HDI). Median absolute gender difference in inactivity prevalence was 7.45% (95%: 3.80-10.90); this varied from -10.1% in Lebanon to +33.2% in Bangladesh. Median relative difference was 1.34 (IQR 1.22-1.55), ranging from 0.77 in Lebanon (women less inactive than men) to 4.25 in Bangladesh (women more inactive). Even in high income countries such as Australia, the UK and the USA, there were surprisingly high relative differences in inactivity rates of women and men (UK, 1.31; Australia 1.37; USA 1.55). There were no clear relationships between these differences and HDI; relative difference was slightly higher in low HDI countries (median 140; IQR 1.25-1.58) than in very high HDI countries (median 1.30; IQR 1.20-1.39) p=0.115. Conclusion: Gender differences in the
prevalence of physical inactivity were highly variable, both within and across categories of HDI. The greatest absolute differences were seen in high HDI countries and the greatest relative differences in low HDI countries. Interventions that decrease physical inactivity in women could reduce both absolute and relative differences in countries with varying HDIs, and may help to reach the WHO target of an overall reduction of 10% in PIA by 2025. This could be done by improving access to opportunities for women to participate in sport and safe active transport.

**P1.03.9**

EXECUTIVE FUNCTION, PHYSICAL ACTIVITY AND GROSS MOTOR SKILLS OF PRESCHOOL CHILDREN FROM A LOW-INCOME SOUTH AFRICAN SETTING

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Purpose: Executive function (EF) and factors associated with EF, such as physical activity (PA) and gross motor skills (GMS), are not well understood in South African preschool children. The aim of this research project was to assess EF in preschool children from low-income settings, and also assess gross motor skills and physical activity in this group to investigate associations between these components of development. Methods: Sixty-one children (3-6 years old) were recruited from preschools in a low-income South African setting. EF was assessed using the Early Years Toolbox (EYT), an iPad based battery of EF tasks, of to measure inhibition, cognitive flexibility and working memory. GMS proficiency was assessed using the Test of Gross Motor Development – Version 2, to calculate a gross motor quotient (GMQ) and standard scores for object control and locomotor skills. Physical activity was measured objectively using ActiGraph GT3X+ accelerometers, which were worn for seven consecutive days. Correlation analyses (Spearman rank-order) were conducted to determine the relationships between the three components of EF, GMS and PA. Results: Mean daily minutes of total PA were 446. A two-tailed test of significance indicated that there was a positive, significant relationship between GMS (GMQ and object control skills) and inhibition control r=0.25 (p<0.01). Conclusion: These results indicate that EF and GMS are positively associated, whilst PA shows no association with EF or GMS. The lack of association with PA may be due to the high PA levels (recommendation for this age group is 180 minutes of activity of any intensity per day). However, these results support previous research that has highlighted the importance of the context of PA for positively impacting on EF, and that meaningful PA that provides the opportunity to practice GMS may be more effective at improving EF.

**P1.03.10**

PROFILES AND DETERMINANTS OF COMBINED BEHAVIORS OF SLEEP, SEDENTARY TIME, AND PHYSICAL ACTIVITY AMONG ADOLESCENTS AND ADULTS

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Purpose: To establish clusters of behavioral patterns of sleep, physical activity and sedentary behavior and find determinants that may clarify differences between these behavioral profiles. Findings may contribute to the design of multi-behavioral interventions. Methods: Participants were recruited via schools (adolescents) and general population databases (adults). Measurement methods included: diaries (sleep time), ActivPal (sedentary time (ST)), accelerometers (light physical activity (LPA) and moderate-to-vigorous physical activity, MVPA), questionnaires (determinants). Latent class cluster analyses were performed on age group and behavioral data. Differences between clusters were analyzed with ANOVA or Chi² tests. Results: The sample consisted of 46 adolescents and 66 (older) adults. Cluster analyses revealed four adult clusters and three adolescent clusters. Adult clusters were: 1. High sleep, high ST, moderate LPA, low MVPA (M age 65, SD=13); 2. High sleep, high ST, high MVPA, moderate LPA (M age 52, SD=16); 3. Moderate sleep, highest ST, low MVPA, low LPA (M age 60, SD=15); 4. Lowest sleep, lowest ST, high MVPA, highest LPA (M age 49, SD=8). Adult clusters differed in the number of computers in the house/bedroom (cl.4>others), time spent on computer during week and weekend(cl.3=cl.1&2), feeling TV watching takes time away from important things (cl.11. Moderate sleep and ST, highest MVPA and LPA (M age 15.5, SD=0.9); 2. Highest sleep, lowest ST, low MVPA, moderate LPA (M age 15.8, SD=1.0); 3. Lowest sleep, highest ST, low MVPA, lowest LPA (M age 16.5, SD=1.0). Adolescent clusters differed in having shops within walking distance of home (cl.1.cl.2), time spent watching TV with siblings (cl.1>cl.3) and encouragement of friends to use computer less often
during leisure time (cl.1>cl.3). No other differences were found on physical environment or media use. Conclusions: Media use and social support contributed to understanding differences in clusters on sleep, ST and PA, but in different ways between adolescents and adults.

P1.03.11
THE NEXUS BETWEEN OBESITY, FOOD INSECURITY AND PHYSICAL ACTIVITY IN SOUTH AFRICA: TACKLING "WICKED PROBLEMS" BY CHANGING THE CHOICE SET

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Objective: South Africa is a middle-income country, with a GINI coefficient (0.63) suggesting marked inequalities, and nearly half of all households experiencing some degree of food insecurity (46%). Despite this, three out of every 4 adult women and 1 in three men are either overweight or obese, and secular trends suggest that obesity is on the rise. Further, nearly half of all adults are reportedly inactive, and those who are active generally report little or no leisure-time physical activity. Indeed, the majority of persons accumulate physical activity in non-motorised transport, getting to and from places. There is a clear need to identify ecological factors linked to this "wicked problem" of and disproportionate burden of obesity in women, in particular, vulnerable, women-headed households from disadvantaged communities. structural, socio-cultural, environmental, epidemiological and policy variables that may provide the basis for a causal link or pathway between obesity and food insecurity

P1.03.12
STAGE OF CHANGE, AUTONOMOUS MOTIVATION, AND COPING PLANNING AS MODERATORS OF THE RELATIONSHIP BETWEEN INTENTION, ACTION PLANNING, AND PHYSICAL ACTIVITY BEHAVIOR

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Purpose: The aim of this study was to investigate the moderators of the gap between intention to engage in physical activity (PA) and PA behavior by examining whether action planning (planning when, where, and how PA will be practiced) mediated the effect of intention on PA behavior as a function of participants' underlying levels of autonomous motivation (sense of volition and choice associated with PA practice), coping planning (anticipating obstacles that might interfere with PA practice and planning how the overcome them), and stage of change (currently practicing, or not, PA three times/week for at least three months). Method: A two-wave prospective design was used and 417 adults (341 or 81.8% women, M age = 35.83, SD = 11.79) participated in the study. At Baseline (T1), participants completed questionnaires assessing their PA intention (Ajzen & Fishbein, 1980), PA motivation (BREQ-2, Markland & Tobin, 2004), and PA behavior (GLTEQ, Godin & Shepard, 1985). Moreover, participants also indicated their stage of change in regards of exercise (Marcus et al., 1992). Three months later (T2), PA behavior was reevaluated, and participants completed measures of action and coping planning toward PA. Results: A moderation-mediation analysis was conducted using PROCESS macro (Hayes, 2013). The model was controlling for age, sex, and T1 PA behavior. Results showed that when individuals were currently practicing PA three times/week, action planning did not explain or mediate the relationship between T1 intention and T2 PA behavior. By contrast, when individuals were not currently practicing PA three times/week, action planning explained the relationship between T1 intention and T2 PA, but only when autonomous motivation was low or moderate, whatsoever the level of coping planning. The strongest mediation effects were found when the level of autonomous motivation was low and the level of coping planning was high or moderate. Conclusions: Although some behavioral change theories (e.g., Theory of Planned Behavior) consider intention as the most proximal determinant of behavior, the herein results highlight the importance of examining other psychological processes such as one's motivation, planning strategies, and stage of change, that can lead to its actual adoption or not.

P1.03.13
NEIGHBOURHOOD DESIGN AND SOCIOECONOMIC STATUS AND THEIR ASSOCIATIONS WITH WEIGHT STATUS IN CANADIAN ADULTS


Objective: The increasing global prevalence of overweight and obesity is a major public health concern. The causes of overweight and obesity are complex however, evidence suggests that neighbourhood socioeconomic composition and neighbourhood design are important correlates of weight-related behaviour such as physical activity and diet. We investigated the relations between neighbourhood design and socioeconomic status and their interaction, in relation to waist circumference (WC), waist-to-hip ratio (WHR), and body mass index (BMI).

Methods: Using stratified random sampling, 12 of the 195 established Calgary neighbourhoods built prior to 1980 were selected as recruitment sites. The 12 neighbourhood strata were defined by their design (grid, warped-grid, or curvilinear block patterns) and socioeconomic status quartiles. In April 2014, a random sample of households (n=10,500) from across the 12 neighbourhoods were mailed a survey package. One adult (≥20 years of age) per household was invited to participate. The survey package included instructions for completing two self-administered online questionnaires including a physical activity, health and demographic questionnaire (PAHDQ). The survey package also included a tape measure and instructions for measuring waist and hip circumference. Covariate-adjusted multivariable linear regression models estimated associations between BMI, WC, and WHR in relation to neighbourhood design, neighbourhood socioeconomic status, health (self-reported mental and physical health, attempts to change, smoking, sleep) and demographic (sex, age, education, income, ethnicity, marital status, number of children at home, access to a motor vehicle, dog ownership) characteristics. Results: Of the 10,500 households sent the survey package, 407 were non-deliverable, 918 completed the online PAHDQ and an additional 105 participants requested and completed a paper version of the PAHDQ (response rate of 10.1%; n=1023). N=851 provided complete data. WC and BMI were higher among residents of disadvantaged neighbourhoods, independent of neighbourhood design and individual-level characteristics. The association between neighbourhood socioeconomic status and WC was modified by neighbourhood design – WC was higher in disadvantaged-curvilinear neighbourhoods and lower in advantaged-grid neighbourhoods. Conclusions: Participants in advantaged neighbourhoods had smaller waist circumference and BMI. Neighbourhood design and socioeconomic status jointly effect waist circumference. Policies making less obesogenic neighbourhoods affordable to low socioeconomic households are necessary for improving population health.

P1.03.14
LONGITUDINAL ASSOCIATIONS BETWEEN SPORTS PARTICIPATION AND QUALITY OF LIFE IN CHILDREN

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Purpose Little is known about longitudinal associations between sports participation and quality of life (QoL) in children. This study explored longitudinal associations of sports participation with physical, psychological and social QoL domains in children aged 10 to 12 years. Methods Self-reported data from 494 Dutch fourth and fifth-grade elementary school children (11.4 ± 0.7 years) were collected on two moments with an interval of about one year in the period 2011-2014. Sports participation was measured with the Move and Sports Monitor Questionnaire – Youth Aged 8-12 years (MSMQ) and operationalized as membership of a sports club, frequency of sports participation, and compliance with a WHO physical activity standard. The three quality of life domains were measured with the Kidscreen-52 questionnaire (Kidscreen-52). Associations between sports participation and the three QoL domains were examined with linear generalized estimating equations (GEE), adjusted for gender, age, body mass index, socioeconomic status, and household composition. Results Over a period of one year, a better overall physical QoL was observed for children who were member of a sports club (difference=3.25, p= children who participated in organized sports activities with a minimum frequency of once a week (difference=1.92, p=0.04), and children who complied with the WHO physical activity standard (difference=2.78, p A single better subscore on psychological QoL was found for children who complied with the WHO physical activity standard (difference=1.80, p=0.002). Also a number of better subscores on social QoL were found for these children (difference=1.09, p=0.05; difference=1.40, p=0.03; difference=1.61, p=0.02; difference=1.47, p=0.04). Conclusions This longitudinal study suggests that sports participation is beneficial for improving QoL, especially for physical and social QoL.
THE MODERATING EFFECT OF CONTROLLED MOTIVATION ON THE RELATIONSHIP BETWEEN AUTONOMOUS MOTIVATION AND PA BEHAVIOR AMONG ADULTS WITH TYPE 2 DIABETES

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Purpose: Physical activity (PA) is a cornerstone of type 2 diabetes (T2D) management (Sigal et al., 2013). To date, the few Self-Determination Theory-based studies that have looked at the relation between motivation and PA among adults with T2D demonstrate that autonomous forms of motivation are positively associated with various positive PA outcomes, including PA frequency and adherence over time (e.g. Healey, 2013; Sweet et al., 2009). However, these studies have not investigated the moderating effect of controlled motivation on the relationship between autonomous motivation and PA frequency and additionally, they have relied exclusively on self-report measure to assess PA frequency. Therefore, the aim of this study was to look at the moderating impact of controlled motivation on the relationship between autonomous motivation and PA frequency, measured with accelerometers, within a sample of adults with T2D.

Method: A longitudinal study was conducted with 99 adults (43 women, M age = 61.27, SD = .82) with T2Db. At Baseline (T1), participants completed a questionnaire assessing their PA motivation (BREQ-2, Markland & Tobin, 2004). Participants were then asked to wear an accelerometer without interruption for the following month. The accelerometers were able to record all participants' physical movements intensity and frequency and allowed the computation of PA bouts over a one-month period. Results: Results of a moderation analysis, conducted with the PROCESS macro (Hayes, 2013), significantly showed [F (3, 95) = 3.94, p = .01] that the predictive value of autonomous motivation on PA bouts decrease progressively through low (B = 140.52, p = .03), moderate (B = 121.16, p = .01), and high (B = 3.43, p = .13) levels of controlled motivation. Conclusions: These results show that, in addition of having a direct and negative effect on PA frequency, controlled motivation can also have a deleterious impact on the relationship between autonomous motivation and PA frequency, measured by accelerometers. These findings highlight the importance of both increasing autonomous motivation and decreasing controlled motivation toward PA to promote PA frequency within adults with T2D. They also corroborate the existence of a relationship between autonomous motivation and an objective measure of PA behavior.

CYCLISTS’ EXPERIENCES OF HARASSMENT FROM MOTORISTS PRE- TO POST-TRIAL OF THE MINIMUM PASSING DISTANCE ROAD RULE AMENDMENT IN QUEENSLAND, AUSTRALIA

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Objective: Cycling for transport is associated with higher physical activity levels and better health. However, motorists’ harassment of cyclists is a barrier to cycling. Whether the introduction of a road rule can decrease cyclists’ perception of harassment from motorists is unknown. This study examined changes in cyclists’ reporting of harassment pre- to post-trial of a Minimum Passing Distance Road Rule amendment in Queensland, Australia. Methods: Cross-sectional online surveys of cyclists in Queensland, Australia were conducted in 2009 (pre-trial; n=1758) and 2015 (post-trial commencement; n=1997). Cyclists were asked about their experiences of five types of harassment from motorists while cycling. Logistic regression modelling was used to examine differences in the reporting of harassment between these time periods, after adjustments for demographic characteristics and cycling behaviour. Results: At both time periods, the most reported types of harassment were deliberately driving too close (causing fear/anxiety) (2009: 68%; 2015: 66%), shouting abuse (2009: 66%; 2015: 68%), and making obscene gestures/sexual harassment (2009: 48%; 2015: 45%). The percentage of cyclists who reported tailgating by motorists increased significantly between 2009 and 2015 (15% to 20%; p<.05). Conclusions: Cyclists in Queensland continue to perceive harassment from motorists while cycling on the road. The amendment to the minimum passing distance rule in Queensland appears to be having a negative effect on one type of harassment but no
significant effects on others. Minimum passing distances rules may not be sufficient for improving cyclists’ perceptions of harassment from motorists. Additional strategies are required to create a supportive environment for cycling.

P1.03.17
COMPARISON OF DIETARY INTAKE AND QUALITY FOR NON-NUTRITIVE SWEETENER CONSUMERS VERSUS NON-CONSUMERS LIVING IN A HEALTH-DISPARATE REGION IN RURAL SOUTHWEST VIRGINIA

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Purpose: Controversy surrounds the use of artificial sweeteners (non-nutritive sweeteners [NNS]) as an effective weight-loss and maintenance strategy. Minimal data assessing NNS intake is available, and no literature exists for rural, health-disparate areas, where obesity and related co-morbidities are prevalent. The objective of this investigation is to determine if dietary quality and dietary intake differs between NNS consumers and non-consumers within a rural health-disparate region. Methods: A cross-sectional sample (n=301) of southwest Virginian adults completed three 24-hour dietary recalls, which were analyzed with NDS-R nutritional analysis software. Differences in demographics, anthropometrics, dietary quality (Healthy Eating Index-2010 [HEI]), and dietary intake were assessed between NNS consumers and non-consumers. Findings: Thirty-three percent of participants reported consuming NNS. Mean BMI was significantly higher for NNS consumers (n=100) as compared to NNS non-consumers (n=201) (mean difference = 2.6±1.2 kg/m2; p=0.02). Overall, NNS consumers had significantly higher overall dietary quality than NNS non-consumers (total HEI score: 46.7±11.9 vs. 42.4±12.6; p≤0.01). Contributing to this higher score were significantly higher HEI sub-component scores in total fruit, whole fruit, dark-green vegetables and beans, dairy, and empty calories for NNS consumers. However, NNS consumers had significantly lower HEI sub-component scores for refined grains and sodium. Other HEI sub-components (total vegetables, whole grains, total protein foods, seafood and plant proteins, and fatty acids) were not significantly different between NNS consumers and non-consumers. Healthier dietary behaviors for NNS consumers as compared to NNS non-consumers included significantly lower intake of total daily energy (kcal), total beverage (kcal), sugar-sweetened beverage (kcal and fl oz), total sugar (g), added sugar (% total kcal and g), alcohol (% total kcal), and energy density (kcal/g). Conclusions: NNS consumers had better overall HEI scores and healthier dietary habits than NNS non-consumers, particularly with regard to daily energy, sugar-sweetened beverages, total and added sugar intake, and energy density. However, NNS consumers demonstrated a significantly higher BMI and lower sodium and refined grain HEI scores than NNS non-consumers. Future directions for NNS research need to include well-designed randomized controlled trials in order to determine causality, as well as longitudinal studies to assess long-term associations and outcomes with NNS consumption.

P1.03.18
BELIEFS, BARRIERS AND FACILITATORS OF ACTIVE LIFESTYLES IN PERI-URBAN AUSTRALIA

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Objective: Active lifestyles that incorporate regular physical activity and minimised sedentary behaviour are beneficial for health and wellbeing. Populations living in peri-urban or ‘inner-regional’ Australia are sedentary, less active, and experience poorer health than city dwellers (ABS, 2013). More than 4.3 million people live in inner-regional Australia, and congruent with global trends of urbanization this population continues to grow. In order to support the improved health of this growing population it is important to identify the salient determinants of active living. However, little research of active lifestyle behaviours has been conducted in peri-urban Australia to date. The aim of this study was to examine the psycho-social determinants of active living in inner-regional Australia, through the identification of beliefs, barriers, and facilitators of physical activity and sedentary behaviour. Methods: This qualitative study involved semi-structured interviews (N = 8) with people residing in inner-regional, Southern Queensland. The questioning route was designed to elicit beliefs in relation to physical and sedentary activities. Data was extracted and evaluated using thematic analysis (Braun & Clarke, 2006). An essentialist/realist epistemological position was adopted. NVivo software was used to develop a code book of major themes and
common patterns. Results: Themes representing behavioural, normative, and control beliefs in relation to physical activity and sedentary behaviour were identified. Some themes were consistent with beliefs commonly revealed in broader adult populations, such as a lack of time and competing demands which present as barriers to activity. However, contextually-specific beliefs were also identified, such as poor pedestrian mobility infrastructure and greater physical isolation. The latter leading to greater sedentary time whilst driving and less opportunity for activity. Conclusions: This research contributes to an improved understanding of active lifestyles in peri-urban Australia where participation is lower and health outcomes are comparatively poor. The study provides insight into the factors that contribute to the development of behavioural, normative, and control beliefs in relation to active living. The findings will be of practical significance in informing public health strategy, and the development of contextually-relevant, behaviour-change interventions designed to improve active lifestyle participation.

P1.03.19
DO SINGLES OR COUPLES LIVE HEALTHIER LIFESTYLES? TRENDS IN QUEENSLAND BETWEEN 2005-2014

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Purpose To compare the prevalence of and trends in healthy lifestyle factors between singles and couples. Methods Cross-sectional data from annual surveys conducted from 2005-2014 were used. The pooled sample included 15,001 Australian adults (mean age: 52.9 years, 50% male, 74% couples) who participated in the annual Queensland Social Survey via computer-assisted telephone interviews. Relationship status was dichotomised into single and couple. Healthy lifestyle factors examined included fruit and vegetable intake, limited fast food, physical activity, limited TV time, limited alcohol consumption, no smoking and normal weight. Binary logistic regression was used to assess associations between relationship status, and the prevalence of and trends in healthy lifestyle factors. Results Compared to singles, couples were significantly more likely to be a non-smoker (OR = 1.82), and meet recommendations for fruit and vegetable intake (OR = 1.24), limited fast food (OR = 1.12) and alcohol consumption (OR = 1.27). However, couples were significantly less likely to be within a normal weight range (OR = 0.81). In both singles and couples, the trend data revealed significant declines in the rates of normal weight (singles: OR = 0.97, couples: OR = 0.97) and viewing TV for less than 14 hours per week (singles: OR = 0.85, couples: OR = 0.84), whilst non-smoking rates significantly increased (singles: OR = 1.12, couples: OR = 1.03). Further, in couples, rates of meeting recommendations for physical activity and fruit/vegetable consumption significantly decreased (OR = 0.97 and OR = 0.95, respectively), as did rates of eating no fast food (OR = 0.96). In singles, rates of meeting alcohol recommendations significantly increased (OR = 1.08). Conclusions Couples were more likely to engage in healthy behaviours than singles, yet they were more likely to be overweight. The findings suggest that in singles, promoting fruit and vegetable intake, and reducing fast food, alcohol consumption and smoking is most relevant. In couples, promoting physical activity and reducing sedentary TV time for the treatment of overweight is particularly important.

P1.03.20
EATING BEHAVIOURS OF AUSTRALIAN UNIVERSITY STUDENTS IN RELATION TO SOCIO-DEMOGRAPHIC, STUDY TYPE AND HEALTH-RELATED CHARACTERISTICS.

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Purpose It is important to understand University students' eating behaviours as adult eating patterns are forming during this particular life-stage, and it is an at-risk time for weight gain. This study aimed to describe the eating behaviours of a sample of Australian university students, and to explore associations with socio-demographic, study type and health-related characteristics. Methods An online, cross-sectional survey was conducted among students of the University of Newcastle, Australia. Every student enrolled in February 2016 was emailed an invitation to participate. Measures included: eating behaviours (eg. meal frequency, food security, fruit and vegetable and non-core food intakes), socio-demographics (eg. age, living situation), study type (eg. international/domestic, financial support) and health-related characteristics (eg. BMI, alcohol, smoking, mental health). Results/findings 4,093
students responded: 70.1% female; mean age 24.7±8.5 years. Students were predominantly Australian (84.0%), never married (74.4%), financially supported (62.8%), and living in parents' home (39.8%) or renting (35.3%). Most were undergraduate (89.5%), domestic (92.0%), health/medicine (31.4%) students, and first years (43.7%). Inadequate fruit consumption ((≥3 times/week) of non-core foods included: processed meats 25.7%, with highest rates among males (38.6%) and Engineering students (36.2%); and hot chips 12.5%, particularly among heavy drinkers (22.8%) and Aboriginal and Torres Strait Islander students (20.4%). Soft/sports drinks consumption (9.33% ≥1cup/day) was highest among students studying English proficiency/enabling courses (18.7%) and smokers (17.5%). Food insecurity, reported by 23.0% of students, was higher in students in boarding/homestay accommodation (46.6%), those at very high mental health risk (45.0%) and females (24.2%). Conclusions Unhealthy eating behaviours are prevalent among Australian university students, and rates of reported food insecurity are alarmingly high. These results justify the need for interventions targeting university students' eating behaviours, and suggest that interventions should consider individual student characteristics and target particular higher risk sub-groups.

P1.03.21
BARRIERS TO HEALTH BEHAVIORS AMONG MILITARY SPOUSES

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Purpose: There are currently over one million registered military spouses in the United States. As a group, military spouses report poor physical and mental health and low participation in health behaviors. Understanding the barriers that prevent military spouses from engaging in health behaviors will inform the development of interventions to promote health in the large military population. The purpose of this study was to identify the most prominent barriers to 1) engaging in physical activity, 2) maintaining a healthy diet, 3) establishing/maintaining social relationships, and 4) relaxing/managing stress among military spouses. Methods: Military spouses (N=230) completed online surveys and reported up to three barriers that impacted each of the four health behaviors. Based on their responses, a coding sheet was developed for each behavior, and two independent investigators coded all barriers and then met to resolve discrepancies. Frequency analyses were used to determine the most prevalent barriers for each behavior. Additionally, six focus group sessions were conducted to gain further insight regarding the challenges military spouses encounter. Comments from the focus groups were used to provide additional context to support the quantitative results. Results: In total, 2159 barriers were reported and coded. Lack of time was the most prevalent barrier for physical activity (n=142), social connection (n=98), and stress management (n=108), and the second most prevalent barrier for diet (n=65). Financial concerns were the most prevalent barrier to maintaining a healthy diet (n=93). Barriers related to parent/family responsibilities were commonly reported across all health behaviors (total n=216). Issues specific to the military lifestyle (i.e., moving frequently and living far from family and friends) were prevalent barriers to social connection (n=72). Qualitative data from the focus group sessions reinforced and expounded upon these findings. Conclusions: These results suggest time and family barriers might be especially salient among military spouses because of their spouse's lack of availability. In addition, the transient military lifestyle may inhibit military spouses' ability to maintain meaningful relationships. Interventions to promote holistic health among military spouses are gravely needed, and can draw on these results to tailor content to this population and equip spouses with resources and strategies for overcoming key barriers.

P1.03.22
MODELS FOR IMPLEMENTING PHYSICAL ACTIVITY AND NUTRITION CARE INTO MENTAL HEALTH SERVICES

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Purpose: Evidence based guidelines recommend mental health clinicians provide care to increase physical activity and improve nutrition. However, evidence demonstrates sub-optimal provision of such care by mental health services, and there is a need to develop effective interventions to increase mental health clinician provision of physical activity and nutrition care. Method/results: Two research and service delivery initiatives being undertaken in Australia to increase the capacity of mental health services to provide care addressing physical activity and nutrition will be discussed: 1) a practice change intervention to increase routine care by all mental health clinicians;
and 2) the integration of a designated clinician to provide such care. Conclusions: This discussion will provide an understanding of barriers to the implementation of evidence based physical activity and nutrition care provision in mental health services, an overview of two models for implementing such care in mental health services, and advantages and disadvantages of each model.

P1.03.23
A CROSS-SECTIONAL STUDY OF THE LIFESTYLE BEHAVIOURS OF LEBANESE-AUSTRALIANS

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Objective: Little is known regarding the lifestyle behaviours of culturally and linguistically diverse adults of Lebanese origin. It is known, however, that lifestyle behaviours differ according to country of birth among culturally and linguistically diverse groups of the same origin. The purpose of this study was to compare the lifestyle behaviours of Lebanese-Australian adults born in Lebanon, Australia, and other countries with Australian-born Australians.

Methods: Lebanese-born Lebanese-Australians (n=346), Australian-born Lebanese-Australians (n=302), Lebanese-Australians born in other countries (n=64), and Australian-born Australians (reference; n=36,707) were sampled from the baseline dataset of The 45 and Up Study (Total=37,419), a cohort study of healthy ageing among adults aged 45 and older. Lifestyle behaviours (physical activity, sitting time, smoking, sleep duration, fruit, vegetable, processed meat, red meat, and alcohol consumption) were dichotomised to distinguish between 'optimal' and 'suboptimal' behaviours based on published guidelines, where possible. Using multilevel logistic regression, the odds of Lebanese-Australians reporting 'suboptimal' lifestyle behaviours relative to Australian-born Australians was examined. Lifestyle behaviours were summed to create a lifestyle index score ranging from 0-9 (Higher scores indicated a higher number of 'suboptimal' lifestyle behaviours). Multilevel linear regression was utilised to examine the clustering of 'suboptimal' lifestyle behaviours among Lebanese-Australians in comparison to Australian-born Australians. Results: Lebanese-born Lebanese-Australians had higher odds of smoking, 'suboptimal' levels of physical activity and sleep, and lower odds of prolonged sitting, 'suboptimal' fruit, processed meat, and alcohol consumption in comparison to Australian-born Australians. Australian-born Lebanese-Australians had higher odds of 'suboptimal' sleep, and lower odds of 'suboptimal' fruit and alcohol consumption. Lebanese-Australians born in other countries had higher odds of 'suboptimal' levels of physical activity, and lower odds of 'suboptimal' fruit consumption. Lower 'suboptimal' lifestyle behaviour clustering was observed for Lebanese-born (-0.36, 95% CI -0.51, -0.22, pp Conclusion: The findings of this study suggest that the lifestyle behaviours of Lebanese-Australians differ according to country of birth. This study contributes to the limited available evidence on the health of Lebanese-Australians and future studies should examine the impact of these lifestyle behaviours towards various chronic diseases.

P1.03.24
EXPLORING THE RELATIONSHIP BETWEEN PERCEIVED BARRIERS TO HEALTHY EATING AND DIETARY BEHAVIOURS IN EUROPEAN ADULTS

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Purpose: Although perceiving barriers towards healthy eating can lead to unhealthier dietary behaviours, no study so far has explored the relationship between perceived barriers towards healthy eating and food consumption in a
diverse sample from different countries. We aimed to address this gap by studying the association between perceived barriers to healthy eating and dietary behaviours— as well as moderating factors— among adults in five urban regions across Europe. Methods: We analysed data from the cross-sectional European SPOTLIGHT study (N=5,900). Consumption of fruit, vegetables, fish, fast-food, sugar-sweetened beverages, sweets, breakfast and home-cooked meals, measured with single-item questions, were split by the median into higher and lower consumption. We tested associations between perceived barriers (irregular working hours; giving up preferred foods; busy lifestyle; lack of willpower; price of healthy food; taste preferences of family and friends; lack of healthy options, and unappealing foods) and dietary variables using multilevel logistic regression models. In addition, we tested effect modification by age, sex, education, weight status, household composition, employment status and urban region. Results: Respondents who perceived any barrier towards healthy eating were less likely to report higher consumption of healthier foods and more likely to report higher consumption of fast-food. 'Lack of willpower', 'time constraints' and 'taste preferences' were most often associated with dietary behaviours. Associations between the barriers and consumption of vegetables and home-cooked meals had the strongest effect sizes. For vegetable consumption, barriers related to willpower (odds ratio (OR) 0.47; 95% confidence interval 0.42 – 0.54), price (OR 0.53; 95% CI 0.47 – 0.61) and taste (OR 0.54; 95% CI 0.47 – 0.63) stood out. For home-cooked meals, the barriers related to willpower (OR 0.48; 95% CI 0.42 – 0.55) and time (OR 0.52; 95% CI 0.45 – 0.59) were particularly important. Many associations were modified by region, sex, age, and household composition. Urban region modified the associations most often. Conclusion: Perceived 'lack of willpower', 'time constraints' and 'taste preferences' were identified as relevant barriers for healthy eating in European adults. The relationship between perceived barriers to healthy eating and food consumption showed to be region-specific and differed across socio-demographic groups.

P1.03.25
A PRACTICE CHANGE INTERVENTION TO INCREASE PHYSICAL ACTIVITY AND NUTRITION CARE IN MENTAL HEALTH SERVICES: A WHOLE SERVICE APPROACH

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Purpose: Addressing the physical health needs of people with a mental illness is an increasingly recognised priority; however, mental health services provide sub-optimal levels of care to address health risk behaviours, including inadequate physical activity and nutrition. A study was undertaken to evaluate the effectiveness of a clinical practice change intervention to increase the provision of care for inadequate physical activity and nutrition within community mental health settings. Methods: A 12-month multi-strategic intervention was implemented sequentially across two groups of community mental health services (n=19) to increase clinician provision of assessment, advice, and referral/follow-up for inadequate physical activity and nutrition. Telephone interviews were undertaken with clients and clinicians. Outcomes included client receipt of care, and clinician reported availability and usefulness of intervention supports, and attitudes towards the provision of physical activity and nutrition care. Results: No significant changes in assessment, advice or referral were found. Supports that were perceived to be most useful by clinicians included nominated support people, manager support, a resource pack of forms and handouts, and a list of referral services. Following the intervention, there was an increase in positive responses to three of ten attitudinal items. Clinicians remained negative regarding client interest in improving their behaviours; with less than half of respondents indicating that they thought their clients wanted to increase their physical activity or improve their diet. Conclusions: The intervention had limited effectiveness in increasing the provision of care for inadequate physical activity and nutrition within community mental health services. A greater tailoring of intervention strategies to the context of mental health services is likely required, as well as the exploration of other models of care. Most intervention supports were perceived to be useful, and some improvements in attitudes were identified following the intervention. The intervention was unable to increase clinician perceptions of client interest in improving their behaviours. Future attempts to increase such care should include strategies to increase clinician awareness of client interest in increasing their physical activity and improving their diets.

P1.03.26
BREASTFEEDING AND MATERNAL CARDIOVASCULAR RISK FACTORS AND OUTCOMES: A SYSTEMATIC REVIEW

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Background and purpose. There is growing evidence that breastfeeding has short- and long-term cardiovascular health benefits for mothers. The objectives of this systematic review were to examine the association between breastfeeding and maternal cardiovascular risk factors and outcomes that have not previously been synthesized systematically, including metabolic syndrome, hypertension and cardiovascular disease. Methods. This systematic review meets PRISMA guidelines. The MEDLINE, EMBASE and CINAHL databases were systematically searched for relevant publications of any study design from the earliest publication date to March 2016. The reference lists from selected articles were reviewed, and forward and backward referencing were conducted. The methodological quality of reviewed articles was appraised using validated checklists. Findings. Twenty-one studies meeting the inclusion criteria examined the association between self-reported breastfeeding and one or more of the following outcomes: metabolic syndrome/metabolic risk factors (n=10), inflammatory markers/adipokines (n=2), hypertension (n=7), subclinical cardiovascular disease (n=2), prevalence/incidence of cardiovascular disease (n=3) and cardiovascular disease mortality (n=2). Overall, 19 studies (10 cross-sectional, 9 prospective) reported significant protective effects of breastfeeding, nine studies (3 cross-sectional, 5 prospective, 1 cluster randomized controlled trial) reported non-significant findings and none reported detrimental effects of breastfeeding. In most studies reporting significant associations, breastfeeding remained associated with both short- and long-term maternal cardiovascular health risk factors/outcomes, even after adjustment for socio-demographic, lifestyle factors, body mass index and parity. Findings from several studies suggested that the effects of breastfeeding may diminish with age and that there is a dose-response association between breastfeeding and several metabolic risk factors. However, further longitudinal studies, including studies that measure exclusive breastfeeding, are needed to confirm these findings. Conclusions. The evidence from this review suggests that breastfeeding is associated with cardiovascular health benefits and supports breastfeeding recommendations and strategies that enable successful initiation and continuation of breastfeeding. PROSPERO registration number: CRD42016047766.

P1.03.27
A RESEARCH PRACTICE PARTNERSHIP FOR IMPROVING THE HEALTH OF POPULATIONS

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Objective: Implementation of evidence based guidelines, policies or programs into clinical and community settings is a cornerstone of effective public health efforts to prevent chronic disease. Over the past two decades, a partnership between Hunter New England Health, a government funded health service serving approximately 850,000 residents of a geographically and socially diverse region of NSW, and researchers of the University of Newcastle formed a unit to develop and test innovative strategies to increase the translation of population health evidence into practice. The aim of this presentation is to describe the implementation strategies employed by the partnership to build capacity and infrastructure for population based translation research, highlight key learning’s and outcomes Methods: The research employs a case study approach. Key strategies to improve translation science capacity included executive support and endorsement for the partnership; alignment of research and practice priorities; targeted training of practitioners and policy makers in implementation science (e.g through enrollment in PhD’s); investment in research infrastructure; co-location; the development of strategic collaborations; and clear governance structures and partnership values. Results: Over the past 20 years the partnership has grown to over 50 academics, PhD students, health promotion practitioners, dieticians, exercise physiologists, psychologists, teachers, and statisticians. The group has established expertise in the key modifiable risk factors for morbidity and mortality in Australia including nutrition, physical activity and obesity. Collectively the group publishes >60 manuscripts per year, and receives on average $2 million pa in nationally competitive grants funding. Implementation research conducted by the group has led to significant changes to population health policy and practice in a variety of settings including hospitals, community health services, licensed premises, schools, childcare services and sporting activities.
clubs. Examples of such impact at a local, state and national level in obesity, alcohol, and tobacco will be presented. Conclusions: The Hunter New England Population Health and University of Newcastle Partnership provides one model of increasing the translation of evidence into practice to improve population health. Many of the strategies employed by the group may be suitable to build academic / research partnerships and implementation science capacity in other jurisdictions.

**P1.03.28**

**PSYCHOLOGICAL FACETS OF THE ‘QUANTIFIED SELF’: EXPLORING THE RELATIONSHIP BETWEEN EMOTIONAL RESPONSES TO ACTIVITY TRACKERS AND PERSONALITY CHARACTERISTICS**

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Objective: Consumers are increasingly using personal activity trackers (e.g. Fitbits) to measure a range of physical activity and health outcomes. These devices are known to be valid and reliable, however, little is known about users’ experiences using such technology, in particular, potential psychological impacts of the ‘quantified self’. This study sought to investigate users’ emotional responses towards their activity trackers, and the impact of personality traits on activity tracker usage and emotional responses. Methods: Participants (N = 200) completed an online survey that assessed positive and negative emotional responses towards their activity trackers, personality traits (openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism), and device usage. Data were analysed using ANOVAs. Hypothesis one predicted that device usage would be significantly associated with personality traits, specifically, frequency of viewing data would be associated with conscientiousness and neuroticism; and sharing to social media would be associated with extraversion. Hypothesis two predicted that emotional responses would be significantly associated with extraversion, conscientiousness, and neuroticism. Results: Results found that users’ emotional responses towards their activity trackers were very positive. Contrary to hypothesis one, device usage was largely unrelated to personality traits with the exception of openness to experience, which was inversely related to goal setting (χ²(1) = 5.578, p=0.013). Consistent with hypothesis two, significant associations were found between emotional responses and personality characteristics; specifically, between extraversion and positive emotions (empowerment, motivation, and accountability) towards activity trackers (F(1,190) = 4.07, p=0.045), and between negative emotions (guilt, self-consciousness, and anxiety) towards the activity tracker and conscientiousness (F(1, 191) = 15.61, p= Conclusions: This study found that, contrary to expectations, device usage was not significantly associated with personality characteristics, suggesting that the factors underlying how people use their devices are unrelated to personality. On the other hand, emotional responses to activity trackers were consistent with previous findings, and suggest that users high in extraversion are more likely to report positive emotional responses to their activity trackers whilst users high in conscientiousness and neuroticism are at greater risk of experiencing negative emotional responses towards activity trackers.

**P1.03.29**

**INVESTIGATING THE RELATIONSHIP BETWEEN SEDENTARINESS AND OBESITY – IS SITTING OR LOW ENERGY EXPENDITURE TO BLAME?**

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Purpose: The relationship between free-living sedentary behaviour and obesity is unclear. The definition of sedentary behaviour has three components – waking behaviour, low energy expenditure and sitting/reclining posture, yet no devices measure all simultaneously. The aim was to integrate information from two validated activity monitors - one measuring sleep and activity intensity and one measuring posture; and to examine its relationship with adiposity compared to measures of posture and activity intensity alone. Methods: Sixty-three female participants aged 37.1±13.6 years with a body mass index (BMI) of 29.6±4.7 kg/m² were continuously monitored for 5-7 days to track free-living sedentary behaviour with the SenseWear Armband (SEDSWA; for activity intensity AP; for sit/stand posture). Body composition was measured using Bodpod (Cosmed, USA). Data from both activity monitors were analysed separately and integrated using a novel procedure to create a three-dimensional...
sedentary behaviour measure (SEDINT). Sedentary behaviour outputs were correlated against body composition, body mass, body mass index and waist circumference. Results The three methods differed significantly in the measurement of sedentary time (F(1.18, 73.15)=104.70, pSWA showing the most (11.74±1.60hours/day), followed by SEDAP (10.16±1.75hours/day) and SEDINT (9.10±1.67hours/day). The three sedentary behaviour measures were positively correlated with each other (SEDSWA and SEDAP (r(61)=.37, p=0.003); SEDSWA and SEDINT (r(61)=.58, pAP and SEDINT (r(61)=.91, pSWA and fat mass (r(61)=.32, p=0.01) and BMI (r(61)=.33, p=0.009). However, there were no associations between SEDAP or SEDINT with any of the indices of adiposity (SEDAP – fat mass r(61)=0.02, p=0.891; BMI r(61)=.02, p=0.545 and SEDINT – fat mass r(61)=0.08, p=0.555; BMI r(61)=.03, p=0.822) . Conclusions The relationship between sedentary behaviour and adiposity differed depending on how sedentary behaviour was operationally defined and measured. The postural definition of sedentary behaviour did not impact strongly on obesity, whereas the accumulation of any waking behaviour (sitting or standing) with an intensity of

P1.03.30
INDIVIDUAL DIFFERENCES IN OBJECTIVELY ASSESSED SEDENTARY BEHAVIOR: A TWIN/SIBLING STUDY

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Purpose Sedentary behavior has been associated with the development of a range of non-communicable diseases, including cardiovascular disease and type 2 diabetes. In order to develop interventions that decrease sedentary time, a better understanding of its underlying determinants (including genetic background) is needed. The aim of this study is to disentangle the genetic effects from the environmental effects on a sedentary lifestyle. Methods In part 1 of this study, a systematic review was performed on all published studies on the heritability of sedentary behavior (N = 7), the majority based on self-reports. In part 2, a large-scale study using objectively assessed sedentary data in twin and their siblings (N = ±1000) aged 24–46 from the Netherlands Twin Register (NTR) was set up. Participants were invited to wear the Actigraph-accelerometer for seven consecutive days in order to assess sedentary behavior objectively. The NTR is a unique large prospective cohort study that longitudinally follows twins and their families, and previously collected data on self-reported sedentary behavior of these individuals was available. Data on twins and their siblings allows to estimate the amount of variation in sedentary behavior due to additive genetic, shared environmental (e.g. family environment), and person-specific environmental factors by comparing the resemblance in sedentary behavior between monozygotic and dizygotic twins and non-twin siblings. Results The systematic review showed that sedentary behavior is partly heritable (±30%), but can also be affected by the environment that is shared between siblings, such as family environment. However, the estimates differed widely and it is unclear whether this is due to the large variety of sedentary behavior measures that are used. Results of the ongoing large-scale accelerometer study in twins and their siblings will be used to resolve this and will allow insight in the overlap of objectively and subjectively measures of sedentary behavior. Conclusions In order to study the genetic mechanisms underlying sedentary behavior, it is essential to establish the relative contribution of genes and the environment to individual differences. Fundamental knowledge on the determinants of sedentary behavior will optimize the intervention efforts that are aimed to reduce sedentary behaviors in this increasingly sedentary society.

P1.03.31
THE ECONOMIC BURDEN OF PHYSICAL INACTIVITY: A SYSTEMATIC REVIEW AND CRITICAL APPRAISAL

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Objective: To summarise the current literature on the economic burden of physical inactivity in populations, with a
focus on appraising the methodologies and a discussion regarding how the conduct and interpretation of future studies may be improved. Methods: We conducted a systematic review following the PRISMA guidelines (PROSPERO registration number CRD42016047705). Electronic databases were systematically searched, including Medline, Scopus and Global Health for peer-reviewed papers, and Web of Science Conference Proceedings, ProQuest Dissertations and Theses Global, Google Scholar and Google for grey literature. The database search was followed by reference searching and consultation with experts. Studies (published from database inception through October 2016) that examined the economic consequences of physical inactivity in a population or population-based sample, with clearly stated methodologies, and at least an abstract/summary written in English. Data on various methodological aspects and result summary were extracted systematically by the lead author, with two co-authors each independently re-entering 30% of the studies for quality assurance. Results: Forty studies met the eligibility criteria. Of those, 27 focused on direct health care costs only, 13 also estimated indirect costs, and 1 study estimated direct, indirect and household costs (i.e. a societal perspective). For direct costs, 23 studies used a population attributable fraction (PAF) approach and 17 used an econometric approach, with studies using the econometric approach yielding to higher estimates within the same country than those using a PAF approach. Overall, estimates varied substantially, even for studies on the same country, depending on analytical approaches, time frame, and other methodological considerations. Conclusion: Estimating the economic cost of physical inactivity is an area of increasing importance which requires further development. There is a marked lack of consistency in methodological approaches and transparency of reporting, some of which might be avoided by following best practices. Future studies could benefit from cross-disciplinary collaboration involving economists, taking a societal perspective, careful consideration of confounding, reverse causality and comorbidity, discounting and sensitivity analyses.

P1.03.32
PRAGMATIC ASSESSMENT OF TREATMENT FIDELITY; KEEP ACTIVE KEEP WELL PROGRAMME

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Purpose Chronic pulmonary disease is a progressive disease associated with reduced physical activity. 'Keep Active Keep Well' (KAKW) is a theoretically underpinned, 12 week physical activity behaviour change programme, commissioned by British Lung Foundation, using motivational interviewing (MI) techniques to promote physical activity maintenance in the longer term. Treatment Fidelity refers to methodological strategies that enhance the reliability and validity of behavioral interventions and rarely incorporated in community based programmes. The aim of this study was to pragmatically assess the treatment fidelity of the KAKW programme at 2 pilot sites. Method A treatment fidelity plan was developed utilising Borrelli's (2005) framework and a checklist assessing adherence with MI. This aimed to assess the instructor's relational skills in line with the KAKW programme (empathy, partnership, cultivating change talk) and technical skills (open ended questions, affirmations, reflections, summaries). Both checklists were then scored on a Likert scale from 1 to 5, (1 = limited evidence supporting session material provided by KAKW and 5 = excellent evidence that instructor have met criteria set by KAKW). Treatment receipt was assessed using Client Experience of Motivational Interviewing (CEMI). Results Site 1: Treatment delivery was proficient with strong adherence to KAKW content criteria; all core content aims were addressed scoring an average of 4. MI proficiency was satisfactory, scoring an average of 2.5 in relational skills and 2.3 in technical skills. Mean CEMI score at session 2 was 52.17 (SD = 9.66) and 56 (SD= 5.02) at session 8. Site 2: Strong MI proficiency enabled content to be delivered clearly in a client centred style without reliance on the MI script. Average MI proficiency score of 3.7 on the relational components of MI and 3.8 on the technical components of MI. Mean CEMI score at session 3 was 56 (SD = 5.73) and 54.33 (SD = 6.55) at session 9. Both sites adhered highly to checklist criteria (>80%). Conclusion Training delivered from the British Lung Foundation (BLF) was high quality, robust and well received by staff. Proficiency of Motivational Interviewing (MI) by delivery staff improved throughout the duration of the programme and adherence was high.

P1.03.33
RUNNING BEHAVIORS IN A CONVENIENT SAMPLE OF PREGNANT WOMEN: A DESCRIPTIVE STUDY
Running in low-risk pregnancies is safe (with proper attention to risk) and has important benefits for both mother and fetus. There is little to no data about running patterns throughout the perinatal period. The objective of this study was to describe running patterns in women during pregnancy. Methods: We collected survey data on a national, convenience sample of women who were at least 18 years of age, in the perinatal period (i.e. pregnancy through one-year post-partum), and had run during their pregnancy. Women were recruited nationally utilizing social media (i.e., Facebook) through organizations that cater to pregnant women. The 136-item survey assessed running patterns (e.g. frequency, duration, intensity, reasons for terminating, etc.) and took 15-20 minutes to complete. Results: A total of 195 women (M=31.9±4.2 yrs of age, 18%, Hispanic) who completed the survey were currently pregnant (1st trimester 18% (n=26), 2nd trimester 48% (n=71), 3rd trimester (34%, n=51). Almost half (48%, n=93/181) ran 3-4 times a week and a third (n=61/177) ran 1-2 hours per week. About half (48%, n=94/176) reported running 11-30 miles per week. Most women 94% (n=166/195) reported changing their running behavior pattern during pregnancy including 35% (n=58/166) supplementing their running routine (i.e., added other activity but kept running), 32% (n=53/166) replacing their running with other activity (i.e., completely stopped running and began another form of exercise). Less than 20% (n=31/166) modified their running behavior (shorter bouts, slower pace) and some women (15%, n=24/166) reported their running didn’t change during their pregnancy. When asked why women changed their running patterns, 74% (n=122/166) reported fatigue, 24% (n=40/166) said pelvic pain or pressure and 18% (n=30/166) said joint or muscle pain. Due to fatigue, women changed their running patterns in the 1st trimester (71%, n=86/121). However, due to pelvic pain or pressure or joint or muscle pain, women changed their pattern during the 2nd trimester (70%, n=27/39; 60%, n=18/30) respectively. Conclusions: There is a need for better understanding running patterns during pregnancy to inform future interventions and provide health care professionals with valid, reliable information (i.e. what to expect, safety) to women who want to run during pregnancy.

P1.03.34
USING THE COM-B MODEL OF BEHAVIOUR TO UNDERSTAND SITTING BEHAVIOUR IN OFFICE WORKERS

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Objective: Prolonged sedentary behaviour has established health risks; however many individuals spend long periods of time sitting at work. Two recent studies reviewed the workplace sedentary behaviour intervention literature and drew limited conclusions do to the quality of studies. Subsequent qualitative research has suggested that inconsistent effectiveness of interventions may be linked to an incomplete understanding of the nature of, and factors influencing sedentary behaviour in the workplace. A psychological model, underpinned by behavioural science, is best placed to explore the nature of behaviour. Therefore, the aim of this study was to use the COM-B model of behaviour to examine how Capability, Opportunity and Motivation influences sitting behaviour at work in office workers. Methods: The study was a qualitative phenomenological analysis in which office workers (n=10) who had predominantly desk-based jobs were interviewed about their sitting behaviour at work. The 1-1 semi structured interviews utilised a topic guide which was informed by the COM-B model of behaviour. Interviews were analysed with the NVivo 10 program and followed the Framework Method to identify emergent themes and quantify the prevalence of each theme across participants. The analysis incorporated a number of procedures to enhance the trustworthiness including researcher reflexive journal, member checking and coding triangulation. Results: Six emergent themes were identified by at least nine participants; lack of knowledge (n=9), pressure to complete work (n=10), sitting as a habit (n=10), job demands (n=10), office environment (n=10) and social acceptability (n=10). It was evident that physical capability had minimal influence, but psychological capability (e.g., lack of knowledge) was influential. Both physical and social opportunities were influential in terms of the physical environment, nature of the job, social acceptability and norms related to sitting. Both automatic and reflective motivation emerged as being influential on behaviour. Conclusions: This is the first study that has used the COM-B model in order to understand sedentary behaviour in the workplace. The COM-B model facilitated understanding of factors influencing office workers' sitting behaviour and highlighted a number of potential areas for future interventions.
The findings add to the literature and provide direction for future interventions.

P1.03.35
IS PHYSICAL ACTIVITY A ROSE-COLOURED GLASS THROUGH WHICH WE VIEW SEDENTARY BEHAVIOUR?

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OBJECTIVE: Whereas traditional physical activity (PA) paradigms conceptualise sedentary behaviour (SB) and PA as opposites on a single continuum, this view has been challenged by SB research. SB – sitting – has been independently associated with biomedical and disease outcomes (e.g., mortality) even after controlling for PA. It is also increasingly recognised that engaging in large amounts of SB does not inherently prevent individuals from meeting PA recommendations. However, behavioural/medical independence does not mean that individuals view the behaviors as psychologically independent. Thus, our purpose was to examine whether PA level is related to how individuals perceive SB METHODS: Two studies were conducted. STUDY ONE was cross-sectional, where individuals (N=143) completed questionnaire items relative to their PA level and extent of SB, perceptions of their SB, and appraisals of photographic stimuli of active or sedentary individuals. STUDY TWO was a within-subjects randomised design in which relationships between PA level, BMI, social cognitive variables (self-efficacy [SE], outcome expectancies [OEs]) and engagement preferences were examined. Participants (N=577) read four randomly-presented vignettes varied by posture (sitting/standing) and activity type (television/studying). Reaction to potential standing break intervention was also assessed. RESULTS: STUDY ONE – "More-active" (MA) and "less-active" (LA) participants differed in their perceptions of SB, including their perceived level of SB (pd=0.96). These differences emerged despite MA and LA individuals reporting similar SB levels p>0.05. STUDY TWO – BMI was not significantly related to SB perceptions. While MA and LA individuals were similar in their sitting-related perceptions for studying and television, significant between-group differences emerged in standing-related perceptions, ps<0.05. CONCLUSIONS: Collectively, these studies suggest a relationship between individuals' activity levels and the psychological aspects of SB. Differences in individuals' PA level were related to how they perceived and anticipated experiencing SB. These novel results about SB and PA behaviours suggest that PA experiences could potentially moderate individuals' social-cognitions in SB investigations and reactions toward SB intervention.

P1.03.36
SLEEP DURATION AND QUALITY AND DIETARY INTAKE AMONG OLDER ADULTS WITH TYPE 2 DIABETES

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Purpose: The relationship between sleep and dietary intake among adults living with type 2 diabetes is not well understood. Hence the purpose of this study was to evaluate the associations between objectively assessed sleep duration and quality and dietary intake. Methods: Participants (N=161) completed a three-day food record that included two weekend and one week days to assess macronutrient derived caloric intake as well as glycemic index and load. Participants also wore an accelerometer (Actigraph GT3X+) on their wrist during sleep and completed a sleep-log over seven days to derive sleep parameters that included total sleep time (TST), sleep latency (SLAT), sleep efficiency (SEFF) and wake after sleep onset (WASO). Multivariable linear and logistic regression models were used to examine the associations among sleep parameters and dietary intake. Results: Participants were mostly male (54.7%), had a mean age of 65.4 years old (standard deviation [SD] 9.6), body mass index 31.6 (6.6) kg/m2, diabetes duration of 13.5 (SD 8.8) years and Mean (SD) total sleep time was 7.5 (1.0) hours. A mean SEFF of 82.7 (6.1)% and with SLAT and WASO of 9.9 (7.5) and 86.8 (54.4) minutes respectively. Mean (SD) energy intake was 2115 (683) kilocalories per day. On average, participants consumed 253.5 (102.5) grams of carbohydrate per day with a glycemic index value of 49.6 (6.5) and glycemic load of 112.6 (48.4) per day. After adjustment, sleeping more than 8 hours per night was associated with an increased glycemic load of 15.44 (95% CI 0.94, 29.94), while for every minute increase in sleep latency there as 0.55 gram increase in fat intake (95% CI 0.03, 1.02). Conclusion: Abnormal sleep duration and poor sleep quality can impact salient dietary targets for people with type 2 diabetes. Researchers and practitioners should consider sleep and dietary intake in combination when supporting self-
management among this clinical population.

P1.03.37
THE ASSOCIATION BETWEEN DOMAIN SPECIFIC SITTING TIME AND OTHER HEALTH BEHAVIOURS IN A SAMPLE OF CIVIL SERVANTS FROM NORTHERN IRELAND: THE STORMONT STUDY

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Objective: There is a dearth of literature on how total and different domains of sitting time relate to other health behaviours. This is necessary to identify high-risk groups and design specific interventions tailored to reducing the health risks and costs associated with said health behaviours. Therefore, this study aimed to explore the associations between different domains of sitting time and other health behaviours in a sample of office workers.

Methods: Cross-sectional, online survey data from the first (2012) and second (2014) waves of the Stormont study which is tracking a large cohort of employees within the Northern Ireland Civil Service were analysed. Employees provided information on socio-demographics, height & weight used to calculate BMI, workday and non-workday sitting time in five domains (travel, work, TV, home computer use, other leisure-time), physical activity, fruit & vegetable intake, alcohol consumption and cigarette smoking. An unhealthy behaviour score was calculated for employees by summing the number of health behaviours (physical activity, fruit & vegetable intake, alcohol consumption, cigarette smoking) which did not meet the current guidelines. A correlational analysis was then performed between the unhealthy behaviour score and each domain of sitting time. Results: 7,170 employees provided sufficient data with the majority being female (55.0%), aged 50-59 years (32.5%), married/cohabitating (70.1%) and working full-time (82.4%). A score of 2 was the most common unhealthy behaviour score (41.2%) and on average employees spent 643±160 minutes sitting on a workday and 491±210 minutes on a non-workday. Total daily sitting time was significantly correlated with unhealthy behaviour score on both a work (r²=.074) and non-workday (r²=.112). Sitting time whilst at work (r²=.059 workday, r²=.030 non-workday), out of work on a workday (r²=.048) and home computer use on a non-workday (r²=.046) were also significantly associated with unhealthy behaviour score. However, sitting whilst watching TV had the strongest association with unhealthy behaviour score (r²=.165 non-workday, r²=.114 workday). Conclusions: An association exists between sitting time and other health behaviours with TV viewing showing the strongest relationship. Interventions need to adopt a holistic approach in order to reduce these unhealthy behaviours and the related health consequences.

P1.03.38
DEMOGRAPHIC AND BEHAVIORAL CORRELATES OF CONSUMER PHYSICAL ACTIVITY TRACKER USE AMONG A POPULATION-BASED SAMPLE OF ADULTS

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Objective: Consumer-based physical activity trackers (PAT) have gained popularity to support individuals to be more active and less sedentary throughout the day. Wearable PATs provide real-time feedback of various fitness-related metrics such as tracking steps, sedentary time, and distance walked. The purpose of this study was to examine correlates of PAT use among a population-based sample of adults.

Methods: Adults >18 years (N=1,215) from Alberta, Canada were recruited through random-digit dialing and responded to a questionnaire via computer-assisted telephone interviewing methods in summer 2016. A minimum response of 400 in each of Edmonton, Calgary, and the rest of the province were obtained. Questionnaires assessed demographic and health behaviour variables, and items were designed to assess PAT ownership and usage. Logistic regression analysis was used to assess correlates of PAT use. Results: On average, participants (N=1,215) were 45 (SD 16.9) years with a mean body mass index (BMI) of 26.9 kg/m² (SD=5.9), and 49.5% were female. Of the sample, 20.2% (n=245) indicated that they currently owned and used an activity tracker with FitBit® reported as the most common brand (32.5%). Participants wore their tracker on average 23 days within the past month. Currently owning and using an activity tracker was
using a validated web

swimming, cycling, running), and half
cross

women) were recruited from the following multisport endurance events: winter triathlon (snowshoeing, skating,
in winter and summer multispor

The purpose of this study was to assess overall diet quality among a group of non

effort. Yet, the impact of engaging in multisport

Objective: Athletes involved in multisport endurance events such as triathlons have significant dietary constraints to

sustain their training regimen and to achieve optimal performance. Yet, the impact of engaging in multisport

endurance events on overall diet quality has been poorly described among non-elite multisport endurance athletes. The

purpose of this study was to assess overall diet quality among a group of non-elite men and women taking part

in winter and summer multisport competitions. Methods: A total of 160 non-elite athletes (114 men and 46

women) were recruited from the following multisport endurance events: winter triathlon (snowshoeing, skating,

and cross-country skiing), winter pentathlon (winter triathlon sports + cycling and running), Ironman (IM:

swimming, cycling, running), and half-distance Ironman (IM 70.3). Dietary intake among participants was assessed

using a validated web-based food frequency questionnaire, enquiring about food intake during the last month

P1.03.39

ASSOCIATIONS BETWEEN RISK OF FOOD INSECURITY AND CORRELATES OF EATING BEHAVIORS: AN ANALYSIS OF
THE NATIONAL CANCER INSTITUTE’S FAMILY LIFE, ACTIVITY, SUN, HEALTH, AND EATING (FLASHE) STUDY

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Objective: While emerging but mounting evidence suggests that food insecurity (FI) is associated with consumption
of energy-dense, nutrient-poor foods, few studies have investigated how intra-individual variables salient for eating
behaviors (i.e., health cognitions and emotional experiences) are related to FI. Here, we examine associations
between FI and intra-individual variables that are malleable but largely underexplored in the context of FI. Evidence
for correlational associations points to intra-individual experiences that may be further probed in causal research
and targeted in interventions to improve eating behaviors. We focused on three eating-related variables: self-
efficacy, emotion suppression (i.e., concealing emotion displays), and eating in the absence of hunger (EAH). We
also analyzed whether FI moderated associations among these variables and eating behaviors. Methods: Data were
analyzed from 1,465 adult participants in the United States National Cancer Institute's Family Life, Activity, Sun,
Health, and Eating (FLASHE) study. A two-item measure categorized participants as "food secure" or "at risk of FI."
Associations between FI and: emotion suppression, EAH, and self-efficacy were examined in weighted linear
regressions, controlling for education, age, sex, race/ethnicity, weight status, and health status. In a second set of
regressions, eating behaviors (frequency of fruits and vegetables [FVs], "junk foods," and fast/convenience foods)
were regressed on FI, the intra-individual variables, and their interaction. Results: Thirty-seven percent of
participants reported being at risk of FI. Food insecurity was associated with greater emotion suppression (β=0.12,
pp=.001), and lower FV self-efficacy (β=-0.10, pp=.003), but was not consistently associated with self-efficacy for
limiting junk food (β=-0.05, pp=.11). Self-efficacy predicted greater FV frequency and lower frequency of junk foods
and fast/convenience foods (pp<0.04). These associations were not moderated by FI. Conclusions: Adults at risk
for FI may report health cognitions and emotional experiences associated with less healthful eating. Emotion
suppression, EAH, and self-efficacy were significant correlates of eating behaviors across FI status. Future studies
can examine the impact of targeting these variables in interventions among food-insecure households.

P1.03.40

OVERALL DIET QUALITY IS HIGH AMONG NON-ELITE MALE AND FEMALE ATHLETES INVOLVED IN MULTISPORT
SUMMER AND WINTER EVENTS

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Quebec

Objective: Athletes involved in multisport endurance events such as triathlons have significant dietary constraints to

sustain their training regimen and to achieve optimal performance. Yet, the impact of engaging in multisport

eventson overall diet quality has been poorly described among non-elite multisport endurance athletes. The

purpose of this study was to assess overall diet quality among a group of non-elite men and women taking part

in winter and summer multisport competitions. Methods: A total of 160 non-elite athletes (114 men and 46

women) were recruited from the following multisport endurance events: winter triathlon (snowshoeing, skating,

and cross-country skiing), winter pentathlon (winter triathlon sports + cycling and running), Ironman (IM:

swimming, cycling, running), and half-distance Ironman (IM 70.3). Dietary intake among participants was assessed

using a validated web-based food frequency questionnaire, enquiring about food intake during the last month
leading to the sports event. Overall diet quality was assessed using the alternate Healthy Eating Index 2010 (aHEI), which ranges from 0 to 110. Results: The mean aHEI [95% confidence intervals-CI] among this population of multisport non-elite athletes was 69.1 [67.41-70.74], which is significantly higher than a non-athlete reference population (N=840, mean aHEI score: 59.9 [58.1-59.3]). Non-elite female athletes had a higher aHEI than male athletes (73.28 [70.33-78.23] vs. 67.38 [65.43-69.33], p=0.001), which was attributed to higher scores among women for the following individual components of the aHEI: red meat (p=0.0003), sugar-sweetened beverages (p

Conclusions: These data suggest that being involved in gruelling sports events such as winter and summer triathlons is associated with good overall diet quality among non-elite athletes. Consistent with data from the general population, diet quality is higher among non-elite female athletes than non-elite male athletes.

P1.03.41
MOVE MORE. SIT LESS: DEVELOPMENT OF A PHYSICAL ACTIVITY SUPPORT TOOLKIT TO ADDRESS A GAP FOR PEOPLE LIVING WITH CHRONIC DISEASE

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Purpose: To develop a web-based Physical Activity Support Toolkit "Move More. Sit Less", to address a gap in accessible one-stop, pre-appraised evidence-informed resources to support physical activity (PA) participation in people living with chronic disease. Methods: The "Move More. Sit Less" toolkit is an interdisciplinary, integrated knowledge translation project. Over 145 health care providers (HCP) and students, researchers and individuals with expertise and lived experience in chronic disease have supported development of the toolkit. Informed by online needs surveys of 1,000+ HCP and people living with chronic disease, existing resources were identified through a broad scoping process. Condition-specific working groups appraised resources using the validated Patient Education Materials Assessment Tool (PEMAT) and a purpose-built HCP resource evaluation tool generating a list of recommended resources. Recommended resources were then reviewed by advisory panel members to ensure synchrony with current scientific evidence and the final vetted resources were uploaded to a custom-designed website with patient and HCP portals. The website includes an additional feature termed "Helping you to make it happen" which embraces behaviour change theories to provide guidance on adopting and maintaining an active lifestyle. Findings: This grassroots, unfunded initiative has precipitated unparalleled collaboration from key stakeholders including disease-specific and physical activity-based organizations, and culminated in the BETA launch of the "Move More. Sit Less" online resource for lung disease and cancer. Following usability testing, there will be an open launch with additional content for bone and joint, cardiac, mental health, neurological, and metabolic conditions. Targeted dissemination is planned through local, national and international patient and HCP organizations including Exercise is Medicine (Canada and USA). The toolkit's reach and usability will be determined through website traffic and utilization metrics, and targeted user focus groups to guide further refinements.

Conclusions: Based on extensive stakeholder collaboration and the early, broad-based interest from national and international patient and HCP organizations, the "Move More. Sit Less" toolkit shows great promise for providing a novel and valuable one-stop online portal for HCP and people living with chronic diseases to access evidence-informed resources supporting physical activity participation.

P1.03.42
SIT LESS AND MOVE MORE: PERSPECTIVES OF ADULTS WITH MULTIPLE SCLEROSIS

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Purpose: Multiple Sclerosis (MS) is a chronic neurological disease. The incidence of MS in Canada is the highest in the world. People with MS have challenges with mobility. Exercise improves mobility and quality of life of adults with MS, however, most of them do not meet physical activity guidelines and spend most of their time being
Reducing sedentary behaviour and replacing it with light physical activities may be an important and feasible approach to manage the symptoms of MS. This study explored the perspectives of adults with MS about sedentary behaviour and physical activity as well as ways to change activity behaviour. Methods: Fifteen adults with MS (age 43 ± 13 years; mean ± SD) were recruited through the MS Clinic at the University of Alberta, Edmonton, Canada. Participants were included if they (1) had a confirmed diagnosis of MS; and (2) were at least 1-year post diagnosis. A semi-structured face-to-face interview was conducted with each participant. Interview audios were transcribed verbatim and coded independently by two researchers using a thematic analysis. All transcripts were cross-coded to ensure inter-coder agreement. NVivo software was used to facilitate this inductive process. Results: Balancing competing priorities between sitting and moving was the primary theme that emerged from the thematic analysis. Adults with MS were aware of the benefits of physical activity to their overall health, and in the management of fatigue and muscle stiffness. However, when they had fatigue they chose sitting to get their energy back. For those that worked, their workplace settings and the nature of their jobs often encouraged them to sit more. Particularly for those with walking disability, lack of accessible activity centres in the community, and fear of embarrassment were discussed as factors that encouraged more sitting. Activity monitoring, individualised plans and programmes, socialising, verbal persuasion, and incentive were suggested strategies to motivate them to move more. Conclusions: Adults with MS were open to the idea of replacing their sitting with light physical activities. However, motivational and educational programmes are required to help them to change sedentary behaviour to moving more.

P1.03.43
TEMPORAL AND BIDIRECTIONAL ASSOCIATIONS BETWEEN PHYSICAL ACTIVITY AND SLEEP IN PRIMARY SCHOOL-AGED CHILDREN

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Purpose: The directionality of the relationship between children's physical activity and sleep is unclear. This study examined the temporal and bidirectional associations between objectively-measured physical activity, energy expenditure and sleep in primary school-aged children. Methods: One hundred and two children (50% boys) aged 8-11 years from 6 schools in Melbourne, Australia wore a SenseWear Armband on their upper left arm for 8 consecutive days. Anthropometric (height, weight) and demographic (age, sex) data were also collected. Outcome measures included time spent in light- (LPA), moderate- to vigorous-intensity physical activity (MVPA), energy expenditure (AEE), time in bed, total sleep time and sleep efficiency. Multilevel analyses were conducted using generalized linear latent mixed models to determine whether physical activity on one day was associated with sleep outcomes that night, and whether sleep during one night was associated with physical activity the following day. Results: Complete data were collected from 65 children (31 boys, 34 girls). The majority of the sample (88%) met physical activity guidelines, but only 5% met the average total sleep time recommendation of 9-11 hours/night. The main analyses found no significant associations between time in bed, total sleep time, and sleep efficiency with LPA, MVPA and AEE in either direction. Conclusion: This study found no temporal or bidirectional associations between objectively-measured physical activity, AEE and sleep outcomes (time in bed, total sleep time, sleep efficiency). Future research is needed to understand whether other sleep dimensions (e.g. quality, regularity, timing) may have a greater impact on or be influenced by physical activity compared to the total volume of sleep. Such research would provide potential intervention targets to improve these outcomes in primary school-aged children.

P1.03.44
SUGAR-SWEETENED BEVERAGE CONSUMPTION AND THE SCHOOL FOOD ENVIRONMENT: AN EXAMINATION OF SECONDARY SCHOOL STUDENTS IN GUATEMALA

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Purpose: The increasing prevalence of obesity and high rate of sugar-sweetened beverage (SSB) consumption among adolescents represent two concurrent public health concerns in Guatemala. School-based interventions may represent a promising strategy to help address the "double burden" in Guatemala. However, few studies have examined the school food environment in Guatemala and its potential influence on students’ diets. This study sought to examine Guatemalan adolescents’ consumption of SSBs, identify which individual-level characteristics were associated with SSB consumption, and describe school characteristics that may influence students’ SSB consumption. Methods: The sample comprised 1042 adolescents from four (two public, two private) secondary schools in Guatemala City. A questionnaire was used to assess students’ consumption of three varieties of SSBs (soft drinks, energy drinks, sweetened coffees/teas), as well as a variety of sociodemographic and behavioural characteristics. Built environment data were collected to examine aspects of the school food environment. A Poisson regression model was developed for each SSB variety, and descriptive analyses characterized the sample. Findings: Built environment data revealed that students from the two public schools lacked access to water fountains/cookers. The SSB industry had a notable presence in the schools through advertisements, sponsored food kiosks, and products available for sale. Soft drinks were consumed most frequently (mean of 2.3 and 2.9 days in a typical school week for females and males, respectively), followed by sweetened coffees/teas (mean of 2.4 and 2.6 days in a typical school week for females and males, respectively). Energy drinks were consumed relatively infrequently. Public school students had a significantly higher rate of SSB consumption compared to their private school counterparts, across all three beverage categories. Other common correlates of SSB consumption included sedentary behaviour, frequency of purchasing lunch in the cafeteria, and purchasing snacks from vending machines in school and off-school property. Conclusions: Aspects of the school environment may promote SSB intake among Guatemalan adolescents. School represent a viable setting for equitable population health interventions designed to reduce SSB consumption, including increasing access to clean water, reducing access to SSBs, restricting SSB marketing, and greater enforcement of existing food policies.

P1.03.45
THE INFLUENCE OF SOCIAL STATUS AND SOCIAL ECONOMIC STATUS ON ADOLESCENT INTRINSIC MOTIVATION FOR PHYSICAL ACTIVITY

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Purpose: Adopting a socio-ecological perspective, this study assessed the influence of social status and social economic status on adolescent intrinsic motivation for physical activity. A social network measure of social status was employed which permits analysis of both popularity and relatedness. It was predicted that higher social status would predict higher levels of self-determined motivation (intrinsic) for physical activity, that increasing age and social status would moderate this relationship and that boys with higher social status would show higher levels of intrinsic motivation for physical activity. Methods: One hundred and nine (59 males and 50 females) participants aged 11 years 1 month to 16 years 9 months (M=13 years 5 months) were recruited from schools across the South East of the UK. They completed measures of social economic status, self-determined motivation (BREQ-2) towards physical activity participation and ratings of school peer’s social status (generating popularity and relatedness scores). Results: Hierarchical multiple regression showed that males displayed higher self-determined motivation towards physical activity participation than females; social status was not a significant predictor. Age, gender and social economic status did not predict motivation for physical activity. Social status, specifically popularity, did however correlate with participation for the older participants aged 15 years 2 months to 16 years 9 months. Qualitative, visual interpretation of the social networks of popularity and relatedness showed a mixed influence on motivation across individuals. For example, females with higher and lower popularity and relatedness had higher and lower self-determined motivation respectively to participate in physical activity. Conclusions: In partial support of a socio-ecological framework, age related to increased participation in physical activity. The mixed individual findings regarding the influence of popularity and relatedness in relation to age and social economic status on self-determined motivation to participate in physical activity suggest the importance of assessing the interplay of multiple socio-ecological factors using inclusive social network analysis on an individual basis in relation to understanding and promoting intrinsic rather than regulated motivation towards physical activity.
FOOD PURCHASED ON CAMPUS AS A CORRELATE OF ANTHROPOMETRY AMONG FEMALE UNIVERSITY STUDENTS

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Objective: The purpose of this study was to determine whether the frequency of food purchased from vendors on campus was correlated with anthropometry in a group of young adult female students. Methods: This was a cross-sectional study of 124 randomly selected female students, registered at the University of the Witwatersrand, Johannesburg with a mean age of 21.3 ± 3.15 years. Simple anthropometry (body mass index (BMI) and waist circumference), moderate vigorous physical activity (MVPA), sitting time, and eating habits were collected using standardised methods. Multivariable linear regression models were developed to determine principle correlates of waist and BMI. Analyses were performed with adjustment for age, MVPA, sitting time, and eating behaviour.

Results: The presence of obesity in the sample was 18.5% (95% CIs: 11.6%, 25.5%), with a mean BMI of 25.6 ± 4.67. Females in the highest quartile of purchases made at food vendors had significantly higher BMI and waist circumference values compared with those in the lower groups. In the adjusted models, food vendor purchases made once/day was negatively correlated with waist circumference (β=−0.31, P=0.003); while BMI was positively correlated with the food vendor purchases of ≥3/day (β=0.24, P=0.02). Conclusions: These findings demonstrate that higher frequencies of food purchased away from home are associated with BMI, while lower frequencies are associated with lower fat accumulation in the central region. This is important for young adult females, particularly as the risk of obesity increases as South African women transition into higher socioeconomic strata with the completion of higher education.

SOCIODEMOGRAPHIC FACTORS, PHYSICAL ACTIVITY, AND SCREEN TIME AMONG ADOLESCENTS IN CANADA AND GUATEMALA: RESULTS FROM THE COMPASS SYSTEM

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Purpose: Identifying correlates of adolescent physical activity (PA) and sedentary behaviour (SB) across countries generates evidence regarding the country-specific conditions and contexts that impact these behaviours. Guatemala is one of the most under studied countries for adolescent PA and SB. The purpose of this study was to compare the levels of PA and SB between Canadian and Guatemalan adolescents, and to examine associations of sociodemographic variables with PA and screen time among adolescents in each country. Methods: Self-reported, cross-sectional data from students in grades 9-12 who participated in the 2015 COMPASS-Canada (n=39,817; mean age=15.61 years) and COMPASS-Guatemala (n=1,221; mean age = 15.08 years) were used. Sociodemographic variables included age, gender, ethnicity (exclusively among Canadians), and weekly money allowance. Outcome variables included meeting the PA guidelines (≥ 60 min/day) and the screen time recommendations within the SB guidelines (Results/Findings: The proportions of participants meeting the PA guidelines were 48.7% and 41.3% for Canadian and Guatemalan adolescents, respectively. More Guatemalan adolescents met the screen time recommendations than Canadian adolescents (24.9% vs. 16.5%). Older age, being male, non-White, and $0-5/unknown weekly money allowance was associated with meeting the PA guidelines among Canadians. Gender (being male) was the only variable associated with meeting the PA guidelines among Guatemalan adolescents. Older age, being male, non-White, and $0-5/unknown of allowance were associated with organized sport participation among Canadians. Among Guatemalans, aged 15-16 years and having 0-35 quetzals/unknown of allowance were associated with participating in competitive school sports. Being male was associated with participating in recreational school sports or league/team sports. Older age, being female, non-White, and having ≥$6 of allowance were associated with meeting the screen time recommendations among Canadians. Older age, and having ≥150 quetzals of allowance were associated with meeting the screen time recommendations among Guatemalan adolescents. Conclusions: Using identical data collection procedures across jurisdictions, this study identified important sociodemographic correlates of PA and screen time in samples of Canadian and Guatemalan adolescents, which can be used to inform future targeted health interventions in each country.
P1.03.48
IMPLEMENTING CYCLING SAFETY AND EDUCATION INTO A REQUIRED UNIVERSITY WELLNESS COURSE

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Objective According to the U.S. Center for Disease Control, 60% of American university students fail to get the recommended amount of physical activity of 30 minutes of moderate exercise five or more days a week or 20 minutes of vigorous exercise three or more days a week. University curricular and extracurricular programs can promote more physical activity by providing students not only access to equipment, but also education and skills needed to incorporate physical activity into their lifestyles. Recently there has been a significant effort to create, connect, and improve the bicycling infrastructure across the country. As a result, today’s university students have more opportunity than previous generations to bicycle for recreation, exercise, and transportation. The purpose of this study was to assess the impact of implementing a bicycling education and safety component to a required university lifetime fitness and wellness course. Methods Fifty-five students (53% female, 47% male) from four sections of the required course at a competitive liberal arts university completed a 25 question pre-ride survey. Following the survey, students participated in a 50-minute bicycle education and safety class which included a 4-6 mile, moderately-paced, out and back urban to trail bike ride led by faculty and student bike staff members using bicycles from the campus bike-share program. After the bike rides, students completed a seven question post-ride survey. Results/Findings Students reported high levels of enjoyment (94.5%) and expected to bike more after the class instruction and ride (83.6%). Students agreed the bicycle education and ride contributed to the goals of the course (96.4%) and would be beneficial for all future students enrolled in the course (94.4%). Eighty-eight percent of students claimed they felt safe on the bicycle ride, and the majority of students (68%) expected to check out a bicycle from the bike-share program in the future. Conclusions Providing knowledge, skills, and opportunity to connect with campus bike-share programs and the surrounding neighborhood cycling routes was shown to be a positive way to promote physical activity among university students. This introduction to cycling is one way to promote long-term, physically active, and sustainable lifestyles.

P1.03.49
MODERATE-TO-VIGOROUS PHYSICAL ACTIVITY PREDICTS HIGHER CLUSTERED CARDIO-METABOLIC RISK IN LEAST ACTIVE CHILDREN: THE ACTIVE SMARTER KIDS STUDY

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Purpose: Low levels of physical activity is acknowledged as a crucial risk factor for higher clustered cardio-metabolic risk, which might lead to future type 2 diabetes and cardiovascular disease. However, few prospective studies examined associations between sub-components of objectively measured physical activity and clustered cardio-metabolic risk in children. Therefore, we assessed the differences in clustered cardio-metabolic risk stratified by quartiles of physical activity in a sample of healthy children followed prospectively across one school year. Methods: We analysed data from n=700 children (344 boys/356 girls; mean age 10.3±0.3 yr) as part of a cluster-randomized controlled trial (Active Smarter Kids Study). Physical activity were assessed by accelerometry (ActiGraph GT3X+). We measured resting systolic blood pressure, waist circumference and fasting blood sample (standard lipid panel, glucose, insulin) and analysed them as a clustered cardio-metabolic risk score standardized by age and sex (z score). Children were measured at baseline and follow-up. We examined the differences between quartiles of moderate and vigorous intensity physical activity (MVPA) using linear mixed models with school as the random intercept to account for clustering. Results / Findings: Children in the lowest quartile of MVPA had significantly higher cardio-metabolic risk (β = 0.12; 95 % CI, 0.03 – 0.22, P = 0.011, P-trend = 0.036) at follow up compared with children in the most active quartile. However, associations were attenuated when we adjusted for waist circumference. Being in the least active quartile of MVPA (median MVPA 48.3 min/day) predicted a 0.51 cm higher waist circumference and 0.54 mmHg higher systolic blood pressure compared with those in the most active quartile (median MVPA 107.7 min/day). Summary and conclusion: MVPA predicts higher clustered cardio-metabolic risk in inactive compared with
active children over a period of one school year. These relatively small differences during childhood may lead to substantial differences in later life. Therefore, it seems prudent to encourage children to achieve physical activity guidelines to optimize their cardio-metabolic health.

P1.03.50
“AM I ABLE?” “IS IT WORTH IT?” INVESTIGATING SECONDARY SCHOOL STUDENTS’ MOTIVATIONAL PREDISPOSITIONS IN PHYSICAL EDUCATION

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Objective: Physical activity is known to provide important benefits, however despite this physical activity participation rates have remained low. Physical Education has the potential to influence student enjoyment and attitudes, as well as their perceived competence and self-efficacy in physical activity. The purpose of this research project was to explore students’ perceived Physical Education Ability and perceived Physical Education Worth. Methods: Data were collected utilising a mixed methods approach from one Government secondary school within the Eastern suburbs of Melbourne. The previously validated Physical Education Predisposition Scale (Hilland, Stratton, Vinson & Fairclough, 2009) was employed to collect quantitative data (n=266), with focus group interviews (n=12) utilised to further explore students’ motivational predispositions in Physical Education. Results: Independent sample t-tests revealed no significant differences between the Year groups in perceived Physical Education Ability, however significantly higher results were found for perceived Physical Education Worth (Year 10 vs Year 7). A small, significant positive correlation was found between perceived Physical Education Ability and perceived Physical Education Worth (r = .26, p Conclusion: The students considered Physical Education to be largely a break from other subjects, not as important as other subjects and as having limited impact on their life outside of school. This suggests that teachers are not making meaningful connections for students to their daily lives and physical activity behaviours. Future research should examine the role Physical Education teachers play and how they can better develop positive and meaningful movement experiences to build perceived Physical Education Ability and Worth that can influence lifelong participation in physical activity.

P1.03.51
EVALUATION OF PHYSICAL ACTIVITY LEVELS IN ELITE YOUTH SOCCER PLAYERS

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Purpose: A significant number of children and adolescents engage in elite-level sport, particularly soccer. The impact of high training and match loads on free-living sedentary behaviour (SB) and physical activity (PA) on non-training and non-match days is unknown. This cross-sectional study compared SB and PA levels on non-training and non-match days in highly-trained, male youth soccer players (SP) at a professional club, to free-living SB and PA levels in age-matched, recreationally active males (CON). Methods: Participants were recruited from under-9 and under-12 age groups. Eighteen under-12 SP (age 11.4±0.5 years), sixteen under-12 CON (11.9±0.3 years), ten under-9 SP (8.9±0.3 years) and twenty under-9 CON (8.3±0.6 years) wore an accelerometer (ActiGraph GT3X) for 7 days. An independent t-test or Mann Whitney test compared time spent sedentary, and in light PA and moderate-to-vigorous intensity PA (MVPA) between CON (all days) and SP (non-training and non-match days) with alpha ps0.05. Values reported are mean difference and 95% CIs for SP relative to CON. Results/findings: On non-training and non-match days, under-12 SP were more active (light PA: 38.5 min?d-1 (95% CI -55.0 to 141.3) and more active (light PA: 38.5 min?d-1 (10.2 to 66.7)); MVPA: 28.3 min?d-1 (-2.4 to 59.0)) than CON. On non-training and non-match days, under-9 SP were more sedentary (51.4 min?d-1 (2.5 to 100.3)) than CON. Trivial differences were observed for under-9 SP compared to CON for light PA (-9.3 min?d-1 (-33.9 to 15.4)) and MVPA (1.9 min?d-1 (-15.9 to 19.6)). Conclusions: Elite-level sport appears a potent stimulus to reduce SB and increase light PA and MVPA in under-12 SP on non-training and non-match days compared to recreationally active peers. Conversely, elite-level soccer at under-9 appears to stimulate greater SB on non-training and non-match days compared to recreationally active peers, suggesting a compensation effect from high training and match loads. Similar PA levels between under-9 SP and recreationally active peers may be due to high-levels of free-living PA seen at this age. These findings may suggest
that the normal, age-related decline in PA could be offset by engagement in elite-level sports, which may have positive, long-term health implications for these young athletes.

P1.03.52
GENDERTYPING FOODS BY UNIVERSITY STUDENTS.

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Objective: Gender plays a pervasive role in all aspects of life, including food choice. Considerable research has examined gender differences in food consumption, but little systematic data is presently available about how foods are socially represented as being more or less appropriate for different genders. Social representations theory conceptualizes shared collective understandings about ideas, and can be used to interpret gendertyped food representations. This study is one of the first to systematically quantitatively examine which foods are represented as masculine, feminine, or neither, which may be useful in encouraging healthful food choices. Methods: A cross-sectional design was used to collect data from students in one U.S. university in an introductory biology course using a paper questionnaire. The survey asked students about their familiarity and personal use of the concepts of masculine and feminine foods, and then asked them to list three foods that were masculine, three foods that were feminine, and three foods that were neither masculine nor feminine using open-ended questions. Frequencies of naming gendertyped foods were calculated. Results: Among the 186 respondents, 56% reported having heard of masculine/feminine foods, but only 21% reported personally using those terms. The most frequently named feminine foods were salad, yogurt, and chocolate; the most frequent masculine foods were steak, hamburger, and meat; and the most frequent neither masculine nor feminine foods were pasta, bread, and pizza. Conclusions: The terms masculine foods and feminine foods were not widely shared or personally used by this sample of U.S. students, but students understood the concepts sufficiently to use them to express their social representations of gendertyped foods. Core social representations for each gender had commonalities congruent with contemporary U.S. masculinities and femininities that may be useful in understanding and changing food choice. This study has design, measurement, and sampling limitations. The findings suggest potential opportunities for encouraging healthful food choices by considering how foods are socially represented as masculine, feminine, or neither and using that understanding in clinical work, education, programs, and policies.

P1.03.53
PHYSICAL ACTIVITY AND SEDENTARY TIME ASSOCIATIONS WITH METABOLIC HEALTH ACROSS WEIGHT STATUSES IN CHILDREN AND ADOLESCENTS: AN INTERNATIONAL CHILDREN’S ACCELEROMETRY DATABASE (ICAD) ANALYSIS

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Purpose: Recent research challenges the assumption that obesity is invariably associated with poor metabolic health, and a normal weight status guarantees good metabolic health. However, few studies have examined the association between physical activity and sedentary behaviour and metabolic health-weight status groups in children, particularly with accelerometer measures. Therefore, the current study examined the prevalence of metabolic health across weight status groups, and associations with physical activity and sedentary time. Methods: Data from the International Children's Accelerometry Database (ICAD) from six studies were used (n=4581). Sedentary time, light physical activity (LPA), and moderate to vigorous physical activity (MVPA) were accelerometer-derived. Individuals were classified as normal weight (NW), overweight (OW), and obese (OB). Metabolic health was operationalized with two composite definitions based on fasting glucose, triglycerides, high density lipoprotein cholesterol, diastolic and systolic blood pressure, and homeostatic model assessment of insulin resistance, and participants were classified as metabolically unhealthy (MU) or metabolically healthy (MH). Logistic regression and multinomial logistic regression models were used to analyse the data. Results: The average sample age was 11.8±3.3 years and 50.6% were female. The prevalence of MU status was 25.6% and 45.1% based on two definitions. Additional sedentary time was associated with increased odds of MU classification compared to MH, for NW (Odds Ratio (OR)=1.08; 95%Confidence Interval (CI):1.02-1.15) and OW (OR=1.11; 95%CI:1.00-1.24) groups. Additional MVPA was associated with decreased odds of MU classification compared to MH, for NW (OR=0.95;
Objective: This study investigated whether the Prototype Willingness Model (PWM) has potential to improve understanding of young British adolescents’ physical activity (PA). Many PA interventions are underpinned by the Theory of Planned Behaviour, yet meta-analyses show this model of reasoned decision-making leaves some variance in behavior unexplained. The PWM proposes a spontaneous decision-making path to account for adolescents’ reactions to their social environment. Our aim was therefore to explore concepts linked with a social reaction pathway to PA, particularly during school recess and physical education (PE) lessons. Methods: PE teachers in 4 schools nominated high-active and low-active pupils to take part in focus group discussions. Forty-five participants (22 male) aged 12-13 were recruited and arranged into 8 groups based on school attended and activity level. Discussions were transcribed and subjected to deductive thematic analysis, using NVivo, to search for three themes relating to the PWM: planned and spontaneous decision-making, prototypes and attitudes. A second, inductive analysis looked for further relevant themes. Results: We found evidence for reasoned and social reaction pathways to PA in high schools. Participants appeared to make planned decisions about commuting to school or attending sports clubs, and spontaneous choices to be inactive, during both recess and PE. Unplanned decisions seemed influenced by a social context described as more judgmental than elementary school, and characterised by anxiety about physical competence, negative peer evaluation and inactive playground norms. Participants described both active and inactive prototypes, and there were indications that active images included several negative social characteristics. There was little concern about the long-term risks of inactivity, although they seemed to recognise that PA is healthy. Conclusions: The PWM might more fully explain young adolescents’ PA in school than rational behavioural models, indicating potential for PA interventions that target anxieties in response to the changing social environment in the playground. PA prototypes could be more complex than earlier research has suggested, and their negative characteristics might influence willingness to be active. Prototypes that incorporate competence could be worthy of further investigation.

P1.03.55
DO CHILDREN CONSUME LESS CANDY IN A FREE ACCESS ENVIRONMENT BEFORE OR DIRECTLY AFTER A STANDARD TEST MEAL, IN THE ABSENCE OF HUNGER?

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Candy is a source of added sugars and empty calories in middle childhood. Despite knowing little about what factors influence children’s intake of candy, parents report offering sweets after a meal because they believe children will be full and eat less candy. Participants were 38 parent and child (ages 5-8) dyads. On day 1, children were fed a standard lunch, self-reported hunger was assessed, and children’s intake of 11 types of candy (e.g., solid chocolate bars, gummy bars, lollipops) while in the absence of hunger was observed in a laboratory setting. On day 2, children ate breakfast, had a 2-hour break, self-reported hunger, participated in the free access condition, then ate lunch. Energy (kcal) consumed during the free access sessions was calculated using manufacturers’ information, and individual differences in children’s candy intake were tested. Children’s height/weight were measured and parents reported on child temperament using the Child Behavior Questionnaire (CBQ). On average, children
consumed 209 kcals (SD = 111) of candy following a standard lunch, amounting to about ~15% of the USDA estimated calorie needs for the average sedentary 4-8 year old. In contrast, children ate an average of 283 kcal (SD=167) of candy prior to a meal, when children reported they were hungry, resulting in a difference of 74 kcal (SD=135 kcal), based on repeated measures ANOVA. However, child temperament moderated the effect of meal timing on child intake of candy, such that significant differences between pre- and post-meal intake were only observable among children lower in inhibitory control, effortful control, or higher in approach. Overall, children’s intake of candy in free access exceeds USDA recommendations for SOFAs; however, children with lower regulation may consume even more candy than more regulated children. More research is needed to better understand how individual differences in how children respond to candy differ as a function of hunger and temperament.

P1.03.56
ARE YOUNG CANADIANS SUPPORTIVE OF PROPOSED FOOD ENVIRONMENT POLICIES? AN OVERVIEW OF POLICY SUPPORT AND THE IMPACT OF SOCIODEMOGRAPHIC FACTORS ON PUBLIC OPINION.

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Purpose: Countries, such as Canada, are increasingly considering nutrition policies that seek to improve dietary behaviour, including enhanced food labelling, taxation of unhealthy foods, and marketing restrictions. The current study examined levels of support for policy measures among youth and young adults in Canada, as well as sociodemographic correlates of support. Methods: The first wave of the Canadian Nutrition Cohort Study was conducted in October-November 2016. A sample of 2,741 Canadians aged 16-30 completed online surveys. Participants were recruited across five Canadian cities/provinces (Toronto, Edmonton, Halifax, Montreal, and Vancouver) using a face-to-face intercept sampling method, stratified by region and type of location in each city. Respondents indicated their support for 21 specific policies in the areas of food package and menu labelling, school meal programs, subsidies, taxation, zoning, and bans on marketing. Linear regression models were conducted to examine levels of support by age, sex at birth, and city of residence. Results are reported for those that supported policies (positive support or neutral) due to space constraints. Results: Levels of support were generally highest for food labelling (front of package [FOP] ‘high sugar’ symbol=97%, FOP ‘high salt’ symbol=97%, ‘high sugar’ warning = 96%, grocery store shelf label for healthy/unhealthy food = 93%), calorie labelling on menus (restaurants=95%, schools=90%), school meal programs (97%), and subsidies to reduce fruit/vegetable cost (96%). Taxation policies received slightly less support (sugary drinks = 71%, high sugar foods = 71%, high salt foods = 70%), as did zoning restriction policies (fast food near schools = 78%, convenience stores near schools = 68%) and bans on marketing to children (sugary drinks = 88%, unhealthy foods =88%, all food/beverage marketing = 70%, all marketing to children = 71%). In preliminary regression analyses, age was significantly associated with support for 13 of the 21 policies (p Conclusions: Overall, youth and young adults in Canada reported high levels of support for policy measures, particularly for menu and package labelling. Levels of support were fairly consistent across demographic subgroups, with some exceptions.

P1.03.57
1-YEAR STABILITY OF THE POWER OF FOOD SCALE IN U.S. YOUNG ADULTS, AND ASSOCIATIONS WITH WEIGHT PERCEPTION, DIETING, AND 1-YEAR BMI CHANGE

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Purpose: The Power of Food Scale (PFS) has been used as a self-report measure of food reward sensitivity, the neurologic reward response to food stimuli which, when measured by neuroimaging, is associated with weight status and prospective weight gain in small samples. This study examined stability of PFS over 1 year, and the relationships of PFS with weight perception, dieting, and 1-year prospective and retrospective BMI change in young adults. Methods: Data come from waves 5 and 6 (2nd and 3rd year after high school, respectively) of the NEXT Study, a nationally representative cohort of U.S. adolescents enrolled in 2010 and assessed annually (83% retention at W6, n=2202, 59% female, 20.3years). W5&W6 assessments included PFS (aggregate score and subscales: foods
available, foods present, foods tasted); past-year and current dieting to lose weight, and perceived weight status were assessed at W6. BMI, BMI change (dBMI) and onset of overweight/obesity between W5 and W6 (OWOB) were calculated from self-reported height and weight at each wave. 1-year PFS stability was measured using the intraclass correlation coefficient (ICC) from linear mixed models. Simple and multiple linear and log-binomial regressions estimated relationships of W5PFS and W6PFS with dBMI and OWOB, and concurrent associations of W6PFS with BMI, dieting, and perceived overweight. Results: At W6, 46% of the sample was overweight/obese, and mean±SE dBMI=0.55±0.10; 14% became overweight/obese between W5-W6. ICCs for PFS items, subscales and aggregate scores between W5-W6 ranged from 0.38-0.57. W6BMI, dBMI and OWOB were unrelated to W5PFS scores. Except for the foods tasted subscale, higher W6PFS scores were positively associated with W6 past-year dieting, current dieting and perceived overweight. dBMI was positively associated with W6PFS-aggregate (β±SE=0.03±0.001, p=0.04). Conclusions: PFS did not predict 1-year prospective BMI change in U.S. young adults, but rather, previous 1-year BMI change predicted PFS at follow-up. These findings, together with positive associations of PFS with dieting and perceived overweight, suggest that PFS may more closely reflect psychological response to weight change rather than neurologic sensitivity to food reward per se.

P1.03.58
COMMUNITY WELLBEING : AN INNOVATIVE AND COMPREHENSIVE APPROACH TO ASSESS DIFFERENT PERSPECTIVES

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Background: Studies show that "zipcodes matter" - health status and the locations in which people live are associated. There is substantial evidence that features of neighborhoods (e.g. the built and social environments) influence health and wellbeing of individuals. To measure and track community level wellbeing, a comprehensive approach is needed. However, many of the community wellbeing (CWB) measures in use do not take into account the multiple perspectives of researchers, policy makers/practitioners and community residents. Purpose: This formative mixed methods project identified key CWB factors from the perspectives of researchers, policy makers/practitioners and community residents (citizen scientists). Methods: A multi-phased approach was used to identify the key CWB domains and dimensions including: 1) a literature review; 2) key informant interviews (n = 12) of policy makers and practitioners in Santa Clara County, California; 3) engagement of community resident "citizen scientists" (n = 20) who gathered photographic and audio narrative data about features of their neighborhoods they perceived as impacting community wellbeing, and 4) qualitative analysis of data gathered from these three sources to identify the distinct, and overlapping domains and dimensions of CWB. Results: Qualitative data analysis revealed 7 domains encompassing 23 dimensions: physical (amenities/destinations, built environment, services/facilities, affordable housing), environmental (nature, environmental quality), economic (income sufficiency, quality education, food/housing security), social (social networks, crime/safety, community spirit/cohesion), health (access/affordability), political (civic engagement) and place attachment. There was considerable overlap in the domains of CWB identified by researchers, policy makers and community residents, with some differences in the ranking of the importance of the dimensions: researchers and key informants viewed social (e.g. social cohesion) and economic (e.g. financial issues) dimensions as more important determinants of CWB, whereas community residents regarded their physical (e.g. amenities) and natural environments as more pertinent. Conclusions: This innovative approach incorporated perspectives of researchers, policymakers, and community residents resulting in the development of a comprehensive framework based on the social-ecological model which will be used to develop a Community Wellbeing Questionnaire. Further research is planned to determine if this CWBQ can be used by policymakers, community-based organizations and residents to improve local environments for health and wellbeing

P1.04 SIG: E- & m-health / Cancer prevention and management

P1.04.1
MEASURING PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR AMONG CHILDREN AND YOUNG PEOPLE: A SYSTEMATIC REVIEW OF DEVICE AND DATA HANDLING TECHNIQUES

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Purpose: There is currently no standardisation of accelerometer data handling techniques. These can greatly
influence the results and whether data indicate an intervention was successful. The purpose of this study is to synthesise and report all available evidence on the data handling techniques of high quality studies reporting using accelerometers to objectively measure physical activity (PA) and sedentary behaviours (SB) among children and young people (CYP). Methods: Electronic searches of studies published in 2000-2016 were conducted in online databases for terms including combinations/variations of the keywords: 'child', 'physical activity', 'sedentary', and 'accelerometer'. Inclusion criteria was: a) CYP studies (aged 0-18) reporting accelerometer data, b) full text publication in English. Initial searches yielded 3,258 publications with a final 248 deemed suitable for inclusion. Year of publication, location of study, accelerometer model, epoch, how valid day defined, valid days included in analyses, software used for data reduction, non-wear time definition, and how PA/SB was reported (e.g., counts per minute, METs) were extracted independently by 2 researchers. Quality was assessed using a modified version of the 'Quality Assessment Tool for Quantitative Studies'. Results: Preliminary results indicate that Actigraph was the most popular brand of accelerometer (72.9%) with 5 different models reportedly used. 10.5% (n=26) of studies did not report epoch used, 42.2% (n=104) reported how non-wear time was defined, valid days were defined from 30 min/day to 24hrs, and 11.3% did not report number of valid days included in analyses while others ranged from 1 to 140. Quality assessment found n=75 studies were of three(moderate) or four(high) quality (out of five). Conclusions: Since Actigraph accelerometers are the most popular brand of accelerometer reportedly used, it is imperative that standardised procedures for use and reporting are developed and used. This will allow for comparison and generalisation of study findings. Data handling techniques are notoriously unstandardized across studies, making comparisons between studies challenging. This study provides a useful resource for researchers and practitioners looking to use accelerometers in future CYP studies and interventions and a source with which to compare and contrast accelerometer-derived data. 1.DOI: http://dx.doi.org/10.1136/bjsports-2015-095947 2. DOI: 10.1111/j.1524-475X.2004.04006.x

P1.04.2

EFFECT OF TAILORED, GAMIFIED, MOBILE PHYSICAL ACTIVITY INTERVENTION ON SUBJECTIVE WELLBEING IN ADOLESCENT MEN: A POPULATION-BASED, RANDOMIZED CONTROLLED TRIAL (MOPO STUDY)

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Purpose: Online physical activity programs may change behavior in adolescents, but their effects on subjective health and wellbeing are not well known. We investigated the effects of a mobile, gamified physical activity intervention on subjective wellbeing (SWB) among adolescent men. Methods: Altogether 496 men (17.8y, SD 0.6y) participated in a 6-month, population-based trial. They were randomized into an intervention (n=250) and a control group (n=246). Only the intervention group had access to a tailored mobile service developed in the study in collaboration with a game studio. The tailoring in the service was based on the transtheoretical model of behavior change and the physical activity and the personal objectives of the participants. The participants also wore wrist-worn physical activity monitors during the trial but the monitors displayed only the time of day in the control group. As the measures of SWB, life satisfaction (LS: range 4-20) and self-rated health (SRH) were inquired at baseline and at the end of the trial. Results: A total of 182 (72.8%) participants in the intervention group and 163 (66.2%) controls completed the study. LS improved (≥1 point) similarly both in the intervention (p Conclusions: In this
population-based, mobile physical activity intervention, improvements in SWB were associated with low LS and poor SRH at baseline within the intervention group. Gamified solutions may be used to target health promotion for adolescent men at risk of poor SWB.

P1.04.3
EXPLORING PSYCHOLOGICAL PROCESSES OF EXERCISE HABIT STRENGTH IN JAPANESE COLLEGE STUDENT

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Objective: There are two scales measuring exercise habit strength at present. The one is a Self-Report Habit Index (SRHI) by Verplanken & Orbell (2003). The other is Exercise Habit Strength Scale (EHSS) by Grove et al. (2014) and Takami (2015: Japanese version). These scales have not only original items but also similar items. In order to identify psychological processes of exercise habit strength, all items of both scales and added some new items are analyzed by explanatory factor analysis using Japanese college student sample. Methods: Data were 1,135 college students (28.5% women). Mean of age was 19.2 years old. Measuring amount of 31 items are 12 form SRHI and 15 from EHSS, and new four items regarding physical condition made by Takami (2010). Results: As a result of explanatory factor analysis, we could identify four factors. A cumulative contribution ratio was 61.18%. The first factor was "Patterned action" with 5 items (e.g. I always exercise at the same place., I tend to do the same activity or exercise every time). The second factor was named "Negative feeling" from 6 items (e.g. I get irritated when I do not exercise.). The third factor was "Instinct driven" with 8 items (e.g. I can have good sleep by exercise., When I see other people exercising, I also want to exercise.). This factor had two meanings. Perception of benefits to physical condition, and stimulus response by environment were belong to same factor. The fourth factor was "Automaticity and effortless" with 12 items (e.g. I do without thinking., I would find hard not to do.). Conclusions: It was found that psychological processes of exercise habit strength had four factors structure. The EHSS has a factor structure of four components (Patterned action, Automaticity, Stimulus-Response Bonds, Negative consequences if not done). In this analysis, similar factor structure had merged from 31 items. It was suggested that a psychological process of Exercise habit strength was automatic routine practice with powerful emotion caused by instinct demands. And it was supposed that this process was an essential feature of habitual health behavior including bad habits.

P1.04.4
THE CHALLENGES OF USING COMMERCIAL WEARABLE PHYSICAL ACTIVITY TRACKERS FOR INTERVENTION AND ASSESSMENT IN BEHAVIORAL HEALTH RESEARCH: TALES FROM FOUR STUDIES

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Objectives: Wearable physical activity (PA) trackers are becoming increasingly popular for intervention and assessment in behavioral health research. The purpose of this study is to present lessons learned from four studies that used commercial PA tracking devices for PA intervention or assessment, present issues encountered with their use, and provide guidelines for determining which tools to use. Methods: Four case studies are presented that used PA tracking devices (iBitz, Zamzee, FitBit Flex and Zip, Omron digital pedometer, Sensewear armband, and MisFit Flash) in the field—two behavioral research studies used the tools for intervention and two used the tools as assessment methods. Results: The four studies presented had varying levels of success with using PA devices and experienced several issues that impacted their studies, such as companies that went out of business, missing data, and lost devices. Percent ranges for devices that were lost were 0% to 29% and were 0% to 87% for those devices that malfunctioned or lost data. This study also provides guidance for researchers on how to choose a PA tracking device that is appropriate for a particular behavioral study based on study population, PA outcome of interest, budget, data accuracy and security, place of wear, need for sleep data or waterproof capabilities, Application Programming Interface (API) availability, and customer service and return policy. Conclusions: There is a need for low-cost, easy-to-use, accurate PA tracking devices to use as both intervention and assessment tools in health promotion research related to PA.

P1.04.5
MI-VIA-CALC AS A TELEPHONE-BASED INTERVENTION TO IMPROVE PHYSICAL AND PSYCHOLOGICAL HEALTH IN FIRST-TIME MOTHERS

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Purpose: To examine the impact of a telephone-based Motivational Interviewing applied using Co-Active Life Coaching tools (MI-via-CALC) intervention on physical activity rates, body composition, and psychological health indices among new mothers living in Northwestern Ontario. This is the first study of its kind to examine MI-via-CALC in this population, and may provide valuable insights into its utility as a cognitive behavioural technique delivered via telephone in rural and remote communities. Methods: This mixed-methods pilot study will recruit up to 20 inactive, first-time mothers aged 18 years or older with a Body Mass Index ³ 25 kg/m2. Participants will engage in an 8-week MI-via-CALC intervention delivered by Certified Professional Co-Active Coaches between February and May 2017. Assessments will occur at baseline, mid-, and post-intervention, and involve the completion of body composition measures (e.g., waist circumference, body fat, muscle mass), a series of validated questionnaires (e.g., assessing quality of life, motivation, physical activity behaviour), and a pre-and post-intervention semi-structured questionnaire to explore study experiences. Data will be analyzed using repeated measures ANOVAs and inductive content analysis. Results: Data collection and analysis are ongoing. Seven participants have completed the baseline assessment to date, and have a mean(SD) age of 31(2.3) years, Body Mass Index of 32.7(5.0) kg/m2, and are between 8-35 weeks postpartum. Most of the women are breastfeeding (70.1%) and had a Cesarean delivery (57.1%). All women rated their general health at baseline as “Fair” or “Good,” and expressed a desire to return to their pre-pregnancy physical condition and/or physical activity behaviours. Given the promising results of MI-via-CALC interventions in other populations (e.g., women with obesity), it is hypothesized that participants will have improved physical activity rates, body composition profiles, and psychological health indices post-intervention compared to baseline values. Conclusions: It is anticipated that the study results will inform the development of future large-scale MI-via-CALC behaviour change interventions aimed at improving health outcomes among postpartum women. Since MI-via-CALC is typically delivered over the telephone, this mode could facilitate accessibility in rural and remote areas, especially among new mothers who experience competing demands, and can participate in the comfort of their own homes.

P1.04.6
‘PRECIOUS’, N-OF-1 SMARTPHONE TRIAL FOR PHYSICAL ACTIVITY WITH BIOFEEDBACK AND DIGITALISED ELEMENTS FROM MOTIVATIONAL INTERVIEWING

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Objective: Daily variability in physical activity (PA) and its psychological determinants should be examined within individuals to produce accurate evidence. Precious project developed an app that offers randomised intervention elements and studies the following fluctuation in activity, motivation, and engagement. Methods: Fifteen participants used the Precious app and activity bracelet for six weeks during which they received repeated, randomised interventions of digitalised motivational interviewing features, prompts to conduct 24h measurements with Firstbeat heart-rate variability sensors, prompts to download the biofeedback, and daily questions on motivation, self-efficacy and perceived barriers. Exit interviews focused on feasibility and user perceptions of their motivation, self-regulation, PA, and the role of Precious app in these. Interview data was analysed with thematic analysis. The N-of-1 intervention effects on PA and goal setting were analysed with multilevel modelling and time-series analysis. Results: All participants completed the intervention and most reported sustained motivation to track their well-being and progress. Participants found step tracking features most useful and motivational features least useful, potentially due to the high level of motivation to increase PA reported at baseline. Some participants wished the app offered more detailed PA prescriptions. Challenges relating to feasibility included smartphone notifications as a delivery method, as push notifications sometimes passed unnoticed. Small changes in physical activity and motivational variables were observed over the course of the study. Conclusions: Precious helped participants to understand their PA and self-regulation, and ways to improve these. Most insights were related to self-monitoring of steps and the activity logging. Testing the app among people with low baseline motivation for PA would allow
better examining the motivational interviewing features.

P1.04.7
ASSESSING PHYSICAL ACTIVITY USING FLOOR VIBRATION IN A SMART HOME SETTING

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Purpose: So far, waist-worn accelerometer devices have been the preferred method for the assessment of physical activity in human. However, the recent development of new technologies is progressively changing the situation. Products able to assess physical activity are becoming ubiquitous in the daily life: smartphone applications, wristbands, smart-watches, smart-shoes, etc. Each technology presents particular strengths and might therefore be more suitable and accurate in some specific situations. Given that all these devices can be inter-connected, smart applications should be able to switch from one device to the other depending on people location, activity, etc., or to combine the outcomes of several devices, in order to refine the assessment of people physical activity. Interestingly, the devices that are currently commercialised frequently have limitations for the assessment of indoor physical activity. The present project aims at developing one accurate method for assessing physical activity in the home environment. Methods: The OchaHouse is an independent experimental house (50m2) located in the central Tokyo area. Four sensitive uniaxial accelerometers (0.1 m/s-2) have been installed on the floor of the living room, kitchen, bathroom and dinning room. An original step-count algorithm has been designed to process the floor vibration data, and tested against several commercial monitors (waist: Actigraph GT9X, Omron HJA-750C; wrist: Actigraph GT9X, Fitbit Alta, XiaoMi Miband2) in a 7-min experiment consisting of mimicking routine activities usually completed at home (walking, cooking, washing dishes, etc.). Eight adult subjects participated in the experiments. Results/findings: The subjects walked an average of 125 ±18 steps. The floor vibration system estimated the number of steps with an average mistake of 2 ±10 steps. Among commercial devices, the wrist-worn Actigraph was the most accurate (-3 ±9), followed by the Fitbit (-28 ±17), XiaoMi (-31 ±10), Omron (-36 ±15) and the waist-worn Actigraph (-46 ±15). Conclusions: Counting steps using floor vibration is feasible and accurate. This observation opens the door to the development of smart home applications dedicated to the evaluation of people physical activity when they are at home. The on-going experiments aim at refining the evaluation of physical activity, respectively during locomotive vs. non-locomotive segments.

P1.04.8
WHEN YOU ‘GOTTA CATCH’EM ALL!’ THE IMPACT OF POKÉMON GO ON WALKING BEHAVIOR

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Purpose: “Pokémon GO” (PMG) has been touted as a tool for boosting physical activity (PA). The goal of this study was to determine whether the walking behaviors where different between adults playing PMG (PMG users) and adults who were not playing PMG (non-PMG users) while walking on a greenway. Methods: From June through August 2016, 102 adults on the Maryville-Alcoa greenway in Tennessee, USA wore an ActiGraph GT3X accelerometer on the right hip while walking on the greenway. Percent time in sedentary, light, moderate, vigorous was recorded and time in moderate-to-vigorous physical activity (MVPA) was calculated. Participants also completed a trail intercept survey, which captured demographic information and asked approximately how long they had been using the trail. Independent sample t-tests were used to compare accelerometer variables between PMG users (n=13) and non-PMG users (n=89). Chi Square tests were used to compare the categorical variables. Results: 13% of greenway users were playing PMG. PMG users were significantly younger (26.2±8.8 yrs vs. 47.8±18.7 yrs; pConclusions: Despite spending the same amount of time on the greenway in their quest to 'Catch’em all,' PMG users appear to be spending only about 55% of their walk in health enhancing MVPA. PMG users are likely stopping more, and when walking, walking at a slower pace due to their focus on playing PMG. PMG may encourage young individuals to initiate new greenway physical activity behaviors.

P1.04.9
PILOT STUDY OF A REWARD-BASED MOBILE APPLICATION TO IMPROVE ADOLESCENTS’ SNACKING HABITS
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Background: Snacking habits are partly driven by hedonic processes and the reinforcing value of food. Interventions to improve the snacking behavior of adolescents should acknowledge hedonic pathways and differences in sensitivity to food rewards. Smartphone applications provide an interesting tool to reach adolescents individually. This study evaluated the feasibility and effectiveness of the "Snack Track School" app on adolescents' snack intake. 

Methods: A total of 1463 adolescents aged 14 to 16 years were sampled to participate in this pre-post clustered controlled trial. The adolescents in the intervention schools (n=3) used the app for four weeks, while adolescents in the control schools (n=3) followed the regular curriculum. Outcomes were differences in healthy snacking ratio (intake healthy snacks over total intake snacks) and key determinants (awareness, intention, attitude, self-efficacy, habit and knowledge). Process evaluation data were collected via a questionnaire post intervention (satisfaction) and through log data of the app (exposure). Results: Data of 988 adolescents (n=416 intervention and n=572 control, 3 clusters each) were analyzed. No significant positive effects of the intervention on the healthy snack ratio (b=-3.52±1.82, p>0.05) or targeted determinants could be observed. Only 268 adolescents in the intervention group used the app, of which only 55 (20.5 %) still logged in after 4 weeks. Within this small group of users a higher exposure was also not associated with significant positive intervention effects. Satisfaction ratings of the app were low in both the high and low user group. Conclusion: The current application was not able to improve adolescents' snack choices. Only a small group of adolescents used the app as intended. Several important modifications to the design of the app are warranted. Trial number: NCT02622165

P1.04.10
ENGAGING YOUTH IN THE DESIGN AND DEVELOPMENT OF INTERVENTION INC, A TECHNOLOGY-ENHANCED INTERACTIVE NUTRITION COMIC TO REDUCE CHILDHOOD OBESITY RISK IN MINORITY, URBAN YOUTH

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Purpose: When developing health promotion tools, a user-centered design approach aims to engage the intended audience throughout development to increase usefulness, acceptability, and later adoption. As experts of their own experiences, potential users can contribute unique insights, particularly useful in early stages of idea generation and concept development. Limited literature on the involvement of youth throughout the design and development of m-health tools exist. Thus, the purpose of this presentation is to describe how minority, urban youth were active participants in the development of an interactive nutrition comic for minority children focused on reducing childhood obesity risk.

Methods: Black and Latino youth ages 9 to 12 years residing in New York City participated in a series of focus groups and interviews, which incorporated a combination of design thinking approaches (i.e. card sorting, sketching). One-on-one usability testing will be conducted using a think-aloud protocol to finalize design of the overall health promotion tool. Results/Findings: To first identify factors influencing child dietary behaviors, assess technology use, and identify preferred storylines and characters, 4 focus groups and 7 parent-child dyad interviews (n=27 youth, 63% female) were conducted. From this, an initial comic storyline and character profiles were developed. Their acceptability and relatability was assessed by a sub-group of our initial participants and additional participants from a related previous study in 3 focus groups (n=8, 63% female). After further development of the comic, accompanying health messages, and the website platform design, an additional 2 focus groups (n=6, 67% female) with a similar sub-group of participants were conducted to assess comprehension and acceptability. Conclusion: This process of engaging youth members of the intended audience throughout development will result in a web-based, tablet-optimized application to deliver a culturally-tailored six-chapter interactive nutrition comic and health messages from story characters. This innovative, technology-enhanced tool will be tested using a two-group pilot randomized study targeting behavior change to reduce childhood obesity risk.

P1.04.11
BEHAVIOUR CHANGE TECHNIQUES IN MOBILE APPLICATIONS FOR SEDENTARY BEHAVIOUR

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Objective: An emerging trend in health research involves utilizing mobile applications (apps) to support health behaviour change. Apps may incorporate behaviour change techniques (BCTs) such as self-monitoring, goal-setting, and social support. Classifying interventions based on BCTs allows researchers to determine potential mechanisms underlying behaviour change (Michie & Johnston, 2012). Physical activity apps assessed for the presence of BCTs have an average of 4.4-6.6 BCTs (Yang et al., 2015; Conroy et al., 2014; Middelweerd et al., 2014). However, apps related to sedentary behaviour have not yet been assessed for the presence of BCTs. Thus, the purpose of this study was to review smartphone mobile apps designed to reduce sedentary/sitting time and to determine the presence of BCTs. Methods: Based on keyword searches of the iTunes App store and Google Play Marketplace for sedentary/sitting apps, free (n=36) and paid (n=14) app descriptions were independently coded by two reviewers for BCTs using Michie’s et al.’s (2013) taxonomy of 93 BCTs. A sample of free apps (n=4) that had the highest number of BCTs coded in the description (4 or more) were downloaded by two reviewers, trialed for one week, and subsequently coded for BCTs. A third, experienced coder was consulted to resolve disagreements following coding of free, paid, and trialed apps, respectively. Cohen’s Kappa and PABAK scores were calculated for agreement.

Results: A mean of 2.42 BCTs were present in each app description (range 0-6). There was no difference in the number of BCTs present in free or paid app descriptions [t(48)=0.190, p=0.850]. Only 10 of a potential 93 BCTs were present with commonly coded BCTs prompts/cues (n=43), information about health consequences (n=31), and self-monitoring of behaviour (n=17). Mean kappa (0.60) and PABAK (0.96) scores indicate moderate and almost perfect agreement respectively (Landis & Koch, 1977). Conclusions: The sedentary behaviour apps contained fewer BCTs compared to physical activity apps coded previously and traditional (i.e., non-app) physical activity and healthy eating interventions (Michie et al., 2009). The present study highlights several areas for improvement with incorporating BCTs in sedentary behaviour apps which can inform future app utilization by researchers and app design by developers.

P1.04.12
VALIDATION OF 4 ANDROID WEAR SMARTWATCHES (POLAR M600, HUAWEI WATCH, ASUS ZENWATCH3 AND MOTOROLA MOTO360 SPORT) FOR MEASURING PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR IN ADULT (18-65 YEAR) MEN AND WOMEN

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Objective: Consumer-oriented devices for monitoring physical activity and sedentary behavior are increasingly popular with both consumers and researchers. A distinction should be made between activity trackers and smartwatches. Activity trackers (e.g. Fitbit Flex, Misfit Shine) are specifically built to keep track of people’s activity levels. In recent literature, these activity trackers have been the subject of different validity studies. Although smartwatches also have the ability to assess activity levels, it is not their main function as they include many other functions as well, such as surfing the web, getting SMS/mail/social media notifications, answering calls/mails/SMS, playing music, using GPS, etcetera. Recent trends show that people attach great importance to what activity trackers and smartwatches state about their activity levels (both physical activity and sedentary behavior). Furthermore it is estimated that smartwatch shipments will nearly triple by 2020 compared to 2016, whereas the sales growth of activity trackers will increase less. Therefore, it is important to also explore how accurately physical activity and sedentary behavior can be tracked via smartwatches. Therefore the aim of this study was to investigate concurrent validity of four Android Wear smartwatches (Polar M600, Huawei Watch, Asus Zenwatch3 and Motorola Moto360 Sport) with an ActiGraph accelerometer for measuring physical activity and sedentary behavior. Methods: In this study, a free-living protocol will be used in which 36 adults will engage in usual daily activities over 2 days while wearing two different smartwatches on the same wrist and an ActiGraph accelerometer on the hip. Validity will be evaluated by comparing each smartwatch with the ActiGraph, using correlations and Bland-Altman plots. Results: Specific results on the degree of agreement between the measurements by the various smartwatches and the Actigraph will be presented at the ISBNPA conference. Conclusions: By investigating the concurrent validity of these smartwatches with regard to physical activity and sedentary behavior, important information will be elucidated on the potential use of these smartwatches for research purposes (e.g. as a measurement instrument or as an intervention monitoring tool). Second we will be able to inform (potential) consumers about the accuracy of
smartwatches to track physical activity and sedentary behavior.

**P1.04.13**
QUALITATIVE FEEDBACK, FEASIBILITY AND ACCEPTABILITY OF AN ADAPTIVE SMARTPHONE DELIVERED INTERVENTION FOR PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR CHANGE

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Purpose: To investigate the feasibility and acceptability of an adaptive proof-of-concept smartphone-delivered intervention that captured movement data to inform behaviour change content delivery. Methods: A single group, 8-week study with pre- and post-intervention assessments was conducted. Healthy participants aged 17-69 years who owned an Android smartphone were recruited via online advertisements. Acceptability was assessed using 10 items previously used in qualitative research on desired app features (e.g. "The app gave me positively phrased alerts"). Perceived usefulness of behaviour change techniques (BCTs) was assessed using 23 items based on previous research evaluating adults’ ratings of BCTs in apps (e.g. "It was important for me that the app prompted me to plan how/where/when to be active"). Answers were provided on a 5-point Likert-type rating scale. Feasibility was assessed using attrition and adherence data as well as technical issues. Simple descriptive statistics were used to describe usage and the percentage of answers to each category of usability and acceptability items. Coding of the survey acceptability items was done using MaxQDA. Results: Participants were predominantly female (78%, n=54/69) with a mean age of 34.5 years (SD 11.8) and a BMI of 25.6 kg/m² (SD 4.95). Among the 69 participants that successfully started the app, 62 (90%) completed the post-intervention assessment. Participants opened the app on average 11.4 days throughout the intervention (SD=10.1, median=8, min=1, max=54). 54.3% of participants agreed the app was low effort and pleasant to use (18.7% disagreed). 52.6% agreed it provided guidance on how to increase activity and interrupt sitting (18.7% disagreed) and that it gave positively framed messages (64.4% agreed, 5.1% disagreed). 3.5% disagreed). 30.5% reported the app negatively impacted other uses of their device (e.g. battery). Feedback on behaviour (72.8%), behaviour substitution (71.1%), instruction on how to perform the behaviour (61%), and discrepancy between current behaviour and goal (57.7%) were rated more favourably for perceived usefulness. Other BCTs, such as social support and credible source were rated frequently as not applicable, indicating participants were likely not exposed to such BCTs. Conclusion: While largely acceptable to users, future iterations are needed to address the identified shortcomings and optimise the intervention.

**P1.04.14**
PRELIMINARY RESULTS OF A LIFESTYLE MODIFICATION TELEHEALTH PROGRAM FOR THE TREATMENT OF OVERWEIGHT AND OBESITY IN CHILDREN

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Purpose: To describe preliminary outcomes from a telephone-based lifestyle modification program for the treatment of overweight and obesity in children. The comprehensive program was staffed by registered dietitians and a qualified exercise professional, and was delivered primarily over the telephone through sequential counselling sessions. A family-centred approach was used to further encourage sustained positive behaviour change and the uptake of healthy lifestyle choices. Methods: Of 216 children referred to the program, 55 consented to participate in a program evaluation (n = 25 f, n = 30 m, ranging in age from 2 to 18 yr). Follow-up data was obtained at 3- and 6-month intervals, and program outcome variables were compared to those obtained at baseline. Continuous variables related to parent- and/or self-reported physical activity (Godin-Shephard Leisure-Time Physical Activity Questionnaire), leisure screen time (min/weekday), and frequency of sugary drink consumption (# of times/week) were assessed through a paired sample t-test and represented as means ± SD. Results: From baseline to 3-mo, reported physical activity increased from a score of 49.9 + 27.8 to 75.3 + 33.9 (p = 0.003, n = 12), and from baseline to 6-mo, physical activity increased from a score of 47.8 + 24.4 to 83.0 + 32.6 (p = 0.004, n = 9). From baseline to 6-mo, leisure screen time decreased from 198 + 106 to 126 + 86 min/weekday (p = 0.0002, n = 14).
From baseline to 3-mo, the frequency of sugary drink consumption decreased from $5.8 + 7.1$ to $3.25 + 5.2$ times/week ($p = 0.08$, $n = 14$), and from baseline to 6-mo, consumption decreased from $7.6 + 7.4$ to $2.3 + 4.7$ times/week ($p = 0.03$, $n = 12$). Conclusions: Children referred to a lifestyle modification program for the treatment of overweight and obesity reported benefits in terms of improved levels of physical activity and reduced screen time. Significant reductions in frequency of sugary drink consumption were also reported. Healthy lifestyle counselling delivered via telehealth may be an effective strategy for initiating positive changes in children’s physical activity, screen time, and sugary drink consumption.

P1.04.15
ASSOCIATIONS BETWEEN ENJOYMENT AND BOTH PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR AMONG YOUTH

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Purpose: Despite considerable research, it has proven difficult to clarify the underlying factors that influence youth participation in physical activity (PA) and sedentary behavior (SB). The consensus is that PA and SB are independent behaviors but past findings suggest that they may be influenced by common underlying factors. To clarify this issue, we examined associations between enjoyment of PA and participation in both PA and SB in a large sample of 4-12th grade U.S. youth. Method: Data were obtained from a sample of students involved in the NFL PLAY 60 FitnessGram project. A total of 18,930 students from 187 schools completed the Youth Activity Profile, a self-report 15-items survey that assesses time spent in PA and SB in school and home settings over 7 days. Two additional items captured enjoyment of PA and enjoyment of physical education. All the questions were scored on a 5-point Likert scale. Two-way (gender X enjoyment and grade X enjoyment) mixed ANOVAs were conducted to examine the association of enjoyment and activity/sedentary behaviors across gender and age groups. Cohen’s d was calculated to obtain effect size between pairwise comparisons. Results: Results revealed a significant positive relationship between enjoyment and PA ($r=0.38$, $p<0.001$). Conclusion: The results provide new insight related to the relevance of enjoyment as a common underlying variable influencing both PA and SB across genders and grade levels (elementary to high school).

P1.04.16
PERSONAL AND PERCEIVED PEER MVPA AND ATTITUDES TOWARDS THE INSUFFICIENT MVPA AMONG CENTRAL EUROPEAN ADOLESCENTS

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Background: The aims of ‘Social Norms Intervention for Active Adolescents (SONIAA)’ project is to evaluate feasibility of an e-intervention based on a social norms approach to prevent risk factors such as physical inactivity and excessive sitting among Czech adolescents in their school environment. The project is designed as a randomized controlled crossover experiment and will be implemented in early 2018. Twenty-four classes from sixth to ninth grades of primary schools will be selected at random. Then, these classes will be randomly split into 12 control and 12 experimental classes. In the firstly, adolescents’ physical activity and sedentary behaviours will be assessed. Secondly, the experimental group will be exposed to the intervention based on social norms approach consisting of feedback through an e-portal. In the third stage, physical activity and sedentary behaviour of adolescents both from the experimental and control group will be assessed again. Data from preliminary pilot testing is presented in this work. Method: The pilot study was conducted in late 2015 as a part of ‘Are we growing healthy?’ project on sample of adolescents from Czech Republic Slovakia and Poland. In a web-based questionnaire, 1342 students (mean age 15.02; 53% girls) were asked about level of their MVPA and their approval towards insufficient level of MVPA, as well as the perceived peer(classmate) MVPA. Results: 39% of students thought that the majority of their peers have less daily MVPA than themselves, and 13% thought that the MVPA of the majority was lower than their daily MVPA. The perception that the majority of peers had insufficient daily MVPA was not significantly associated with higher odds for personal insufficient daily MVPA. On the other hand, the perception that the majority of peers approved insufficient daily MVPA was associated with higher odds for own insufficient daily MVPA (OR 1.2; 95% CI: 1.12-1.41).
Discussion: Perceived peers' behaviors and attitudes were found to be predictive of personal behaviors and attitudes. Preliminary results provides support to the view that the social norms approach may be a viable method to promote MVPA among adolescents.

P1.04.17
EXERCISE VIDEOGAMES PRODUCE INCREASED TIME SPENT IN PHYSICAL ACTIVITY COMPARED TO STANDARD EXERCISE

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Purpose: Exercise videogames (EVGs) are widely marketed as a method for increasing physical activity (PA). However, to date there is insufficient research to determine whether adults will engage in regular EVG participation sufficient to meet national guidelines for moderate to vigorous physical activity (MVPA) and thus to produce improvements in cardiovascular fitness and overall health risk. There are little data on whether engagement in PA through EVGs will be sustained outside a supervised laboratory environment. Methods: This study randomized 283 participants to 12 weeks (50 min, 3 x week) of either supervised EVG (N=93), supervised Standard exercise (e.g., treadmill, exercise bike; N=96) on the same schedule, or no treatment Control (N=94). Weekly MVPA was recorded at baseline, week 12 and at 3-month follow up using the interviewer administered 7-day PAR interview. Results: Participants were on average 46.2 years of age (SD=13.5), predominately female (79%), employed (80%), and had at least some college level education (90%). There were no significant between-group differences in baseline demographics or min/week of MVPA at baseline (p's>.05). At baseline, median min/week of MVPA was 27.5 in Control, 30 in Standard Exercise and 40 in EVG (p>.05). Using a series of quantile regression models with bootstrapped standard errors, we tested the effects of condition on median min/week of MVPA at 12 weeks and 3 months, controlling for baseline. Results show significant effects favoring EVG vs. Control, Standard vs. Control, and EVG vs. Standard Exercise at 12 weeks. Specifically, there was an 85 min/week difference in median MVPA between EVG and Control (SE=16.2, p Conclusions: Under supervised laboratory conditions exercise videogames produced increased engagement in MVPA compared to Standard exercise formats and controls. This increased engagement continued in the home practice environment.

P1.04.18
DO EXERCISE AND/OR WEIGHT LOSS AFFECT PAIN FROM BREAST CANCER-RELATED LYMPHEDEMA? PRELIMINARY RESULTS FROM THE WISER SURVIVOR TRIAL

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Purpose: Breast cancer-related lymphedema (BCRL) is a common complication for women who have had lymph node surgeries for breast cancer diagnosis and treatment. Approximately 20-35% of survivors experience BCRL. There is currently no permanent solution to control symptoms, like pain and compromised function, for long-term recovery. Additionally, BCRL symptoms may be worse for sedentary or overweight women. The Women in Steady Exercise Research (WISER) Trial was designed to assess the effects of exercise and/or weight loss on lymphedema in overweight or obese survivors. This report presents the specific effects of exercise and/or weight loss on BCRL pain in these survivors. Methods: WISER Survivor is a 12-month, four-arm (i.e., control, exercise, weight loss or exercise+weight loss) clinical trial with healthy, sedentary breast cancer survivors who are ≥ 6 months post-treatment. Women were recruited through the Pennsylvania cancer registry (i.e., Philadelphia area). The Brief Pain Inventory was used to assess BCRL pain (0-10, least to worst) for severity and interference in participants. To analyze the effects of the treatment conditions on BCRL pain from baseline to 12 months, we used a mixed effects model, controlling for age, race, time since diagnosis, and months since radiation and chemotherapy. Results: Most participants (n=351) were white (62%), had a mean age of 59.5 years (sd 8.9), a mean time since diagnosis of 7.7 years (sd 5.3) and mean BMI of 34 (sd 5.9). Most survivors (49%) were diagnosed early (i.e., stages I or II). For overall pain severity, we noted a slight increase in pain over time for the exercise+weight loss group compared to controls (0.61±0.29, p Conclusions: Our preliminary results suggest that women experiencing BCRL pain may benefit from programs that combine exercise and weight loss to reduce pain interference in daily activities. BCRL pain
severity may be more challenging to address in sedentary and overweight women. Opportunities for meaningful lifestyle changes in these vulnerable women requires further study.

P1.04.19
TOWARDS THE 2017 DIET AND CANCER REPORT

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Introduction: From 1997 World Cancer Research Fund (WCRF) International and the American Institute for Cancer Research (AICR) been at the forefront of synthesising and interpreting the accumulated scientific literature on the link between diet, nutrition, physical activity and cancer, and deriving evidence-based Cancer Prevention Recommendations. The 2007 WCRF/AICR 2nd Export Report, using a robust method and systematic literature reviews, was a landmark in the analysis of evidence linking diet, body weight and physical activity to cancer and led to the establishment of the Continuous Update Project (CUP). In 2017, WCRF/AICR aim to publish a new synthesis of the current evidence and review the Cancer Prevention Recommendations. Main Topic: More recent evidence since the 2007 Report has resulted in new findings, and substantive changes to the CUP Panel’s conclusions, published in reports on bladder, stomach and oesophageal cancer. For instance, alcohol consumption as well as being overweight or obese are now judged probable causes of stomach cancer. New evidence and updated conclusions on breast cancer will also be presented. This new evidence means that there have been shifts in emphasis on the perceived links between diet, nutrition, and cancer, which will be discussed. Furthermore, evidence is accumulating that the degree of adherence to WCRF/AICR recommendations is associated with lower mortality of cancer overall, of specific cancers and of all-cause mortality. Conclusion: As evidence accrues, conclusions regarding the relation of diet, body weight, physical activity to cancer are broadly similar to before and mostly strengthened, though with some change in emphasis. This is supported by the consistent findings that adherence to a healthy dietary and physical activity pattern based on the WCRF/AICR Cancer Prevention Recommendations helps to prevent cancer, overall mortality and other non-communicable diseases.

P1.04.20
PERCEPTIONS OF BREAST CANCER AND HEART DISEASE IN WOMEN WITH SOUTH ASIAN AND BRITISH ANCESTRY IN CANADA: RELATIONSHIPS WITH HEALTHY EATING AND PHYSICAL ACTIVITY

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Purpose: Relationships between perceptions of heart disease and breast cancer, and lifestyle behaviors for Canadian women with British and South Asian ancestry were investigated. Methods: Canadian women with South Asian (n = 170), and British (n = 373), ancestry (Mage = 33.01, SD = 12.86) were recruited. Leisure time physical activity, fruit and vegetable consumption, disease perceptions (ability to reduce risk, control over getting the diseases, and influence of family history), and demographic information was collected. Mann-Whitney tests and multiple hierarchical linear regressions were used to examine the relationships between lifestyle behaviors and disease perceptions, with ancestry explored as a possible moderator. Results: Participants with South Asian ancestry believed they had greater ability to reduce their risk and have control over getting breast cancer than participants with British ancestry. Perceptions of the influence of family history on getting heart disease or breast cancer were higher for women with British ancestry and South Asian ancestry. Age was positively related to all three perceptions in both groups. Fruit and vegetable consumption was related to perceptions of ability to reduce risk and control of both diseases, but was stronger for women with South Asian ancestry regarding perceptions of breast cancer. Leisure time physical activity was positively related to perceptions of control over getting heart disease for women with British ancestry, but not for women with South Asian ancestry. Conclusions: Women's disease perceptions can vary by ancestry and lifestyle behaviors. Accurate representation of diseases is essential in promoting effective preventative behaviors.

P1.04.21
AWARENESS OF THE ROLE OF LIFESTYLE FACTORS IN BREAST CANCER DEVELOPMENT AMONG A COHORT OF
WOMEN AT INCREASED RISK

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Objective: Epidemiological evidence demonstrates a link between physical activity, alcohol consumption and overweight with the development of breast cancer. Women at increased risk of the disease are expected to have high levels of awareness for these risk factors, but no data are available to confirm this. The primary aim of this analysis was to investigate awareness of lifestyle-related breast cancer risk factors among a cohort of women at increased risk. A secondary aim was to investigate educational disparities in awareness. Methods: Survey data from 372 women at increased risk of breast cancer (≥17% lifetime risk) were recruited from 20 clinics in England. The survey data included items from the Breast Cancer Awareness Measure (CAM) assessing knowledge of physical activity, alcohol consumption and overweight as risk factors for breast cancer development. Multivariable logistic regression reported the likelihood of awareness for each risk factor by educational level (no education, high school or equivalent, degree level), after adjustment for age, risk level, ethnicity and self-reported health. Results: Only 44% and 48% were aware that physical activity and alcohol consumption were associated with the development of breast cancer. Awareness of the role of overweight was higher (65%), but not optimal. Individuals with no qualifications or a high school level of education were significantly less likely to be aware of the role of physical activity (OR=0.24, 95% CI, 0.09-0.69, p=0.008; OR=0.27, 95% CI, 0.17-0.44, p Conclusions: These survey data from a large UK sample of women at increased risk of breast cancer demonstrate important deficits in awareness of lifestyle-related breast cancer risk factors. They also illustrate disparities in knowledge by educational attainment, which could contribute to inequalities in cancer preventive behaviors and outcomes. Increasing knowledge is unlikely to trigger behavior change by itself, but promoting awareness of breast cancer risk factors is an important first step in the process. Clinicians working with this patient group should attempt to address these knowledge deficits to promote informed decision-making regarding breast cancer prevention.

P1.04.22
ENVIRONMENTS ASSOCIATED WITH MODERATE-TO-VIGOROUS PHYSICAL ACTIVITY IN BREAST CANCER SURVIVORS IN NOVA SCOTIA, CANADA

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Objective: Studies show that engaging in physical activity (PA) while on adjuvant therapy is a safe and effective way to help mitigate side effects of treatment among breast cancer survivors (BCS). Despite this, most BCS are not active to gain health benefits. The built environment has been shown to influence PA in some populations, but little is known about where BCS engage in PA. The objective was to objectively identify the locations where BCS engage in moderate-to-vigorous PA (MVPA) and any changes over 6 months. Methods: Participants completed a baseline survey and wore an accelerometer to measure MVPA and a GPS unit to indicate where BCS engaged in MVPA every 5 seconds over a 9-day period. BCS had to have ≥ 1 valid accelerometer day (i.e., ≥ 600 minutes of wear-time per day) with GPS data to be included. The accelerometer/GPS data was linked in SPSS, after which it was coded based on the built environment using ArcGIS. Locations of total MVPA and bouts of 10 minutes or more were determined. The same procedure was completed at 6 months. Results: BCS were recruited from the QEII Health Science Centre in Halifax, Nova Scotia. Of the 114 approached, 77 (68%) agreed to participate. Participants were aged 57 years, 68% married, 51% employed, and BMI of 28kg/m2. Seventy-five (97%) and 57 (74%) provided PA data for at least one valid day at T1 and T2 respectively. Fifty-six individual codes were identified for locations that were then collapsed into ten general categories. Most total MVPA measured was at home (53% and 48%) at both time points followed by, sidewalk/street (17% and 20%), and service buildings (e.g., hospitals; 7% and 6%). Most MVPA bouts were on a sidewalk/street (40% and 40%), at home (36% and 32%), and path/trail (17% and 12%). Conclusions: This study shows that a large portion of total MVPA and bouts are engaged in locations in a participants’ home. A very small percentage of MVPA is undertaken in recreation facilities. This study highlights the importance of developing effective home- or distance-based PA programs for breast cancer survivors.

P1.04.23
INVESTIGATING THE QUALITY AND QUANTITY OF PHYSICAL ACTIVITY COMMUNICATION BREAST CANCER SURVIVORS RECEIVE FROM THEIR ONCOLOGY PROVIDERS

ISBNPA 2017 | Page 328
Purpose: Physical activity (PA) has been shown to combat the negative side effects (e.g., fatigue, pain, depression) often faced by breast cancer survivors (BCS) following BC treatment. Several studies have demonstrated that physician promoted PA significantly improves PA participation among BCS, however, less than 50% of oncology providers (OP) recommend or provide advice about PA to survivors. The purpose of this study was to gain a better understanding of the quantity and quality of PA communication OP’s relay to their patients, and to investigate the relationship between this communication and the PA levels of BCS. Methods: This study was exploratory in nature and used a cross-sectional design. Participants (n=60) were self-identified BCS, over the age of 18 years, and lived in the Okanagan Region of British Columbia, Canada. The adapted, 30-item Oncology Provider Physical Activity Communication (OPPAC) questionnaire was used to assess participant’s perceptions concerning the quality and quantity of PA communication and advice they receive from their OP. PA was assessed using accelerometry and by self-report using the Godin Leisure Time Exercise questionnaire (GLTEQ). Descriptives were analyzed as means and standard deviations. Furthermore, one-way ANOVA’s were conducted using SPSS Version 21. Results/findings: All participants provided complete responses to the OPPAC, although, three individuals (5%) did not provide or complete the PA assessments (i.e., accelerometer, GLTEQ). A small proportion of participants (20%) indicated that their OP recommended PA, and only 11.7% indicated that their OP referred them to an exercise professional. When analyzed further, accelerometer data revealed that those who were asked about their PA routines by their OP had significantly higher PA levels (P=0.038) compared to BCS who were not asked. A similar trend was found with the GLTEQ, however, this was a non-significant (p=0.61) result. Conclusion: The findings suggest that the quantity and quality of PA communication that BCS receive from their OP is limited. Establishing effective and efficient ways to assist OP's with integrating PA promotion into their practice is needed.

P1.04.24
IMPLEMENTATION OF HIGH INTENSITY INTERVAL TRAINING FOR KOREAN BREAST CANCER SURVIVORS: THE PILOT FEASIBILITY STUDY

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Purpose: Breast cancer incidence has been recently increased and its survivor rate was found to be higher than any other cancers in Korea. Growing evidences support that low to moderate intensity exercise can alleviate deleterious effects from breast cancer surgery. Although many cancer survivors may participate in exercise rehabilitation program, however, there is a paucity of substantial evidence in terms of implication of high intensity interval training. Therefore, the purpose of this study was to apply high intensity interval training for breast cancer survivors in Korea and to confirm its feasibility. Methods: Survey was performed to ask overall thoughts regarding the exercise program in the participants joined in 2015 Pink Ribbon campaign and total 84 out of 100 surveys were collected. The high intensity interval exercise training program was performed for 4 weeks on 13 subjects whose breast cancer treatment had been terminated for more than 2 years with the consultation of oncologist. The high intensity interval exercise program consisted of 10 min of foam roller stretching as a warm-up, 40 min of high intensity circuit training (total 3 sessions; each session consisted of 10 different exercises using elastic band, and 15 sec resting between the exercise), and 10 min of cool-down exercise for total 60 min, twice a week. Results: To investigate the feasibility of the exercise program, the attendance rate was recorded and heart rate during high intensity interval training was monitored by Team Polar. The main exercise was found to be performed at the intensity of 69% of maximal heart rate and mean heart rate was 112 bpm for 45 min. The physical activity level showed tendency of increase (3634.7 MET·min/week) after 4 weeks of high intensity interval training compared to the baseline (2303.4 MET·min/week) according to IPAQ survey. Furthermore, following the group interview, overall positive responses were collected regarding physical and mental health improvements in this breast cancer survivors. Conclusion: This pilot feasibility study may be served as base and will be helpful in developing and implementing the high intensity interval training for the health promotion in Korean breast cancer survivors.

P1.05 SIG: Theories of motivation and socio-economic inequalities
P1.05.1
ETHNICITY IN RELATION TO DIETARY QUALITY, PHYSICAL ACTIVITY AND ADIPOSITY IN A MULTI-ETHNIC ASIAN POPULATION

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Purpose: The prevalence of overweight is increasing rapidly in many Asian countries, but little is known about the role of ethnicity within Asia. We evaluated whether ethnic differences in body mass index (BMI) could be explained by socio-economic status (SES) and whether these may reflect differences in physical activity or diet quality in a multi-ethnic Asian population. Methods: We used cross-sectional data of 9,757 Singaporean adults of Chinese, Malays, and Indian ethnicity. Data was collected using validated interviewer-administered questionnaires and technician-measured anthropometrics. Dietary quality was assessed using the Alternative Healthy Eating Index (range 0-10 points) and physical activity was expressed as metabolic equivalent hours (MET-hrs/week) of moderate-to-vigorous activity. Multiple linear regression was used to assess ethnicity and measures of SES in relation to dietary quality, physical activity, and BMI. Results: Mean values were 45.2 years for age, 24.8 kg/m\(^2\) for BMI, 12.2 MET-hrs/week for leisure time activity, and 46.7 MET-hrs/week for total physical activity. As compared with Chinese ethnicity, Indian (3.16 kg/m\(^2\)) and Malay (3.52 kg/m\(^2\)) ethnicity were associated with a higher BMI after adjustment for age, sex, and marital status (both P2 for university education vs. less than primary school, P Conclusions: In an urban Asian population, large differences in BMI were observed between different Asian ethnic groups. This association was not explained by differences in SES, and did not seem to reflect ethnic differences in physical activity and dietary quality as defined for chronic disease prevention. More research on ethnic differences in eating habits that may be specific to excess weight gain are warranted.

P1.05.2
THE INHERIT-PROJECT: IDENTIFYING WAYS OF LIVING, MOVING AND CONSUMING THAT PROTECT THE ENVIRONMENT AND PROMOTE HEALTH AND HEALTH EQUITY

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Objective: INHERIT (INter-sectoral Health and Environment Research for InnovaTion) is about promoting effective policies, practices and innovations that address key environmental stressors of health and the underlying causes of health inequality in order to foster healthier and more sustainable lifestyles and behaviours in all. This research project aims to encourage European citizens to modify their current behaviours, shaped by a 'take, make, consume, dispose' model of economic growth, to formulate scenarios for a more sustainable future, and to implement and test inter-sectoral pilot initiatives to achieve the desired change. Methods: INHERIT is a 48-month (2016-2019) Horizon 2020 project funded by the European Commission involving a EuroHealthNet-led consortium of 18 well-established organisations with experts from a range of disciplines (public health, environment, economics, technology, social sciences, psychology, sustainable consumption and media) across Europe. As a first part of this project, a literature review was conducted to explore what is being done across Europe to achieve 'triple wins': actions that encourage people to behave in ways that promote environmental sustainability, health and health equity. The review focused on three areas: living (green space, housing), moving (active transport) and consuming (food). The literature review process involved a 'review of reviews', and a search for relevant articles published between 2006-2016 in Medline, Embase, Scopus, Psychinfo and TRID. It also involved a search of qualitative grey literature. An adapted version of the 'Driving forces through Pressures and Environmental States to Exposures, health Effects and Actions' (DPSEEA) model was used to extract and analyze the literature and to identify gaps in knowledge. Partners also identified over 50 'promising practices' that can contribute to changing lifestyles and behaviours and achieve 'triple wins', which will be included in a project database. Results: An overview of the results of these activities will be presented at the conference. They reflect that there are many promising initiatives taking place across the EU but that much more comprehensive, inter-sector action is needed to raise consumer and
citizens’ awareness and to propel them to behave in ways that contribute to environmental sustainability and also promote health and health equity.

P1.05.3
CULTURALLY RELEVANT DIABETES SERVICES FOR NUTRITION, PHYSICAL ACTIVITY, AND OTHER HEALTH BEHAVIOURS FOR INDIGENOUS PEOPLES AT ONTARIO DECS

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Purpose: Type 2 diabetes is a growing health concern among Indigenous peoples in Ontario. Consequently, Indigenous peoples have expressed a need for culturally relevant diabetes supportive care services (Lafrenière et al., 2005). One potential setting for culturally relevant care is Diabetes Education Centres (DECs). The purpose of this study was to identify the cultural strategies used to enhance the cultural relevance of diabetes supportive care for promoting health behaviours offered at DECs in Ontario. Methods: Respondents from 52 DECs completed an online questionnaire asking about the ways in which diabetes supportive care services offered at their DEC were culturally tailored for Indigenous clients. Questions related to ‘cultural strategy use’ were based on the five cultural strategy types outlined by Kreuter and colleagues (2003): peripheral (6 items; e.g., use of Indigenous symbols), linguistic (5 items; e.g., providing resources in an Indigenous language), evidential (4 items; e.g., using Indigenous-specific physical activity rates), constituent-involving (3 items; e.g., employing Indigenous staff), and sociocultural (8 items; e.g., including storytelling). Items were coded as being present = 1 or absent = 0. Using the frequencies reported for each cultural strategy item, mean percentage use for each of the five cultural strategy types was calculated. Further analyses were conducted using SPSS. Results: DEC respondents reported using evidential strategy item use most often, with DECs using an average of 2.2 out of 4 (55.2%) evidential strategy items. Evidential strategy item use was followed by linguistic strategy item use (52.3%), constituent-involving strategy item use (38.0%), sociocultural strategy item use (35.3%), and peripheral strategy item use (31.6%). Differences in the mean percentage score for each cultural strategy type was considered statistically significant, \( \chi^2(4)=13.28, p=.01 \). Conclusions: These findings indicate that DECs are more likely to use evidential and linguistic strategies than other types of cultural strategies. While these strategies may improve how DEC supportive care services are received by Indigenous clientele (Resnicow, 1999), tailoring DEC programming to the person and the Nation that they belong to requires that Indigenous peoples become partners in diabetes education. For example, DECs could include traditional foods, ceremonies, and other deep-rooted cultural practices as part of their services.

P1.05.4
MEDIATORS OF SOCIOECONOMIC DIFFERENCES IN ADIPOSITY AMONG YOUTH: A SYSTEMATIC REVIEW

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Purpose Youth with a low socioeconomic position in developed countries are at a disproportionately higher risk of being overweight or obese than their counterparts. However, the reasons behind these differences remain poorly understood. The main aim of this systematic review was to summarize the evidence regarding the factors that mediate the association between socioeconomic position and adiposity among youth. METHODS A systematic literature search was conducted using the following databases: Medline, Embase, PsychINFO and Web of Science. The following inclusion criteria were used: studies exploring mediators of the association between at least one indicator of SEP and at least one indicator of adiposity; including youth (≤ 18 years of age); all types of studies including interventions if baseline data or control group data is used; published in English language in peer-reviewed journals and conducted in OECD countries. Assessment of study quality was done. A systematic coding procedure was used to assess the consistency of associations. RESULTS A total of 28 studies of moderate to low quality were included. The most consistent mediators of the association between socioeconomic position and adiposity identified in this review were: consumption of sugar-sweetened beverages, television viewing, computer use, parental BMI, breastfeeding, breakfast consumption, maternal smoking during pregnancy and infant feeding practices. The mediating role of physical activity as well as fruit and vegetable consumption was found to be
indeterminate. Other potential mediators were explored in too few studies to make conclusions about their mediating role. CONCLUSIONS This review identified several modifiable factors that mediated socioeconomic differences in adiposity among youth, in particular children. These factors could be targeted as feasible in interventions aimed at reducing socioeconomic differences in overweight and obesity. More studies including a broader range of mediator and using rigorous analytical methods are needed.

P1.05.5
RELATIONSHIP BETWEEN PARENT LEVEL OF EDUCATION AND OPINION ON CHILD DAILY PHYSICAL ACTIVITY REQUIREMENTS COMPARED TO GUIDELINES IN ONTARIO, CANADA

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Objective: In Canada, 27% of children/youth are overweight/obese and 9.3% meet age-specific daily physical activity (DPA) guidelines (Canadian Society for Exercise Physiology, CSEP). Parents can play an important role in influencing a child's DPA. Parental opinions on DPA requirements may be a factor in whether guidelines are met, and little is known about how these opinions are influenced by social determinants of health (SDOH), such as parents' education. We investigated the association between parent level of education and opinion on quantity of DPA their child should get compared to guidelines. Methods: We analyzed survey results of a random sample of parents/guardians living with at least one child under age 18, in Ontario. Surveys were conducted using cross-sectional Computer-Assisted Telephone Interviews (n=3,206). The sample was limited to parents who responded to the child DPA module and had a child aged 1- Results: 70.8% of parents’ opinions on required DPA met CSEP guidelines. We found no significant association between parent education level and the outcome. Using “up to/including secondary school diploma or equivalent” as reference, the multivariable models yielded the following adjusted odds ratios (ORs) and 95% confidence intervals [CI]: non-university post-secondary OR=1.00 [0.71-1.41], university up to/including bachelor OR=0.94 [0.66-1.35], university above bachelor OR=0.89 [0.60-1.33], and don’t know/refused OR=0.46 [0.14-1.51]. Of note, compared to parents of children aged 1-4 years (recommended DPA=180 minutes), the opinions of parents of older children, were more likely to meet the 60 minute DPA recommendations (ages 5-11 OR=6.41 [4.78-8.60], and ages 12- Conclusion: The majority of parents indicated their child required an amount of DPA that would meet current guidelines, and this relationship wasn't influenced by parent education level. Further study may identify factors influencing DPA, including SDOH and the role of age-specific recommendations, to align child DPA with guidelines.

P1.05.6
ASSESSING CHANGE IN PHYSICAL ACTIVITY IN ADOLESCENT ETHNIC GROUPS

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Purpose Previous research has established that physical activity declines during childhood, but we have inadequate information on how these changes differ by ethnic group. Determining if inequalities exist between ethnic groups is vital for understanding whether different intervention strategies are necessary. We aimed to determine how physical activity has changed over time within different UK ethnic groups. Methods We used Understanding Society, a nationally representative UK-based longitudinal survey to track changes in physical activity over time in different ethnic groups. For children aged 10 to 15, we explored the frequency of participating in sports and mode of travel to school. These factors were measured in four of the available six waves (1, 2 4 and 6), between 2009 and 2015. Children were asked how frequently they participate in sports per week. For mode of travel, children reported whether they walked, cycled, used public transport, were driven or used a combination of these. When including children who were followed up, the sample size was too low to stratify by age or gender. Results At baseline, low sports participation (6%) and inactive commuting (54%) was highest in Pakistani children; differences were significant between ethnic groups for mode of travel to school (P Conclusions Interventions aimed at preventing the decline of physical activity in children from the general population may be appropriate for ethnic minority groups. As active travel to school remains low in some ethnic minorities, targeted interventions to initially change mode of commuting in ethnic minority children is still needed.
THE LINK BETWEEN PHYSICAL ACTIVITY AND INDIVIDUAL AND COMMUNITY WELLBEING IN REMOTE REGIONS; A CASE STUDY OF ALICE SPRINGS AUSTRALIA, WHITEHORSE CANADA, AND KIRUNA SWEDEN

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The link between physical activity and individual and community wellbeing in remote regions: A case study of Alice Springs, Whitehorse, and Kiruna Physical activity and its various benefits to individual health are not new. So it is not a surprise that much of the surrounding literature links physical activity to social capital and/or individual health. The intention of this comparative case study is to view physical activity through two lenses. The first is to discover people’s perceptions and relationship to physical activity in remote regions. The combination of Hedonic and Eudaimonic motivational theories will be used to measure individual wellbeing. This could lead to understanding the mechanisms that stimulate or not, people’s commitment to physical activity. Additional benefits could be improvements in practice within the public arena, facilities and spaces, and highlighting the needs within each community. Physical activity and its contribution to community wellbeing cannot simply be understood as an outcome; benefit to one’s health, physically and psychologically. Discovering whether physical activity in remote settings is a driver of different capital formations can give insight into the capacities of the community, which can significantly affect or enhance the practice of physical activity. The intent of this study is to locate physical activity into a 5 Capital framework (physical, human, financial, environmental, social capital). Discovering the extent that physical activity plays in community connectedness could make the link between physical activity and community wellbeing apparent. The remote locales for this study are Alice Springs Australia, Whitehorse Canada and Kiruna Sweden. All three towns have many commonalities. These include socially diverse populations, geographical remoteness, harsh climatic conditions, and a high proportion of transience in the population. These commonalities will be central to the study as they influence people’s perception, choices and physical activity development. This study is a multi-sited mixed method case study and will use semi structured interviews, questionnaires, and a diverse range of material such as, journals, newspapers and videos to source data. The research is an exegesis; a video will be made that will complement the study. Informants within the field of physical activity will be interviewed.

ADOLESCENTS' VOICES CONCERNING FACILITATORS OF PHYSICAL ACTIVITY

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Objective: Socioeconomic inequalities in adolescents’ health and well-being are increasing, yet relatively little attention has been paid to voices of adolescents’ in disadvantaged communities and their stories about physical activity. As such, the purpose of this study was to illuminate what adolescents, from a low socioeconomic multicultural community in Sweden, convey concerning facilitators of physical activity. Methods: All seventh graders from one school in Sweden, situated in a multicultural community characterized with low socioeconomic status, were invited to the study, and 53 adolescents (12-13 years of age) agreed to participate. Embracing an interpretive approach, ten focus-group interviews was conducted to produce data for the study. The focus-group interviews were analyzed using qualitative content analysis. Results: The analysis resulted in two major themes regarding facilitators of the adolescents’ physical activity: (1) Possibility for enjoyment; and (2) Social support and a supportive environment. The first theme illuminated that feelings of enjoyment guided the adolescents' physical activity engagement, and that presence of peers, perceived competence, variation and options contributed to enjoyment related to physical activity. The second theme illustrated that social support from family facilitated the adolescents’ physical activity, and included several suggestions from the adolescents' on how the school environment could become more supportive of their physical activity (e.g., longer breaks in school). Conclusions: Based on the adolescents' voices, feeling of enjoyment had a great impact on their physical activity engagement, and the presence of peers, variation and options, and perceived competence contributed to enjoyment related to physical activity. Moreover, according to the adolescents, social support from family facilitated their physical activity and the school environment had the potential of becoming more supportive of their physical activity. Noteworthy, when the
adolescents spoke about physical activity, they mostly referred to spontaneous physical activities (e.g., playing football with friends), rather than organized physical activities, which appear to be specific for these adolescents.

P1.05.9
GETTING PEOPLE WITH DISABILITIES PHYSICALLY ACTIVE

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Introduction Even though physical and psychosocial benefits of physical activity (PA) are well documented the majority of people with disabilities are not physically active. It is important to understand how people with disabilities can be motivated to start physical activity. In order to become physically active, intention or being ready to become physically active is crucial for successful physical activity participation. The objective of this study was therefore to determine how adult people with disabilities who are ready for activity can be stimulated to engage in regular PA. Methods This study consists of a 30-week pre-post test design collecting both quantitative and qualitative data. Quantitative data was collected at baseline, week 12 and week 30 by asking participants to complete physical activity and self-efficacy questionnaires. Qualitative data was collected via focus groups or workshops in week 1, 6 and 15. In week 1 the workshop provided useful links to different PA possibilities and tools to set realistic PA goals. During the follow up workshop in week 6 pros and cons of starting to engage in PA and coping strategies for possible barriers were discussed. In week 15 the participants’ PA progress as well as the program itself were discussed. Preliminary results Results from the first workshop show barriers to PA often were related to lack of information, lack of possibilities or lack of adapted facilities. Results from the follow up workshop indicated that a detailed exercise plan helped participants to stay motivated to engage in physical activity. Also a buddy (either a carer or friends/family) to exercise with was a good motivation to stay physically active. Quantitative results will provide an indication whether the positive attitude towards physical activity will also lead to an increase in frequency and duration of PA. Conclusion This study includes a 30 week program to become physically active that is participant driven and tailor made. It not only provides information on how to stimulate people with disabilities to become physically active but provides information about the ongoing process of getting physically active including the setbacks and achieved goals.

P1.05.10
“PARK USE AND PA AMONG CHILDREN IN LOW INCOME AND RACIAL AND ETHNIC MINORITY COMMUNITIES” – THE PARC3 STUDY

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Objectives: To describe the methods used on the PARC3 study, which aims to: 1) identify attributes of parks that associate with parental decisions about children’s use of parks; 2) describe how children from low-income minorities are using parks; 3) determine to what extent specific park characteristics associate with children’s PA during park visits. Methods: Target population are children aged 5 to 10 years old and their parents in two U.S. cities (Raleigh, NC and New York, NY). Public parks were selected according to U.S. Census data on race/ethnicity (80% African American and 25% Hispanic or Asian American density) and low-income (80% or lower than the median income). Each specific aim will be addressed by a set of tools and measurements, and conducted simultaneously from May through October 2017: telephone-based surveys with parents of children living within ½ a mile from the selected parks (n=800 for each city). Users and non-users of parks will be able to participate answering questions related to general and specific park use and PA; parks will be audited using a validated tool (Mini-EAPRS); Trimble GPS units will be used to spatially locate features and facilities within parks. Direct observations using the System for Observing Play and Recreation in Communities (SOPARC) will assess momentary park use and levels of physical activities, as well as gender, age group and race/ethnicity; children’s PA and park use will be assessed during park visits by waist worn accelerometers and GPS devices. Recruitment will take place within selected parks; conjoint analysis will be conducted for data collected during park visits, to assess preferences in settings by parents accompanying a child. Results: Expected results include the perceptions from parents regarding use, decisions and importance of parks; characteristics of parks located in minority prevalent regions; children’s use patterns of parks and their structures; associations between park characteristics and children's use of spaces.
Conclusions: The multi-methods approach can be more time detailed but it will provide enough information to answer elaborate research questions effectively, leading to research and policy briefs to disseminate results with the potential to improve policies and decision-making by park services administrators.

P1.05.11
FOOD CHOICE STRATEGIES: BEHAVIORAL CONTEXTS FOR WEIGHT LOSS INTERVENTIONS

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Objective: Food choice coping strategies, behaviors used to manage food and eating in the context of daily work and family demands, have been associated with dietary quality, but their role as behavioral contexts for dietary change for weight loss has not been studied. This study aimed to examine food choice coping strategies at enrollment in a behavioral weight loss intervention and how those strategies related to individual, household and employment characteristics as well as to adherence, challenges, and self-efficacy for small dietary changes.

Methods: Overweight and obese urban Black and Hispanic adults enrolled in a randomized, controlled weight loss intervention trial, Small Changes and Lasting Effects (SCALE). Community health workers assessed demographics, household, and employment characteristics at baseline; and adherence, challenge, and self-efficacy weekly over 12 weeks. Results: Two meaningful clusters emerged among 397 participants with complete data. Clusters were defined by individual, household, and employment characteristics and differed significantly on food choice coping strategies (e.g. meals at home and away, missed and quick meals). Clusters did not differ on adherence, challenge or self-efficacy, likely in part because of a design to capitalize on these at baseline. Conclusions: Study results highlight how individual, household and employment characteristics are associated with food choices coping strategies. These understandings offer utility in adapting weight loss behavioral interventions to existing food choice coping strategies in social, economic, and temporal contexts.

P1.05.12
LIMITED AWARENESS OF LIFESTYLE BEHAVIORS AMONG LATINO COMMUNITIES IN THE US MID-SOUTH AND THE IMPACT ON HEALTH PROGRAM ACCEPTANCE

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Purpose: Latino populations are expanding across the US. Faith-based health promotion is frequently used to reach minority populations who may not trust or have access to traditional health care systems. Knowledge gaps exist regarding Latinos’ acceptance of such programs, and denominational divides, immigration status, and regional differences may influence program acceptability. This study, informed by Latino faith leaders and community members, examined health needs and acceptance of faith-based health promotion efforts among Latino communities in Memphis, TN. Methods: Ten faith leaders, individuals within faith-based organizations serving Latino communities, participated in in-depth interviews lasting approximately one hour each. Thirty community members, self-identified as Latino/Hispanic, participated in focus groups (n=4). Respondents were asked about the health needs facing Latino communities, organizations offering health-related services or programs, and gaps in/acceptability of services and programs offered through faith-based organizations. A grounded theory approach was used to analyze transcripts. Interviews and focus groups were analyzed separately and findings reviewed by three trained qualitative researchers for commonalities and differences. Results: Faith-leaders were 90% male, 80% Protestant, and on average 48 years old. Community members were 30% male, 43% Methodist (33% reported no church affiliation), and on average 36 years old. Community members reported days/week of physical activity (M(SD)=1.63(1.69)), daily fruit and vegetable servings (M(SD)=2.07(1.22)), and daily sugar sweetened beverage intake (M(SD)=1.42(1.46)). Lack of awareness about lifestyle behaviors was a common theme and included: Participants’ noting a lack of awareness about lifestyle-related conditions, such as diabetes, and how to prevent or control such conditions. Faith-leaders’ noting their congregants’ lack of knowledge about the links between unhealthy lifestyle and unwanted health outcomes. Both groups stressed a need for education, but were unaware of diet and physical activity programs. Respondents acknowledged barriers to program outreach, including language, childcare/family needs, cost, denominational differences, variations in cultural norms within Latino communities, and disinterest among younger people and males. Conclusions: Our findings add to the literature on...
health knowledge and needs among Latino communities. Findings indicate increasing community awareness about the relevance of healthy diet and exercise is needed before behavior change programs can be successfully implemented.

P1.05.13
DESCRIBING THE DIET QUALITY OF ADOLESCENTS IN RURAL SRI LANKA OVER TIME USING A MODIFIED VERSION OF THE DIET QUALITY INDEX-INTERNATIONAL

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Purpose: This presentation describes the diets of adolescents living in rural Sri Lanka at two time points (June-August 2014 and August-September 2015) using a modified version of the Diet Quality Index-International (DQI-I), which creates a quantitative summary of dietary variety, adequacy, moderation and overall balance (maximum score=100). This work was part of a larger quasi-experimental research project which implemented a multi-sectoral community-led nutrition promotion intervention to examine the feasibility of "Integrating Nutrition Promotion with Rural Development" (INPARD). Methods: Cluster randomised sampling was used to select schools based on region, intervention and school type. Diets were assessed among 1,300 pupils aged 12-18 over time using a validated Sri Lankan food frequency questionnaire. Additionally, we collected data related to anthropometrics, demographics and school nutrition policies.

P1.05.14
SHARED FAMILY DINNERS AND ADOLESCENT OVERWEIGHT – DOES THE ASSOCIATION DEPEND ON SOCIOECONOMIC POSITION?

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Objective Previous studies document an increased risk of overweight among adolescents with infrequent shared family meals compared to adolescents with frequent family meals. It is unknown whether this association depends on socioeconomic position (SEP). The present study aimed to study the association between frequency of family dinners and adolescent weight status and whether this association varied by SEP. Methods Analyses are based on representative cross-sectional questionnaire data from the Danish contribution to the international Health Behaviour in School-aged Children study, 2014 (response rate=86.6%). Analyses include 3,054 students aged 13 and 15 years. Weight status was based on self-reported data on height and weight and family dinners were measured by a frequency questionnaire, SEP was measured by parents’ occupational social class. Multivariate logistic regressions were conducted adjusted by age, gender, family structure social class and combined effect of family dinner and social class was analysed by joined effect analyses. Results Adolescents with infrequent family dinners had significantly higher odds of being overweight than adolescents with frequent family dinners (adjusted OR=1.44). Adolescents from middle and low social class had significantly higher odds of being overweight (OR=1.74 and 2.18, respectively) than adolescents from high social class. Joined effect analyses showed that compared to high social class adolescents with frequent family dinners (reference) both adolescents with frequent and infrequent family dinners had significantly increased odds of being overweight if they at the same time were living in families from middle or low social class (OR between 1.53 and 2.78). No increased odds of overweight were observed among adolescents with infrequent family dinners and high social class. Conclusions The presented results indicate that living in a high social class family may buffer the negative effect of infrequent family dinners on adolescent weight status. On the other hand, the protective effect of frequently having shared family dinners seems to diminish when the adolescent at the same time is living in a middle or low social class family. The results highlight the importance of considering SEP when understanding the relevance of family meals for adolescent weight status.

P1.05.15
TOTAL AND DOMAIN-SPECIFIC LEVELS OF PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR IN RELATION TO
PSYCHOLOGICAL DISTRESS AMONG AN URBAN ASIAN POPULATION

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Purpose: This study investigated how self-reported total moderate-to-vigorous physical activity (MVPA) and different life domains of physical activity (PA) and sedentary behavior (SB) may affect psychological distress in a multi-ethnic Asian population. Methods: Participants were recruited from the 2014-2015 Singapore Health Study, a cross-sectional survey of adults aged ≥18-years. The Kessler Screening Scale (K6) with a score of 6-13 was used to define an individual as having no or low psychological distress, 14-18 as moderate psychological distress and ≥19 as high psychological distress. Participants were classified into two groups: low distress vs. moderate-to-high distress only. PA and SB were collected using the Global Physical Activity Questionnaire (GPAQ) and a domain-specific SB questionnaire. Associations of PA, SB and psychological distress were investigated using multivariable logistic regression. Results: Analysis included 845 participants who provided valid self-reported PA, SB and K6 data. Participants (mean age ± standard deviation: 44.5 ± 14.8 years) were predominantly female (58.3%), of Chinese ethnicity (64.5%), with pre-tertiary to university educational level (77.9%), married (60.2%), employed (76.7%), with 28.3% cigarette smokers and 62.6% alcohol consumers. The median (interquartile range [IQR]) for total MVPA and SB was 350.0 min/week (150.0-840.0) and 9.5 h/day (6.4-13.0), respectively. The prevalence of moderate-to-high psychological distress was 10.6%. Occupational PA (highest vs. lowest tertile: odds ratio [OR]=1.94, 95% confidence interval [CI]: 1.19-3.18, overall p-value=0.02) and total MVPA (highest vs. lowest tertile: OR=2.02, 1.11-3.69, overall p-value=0.05) were significantly associated with increased odds of being psychological distressed after adjusting for age, gender, ethnicity, educational level and marital status. In contrast, leisure-time PA was associated with reduced odds for psychological distress (highest tertile vs. lowest tertile: OR=0.57, 0.33-0.97, overall p-value=0.10). Leisure-time SB had a borderline significant association with psychological distress (medium vs. lowest tertile: OR=0.66, 0.35-1.23; highest vs. lowest tertile: OR=1.37, 0.78-2.41, overall p-value=0.05). Conclusions: These results are in line with earlier studies, which suggested different influences of PA and SB across different domains on mental health and should therefore be taken into consideration when tailoring future interventions. This approach complements the commonly used method that compared total PA and SB regardless of life domains.

P1.05.16
BARRIERS TO EATING HEALTHY AMONG FOOD PANTRY CLIENTS

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Purpose: To explore perspectives on barriers of eating healthy among food pantry clients. Methods: Food pantry clients participated in focus groups/interviews. Qualitative data were coded and analyzed using content analyses and grounded theory approach. Themes were then identified. Quantitative data were analyzed for frequencies and descriptives. Results: 54 clients from 10 pantries participated in interviews/focus groups and completed questionnaires. Two major themes emerged: concern over obesity and other chronic diseases, and barriers to healthy eating. Several sub-themes for barriers to healthy eating were identified: financial uncertainty, cost of healthy foods, lack of time, rationing food within family, lack of transportation, lack of adequate kitchen equipment, lack of nutrition knowledge and skills, and social support network. Conclusions: Issues identified above and those identified by others working with low-income populations need to be systematically addressed and incorporated into programs and nutrition education interventions for this group.

P1.05.17
DEMOGRAPHIC RELATIONSHIPS OF FRUITS AND VEGETABLES SELECTED, CONSUMED, AND WASTED AMONG MIDDLE SCHOOL STUDENTS IN A CROSS-SECTIONAL DESIGN

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Background: Youth do not meet national recommendations for fruit and vegetable (FV) consumption. Evidence suggests FV intake differs across demographic groups, such as sex, race/ethnicity, and socioeconomic status.

Objective: To examine the relations between demographic factors and objective measures of FV selected, consumed, and wasted in middle schools with salad bars. Methods: A cross-sectional study (N=294 students) from three middle schools serving fresh FV during lunch. Amount of FV selected and wasted were measured objectively by plate waste. Separate regressions examined demographic relationships to the dependent variables and adjusted for school-level clustering. We explored two-way interactions between demographics. Results: No significant associations were found for any demographic factors on objectively-measured FV selected, consumed, or wasted. The interaction between sex and free/reduced priced lunch status on FV consumed showed significance (omnibus p-value = .009). Among females, those eligible for free/reduced lunch ate less than females eligible for full price lunch on average (83.9 g versus 109.1 g). The associations among males were reversed; those eligible for full price lunch ate less than the free/reduced status males on average (73.3 g versus 96.8 g). Conclusions: Individual demographic factors have been shown to relate to self-reported consumption. Our study contradicts this, as no demographic differences were observed in objectively-measured FV selected, consumed or wasted from randomly sampled middle schoolers. However, further analysis revealed an interaction between socioeconomic status and sex. Results suggest targeted interventions for specific demographic subgroups may support increased FV consumption at schools.

P1.05.18
A SYSTEMATIC LITERATURE REVIEW RELATING FOOD INSECURITY TO CANADIAN AND US WOMEN’S DIETARY OUTCOMES

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Objective: This systematic literature review applied PRISMA guidance to synthesize and evaluate available evidence relating food insecurity to women’s dietary outcomes (total energy, food groups, macronutrients, micronutrients, and overall dietary quality). Methods: We searched four databases covering health and social sciences (PubMed/MEDLINE, CINAHL, Scopus, and Web of Science) and relevant gray literature. Included studies were English-language; with women (18-60 years) living in Canada or the US; used valid, reliable measures of food insecurity and diet; and reported the association of food insecurity with dietary outcomes for women, or a women subgroup. Excluded studies were qualitative, and focused on less-generalizable populations (refugees, people with HIV/AIDS, and drug users). The review compared percent difference in each outcome in food-secure versus food-insecure women, and evaluated risk of bias at the study and outcome level using the EPHP quality assessment tool for studies, and GRADE for grading the evidence. Results: After screening 2471 studies, 90 studies were considered for the review. Twenty-four studies met all criteria and were included. Of the 24 studies, 10 came from the gray literature. All were observational studies. Several studies showed food-insecure women had lower intakes relative to food-secure women; 15 studies reported statistically significant, negative associations for >1 dietary outcome. Methodological quality varied across studies. Quality of evidence was low across dietary outcomes, due to having only observational studies. Among high-quality studies, food insecurity was negatively and significantly associated with intake of fruits and vegetables, dairy, grains, meats/meats alternatives, protein, fat, calcium, iron, magnesium, vitamins A and C, and folate. Conclusions: Prior research suggested food-insecure women report lower nutrient intakes relative to food-secure women, but the evidence came from a small number of studies. Results extend what is known regarding how food insecurity relates to women’s dietary outcomes. However, for each dietary outcome, there were one or two high-quality studies. Results can be applied to increase the quality of future studies, such as using less-biased measures, having congruence in the timing of food insecurity and dietary assessment, and controlling confounding. This review has practical relevance for informing policies, programs and interventions focused on food insecure women.

P1.05.19
RE-CONCEPTUALIZING FOOD INSECURITY WITH A NEW, MULTI-DIMENSIONAL SCALE TO MEASURE FOOD
INSECURITY AMONG LOW-INCOME WOMEN

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Objective: To develop and test a new multi-dimensional, food insecurity measure for use in research, evaluation and intervention programs. The study extends the most commonly used measure, the USDA's Food Security Survey Module, to assess the diet quality dimension, as well as the psychological and social dimensions of food insecurity. Methods: We used cross-sectional, qualitative and quantitative survey data from a prospective study with low-income African American, Latina, and Caucasian women living in rural and urban areas of North Carolina (n=109). The new food insecurity scale was designed to measure food insecurity at the individual level, and to reflect the four dimensions of food insecurity: quantitative (reduced food intake), qualitative (reduced diet quality), psychological (feelings of anxiety and stress) and social (feelings of deprivation and alienation). We tested if the new scale had the hypothesized four-factor structure using confirmatory factor analysis in Mplus®. A scoring protocol for categorizing food insecurity status based on the new measures was developed using the qualitative data, resulting in the categories of food secure, mildly food insecure, severely food insecure. Concordance of the new scale with the USDA's adult scale, and the relationship of each scale with demographic characteristics (related to food insecurity, such as poverty) were analyzed using SAS® software (correlations and linear regression). Results: While analyses are preliminary, results from the confirmatory factor analysis support the hypothesized model with four factors for the quantitative, qualitative, psychological and social dimensions. A four-factor model fit the data reasonably well: χ² test p >0.05 (χ²=94.4, degrees of freedom=98, p=0.6) and χ²:df ratio less than than 3:1 (1:1); RMSEA>0.95 (CFI = 1.0). Factor loadings ranged from 0.8–1.1. Each factor had statistically significant associations with hypothesized items. Correlations between factors ranged from 0.4 to 0.8. Conclusions: Findings provide preliminary evidence for a new tool for assessing individual-level food insecurity among at-risk populations. By comparing the current USDA and novel food insecurity scale, this study has the potential to provide key insights on the utility of these measures.

P1.05.20 MULTIPLE DEPRIVATION AND ITS IMPACTS ON THE PHYSICAL ACTIVITY OF PORTUGUESE CHILDREN: EVIDENCE OF A GENDER GAP OVER AND ABOVE THE OVERALL NEGATIVE IMPACT

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Purpose: Multiple deprivation impacts the neighbourhood availability of healthy living opportunities. Several studies concluded that poor areas are characterized by a scarcity of physical activity (PA) facilities; thus, children living in face a daily double burden: they tend to be poorer and subjected to a disadvantageous environment. This has been referred as "deprivation amplification" and its consequences for health are supposedly harmful. This study investigates whether the availability of PA facilities varies according area deprivation and how it impacts on children's sports activity (SA). Methods: 944 children aged 3–10 yrs of private/public schools of Lisbon (March–July 2009) were geocoded at the address level. Number of PA facilities within a 0.5km buffer around each participants’ address were collected and mapped. A Multiple Deprivation index was created comprising three census variables – unemployed; unskilled employed; overcrowding – and assigned to each children address. Availability of PA facilities and levels of children's SA (practice/not practice; weekly frequency) by terciles of area deprivation were compared and tested using qui-squared test. Results: Girls showed lower levels of SA. Considering area deprivation terciles, PA facilities showed low availability in the most deprived areas (p Conclusions: PA facilities are scarce in the most deprived areas and this may constrain the opportunities for an active living. This is doubly true for girls (those living in poorer areas showed both less sports practice and weekly frequency); and a half-truth for boys (those living in poor/middle areas showed the highest SA weekly frequency). Probably, boys are less influenced by the availability of PA facilities than girls, due to the type of activities preferred by each sex. This difference may also reflect
different parental attitudes; parents, considering boys less vulnerable than girls, and conceiving their activities as competitive and aggressive, may encourage them to practice regardless neighborhood suitability.

P1.06 Theories and determinants: All ages

P1.06.1
BARRIERS AND FACILITATORS TO MOVING MORE AND SITTING LESS WITHIN FOUR CONTACT CENTRES

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Purpose: The workplace provides a pivotal context to reduce sedentary behaviour and increase physical activity among adults. Contact centre call agents spend up to 90% of their working day seated, which can negatively impact cardiovascular and metabolic health, presenteeism and productivity. For the first time, this study qualitatively explored the barriers and facilitators to call agents moving more and sitting less, at multiple levels of influence (organisational, environmental, interpersonal, intrapersonal), as guided by the socio-ecological model. Methods: Semi-structured interviews and focus groups were conducted with call agents, team leaders and senior staff across four contact centres (n=43, 52% female). Questions explored barriers and facilitators across the socio-ecological model; current working practices, and perceived and actual roles and responsibilities for promoting workplace physical activity and reducing workplace sedentary behaviour. Audio recorded focus groups and interviews were transcribed verbatim. Data were analysed using thematic analysis in QSR NVivo10. Results: High workload, maintaining productivity, sedentary working cultures and job security were major barriers towards sitting less and moving more. Facilitators to increase engagement in future strategies included developing supportive working cultures and raising awareness through effective promotion of move more sit less messages. Short frequent breaks, walking/standing/active meetings and height adjustable workstations were potential strategies to increase physical activity and/or reduce sedentary behaviour, though for the latter, cost and usability impacted perceptions of feasibility. All centres would want evidence-based business cases for enhancing organisational buy-in. Conclusions: Barriers and facilitators across multiple levels influence contact centre call agent’s workplace sedentary behaviour and physical activity. Multi-level interventions embedded into current working practices may promote engagement and increase sustainability by addressing concerns regarding productivity.

P1.06.2
HOW DO CHANGES IN OCCUPATIONAL SEDENTARY BEHAVIOUR AFFECT LEISURE TIME SEDENTARY BEHAVIOUR? EVIDENCE FROM A LONGITUDINAL POPULATION BASED COHORT STUDY IN SWEDEN

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Purpose: Evidence from small, cross-sectional studies suggests that people who are more active at work are more sedentary in their leisure time. However, no studies have tested the longitudinal impact of occupational activity levels on sedentary behaviour outside work. The aim of this study was to ascertain the impact of changing occupational activity level on leisure time sedentary behaviour among workers. Methods: Data from a longitudinal population-based cohort responding to public health surveys in 2010 and 2014 were used, including those aged 18-60 years old in 2010 and employed in both years. Sedentary occupation was defined as mainly sedentary whereas active occupation included mainly standing or mostly walking, mild or heavy physical work. Two occupation trajectories were made: 1) changed from sedentary to active, with reference sustained sedentary, and 2) changed from active to sedentary, with reference sustained active. Leisure time sedentary behaviour was measured asking for hours of sitting time e.g. watching TV or reading. Changes from 2010 to 2014 were defined as increase, decrease or stable. Odds ratios (OR) and corresponding 95% Confidence Intervals (CI) were calculated adjusting for age, gender, education, and physical activity. Results: Data were available for 7,150 participants (57% women, aged 45±9, 57% highly educated), of which 549 changed from sedentary to active occupations and 375 from active to sedentary occupations. Compared to people with sustained sedentary occupations, those who changed from sedentary to active occupations were more likely to have an increase in leisure time sedentary behaviour (OR=1.44, CI=1.08-1.94). Compared to people with sustained active occupations, those who changed from active to sedentary
occupations were not more likely to have a decrease in leisure time sedentary behaviour (OR=0.97, CI=0.73-1.30). Conclusions: Participants changing from sedentary to active occupations compensate by increasing leisure time sedentary behaviour. However, in those changing from active to sedentary occupations this compensatory mechanism was not true. These results are important to build our understanding on how active and sedentary behaviours in different contexts influence each other, and this should be taken into consideration when developing interventions to reduce either occupational or leisure time sedentary behaviour.

P1.06.3
IMPLICIT AND EXPLICIT HEART DISEASE AND BREAST CANCER COGNITIONS: RELATIONSHIP TO PHYSICAL ACTIVITY AND FRUIT AND VEGETABLE CONSUMPTION

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Objective: Preliminary data (data collection is ongoing) are presented from a study that examines the effects of reading information about preventing heart disease (HD) or breast cancer (BC) through physical activity (PA) and fruit and vegetable (FV) consumption on automatic associations of PA and FV consumption with disease related words (e.g., coronary, malignant), attentional bias for disease related words after exposure to logos from the Red Dress and Pink Ribbon campaigns, explicit attitudes about the behaviours, and perceptions of disease risk; the relationship of these cognitions to steps taken and FV consumption over the following week is assessed. Methods: Participants (N =73 healthy women to date) in BC, HD, or control conditions completed a primed Stroop task to measure attentional bias and a Go/No Go [GNAT] task to measure automatic associations; they then read BC, HD, or control condition materials followed by questionnaires and the Stroop and GNAT tasks again. Participants wore a pedometer and completed a daily FV consumption diary for the following week after which they again completed the questionnaires, Stroop and GNAT tasks. Results: Across conditions and time points, there were stronger automatic associations of FV consumption than PA when paired with BC stimuli (all p p > .25). At posttest, participants in the BC condition avoided BC words after exposure to the pink ribbon logo, but at follow-up showed attentional bias for BC related words (p Conclusions: Healthy women have stronger automatic associations of FV consumption than PA with BC. The Pink Ribbon but not Red Dress logo affects attentional bias and there is preliminary evidence that attentional bias and perceived risk is related to behaviour.

P1.06.4
A DESCRIPTIVE STUDY OF INDIVIDUALS SEEKING SPECIALIZED TREATMENT FOR AN EATING DISORDER: INTUITIVE EATING AND EATING PROFILE

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Objective: Intuitive eating, an adaptive eating behavior, promotes reliance on hunger and satiety cues to guide eating, without any restrictions on the type of food eaten (Tribole & Resch, 2012). Even though this positive approach might be a promising treatment strategy for eating disorders (ED), it has been only minimally studied among clinical populations, least of all in a treatment-seeking sample. The current study explored intuitive eating and diet quality, among 20 individuals seeking a specialized care for ED. Methods: Eighteen women and two men aged between 20 and 55 years were included in the study. Participants completed online self-reported questionnaires (sociodemographic, Intuitive Eating Scale-2 (Camilleri & al., 2015)) and three online 24-hour recall questionnaires to evaluate the quality of their diet. Individuals were grouped based on ED diagnosis: the restrictive group (n=4) comprised individuals with anorexia (n=3), and orthorexia (n=1), whereas the disinhibited group (n= 16) comprised individuals with bulimia (n=9), and binge eating disorder (n=7). Mann-Whitney U tests for independent samples were performed to compare intuitive eating and diet quality in both groups. Results: Significant differences were found for total intuitive eating score for the restrictive (Mdn=2.72) compared to the disinhibited (Mdn=2.30), U=6.5, p=0.01. Individuals within the restrictive group tend to have significantly higher scores in the Reliance on internal hunger and satiety cues (HSC) subscale (Mdn=2.33) compared to those within the disinhibited group (Mdn=1.58), U=11.5, p=0.05. As expected, the restrictive group had a significantly lower mean energy intake (Mdn=1342) than the disinhibited group (Mdn=2908.5), U=6.0, p=0.02. No significant differences were found
regarding diet quality using the total Healthy Eating Index score, and macronutrient intakes. Parametric and non-parametric tests showed similar pattern of results. Conclusions: The current study provides an overview of intuitive eating and diet quality among treatment-seeking individuals with ED. Results suggest that if intuitive eating was to be part of a clinical strategy for treating ED, key targets would depend on the type of ED (restrictive or disinhibited). It also suggests that ED individuals, particularly those with restrictive symptoms may confuse dietary restraint with intuitive eating.

P1.06.5
PERCEPTIONS OF SUGARY DRINKS AMONG CANADIAN YOUTH AND YOUNG ADULTS

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Objective: Excessive intake of added sugars, particularly from sugar-sweetened beverages, is associated with higher dietary energy density, weight gain and increased risk of chronic disease. The current study examined perceptions of sugary drinks among young Canadians, including knowledge of sugar content. Methods: A sample of 2,902 Canadians aged 16-30 completed an online experiment as part of the 2016 Canada Food Study. Participants were recruited from five cities (Toronto, Edmonton, Halifax, Montreal, and Vancouver) using in-person intercept sampling. Participants were randomized to view an image of one of nine beverages (chocolate milk, diet pop, energy drink, lemonade, regular pop, specialty coffee, sports drink, water, or 100% fruit juice). Measures included perceived healthiness of the beverage (7-point scale: “very unhealthy” to “very healthy”), perceived acceptable consumption frequency (7-point scale: “never” to “as often as you would like”); and perceived sugar content (6-point scale: “none” to “very high”). Linear regression models were conducted to examine differences in perceptions by beverage, adjusted for age, sex, BMI, and race/ethnicity. Results: Regular pop, diet pop, and energy drinks consistently received the lowest ratings of healthiness and acceptable consumption frequency. Respondents were significantly more likely to perceive chocolate milk, lemonade, specialty coffee, sports drinks, and 100% fruit juice as healthier (p Conclusions: The findings indicate that young Canadians have relatively accurate perceptions of the general nutritional quality of beverages; however, juice-flavoured sugary drinks, as well as ‘functional’ drinks such as sports drinks were more likely to be perceived as healthier. The findings also suggest considerable confusion about the sugar content of diet pop, which use non-caloric sweeteners.

P1.06.6
INVESTIGATING TRENDS IN FRUIT AND VEGETABLE CONSUMPTION IN THE NORTH AND SOUTH OF ENGLAND


Objective: Consumption of fruit and vegetables in England is geographically patterned, with a higher proportion of adults meeting the national 5-a-day recommendation in the South than the North. Less clear, however, is how these geographical inequalities have changed over time. We aimed to compare trends from 2001-2011 in fruit and vegetable consumption in the North and South of England, and to explore whether differences between these regions could be explained by geographical disparities in age and social class composition. Methods: We derived annual estimates of the proportion of adults meeting the 5-a-day recommendation in the North and South from each of the Health Surveys for England between 2001 and 2011. We used Joinpoint models to analyse trends in the age-standardised prevalence of meeting '5-a-day' in the North versus South by sex. For each survey year and sex, we then performed logistic regression analyses to assess the independence of any geographical effect when adjusting for age and social class, before analysing trends in the resulting odds ratios to assess whether geographical inequalities (independent of age and social class) have widened or narrowed over time. Results: In both sexes, the crude prevalence of meeting '5-a-day' rose in parallel in the North and South between 2001 and 2011, by approximately 2.22% in men and 1.85% in women each year. The increased odds of meeting '5-a-day' for the South was independent of age and social class in each year for women, and in each year except 2003 and 2004 for men. For women, the adjusted OR remained roughly stable from 2001-2011 at around 1.15-1.20, although for
men the adjusted OR showed a significant increase, from 1.05 in 2003 to 1.33 in 2011. Conclusions: Despite positive increases in both the North and South in the prevalence of meeting fruit and vegetable recommendations, substantial geographical inequalities remain, and are independent of age and social class. These inequalities show no sign of narrowing in women, and in men appear to have widened since 2003. Further work is needed to explore the socio-economic drivers of these geographical disparities, with a view to designing appropriate interventions to counter them.

P1.06.7
LONG-TERM EFFECTS OF LIFE EVENTS ON ADOLESCENTS’ PARTICIPATION IN PHYSICAL ACTIVITY, AND ORGANIZED AND UNORGANIZED SPORTS

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Objective: This study aimed to determine the long-term effects of life events on adolescents’ participation in physical activity (PA), organized sports, and unorganized sports. Adolescence is marked by a large decrease in PA levels and to date there is dearth in research evaluating the effect of life events on the observed decline. Methods: Data used in this study were derived from a large prospective cohort study (Monitoring Activities for Teenagers to Comprehend their Habits [MATCH]). Children (n=937, initially 10-11 years-old) were recruited from 17 elementary schools in New Brunswick Canada, in 2011. The MATCH data are collected through questionnaires three times per school year (approximately every four months) and 16 cycles were available for this analysis. Exploratory factor analysis was used to identify groupings among 19 life events. Mixed effects regression models were conducted to evaluate the association of life events with changes in PA levels and participation in organized and unorganized sports. Models were adjusted for sex, socio-economic status, and data collection cycle. Results: The percentage of individuals expressing that they did not experience any life event ranged from 21.5% to 53.3% by cycle. Using factor analysis, two grouped factors were created: 1) high severity life events (e.g. bereavement or physical injury), and 2) low severity life events (e.g. loss of social or resource support). Through mixed effects regression models we found that a one-unit increase in exposure to low severity life events was associated with a 0.03 decrease in the number of days youth reported achieving the PA recommendations during a seven-day period (p Conclusions: Low severity life events had a negative association with PA participation. We expected that life events would negatively impact all types of participations in PA, organized and unorganized sports. However, we found that high severity life events had a positive association with participation in organized sports. More research is warranted to examine the mechanisms that make life events have positive or negative effects on adolescents' PA.

P1.06.8
PROTOTYPE SIMILARITY AND NOT INTENTION PREDICTS VARIANCE IN YOUNG ADOLESCENTS’ OBJECTIVE PHYSICAL ACTIVITY: A PRELIMINARY INVESTIGATION

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Objective: Adolescent decision-making is characterised by sensitivity to peer evaluation and heightened self-consciousness. Yet many physical activity interventions are underpinned by rational behavioural models. The Prototype Willingness Model (PWM) is an account of decision-making that proposes both rational choices and spontaneous responses to social contexts. This prospective study investigated how far constructs in the PWM explained variance in young adolescents' objectively-measured daily average moderate-to-vigorous physical activity (MVPA), over and above variables in the Theory of Planned Behaviour (TPB). Methods: British pupils from 3 high schools (N= 189; male= 98) aged 12-13 completed a questionnaire assessing TPB constructs of attitude, descriptive and injunctive norms, perceived behavioural control and intention, and PWM constructs of active image similarity and favourability; inactive image similarity and favourability; and behavioural willingness. Participants wore wrist-mounted Axivity accelerometers for the following 7 days. MVPA data was analysed using OpenMovement software; participants were included in further analysis if they recorded at least 12 hours of activity on 5 or more days, including one weekend day (N= 118; male= 59). We entered 5 TPB variables, followed by 5 PWM variables, into a hierarchical regression analysis to explore predictors of MVPA. Results: TPB variables alone explained 17.2% of variance in MVPA, F(5, 112) = 4.655, p= .001. Intention (B= 4.78, β= .22, t= 2.40, p= .018) and perceived behavioural
control (B= 6.88, β= .18, t= 2.01, p= .046) made significant contributions to the model. Adding PWM variables explained an extra 8.6% of variance in MVPA. tF (5,107) = 2.491, p= .036. Here, the only variable that made a significant contribution to the model was participants’ reported similarity to an active image (B= 4.78, β= .22, t= 2.08, p= .04). Conclusions: This study offers initial evidence that an active self-image, rather than intention, might be a key predictor of physical activity among young adolescents. It suggests that the social reaction pathway hypothesised in the PWM could more fully explain young adolescents’ physical activity than rational behavioural models alone. The results are drawn from a relatively small sample, but they indicate potential for interventions that target physically-active images.

P1.06.9
EFFECTS OF SEASON ON PHYSICAL ACTIVITY IN AN OVERWEIGHT AND OBESE SAMPLE: A PERCEIVED BUT UNTRUE BARRIER
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Objective: Only 2-3% of Americans with overweight/obese BMIs engage in the recommended amount of exercise. To address this issue, we must understand barriers to physical activity (PA) for this population. Research demonstrates a small effect of season on PA in normal weight populations, but this effect has not been examined in individuals with overweight/obese BMIs using objectively measured PA. This study will test the hypothesis that this population experiences seasonal effects on perceived barriers to PA and objectively measured PA. Methods: Participants (n=531) were obese (M BMI=35.0, SD=4.8) adults entering lifestyle modification treatments in Philadelphia, Pennsylvania. ActiGraph GT3X tri-axial solid state accelerometers worn at least 8 hours/day for 4 days measured minutes/week of bouted PA at baseline. The Barriers to Being Active scale (BBA), a self-report measure with 7 subscales, was examined at baseline. Astronomical seasons were used. ANCOVAs and logistic regressions, controlling for age, examined seasonal associations with perceived barriers and objectively measured PA. Results: There was no significant effect of season on moderate to vigorous PA (MVPA) (p's>0.1). Season had a significant effect on minutes/week of light activity (F(3,522)=4.0, pM=70.1, SD=74.5) and Fall (M=62.6 SD=57.5) than Summer (M=100.6, SD=94.0) (p'spM=5.4, SD=2.9), Spring (M=5.1, SD=2.6), and Winter (M=4.5, SD=2.7), than in Fall (M=3.3, SD=2.0) (pp's>0.07). Conclusions: Participants reported lack of willpower as a greater barrier to PA in Summer and Spring than Fall; however, these seasonal differences did not correspond to actual PA. In fact, light PA was higher in Summer than Winter or Fall, and there were no seasonal differences in MPVA. Perhaps Summer and Spring present increased opportunities for PA, making individuals more aware of lack of willpower as a barrier to PA at these times. Addressing this perceived barrier might help individuals achieve greater PA during warmer seasons when PA may be more accessible, as suggested by greater light activity in the Summer.

P1.06.10
CORRELATES OF PARTICIPATION IN HOLISTIC MOVEMENT PRACTICES: SOCIODEMOGRAPHIC AND PARTICIPATION CHARACTERISTICS OF A NATIONAL SAMPLE OF AUSTRALIAN ADULTS.
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Purpose: Holistic movement practices (HMPs, e.g. yoga, t’ai chi), differ from typical physical activities in that they are embedded in integrative philosophies that focus on holistic well-being. Given this, it is plausible that these practices may attract specific subpopulations. The purpose of this study was to examine sociodemographic and participation characteristics of HMP users, and compare these to the characteristics of physically active people who did not engage in HMPs. Methods: Data were derived from the Exercise, Recreation, And Sport Survey (ERASS), an Australia-wide random telephone survey, conducted quarterly 2001-2010 (yearly N’s =12,043 - 18,734) (age range = 15+ years). Respondents listed up to 10 types of physical activity that they had participated in during the past 12 months. For this analysis, respondents were pooled across the 2001-2010 survey period (n = 195,926). HMP users were defined as those who had participated in yoga, Pilates, t’ai chi, and/or qigong (i.e. HMPs) (n = 6,826). Non-HMP-users were defined as those who had participated in any physical activity other than HMPs (n = 152,468). Chi
square tests and multiple logistic regression analyses were used to examine differences between HMP-users and non-HMP-users. Results: Significant differences in participation were found for sex, age, education, social-economic background, level of geographical remoteness, marital status, and number of children living at home (p < 0.05). Conclusions: There are differences in several socio-demographic and participation characteristics between active Australians who do engage in HMPs and those who do not. Knowing what subgroups are more interested in HMP participation may help develop more specifically tailored physically activity promotion interventions. Future research may also investigate what makes HMPs more attractive to the currently dominant population subgroups, as well as key barriers to participation for other population subgroups.

P1.06.11
EXAMINING BEST PRACTICES FOR PROMOTING CYCLING AMONGST UNIVERSITY STUDENTS AND EMPLOYEES

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Active commuting (AC), walking or biking to work or school, has been found to be a major component in increasing physical activity participation and positive health outcomes. Factors influencing the choice to actively commute have been well documented in child and adult populations, however there is a gap in the research concerning university students and employees. College campuses offer a unique setting in which to offer resources and programs to facilitate active commuting in their specific population. Objective: The purpose of this study was to examine the best practices of bike-friendly universities and to document effective strategies for cycling promotion. Methods: Universities designated as bike-friendly by the League of American Bicyclists were recruited via email and participated on a volunteer basis. Representatives from universities were asked to reflect on their current practices concerning engineering, education, encouragement, enforcement and evaluation, via a structured phone interview, which were transcribed verbatim and coded using a social-ecological framework. Results: The sample (n=19) was diverse and represented a range of different sized institutions, designation levels of bike-friendliness (bronze, silver, gold or platinum) and geographic locations. Several common themes were noted. In terms of engineering, the interplay between the community and the university, on multiple levels, was cited as having a significant impact on participation. The creation of a network of connectivity between campus and surrounding student housing areas was highlighted as a major facilitator for participation. Education was also noted as important, as universities also mentioned the positive effect of access to both general safety as well as maintenance classes on current student and employees, with more focus placed on targeting incoming students. Most universities reported fairly secure campuses, with only two indicating a theft problem, those who had dedicated information regarding proper bike locks and practices were less likely to experience theft and thus more highly rated. Universities who provided an organized means of cycling (e.g. teams/clubs/events) were rated higher in terms of encouragement. Conclusion: Findings from the study can provide a foundation for other universities looking to increase bike-friendliness for students and employees and inform further research regarding active commuting on college campuses.

P1.06.12
PHYSICAL ACTIVITY BEHAVIOUR AND MOTIVES IN DOG AGILITY COMPETITORS

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Objective: Dog agility is an increasingly popular activity that demands a high level of physical fitness and a strong bond between dogs and their owners. Although many dog owners do not regularly walk or engage in other physical activity with their dogs, it is unknown if the same applies to dog owners who compete in dog agility. The purpose of this study was to compare physical activity levels of agility competitors to dog owners who are non-agility competitors, and to examine motives for physical activity using Self-Determination Theory (SDT). Methods: A total of 228 dog owners completed an online survey that assessed participation in dog agility, physical activity with a dog (e.g., walking or running with a dog) using a modified version of the Godin Leisure Time Exercise Questionnaire, motives for physical activity using the Motives for Physical Activity Measure-Revised (MPAM-R), behavioural regulation using the Dog Walking Behavioural Regulation in Exercise Questionnaire (DW-BREQ), and Dog Obligation. Results: Agility competitors indicated significantly more weekly moderate-to-vigorous minutes of physical activity with their dog (M=349.3, SD=534.2) compared to non-agility competitors (M=193.8, SD=226.5); pp Conclusions:
Participation in dog agility may have a positive effect on self-determined motives for physical activity and physical activity levels in dog owners. The further availability and promotion of dog agility programs to the public could serve as a means of getting dog owners more physically active with their dogs.

**P1.06.13**

**EXPLORING STAKEHOLDERS’ EXPERIENCES OF DELIVERING COMMUNITY-BASED PHYSICAL ACTIVITY AND HEALTH PROMOTION SERVICES: A QUALITATIVE STUDY.**

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**Purpose:** Non-communicable diseases are a major cause of death globally, often caused by modifiable behavioural risk factors, such as insufficient physical activity. Community-based services targeting positive behaviour change have the potential to increase the reach of health promotion to population sub-groups and have gained increasing popularity. However, these services have shown limited effectiveness and stakeholder views on their implementation are unclear. This study aimed to explore the experiences of people delivering community-based physical activity and health promotion services, and to identify perceived barriers, facilitators and gaps in the delivery of these services. Methods: Semi-structured interviews were conducted with key stakeholders (n=15) from public and voluntary community-based health promotion organisations. These individuals were identified due to their role in the development or delivery of community-based services, using purposive and snowball sampling. Topics addressed in the interview included perceptions of current service provision, practical aspects of service delivery and effectiveness. Interviews were audio recorded, transcribed verbatim and analysed using a thematic framework. Data was stored using NVivo. Results: Four main themes emerged: service delivery; factors influencing participation; community factors; effective elements of services. Interviewees identified the need for collaborative working with the community and other organisations in delivering services but, engagement with primary care practitioners was reportedly challenging. The need for context-specific services in convenient and familiar community venues was highlighted, and it was suggested that opportunities outside of traditional physical activity settings should be explored. Factors influencing participation in services and healthy behaviours were information dissemination, accessibility, gender-specific needs, and the built environment. Community factors influencing service provision included deprivation, politics and competing priorities. Social support from a group, regular contact with service providers possessing appropriate interpersonal skills, relevant education, and using goals and incentives were all perceived to be effective elements of services. Conclusions: Many complex, interacting factors influence community-based services. Challenges in inter-service collaboration and in designing services that attract target populations were identified; facilitation of engagement was perceived when the community's contextual background was recognised and relevant social and educational support was provided. These findings should guide the development of future services seeking to engage users in health-promoting behaviour change.

**P1.06.14**

**PHYSICAL ACTIVITY MESSAGES IN POPULAR MAGAZINES: A CROSS-SECTIONAL ANALYSIS BY TARGET AUDIENCE**

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**Objective:** The purpose of this study was to investigate the ways exercise is portrayed in popular, non-fitness focused magazines. Specifically, this study investigated the type and intensity of exercise, as well as the reasons for exercise being promoted in magazines targeting a range of age groups. Methods: A total of 10 popular, non-fitness focused magazines were selected based on target audience (Teens, Young Adults, Family, Late Adults, Older Adults). 100 total digital magazine articles from the health/fitness section of these magazines (20 per age group) were coded for the primary reason to exercise, type of exercise portrayed, and intensity of the workout being discussed. Results were then analyzed via frequency distributions, and Chi-Square tests were used to examine differences in the messages being sent across age groups. Results: Significant differences were found in media messages between age groups for reason to exercise (p Conclusions: The reasons, type, and intensity of exercise described in magazines varies by target audience. The primary reason to exercise portrayed to young adults was appearance, which is concerning since this extrinsic motivator often results in short-term changes instead of long-term lifestyle modification. The intensity and mode of exercise messages also appear to be tailored towards each audience's primary motivator, meaning higher intensity circuit workouts are suggested for groups targeting appearance and moderate cardiovascular exercise is emphasized for general health. Non-fitness focused magazines have readers of
all fitness levels and body types, and with the growth of these magazines as an exercise information source it is important that media outlets consider collaborating with public health professionals to ensure promotion of evidence-based information.

P1.06.15
VEGETARIAN DIET, CHANGE IN DIETARY PATTERNS AND WEIGHT GAIN OVER 5 YEARS
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Purpose: Vegetarian diets have been shown to reduce body weight in meta-analyses of randomized controlled trials. However, most trials are short term, and little is known about its long term effect in non-intervening settings. We aim to examine the long term effect of a vegetarian diet and change in dietary patterns on weight gain. Methods: We prospectively followed 2375 men and women who never smoked or habitually drank alcohol and were free of cancer, diabetes, and cardiovascular diseases, in the Tzu Chi Health Study. This is a Taiwanese cohort of devoted Buddhist volunteers, among whom 1/3 were vegetarians at baseline. Diet was assessed through a validated food frequency questionnaire at baseline and a simple questionnaire at follow-up. Dietary patterns were divided into 4 types: (1) vegetarians: consistently eating vegetarian diet, (2) Reverted: initially vegetarian but reverted to nonvegetarian diet later, (3) Converted: nonvegetarian at baseline but converted to vegetarian later. (4) Nonvegetarians: consistently eating nonvegetarian diet. Heights and weights were measured at baseline and follow-up health examinations. Pair-t-test was used to compare baseline and follow-up weights within each dietary pattern. General linear model (GLM) was used to compare weight changes of different dietary patterns while adjusting for age, education, leisure time physical activities, and followed months. Results/findings: For both men and women, vegetarians had lower BMI and weights at baseline but no significant difference in heights. Over 5 years, there was no significant difference in weight gain (p=.06 for GLM) between vegetarians (+ 0.7kg, pair-t-test p Conclusion: Both vegetarians and nonvegetarians gained small amount of weight over time, but those converting from nonvegetarian to vegetarian diets were the most likely to either maintain or lose weight.

P1.06.16
PROMOTION OF HEALTHY EATING: EVALUATION OF PLEASURE-ORIENTED VERSUS HEALTH-ORIENTED MESSAGES
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Objective: Two versions of a leaflet promoting healthy eating, but differing by message orientation (pleasure-oriented (P) versus health-oriented (H)), have been developed and compared in terms of induced perceptions about healthy eating, perceived orientation (P or H), message characteristics, perceived effectiveness of the message and general appreciation. Methods: Focus groups conducted by our team were used to determine salient dimensions to include in both P and H messages. Adults (45.2±12.9 years) were randomly assigned to read one of the two versions (P: n=48; H: n=50). Before and after reading the leaflet, participants gave their perception about healthy eating on a 7-point scale (“Eating healthy can bring me pleasure” and “Eating healthy can help me achieving or maintaining good health” [1=strongly disagree, 7=strongly agree]). Participants also had to answer to manipulation check items assessing message orientation and message characteristics relative to clarity, ease to understand, importance, quality and interest. Eight 7-point semantic differential items regarding message impact (e.g. convincing/not convincing) and its attributes (e.g. logical/illogical) were used to assess perceived effectiveness of the message. Participants also rated their general appreciation on a 1 to 10 scale. Results: Both leaflets influenced perception about healthy eating. After reading the P leaflet, more subjects strongly agreed with the statement « Eating healthy can bring me pleasure » than before reading the leaflet (42% vs. 56%, p=0.002). Similarly, a higher proportion strongly agreed with the statement « Eating healthy can help me achieving or maintaining good health » after reading the H leaflet (78% vs. 90%, p=0.002). The message manipulation was successful since participants discerned the message orientation for both versions (P: p=0.06; H: p Conclusions: These results suggest that these leaflets
might be used for future nutritional interventions aimed at promoting healthy eating using distinct approaches (pleasure- vs. health-oriented). Nevertheless, reactions to message orientation may differ according to individual’s characteristics.

P1.06.18
DIFFERING COMPOSITIONS AND POTENTIAL HEALTH IMPACTS OF SUGARS IN POPULAR SOFT DRINKS FROM AUSTRALIA, EUROPE AND THE U.S.A.

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Purpose: The relative proportion of sugars (sucrose, glucose and fructose) in popular soft drinks varies between global regions as a result of differences in the primary industry sources of sugars. However, despite the potential for distinct health implications arising from the differing metabolic effects of these sugars, regional differences in soft drink formulation have not been characterised. We compared the regional variation in the types of sugars in four soft drinks currently available in Australia, Europe and the U.S.A. Methods: Sixty soft drink samples, marketed under the same trade name (Fanta, Sprite, Coca-Cola and Pepsi) in Australia, Europe and the U.S.A. (5 samples per drink per region) were analysed by an independent, certified laboratory (National Measurement Institute, Australia) for the concentration of sugars, using high-performance liquid chromatography. Total fructose and glucose concentrations were calculated, accounting for these sugars within sucrose (a disaccharide composed of 50% glucose and 50% fructose). Comparisons for each drink type between regions were made using one-way ANOVA and where significant, individual means were compared with a least significant post-hoc test. Results/findings: Australian soft drinks were on average 22% higher in total glucose concentration (0.96 [SD = 0.22] g/100mL) than the U.S.A. formulations (4.44 [0.09] g/100mL; p. Conclusions: High fructose consumption can have adverse health consequences for lipid metabolism, which may be particularly relevant for U.S.A. soft drink formulations. Consumption of glucose, but not fructose, raises blood glucose and insulin; thus, the higher glucose concentrations in Australian and European formulations, may have distinct health consequences for glucose metabolism.

P1.06.19
PREVALENCE OF WEEK AND WEEKEND DAY SEDENTARY BEHAVIORS ACROSS THE LIFESPAN: A DESCRIPTIVE STUDY
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Objective: High levels of sedentary behavior are related to adverse health outcomes. Therefore, insight is needed into the contexts in which people from different age groups are sedentary. The aim of this study was to describe context-specific prevalence of sedentary behaviors in adolescents, adults and older adults. Methods: This descriptive study was conducted among a Flemish sample of adolescents, adults and older adults. Week and weekend day context-specific sedentary behaviors were assessed using paper-based questionnaires in adolescents and adults, and using face-to-face interviews in older adults. Descriptive statistics were performed to determine the prevalence of sedentary behaviors in the three age groups. Results: In total, 513 adolescents (mean age: 15.0 ± 1.7), 301 adults (mean age: 43.3 ± 24.6) and 258 older adults (mean age: 74.0 ± 6.2) participated in this descriptive study. Most weekday sedentary time was spend at school for adolescents (315.02 min/day ± 129.40), at work for adults (248.59 min/day ± 158.89) and during watching television for older adults (204.40 min/day ± 100.87). The most common context in which weekend day sedentary behavior took place was during watching television in all age groups (162.83 min/day ± 112.85 [adolescents], 144.69 min/day ± 84.06 [adults], 193.16 min/day ± 112.41 [older adults]). Other contexts of sedentary behavior vary by age group. The top three was completed by sitting during meals (91.35 min/day ± 44.14) and sitting while reading (58.60 min/day ± 53.68) for older adults; by sitting while socializing (76.99 min/day ± 64.98) and sitting during meals (70.42 min/day ± 42.30) for adults; and by sitting while using a computer (137.57 min/day ± 119.21) and sitting while gaming (125.66 min/day ± 125.09) for adolescents. Conclusions: This study provides insight into adolescents’, adults’ and older adults’ context-specific sedentary behaviors. There are important differences in the contexts in which sedentary behavior take place by age group; these should be taken into account when designing age-specific sedentary behavior reducing interventions.

P1.06.20
TRENDS IN PHYSICAL ACTIVITY AND SCREEN BASED BEHAVIOR IN CZECH ADOLESCENTS: FINDINGS FROM 2009 TO 2013

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Purpose: Trend data provide basic information for different processes in public health practice. Therefore, the aim of the study was to examine trends in pedometer-determined physical activity and subjectively assessed screen based behavior over five-year period in Czech adolescents. Methods: Data of 1,314 participants (aged 15 – 19 years, 35.7% men, BMI 21.6±3.0 kg/m2) recruited within Czech national five-year cross-sectional survey "Physical Activity and Inactivity of the Inhabitants of the Czech Republic in the Context of Behavioral Changes" were included into trend analysis. Pedometer (Yamax Digiwalker SW-700) data were obtained for seven consecutive days (at least 10 hours per day) from spring and autumn seasons. Participants provided seven-day record related to their screen based activities (watching TV, computer use). The pedometer-determined and questionnaire based outcomes were divided into two categories (with cut offs: 11,000 steps per day; 3 hours of screen based activities per day) and analyzed using logistic regression models. Results: Significant decrease in steps/day (from 11,962 to 11,185; -777) was observed in the whole sample between 2010 to 2013. The Czech health related criterion 11,000 steps/day decreased from 54.6% in 2010 to 49.3% in 2013. Conversely, significant increase in screen based activities (from 160 min/day to 200 min/day) was observed between 2009 to 2013. Increase in percent of adolescents having more than 3 hours of screen based activities per day (16.8%) was observed during the same period. In 2013, the Czech adolescent were 2.2 times more likely to have more than 3 hours of screen based activities per day than in 2009. Conclusions: The national five-year survey suggests a reduction in steps/day in Czech adolescents (with exception of 2009) and increase in sedentary behavior. These findings are very important from the perspective of Czech public health initiatives. However, further confirmation of this trend is needed.

P1.07 SIG: Implementation and scalability

P1.07.1
DEVELOPMENT AND TESTING OF A SURVEY TO ASSESS KNOWLEDGE, ENGAGEMENT, AND SOCIAL NETWORK CHARACTERISTICS OF COMMUNITY-BASED LEADERSHIP GROUPS INVOLVED IN CHILDHOOD OBESITY PREVENTION

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Objective: Involving groups of community leaders (advisory boards, steering committees, etc.) appears to support behavioral and health outcomes in childhood obesity prevention interventions, yet evaluation tools are lacking. We hypothesize that diffusion of knowledge and engagement through networks is the mechanism by which leaders improve interventions. This study describes the development and reliability of a tool that quantifies community leaders’ knowledge about obesity prevention strategies, engagement with the issue, and social networks. Methods: Survey Development: A literature review and expert input generated 20 knowledge and 50 engagement items. Retrospective Study: We re-contacted community and academic leaders from the whole-of-community interventions Shape Up Somerville (SUS; USA; 2002-05) and Romp & Chomp (R&C; Australia; 2004-08) to pilot test the survey. We measured social networks using memory recall and a roster; leaders were asked to name up to 20 people with whom they "discussed issues related to childhood obesity" during the intervention. Leaders retrospectively reported knowledge, engagement, and networks at the beginning (T1) and end (T2) of intervention involvement. SUS leaders completed knowledge and engagement survey components twice, one week apart, to inform test-retest reliability using intraclass correlation coefficients (ICCs). We calculated mean knowledge and engagement scores and represented networks visually. Prospective Study: We revised the knowledge and engagement scales based on retrospective results, yielding 18 and 25 items, respectively, and then assessed test-retest reliability among a convenience sample of leaders involved in community-based obesity prevention in Victoria, Australia. Results: Retrospective Study: Leaders from SUS (n=13/23) and R&C (n=8/12) completed the survey. Eleven SUS leaders completed the retest reliability survey. At T1, ICCs (95% CIs) for knowledge and
engagement were 0.88 (0.67, 0.97) and 0.97 (0.89, 0.99), respectively. SUS mean knowledge score significantly increased by 34.1% from T1 to T2 (P=0.03). SUS and R&C networks included 99 and 54 individuals. Prospective Study: Thirteen leaders completed reliability surveys (100%). Knowledge and engagement ICCs (95% CIs) were 0.84 (0.62, 0.95) and 0.58 (0.23, 0.86), respectively. Conclusions: The survey measures leaders’ knowledge, engagement, and social networks with good test-retest reliability. This instrument shows promise in helping identify group processes that influence community-based childhood obesity prevention interventions.

P1.07.2 FEASIBILITY OF DELIVERING VIRTUAL WORLD-MEDIATED INTERVENTION THROUGH SUMMER CAMPS AMONG HIGH SCHOOL SOCCER PLAYERS

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Objective To evaluate the feasibility of delivering a 2-year virtual world-mediated intervention (VWMI) aimed at childhood obesity prevention among high school soccer players. Methods Rippleville is a VWMI experiential learning space deployed in OpenSim to reinforce face-to-face sport-nutrition lessons. We delivered this VWMI to 495 youth (14-19 year-old) through two annual summer camps (SC). SC1 aimed to prepare the participants to login and explore Rippleville on their own. SC2 aimed to assess participant’s user and learning experience in the VWMI. SC1: With soccer coaches’ input, we conducted SC1 at individual schools. Key preparation involved connecting the research laptops to the school local area network (LAN) and stress testing a back-up portable network system at each school. Our technology team traveled up to one hour per site, and each setup/tear down took 30-45 minutes. During SC1, participants joined an interactive Rippleville introduction, navigated in Rippleville, practiced camera control, and created their own avatar. Everyone received a swag bag containing a USB thumb drive for Rippleville login and a printed user manual. We delivered 15 90-minute sessions in nine sites. SC2: With coaches’ input, we moved SC2 to the university campus. We offered four SC dates and chartered school buses to transport the participants. Participants (n=157) attended a 60-minute Rippleville session in a computer lab, capped at 20 persons/session. They had virtual tours, played new quests, and competed in a virtual obstacle course. Half of participants joined a 60-minute focus group. Excluding the focus groups, we delivered a total of 16 60-minute sessions in one site. Results Moving the VWMI to one location saved staff and travel time and increased implementation fidelity. Quality of delivery increased with onsite delivery and real-time troubleshooting support. The user/computer ratio (1:1) and robust physical and virtual VWMI environments improved Rippleville specificity and exposure, and increased intervention adherence and student engagement. Conclusions Conducting a computer-based, VWMI in high schools remains challenging when implementation fidelity depends on the school LAN and computer infrastructures. Until significant advancement in the infrastructure occurs, researchers shall strategize to bring their participants to the most robust VWMI environment.

P1.07.3 SCALING UP AND IMPLEMENTING MIND EXERCISE, NUTRITION DO IT! (MEND 7-13) IN BRITISH COLUMBIA: 3 YEAR EVALUATION RESULTS.

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Background: MEND helps overweight children and their families to adopt and maintain a healthy lifestyle and is one component of BC’s province-wide intervention programming for children above a healthy weight. Families self-refer to the program and are eligible for MEND 7-13 if their child is between seven and 13 years and has a BMI-for-age above the 85th percentile. Objective: To evaluate the scale up and implementation of MEND from 2013-2016 over two phases. Methods: MEND is an efficacious age-specific, family and community-based healthy weights intervention developed in the United Kingdom. MEND 7-13 is 20 sessions over 10 weeks and offered through recreation facilities. The evaluation used multiple lines of evidence and both process and outcome evaluation practices. RE-AIM framed the evaluation; reach, effectiveness, adoption, implementation and maintenance were
assessed. Pre/post outcome measures included BMI z-score, waist circumference, cardiovascular fitness and self-reported nutrition, screen and physical activity habits. Results: 27 sites delivered 105 MEND 7-13 programs April 2013 - June 2016. 808 eligible children participated; approximately 78% completed the program across three years. Approximately 83% had a BMI-for-age above 97th percentile. We found significant positive changes in vegetable and fruit consumption, physical activity (PAQ-C), screen-time, self-esteem (Rosenberg Self-esteem Scale), emotional distress (Strength and Difficulties Questionnaire), waist circumference, child BMI z-score across all three years. Results showed statistically significant changes in child fitness (recovery heart rate), sedentary activity score and in Parent BMI were mixed depending on the year. Families reported positive lifestyle changes. Program satisfaction was high across all implementation years however recruitment was challenging. Program schedule and other commitments were barriers while cost (free) and sibling inclusion facilitated attendance. MEND delivery continues province-wide.

P1.07.4
THE GLOWING PILOT CLUSTER RANDOMISED CONTROLLED TRIAL (RCT): AN INTERVENTION TO SUPPORT MIDWIVES IMPLEMENTATION OF WEIGHT MANAGEMENT GUIDELINES

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Objective: UK evidence-based guidelines exist for weight management in pregnancy but are not optimally implemented. There are multiple complex barriers to practice(1) and an absence of interventions to support health professionals(2). GLOWING uses social cognitive theory to facilitate community midwives' implementation of guidelines. This pilot study explores feasibility and acceptability of the GLOWING intervention. Methods: A multi-centre pilot cluster RCT, stratified by size of cluster (large/small NHS Trust) with intervention and control arms (n=2 clusters/arm). GLOWING consisted of 1-day face-to-face midwifery training, plus provision of written resources for use in routine practice. Feasibility assessments explored ability to deliver GLOWING to all eligible midwives in intervention clusters (planned 6 midwives/session), and recruitment for data collection (target n=60 questionnaires). Questionnaires and focus groups assessed acceptability of GLOWING among intervention arm midwives, with intervention components rated 1-very/2-somewhat/3-not very/4-not at all useful. Descriptive statistical and thematic analyses were performed. Results: The data collection target was reached (n=63 questionnaires returned). GLOWING was delivered to 100% of eligible midwives in intervention clusters (n=67): delivered as planned in the large cluster (n=48 midwives; mean n=6/session) but not the smaller cluster (n=19 midwives; mean n=4/session). Midwives rated most GLOWING components as very/somewhat useful (mean 94.4%). The GLOWING resources rated highest, followed by the lectures, reflection and group discussion activities. The components with any ratings of not very/not at all useful (mean 5.6%) were predominantly role-play activities. Midwives felt GLOWING was directly relevant to practice, increased their evidence-based knowledge, and their confidence to support women with weight management. Conclusions: This pilot study demonstrates it is feasible and acceptable to deliver and evaluate GLOWING using a cluster RCT design. All eligible midwives in the intervention clusters were released from practice to participate; although limited workforce capacity in the small NHS Trust would have required 1/3 of community midwives to be released from practice/session for complete protocol adherence. Delivering GLOWING to fewer midwives/session increases the intervention costs. Intervention delivery in a definitive trial could combine clusters to reduce costs and prevent the exclusion of smaller Trusts unable to adhere to protocol. 1.Heslehurst et al. Obesity Reviews.2014;15:462-486 2.Heslehurst et al. Implementation Science.2014;9:97

P1.07.5
EVALUATING THE IMPACT OF A WORKSHOP AIMED AT ENHANCING MEDICAL STUDENTS’ MOTIVATIONAL INTERVIEWING KNOWLEDGE, SKILLS AND SOCIAL COGNITIONS TO COUNSEL PATIENTS ON PHYSICAL ACTIVITY, NUTRITION AND MEDICATION ADHERENCE

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Objective: Motivational Interviewing (MI) is an effective counselling technique healthcare providers can employ to facilitate health behaviour change among their clients (Lundahl et al., 2013). Currently, MI is not routinely taught in medical schools. The purpose of this study was to address this gap by evaluating the efficacy of a workshop to increase medical student's MI knowledge, social cognitions, and skills. Methods: A 3.5-hour workshop designed to teach the core tenets and skills of MI as per Miller et al. (2013) was delivered to 2nd year medical students at a Canadian medical school in the fall of 2016. The workshop was delivered by MI experts and included one hour of didactic teaching, and two hours of experiential learning with a focus on the evoking phase of MI. The intervention’s impact was evaluated through a quasi-experimental design guided by the Theory of Planned Behaviour (Ajzen, 1991). Questionnaires were distributed to students before and immediately after the intervention to gather data on student demographics, previous MI experience, knowledge and social cognitions (likert scales assessing MI knowledge, self-efficacy, affective attitudes, subjective norms, and intentions). Changes in knowledge and social cognitions were analysed using paired-samples t-tests. Results: 2nd year medical students (n=58; 29 female) represented a diverse range of ages (21 to 32 years) and ethnicities (African, Asian, European, and Indigenous). The majority of students had a Bachelor’s degree (n=34), had no previous MI experience (n=47), and no previous clinical experience (n=52). Of the 58 students who completed the pre-questionnaire, 28 students completed the post-questionnaire, yielding a response rate of 48%. Students who completed the post-questionnaire indicated that their knowledge of MI increased. This difference, -2.74, 95% CI [-3.29, -2.22], was significant t(26)= -10.35, p=.001. Students also indicated that their perceived behavioural control, t(26)= -3.50, p=.001, increased significantly. Attitudes, subjective norms, and intentions did not increase significantly following the workshop. Conclusions: A half-day MI workshop embedded into the undergraduate medical education curriculum may be a feasible method for increasing medical student’s ability to engage in effective health behaviour change counselling with patients, particularly regarding physical activity, nutrition and medication adherence.

P1.07.6
EVALUATION OF HIGH SCHOOL SOCCER PLAYERS’ USER AND LEARNING EXPERIENCES IN A VIRTUAL WORLD-MEDIATED INTERVENTION TO PROMOTE PHYSICAL ACTIVITY AND HEALTHY EATING BEHAVIORS.

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Purpose: Adolescence is a critical time to establish lifelong healthy behaviors to prevent obesity. Virtual world-mediated intervention has the potential to reinforce face-to-face lessons and shape behavior. Rippleville, a virtual world in OpenSim, is designed to reinforce face-to-face sport nutrition lessons, practice Family and Consumer Sciences skills, and promote moderate-to-vigorous physical activity maintenance. This study is to explore high school soccer player’s user experience and learning experience in the virtual world. Methods: Sixteen sessions of semi-structured focus group (60-min) were conducted among 97 high school soccer players. Eight formative evaluation sessions focused on the user experience; and eight summative evaluation focused on learning experience. Prior to the focus group, participants joined a 60-min Rippleville play session. They toured Rippleville with a tour guide (trained computer science developers), played a virtual obstacle course quest called the Rough Mudder (RM) and competed in RM by teams. The interview moderator and note taker transcribed all focus group interviews verbatim and coded them independently by using standard content analysis techniques. Frequently emerging patterns were labeled as themes if they were discussed in >50% of the focus groups. Results: The overall user experience enjoyment scored 6.9 out of 10. Participants enjoyed the competition component and different modes of actions in Rippleville. They wanted to see more nutrition information especially the consequences for making bad food choices. In terms of meeting the learning objective, 85% agreed that the RM helped them in practicing pre/during/post exercise fueling; 71% agreed that it reinforced the nutrition lessons. However, 66% thought it failed to motivate them to be active because it is a computer game. Nearly 7 in 10 participants chose food based on their nutrition knowledge, and they believed the virtual skill would transfer to their real life. To improve the technology-mediated intervention, participants suggested the use of mobile games like Pokémon Go, virtual reality goggles, and personal virtual coaches on the smartphone. Conclusion: Virtual world-mediated intervention appear to be somewhat acceptable to high school athletes. Insights from these focus groups will help the research team to make Rippleville more effective, efficient, enjoyable, easy-to-learn and error-tolerant.

P1.07.7
PROMISING TOOLS TO SUPPORT DISSEMINATION AND IMPLEMENTATION OF EVIDENCE-BASED HEALTH PROMOTION STRATEGIES

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Purpose: Preventing obesity is a complex challenge, creating a compelling need to move from single isolated programs to comprehensive multi-system interventions. Methods: A multidisciplinary team of researchers and practitioners from the Wisconsin Obesity Prevention Initiative are testing several tools to promote dissemination of evidence-based practice and to support implementation of policy, system, and environment changes to promote healthy eating and physical activity. Promising tools include: (1) a web-based strategy menu of evidence-based approaches that helps communities develop tailored, context-specific health interventions based on local needs and capacity; (2) a web-based data portal that connects communities with the information they need to inform and evaluate their health promotion work, including comprehensive local area data on health outcomes, behaviors, policies, systems, and environments; (3) a coaching curriculum that guides technical support to communities; (4) statewide public messaging. The multi-component, mixed-methods evaluation includes: local and statewide partner surveys, key informant interviews, structured observations, document review, and analysis of existing public health, clinical, and community data. Results: Data from user evaluations, key informant interviews, and case studies suggest that these tools show promise for increasing dissemination and implementation of evidence-based practices. In addition, evaluation data are informing ongoing refinement and quality improvement. Conclusions: These promising tools can be used and replicated by researchers and practitioners beyond Wisconsin. They provide infrastructure to support dissemination and implementation of evidence-based policy, system, and environment interventions at the population level to support healthy eating and physical activity.

P1.07.8
INITIAL RESULTS FROM A STATEWIDE MULTI-LEVEL INITIATIVE TO PREVENT CHILDHOOD OBESITY

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Purpose: The Wisconsin Obesity Prevention Initiative supports multi-system interventions and provides local data for action to increase policies, systems, and environments that support healthy eating and physical activity. Methods: The Initiative has three components: (1) infrastructure to disseminate evidence-based solutions through a statewide health promotion network and public messaging; (2) community-led, multi-setting pilot studies in two Wisconsin counties; and (3) a geocoded statewide surveillance system to track obesity rates, nutrition, physical activity, and health promoting policy, system, and environment strategies in communities statewide. The multi-component, mixed-methods evaluation includes: local and statewide partner surveys, key informant interviews, structured observations, document review, and analysis of existing public health, clinical, and community data. Results: Preliminary results will be presented that showcase selected evaluation results from across the three components of the initiative. Case studies highlighted will include: (1) implementation of statewide system incentivizing physical activity in childcare, which has resulted in an increased proportion of preschool children statewide who receive at least 60 minutes of physical activity daily; (2) innovative food systems work in an American Indian community that has decreased consumption of processed foods via community-based efforts that emphasize cultural reclamation, food sovereignty, and community empowerment; (3) several million dollars in leveraged funding for various local and state agencies and partnerships, made possible by infrastructure supporting statewide action networks as well as novel data sources, such as geocoded, local pediatric obesity prevalence estimates computed from electronic health record data. Conclusion: Successes and lessons learned from this Initiative’s first years can inform other wide scale efforts to disseminate and implement evidence-based policy, system, and environment changes that support healthy eating and physical activity at the population level.

P1.07.9
DEVELOPMENT AND IMPLEMENTATION OF A PROCESS TO IDENTIFY FEASIBLE AND RELEVANT NUDGE
INTERVENTIONS TO INCREASE VEGETABLE PURCHASING BY YOUNG ADULTS IN A UNIVERSITY FOOD SERVICES SETTING.

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Background: Deterioration in the consumption of fruits and vegetables tends to occur as youth transition from high school to university. Individuals are making conscious and unconscious choices everyday, based not only on personal but also on environmental and organizational determinants. An intervention is most likely to be successful if it addresses these factors for the target population of interest and is feasible to implement. We conducted a formative assessment with University students and food service managers and staff to identify a feasible and target population relevant NUDGE intervention to increase the purchase of vegetable purchasing in a campus food outlet. Methods: First a web-based survey was implemented with currently registered undergrad students between 18 – 34 years old, to identify and rank the factors they perceived influenced their fruit and vegetable consumption. Second a literature review identified types of effective Nudges to present to staff and managers. Finally, focus group were conducted first with the food services management team and then staff to identify a NUDGE that could be feasibly implemented in the local cafeteria. Results: 340 students completed the survey. The top student identified vegetable purchasing influences were the: appearance of freshness (77.9%), healthiness (76.1%), taste (66.8%) and inclusion of vegetables in combination meals (46.6%). This data and 30 nudges from the literature were presented to the managers they were prioritized based on feasibility and perceived effectiveness. One NUDGE was added and reduced to 19 for a similar process with staff. The top ranked NUDGES were then reviewed again by Food Service Management leaders and adding fresh vegetables to the hot table and 'veggie-fying' Grab and Go sandwiches were selected. Conclusion: The nudge interventions were systematically identified through an evidence-informed real world process. This formative research is necessary in order to address specific concerns of the target population and the implementation context. An efficacy trial is necessary to confirm if the feasible and relevant NUDGE identified increased vegetable purchasing.

P1.07.10
AFTER SCHOOL PHYSICAL ACTIVITY PROGRAMMING IN THE NORTHWEST TERRITORIES OF CANADA: A QUALITATIVE EXPLORATION OF FACILITATORS AND BARRIERS TO IMPLEMENTATION

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Purpose: Numerous challenges limit physical activity (PA) participation among children and youth in Canada’s Northwest Territories (NWT), including geographical remoteness and lack of resources. Since 2010, the Government of NWT has recognized this need for resources and has provided funding to all NWT communities for after school physical activity programs (ASPA). The purpose of this study was to explore the current status of ASPA, including program outcomes, and facilitators and barriers to program implementation. Methods: A qualitative study was conducted in three phases: 1) archival analysis of annual reports submitted by participating schools/communities; 2) interviews with program stakeholders and key informants; 3) case study site visits. Frequency counts were performed on relevant documents, which were triangulated with the transcribed interviews and direct observation notes from the site visits. Qualitative content analysis was conducted on the data to determine patterns and search for convergence. Categories emerged from all data sources and were grouped into themes. Results: A total of 180 documents were reviewed in Phase 1. In Phase 2 interviews were conducted with seven stakeholders and 18 key informants. Six ASPA sites were visited in Phase 3. Five over-arching themes emerged from the data. 1) ASPA filled a programming void in the community; 2) The program was perceived to have a positive effect on students’ after school PA participation; 3) Flexible funding was a facilitator but limited by high costs of living in remote areas; 4) Ensuring consistent staffing was key to program implementation and this could be improved through greater training; 5) Formal evaluation is needed to demonstrate program effectiveness, ensure program sustainability and for quality improvement. Conclusions: Data revealed that ASPA is needed in the NWT communities. Most programs appeared to have positive effects on students’ after school PA participation, but a more vigorous evaluation is needed to determine program effectiveness. Funding and consistent staffing are key facilitators but challenges such as high equipment/transportation costs and staff turnover remain. Specific actions include providing capacity building to local staff/volunteers and developing a formal evaluation mechanism to ensure the funding spent leads to sustainable programming of high quality.
P1.07.11
EVALUATING AN OLDER ADULT PHYSICAL ACTIVITY MODEL IMPLEMENTED AT SCALE: FRAMEWORK FOR ACTION

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Purpose: Most physical activity (PA) intervention trials demonstrate efficacy in selected samples. However, to address the pandemic of physical inactivity and improve population health, effective interventions need to be scaled up. Despite this, few PA interventions have been translated from research to practice and scaled up, thus we know little about the success of delivering PA interventions at scale. Older adults are among the least active Canadians; therefore, we developed, implemented and evaluated an evidence-based PA intervention during scale up across British Columbia, Canada. Here we present the conceptual framework for implementation and evaluation of Choose to Move (CTM) during scale up and share findings from our implementation evaluation, with a focus on delivery partners. Methods: CTM is an evidence- and choice-based PA intervention that aims to increase PA, social connectedness and mobility of low active older adults across BC. With Ministry of Health funding we identified and engaged key partners to develop, deliver and evaluate a scalable, evidence-based PA intervention across British Columbia. We used a type 2 hybrid effectiveness-implementation study design with mixed methods to evaluate implementation of CTM. Results: We adopted key elements of the Framework for Effective Implementation and the Interactive Systems Framework to plan our implementation and evaluation approaches. At baseline, decision makers at delivery partner organizations reported funding, relationships and infrastructure as key facilitators to delivering CTM at scale. Conclusions: To address low levels of PA among our aging population it is necessary to move beyond small scale research studies and scale up effective interventions so as to improve population health. We extend the existing PA intervention literature by focusing on a scalable PA intervention and engaging key stakeholders positioned to deliver CTM at scale across British Columbia. CTM has great potential to be delivered more broadly as a feasible, scalable model for community-wide physical activity among older adults.

P1.07.12
YOUNG & ACTIVE – A FORMATIVE EVALUATION OF A HIGH SCHOOL-BASED INTERVENTION AIMING AT PROMOTING PHYSICAL ACTIVITY, SENSE OF COMMUNITY AND ENJOYMENT

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Purpose: 'Young & Active' is part of the multi-component Healthy High School Study (HHS) with the aim to promote well-being and a healthy school day among Danish high school students. The overall aim of the Young & Active intervention component is to promote physical activity, enjoyment and sense of community among high school students. The component mainly consists of a 3-hour workshop facilitated by university students, where first-year students are encouraged to develop and plan new physical activity initiatives. This study presents a formative evaluation, where findings from the first part of the process evaluation guide an adjustment of the intervention adopted in the implementation in 2017 and 2018. With the adjustments we expect the students to implement more activities promoting physical activity, sense of community and enjoyment. Methods: The participatory approach adopted in the intervention makes the students both 'receivers' and 'deliverers'. The implementation process therefore highly depends on the students' acceptance, perception and understanding of the intervention. Inspired by the process evaluation concepts of acceptability/appreciation and context combined with a thorough inquiry of the target group, this study adopted an ethnographic approach combining several methods: participant observation of workshops including a general oral evaluation among the students, ethnographic fieldwork at two high schools, focus groups with students and teachers and feedback from workshop facilitators. Results/findings: Preliminary findings suggest the following themes as important: timing and duration of the workshop, communication of the purpose of the workshop, the amount of active games during the workshop and support from teachers and second- and third-year students in realizing the ideas. The findings has informed the following adjustments of the intervention: workshop conduct at a later time of the school year, division of the workshop in two parts of 1½ hours, more active and creative games during the workshop, clear communication of the purpose and greater involvement of teachers and second- and third-year students. Conclusions: This process of formative evaluation
with the possibilities of adjusting the intervention in collaboration with participating students and teachers is expected to enhance the chances of sustainability and relevance of the intervention.

P1.07.13
A QUALITATIVE STUDY OF HOW TO CREATE SUPPORTIVE ENVIRONMENTS FOR THE IMPLEMENTATION OF IN-CLASS-ACTIVITIES IN MIDDLE SCHOOL
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Purpose School physical activity (SPA) holds the potential to benefit children's psychosocial well-being. PA can positively influence mental health through social connectedness, physical self-perception, and improvements in emotions. For such reasons, in-class-activities (ICA) (e.g. energizers, active breaks) has been given increased attention in the literature. However, if all students are to benefit from the potential mental health qualities of ICA, the right supportive environment is crucial. The purpose of this study was, on the basis of students and teachers feedback to an ICA-intervention, to impart practical advice for the implementation of ICA-supportive environments.

Methods ICA is one of three intervention components in the RCT-designed 'Move for well-being in school' research program. During a full school year, thematized ICA was to be delivered two times every day. Along the intervention period, a case study comprising 10 semi-structured focus group interviews were carried out with 37 4th and 6th-grade students. Furthermore, the involved class teachers were interviewed. The interviews aimed to gain insight into students and teachers experiences with the implementation of ICA in their everyday school life. Findings and conclusion ICA was well received by both students and most teachers. It was found that it was necessary for the implementation, that ICA were planned and scheduled in the timetables. The best approach was to prepare students on the timing of ICA at the beginning of lessons and inform them about the following assignments to increase on-task behavior. Regarding creating a supportive environment, it was found that student motivation increased if they were involved in choosing, developing and instructing the ICA's themselves. Furthermore, the variation in ICAs was important to satisfy different needs of the students, and the focus on social connectedness instead of competition was essential regarding the motivation of the less active students.

Jun 09, 11:00 - 12:30: Poster Presentation

P2.01 SIG: Children and families

P2.01.1
ASSOCIATIONS BETWEEN TV IN BEDROOM WITH OUTDOOR PLAY AND OBESITY STATUS AMONG PRE-SCHOOL GIRLS.
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Background: To explore the association between obesity status and weight-related room environment (TV at room) and play outside in preschool girls. Methods: This study included 120 preschool girls (4-6 years-old). Data were collected through parents' questionnaire about (yes /no) children have TV in bedroom and the perception of playing outside. Logistic regression was used to determine the association between BMI and play outside with TV in the bedroom Results: Girls either classified as overweight (OR: 2.6; CI: 1.1-6.0; ps0.034) or obese (OR: 4.0; CI: 1.2-13.2; ps0.02) were more likely to have TV in room compared to their lean peers. Girls whose parents reported less outdoor play ( Conclusions: Our data suggested that having TV in bed room is associated with increased level of obesity even in preschool girls as well as showed an marginal association with playing outside.

P2.01.2
SEASONAL VARIATIONS AND CHANGES IN SCHOOL TRAVEL MODE FROM CHILDHOOD TO LATE ADOLESCENCE: A PROSPECTIVE COHORT STUDY
Larouche R1, Gunnell K1, Bélanger M2,3. 1Healthy Active Living and Obesity Research Group, Children’s Hospital of Eastern Ontario Research Institute, Ottawa, ON; 2Centre de formation médicale du Nouveau-Brunswick, Moncton, NB; 3Département de médecine de famille et de médecine d’urgence, Université de Sherbrooke, Sherbrooke, QC.

Purpose: Active school transportation (AST) is an important source of moderate-to-vigorous physical activity
(MVPA), but few longitudinal studies have examined relationships between AST and MVPA longitudinally. Furthermore, while AST may be subject to seasonal variations, the evidence is inconclusive and predominantly consists of cross-sectional studies. We aimed to address these limitations using data from 13 triennial waves of the Monitoring Activities of Teenagers to Comprehend their Habits (MATCH) cohort study. Methods: 936 children (10.3±0.6 years; 55.2% female) participated in the MATCH study. Participants reported how they traveled to school over the previous 7 days, and school travel mode was categorized as "active", "mixed" (e.g., combination of active and motorized mode) or "motorized". MVPA was assessed with a 2-item self-reported screening tool. Seasonal differences between two time points in AST were assessed with tests of marginal homogeneity. Latent growth modelling was used to examine changes over time in AST (modeled as an ordered categorical variable) and MVPA. To examine sex differences, the starting points and rates of change of AST and PA were regressed on sex. Results: The proportion of children engaging in AST was generally lower in the winter, with significant marginal differences between seasons (plinear.slope=-0.06, p=.005). MVPA increased (Mlinear.slope=.10, pqquadratic.slope=.11, pr = .13, p=.03), but decreases in AST over time were faster when participants reported higher than average MVPA at Time 1 (r=-.15, p=.04). Boys had higher MVPA at Time 1 (β=.11, p=.01) and slower decreases in AST over time (β=.15, p=.01). Conclusions: The prevalence of AST decreased from childhood to adolescence and this decline was steeper in girls. Many children used less active travel modes in the winter. The decline in AST was steeper among participants reporting higher MVPA at baseline, although this finding should be interpreted cautiously given the rather crude measure of MVPA. These results suggest a need for interventions to promote AST among youth.

P2.01.3
MATERNAL SENSITIVE DETERMINANTS OF NUTRITIONAL STATUS AMONG CHILDREN BELOW FIVE YEARS IN OBUNGA SLUMS
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Malnutrition remains a major proxy determinant of child mortality common among under five children and account for about one-third of malnourished cases worldwide. This chronic condition is a severe public health problem in sub-Saharan Africa that requires continuous critical attention. This study explored maternal sensitive factors that are important in the etiology of malnutrition with urban slum setting. The study was conducted among 400 eligible households systematically samples at random. Analysis was based hierarchical regression with principal axis factoring for selective variables. Psychosocial indicators did not have any observable association with nutritional status. Seeking immediate medical attention from the nearest health facility (HSB-1) and Average duration of introducing a child to the first liquid in hours (FP-4) significantly reduced stunting. Clean my hands with running water and soap before feeding a child (FHP-1) significantly reduced stunting among other indicators. HSB-1 somehow increased stunting. Wasting was significantly reduced by HSB-1 but increased by consulting a private doctor to examine a child (HSB-3). Underweight had no association at all with all indicators of maternal factors except at crude odds ratio level where FHP-1and HSB-1 were somewhat associated with underweight. In conclusion, this study revealed that food hygiene practice, health seeking behavior and feeding practice were all significant associates of stunting (pKeywords: Maternal, Malnutrition, Nutritional Status, Children Under Five, Slums

P2.01.4
HOUSEHOLD CRITICAL CORRELATES OF CHILD NUTRITIONAL STATUS WITHIN OBUNGA SLUM IN KISUMU, KENYA

Malnutrition has both short and long term effects and may lead to increased mortality among children under five years. It may also lead to impaired development, poor educational achievement and poor economic productivity if not addressed at an early stage of child growth and development. Rapid growth of urban informal settlement is being experienced in Kisumu city in Kenya and this slum is characterized by overcrowding, filth, inadequate water supply, poor drainage and poverty. These characteristics have negative impact on general health and may compromise nutritional status of children within this setting and eventually staggered economic development. This menace could be attributed to household factors such as food security measures, food consumption frequency and diet pattern, parasitic infection, family size and family diversity. This study attempted to explore the competitiveness of household factor correlates as key predictors of nutritional status. The study targeted a sample...
of 400 households made up of caregivers with children between 6-59 months as sampling units. The study employed use of structured questionnaire with key variables under focus explicitly covered and anthropometric assessments techniques. Statistical analysis explored use of risk estimated odds ratios in multivariate logistic regression. The results revealed that parasitic infections, family size and diet diversity score revealed significant influence on both HAZ and WHZ (p Key words: Household factors, correlates, child nutritional status, slum

P2.01.5
OBESITY AND OVERWEIGHT IN FIRST YEAR UNDERGRADUATES IN TWO TERTIARY INSTITUTIONS SOUTH EAST, NIGERIA

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Purpose: University students are often a neglected group in health intervention studies. When young adults leave home and adjust to independent living, apparently good dietary habits gained from home declines. This study, therefore, assessed the prevalence of obesity and overweight among fresh university students, South East Nigeria.

Methods: The study was cross sectional survey involving 330 randomly selected undergraduates in two universities (Ebonyi State University-EBSU and Federal University of Technology, Owerri-FUTO) in South East, Nigeria. A pre-tested and validated questionnaire was used to obtain information on socio-demographic characteristics and dietary habits of the undergraduates. Anthropometric measurements (weight and height) were taken and Body Mass Index calculated. Descriptive statistics and Chi square were performed using SPSS version 20. Results: About 42.2% of the undergraduates were males, while 57.8% were females. The prevalence of obesity and overweight were 12.4%, and 35.5%, respectively. Higher rate of obesity was found among females ((X2=10.871; p2=18.381; p2=27.179; p

Conclusion: Prevalence of obesity was high. There is need to focus on interventions to improve good dietary and lifestyle practices among this population group. Keywords: Obesity, overweight, university students, Nigeria

P2.01.6
EXPLORING THE FOOD CHOICES OF MUSLIMS ARAB IMMIGRANTS IN CANADA

Aljaroudi Rana1, Horton Susan2. 1School of Public Health and Health Systems, University of Waterloo, Waterloo,ON. Objectives: This study aimed to investigate Arab Muslim immigrants' lived experiences and perceptions around food choice, including whether participants maintained their traditional diet or incorporated more Western foods.

Methods: This study utilized the phenomenological methodology with a sample of Arab Muslim mothers in Canada. Data were collected in Arabic by semi-structured individual interviews, focusing on food availability, meal preparation and food choices in Canada. Data were translated into English and coded to facilitate analysis. An adapted version of the Male Arab-American Acculturation Scale was also used to assess participants’ attitudes towards acculturation. Results: Arab Muslim immigrants to Canada strive to maintain their traditional eating practices and food choices. Participants reported that traditional foods were available at supermarkets, but they expressed concerns over the cost of food and the general lack of flavour and freshness. They felt that traditional foods offered a link to their cultural identity and that, as mothers, they had an important role to play in feeding their families while maintaining cultural ties. Participants reported generally avoiding fast food. Most did not take their families out to restaurants. While some were open to Western foods, some expressed resistance. There were varying levels of adherence to religious dietary observances. Conclusions: As Arab Muslim immigrants to Canada become acculturated, they tend to try to balance the maintenance of their traditional dietary habits with being open to Western foods, although some individuals resist the Western influence more than others.

P2.01.17
THE PROMOTION OF WATER DRINKING BEHAVIORS AMONG CHILDREN IN A CARIBBEAN ISLAND: A SOCIAL NETWORK RANDOMIZED CONTROL TRIAL

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Purpose: Health related behaviors—such as beverage consumption—are spread socially to other individuals within a certain network environment. Therefore, the purpose of this study was to conduct a school-based social network
intervention promoting water consumption in a Caribbean island, Aruba. It is hypothesized that children in the intervention group will consume (a) more water and (b) less sugar sweetened beverages (SSB) after the intervention compared to the control group. This study contributes to scientifically validated knowledge in an understudied geographic area and contributes to the emerging field of social network-based health interventions. Methods: A school-based randomized controlled trial design was deployed among 377 children (age M=11; girls 54%). The primary schools and their children were randomly assigned to a treatment group (n=192) and control group (n=185). The intervention lasted eight weeks and consisted of children being exposed to peer influencers who were trained to promote water consumption. At pre-intervention, these influencers were selected through sociometric questions. At pre- and post-intervention, children self-reported their consumption of water and SSBs and their intention to drink more water and less SSBs. Descriptive statistics and two-way repeated measures MANCOVA’s were deployed for data analysis. Results: A significant multivariate interaction effect between condition and time (V=.035, F(4, 344)=3.130, p=.015, pη2=.035) was found. Furthermore, a significant multivariate main effect was found for condition (V=.037, F(4, 344)=3.336, p=.011, pη2=.037) on the four dependent variables, but not for time (regardless of condition) (V=.011, F(4, 344)=.982, p=.417, pη2=.011). The univariate outcomes of the multivariate model indicated significant interaction effects between condition and time for SSB consumption (F(1, 347)=4.721, p=.030, pη2=.013) and SSB drinking intention (F(1, 347)=9.096, p=.003, pη2=.026) but not for water consumption and water drinking intention. Conclusions: Findings indicate that children translated the peer influence to drink water into drinking less SSB. The lack of results for water consumption might be explained by the ‘uncool’ image of water drinking on Aruba, making it challenging to promote against the heavily promoted SSB-brands. Overall, however, this school-based social network behavioral change intervention did target healthy drinking behaviors effectively and merits more attention to be strengthened in the future.

P2.01.8
CHANGES IN DIET FROM CHILDHOOD TO ADOLESCENCE AND ASSOCIATIONS WITH SCHOOL LUNCH CHOICE AND SCHOOL NUTRITION ENVIRONMENT
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Purpose There is limited evidence on how diet changes over the transition from childhood into adolescence, and the relative contribution of school-time consumption and school-level variables to these changes. In this study we investigated changes in diet from age 10 years (2007) to age 14 years (2011), disaggregated by intake within and outside school hours, and examined the association of students’ school lunch choice and the school nutrition environment with intake of macronutrients and selected food groups. Methods 351 participants from a prospective observational study with valid diet diary data at both baseline (age 10 years) and follow-up (age 14 years) were included. Multi-level regression models were fitted for absolute or change in nutrient and food group intakes, accounting for clustering by primary and secondary school attended as appropriate, with adjustment for covariates and mis-reporting. Results From age 10 to age 14 years children showed a decrease in intake of fruits (-3.13 gram per Megajoule (g/MJ) (SE 1.04)) and vegetables (-1.55 g/MJ (SE 0.46)) and an increase in sugar sweetened beverages (SSBs) (4.66g/MJ (SE 1.87)) and fries (1.31g/MJ (SE 0.39)) consumption. The contribution of snack foods, SSBs, and fries, but also vegetables to total energy intake was much greater outside school compared to within school hours. Change from non-school lunch to school lunch consumption, compared to maintaining non-school lunch consumption over this period, was associated with a decreased consumption of savoury snacks (-8.32g/day (SE 2.03)) but also an increased consumption of fries (12.8g/day (SE 4.01)) and a decreased consumption of fruit (-8.32g/day (SE 11.02)) during school time. Few, and inconsistent cross-sectional associations between school nutrition environment and food group intakes were identified. Conclusions Associations between school lunch consumption and diet were mixed, suggesting that efforts to encourage school lunch take-up need to be accompanied by ongoing efforts to improve school lunch choices to meet food and nutritional guidelines. In addition efforts are needed to improve adolescent diet outside of school, as changes to the school nutrition environment and to foods consumed at school may have limited impact on total diet.

P2.01.9
CHILDREN’S EATING BEHAVIORS AND MOTHERS’ FEEDING PRACTICES DURING AN AD LIBITUM BUFFET MEAL: RESULTS FROM THE GUSTO COHORT
Purpose: Children’s eating rate has been shown to be associated with food intake and body composition, yet less is known about the role of mothers’ feeding practices. We examined this relationship during an ad libitum meal.

Methods: 155 mother-child dyads from the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort participated in an ad libitum buffet lunch. Recordings of this meal were later coded by trained researchers for maternal feeding practices (prompts to eat, talking about food, telling to eat faster or slower, restricting child intake), and children’s eating behaviors (oral exposure time, eating rate). Oral exposure duration, eating rate, and combinations of these factors were correlated with mothers’ feeding practices and children’s energy intake. Results: A longer oral exposure time was associated with mothers’ greater use of prompting to eat, restriction of intake, and hurrying or slowing the child (r=0.22-0.27; all p<0.05). Mothers of faster eaters were more likely than mothers of slower eaters to ask children to slow down (p=0.036), but there was no difference between groups for use of hurrying. Children who took fewer breaks during eating were also more likely to be asked to slow down (r=0.19, p=0.016). Mothers did not react to fast eating when oral exposure time was shorter. In children with both fast eating rates and long oral exposure times, mothers were most likely to restrict intake and try to slow their children down. Mothers used more autonomy-supportive prompts to eat when oral exposure time was longer, regardless of eating rate. Fast eaters consumed more energy than slow eaters, and fast eaters whose mothers also talked about food during the meal consumed the most energy. Conclusions: Mothers seem to only take action to slow down or reduce the intake of children with faster eating rates during meals with longer oral exposure times. However, as these children were still classified as faster eaters with greater intakes, the impact of this prompting may be limited.

P2.01.10
REVISION AND VALIDATION OF A SOCIAL COGNITIVE THEORY-BASED SURVEY ASSESSING HEALTHY EATING AND PHYSICAL ACTIVITY WITH ADOLESCENTS
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Purpose: The PAWS (Peer-education About Weight Steadiness) Club is a healthy lifestyle program, grounded in Social Cognitive Theory (SCT), and focused on healthy eating and increased physical activity. It is currently being implemented in middle schools in Urbana-Champaign, IL and surrounding areas. Participants experienced difficulties completing an 18-page SCT questionnaire to assess food and physical activity behaviors, which encompassed the constructs of self-efficacy, social support, self-regulation, and outcome expectations. The questionnaire was reformatted for clarity and brevity by reducing the number of pages, the number of questions and the response category options. A validation study was conducted to assess if the revised version of the SCT questionnaire would be better received by the target audience for question clarity and survey length. Methods: In August 2016, 21 adolescents, aged 11 to 14 years, participated in the validation study, assessing mediators of healthy eating and physical activity behaviors. The Institutional Review Board at the University of Illinois at Urbana-Champaign approved the study. Participants were recruited from the community by advertising the study in the weekly University email newsletter. Eligible young adolescents and their parents completed assent and consent forms respectively. Participants were randomly assigned to complete the original 18-page questionnaire first followed by the revised 9-page SCT questionnaire (or vice versa). In the period between completing the two questionnaire forms, participants were offered healthy snacks and taken on a 30-minute tour of research laboratories in the Department of Food Science and Human Nutrition. At the end of the 90-minute session, participants completed a brief form regarding questionnaire format preference. Results: Of the 21 participants, 71.4% reported they preferred the newly formatted 9-page questionnaire, while 28.6% preferred the 18-page questionnaire. The 18-page questionnaire took an average of 17.9 minutes to complete, whereas the 9-page questionnaire was completed in an average of 9.8 minutes. Results suggest that the reformatted questionnaire will save time and has a better acceptance rate with the target population of this program. Conclusion: This study...
indicated that the revised survey has become an improved tool for assessing psychosocial mediators of behaviors related to dietary intake and physical activity with adolescents.

P2.01.11 EFFECTIVENESS OF FAMILY-BASED CHILDHOOD OBESITY INTERVENTIONS WITH PARENTAL INVOLVEMENT: AN UMBRELLA REVIEW
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Purpose: Childhood obesity is a global public health concern. Family-based interventions are increasingly common in childhood obesity treatment interventions. Research suggests direct parental involvement can improve child weight-related outcomes. However, current literature reports difficulties in assessing the effectiveness of family-based interventions on children’s weight and weight-related behavior due to the lack of quality programs and the vast diversity of strategies employed. The aim of this umbrella review is to synthesis existing systematic reviews on the effectiveness of existing family-based childhood obesity interventions with parental involvement, and summarize effective strategies to engage parents in behavioral interventions aiming to improve their children’s weight. Methods: Seven databases, including MEDLINE, EMBASE, CINAHL, PsycInfo, Scopus, Database of Abstracts of Reviews of Effects and the Cochrane Database of Systematic Reviews, were searched from 1990 to May 2016 to identify English language publications. Systematic reviews and/or meta-analyses of experimental studies focused on behavioral interventions for obesity treatment that i) targeted children aged ≤18 who were overweight and/or obese, ii) involved at least one parent/carer of the child (family-based), and iii) reported child weight outcome were included. Results: The search found 15755 articles of which 14 reviews (12 systematic reviews, four meta-analysis) met inclusion criteria. The included reviews were published between 1975 and 2015. Across the included reviews, 122 intervention studies ranging from six weeks to seven years post-intervention follow up were conducted in 10 countries. The majority of reviews (64%) reported weight outcomes of children aged 5-12 years, and 93% indicated that family-based interventions were successful in improving child weight and/or weight-related behavior. Five reviews highlighted that parent-only interventions have similar (n=4) or greater (n=1) effectiveness compared to parent-child interventions. Effective interventions included parent-targeted strategies such as behavior change/role modelling, parenting skills (setting boundaries, reinforcement), and child management strategies to encourage positive healthy eating/exercise behaviors in children and/or whole family. Conclusions: Family-based interventions targeting parents alone or with their child are effective for child weight management. Future interventions need to include larger populations, longer intervention duration, and longer-term follow up.

P2.01.12 PAST EXPOSURE TO FRUIT AND VEGETABLE VARIETY MODERATES THE LINK BETWEEN FUNGIFORM PAPILLAE DENSITY AND CURRENT VARIETY OF FV CONSUMED BY CHILDREN.
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Objective: This study examined the link between children’s fungiform papillae density (FPD) and variety of fruit and vegetables (FV) consumed, in the context of past experiences with variety of fruit and vegetables. Methods: FPD counts were obtained from 61 children between 5-9 years old in a school setting. Parents completed food frequency questionnaires indicating the variety of FV consumed by children in the last 7 days. Parents also indicated the number of different FV types the children had tasted in their lifetime. FV were subdivided to reflect differences in their sensory properties. Results: The results showed that children with high FPD who in their lifetime tasted a greater variety of FV ate a larger variety of FV compared to children with high FPD, but with lower past exposure. When examining effects within specific subcategories of fruits and vegetables, this pattern held for non-astringent fruit and showed a trend for non-bitter vegetables. Children with low FPD consumed similar variety of FV irrespective of past experiences with variety of FV. Conclusion: When strong or irritant sensory food properties are not a barrier to intake, higher FPD in the presence of supportive home environment may be beneficial for FV intake.
Individual phenotypic differences may affect responsiveness to environmental factors in children’s intake of FV.

P2.01.13
FAMILY MEALTIME OBSERVATION STUDY (FAMOS): A PILOT STUDY TO UNDERSTAND PRESCHOOLER DIETARY INTAKE & PARENTAL FEEDING PRACTICES THROUGH DIRECT OBSERVATION OF FAMILY MEALTIMES

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Purpose: Parents are the primary influence in children’s lives and research suggests that parental feeding practices may play an important role in shaping children’s dietary intake and weight status. However, inference from existing research is limited because most studies are cross-sectional and use parent report of feeding behaviours. Cross-sectional studies cannot rule out reverse causality (e.g., that child weight status influences parental feeding behaviours) and inaccurate recall or bias may limit the validity of parent-report. Methods: To start to address these limitations, we conducted a mealtime observation pilot study with 12 families with children aged 3-5 years. Between January and June 2015, families video-recorded 3 separate dinnertimes and videos were coded using the Family Mealtime Coding Scheme (FMCS). The FMCS looks specifically at parental pressures to eat, restriction, use of incentives and the child’s acceptance or rejection of parental feeding practices. Results/Findings: Among our sample, 33.3% of participants identified as non-white, and 27.3% of reported a total household income of $45,000 or more. Conclusions: Results from this pilot study will inform a future, larger-scale study. Findings will be essential to the development of ‘best practices’ for feeding young children, optimizing parent education and childhood obesity prevention interventions in Canada.

P2.01.14
MAPPING THE OBSTACLE COURSE: EXPLORING PARENT-REPORTED BARRIERS TO SUPPORTING DIFFERENT CHILD HEALTH BEHAVIOURS

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Background: Parents can influence the health behaviours of their children by engaging in supportive behaviours (e.g., playing outside with their child, limiting recreational screen time). How, and the extent to which parents engage in supportive behaviours may be influenced by perceived barriers. Objective: The purpose of this study is to explore whether the frequency, and types, of barriers to providing parental support are dependent on the type of child health behaviour being supported (i.e., physical activity, recreational screen time reduction, healthy eating, and sleep). Methods: Study participants were 1,216 Ontario parents with at least one child under the age of 18 who completed a Computer Assisted Telephone Interview (CATI) survey about parental support behaviours. Open-ended responses about perceived barriers to parental support were coded, and aggregated to meta-categories adopted from the social-ecological framework (i.e., individual child, individual parent, interpersonal, environmental). Friedman rank sum tests were used to assess differences across child behaviours. Wilcoxon rank sum tests with Bonferroni adjustments were used as a post hoc test for significant Friedman results. Results: There were more barriers reported for supporting physical activity than for any other child behaviour (psAs≥.53). Parents reported more parent level and environmental level barriers to supporting child physical activity versus other behaviours (psAs≥.55), child level barriers were more frequently reported for supporting healthy eating and sleep (psAs≥.57), and interpersonal barriers were more frequently reported for supporting recreational screen time reduction (psAs≥.52). Overall, parents reported more child and parent level barriers versus interpersonal and environmental barriers to supporting child health. Conclusions: Parents experience a variety of barriers to supporting their children’s health behaviours. Differences in types of barriers across child health behaviours emerged; however, some frequently reported barriers (e.g., child preferences) were common across behaviours. Interventions promoting parental support should consider strategies that can accommodate parents’ busy schedules, and relate to activities that children find enjoyable. Creating supportive environments that help facilitate support behaviours, while minimizing parent level barriers, may be of particular benefit. Future research should explore the impact of barriers on parental support behaviours, and effective strategies for overcoming common barriers.

P2.01.15
EXAMINING SCHOOL HOUR DIETARY QUALITY: AN ANALYSIS OF NATIONAL DIETARY DATA FROM THE 2004 CANADIAN COMMUNITY HEALTH SURVEY

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Purpose. Since 2004, all Canadian provinces have issued school-based nutrition guidelines to improve children’s diet quality. Yet few studies have examined dietary practices at school preceding these policy changes. Moreover, methods to address the multidimensional nature of dietary patterns in specific contexts, such as during school hours, remain underdeveloped. This study therefore adapted a validated diet quality index to examine national diet quality outcomes during school hours among Canadian children age 6-17 years. Methods. This study used nationally representative 24-hour dietary recall data from the 2004 Canadian Community Health Survey (CCHS) to examine foods consumed during school hours (9:00-14:00) on school days. A School-Healthy Eating Index (School-HEI) was adapted from the Healthy Eating Index–Canada (a validated composite measure which assesses dietary quality for a full day) by scaling its scoring criteria using the caloric contribution of foods consumed during school hours (33%). Dietary intakes during school hours and School-HEI scores were assessed using descriptive statistics. Associations between School-HEI scores and socio-demographic characteristics were explored using linear regression models. Results. In 2004, children (n=4,827) consumed on average, 746 kcal, 2.5 servings of grain products, 1.5 servings of vegetables/fruit (including fruit juice), 0.6 servings each of milk/alternatives and meat/alternatives during school hours. Children also consumed 175 kcal from ‘other’ foods (typically minimally nutritious foods such as candy bars and salty packaged snacks) during school hours. Mean School-HEI was 53 points (possible maximum score=100), suggesting that average diet quality during school hours “requires improvement” (defined as School-HEI scores between 50-80 points). Mean (±SE) School-HEI was significantly lower for adolescents age 14-17 (49±0.6) than for children aged 9-13 (54±0.5) and 6-8 years (58±0.7). Differences in S-HEI scores were poorly explained by other socio-demographic characteristics examined here, although parental education and province of residence emerged as significant correlates of school-hour dietary quality. Conclusions. These findings suggest room for improving the quality of foods consumed during school hours in Canada in 2004. Next steps will be to examine how diet quality at school has changed over time by comparing 2004 results with findings from the CCHS 2015, following release of those data in March 2017.

P2.01.16
ASSESSMENT OF TEST-RETEST RELIABILITY AND CORRELATES OF SCREEN TIME IN CHINESE BOYS AND GIRLS

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Purpose: To explore the individual and environmental correlates of screen time (ST) and assess test-retest reliability among school-aged boys and girls in China. Methods: A total of 1,066 participants were included in the final analysis. The intra-class correlation coefficient (ICC) and Bland Altman plots were used to describe the reliability of the test-retest. To access the individual and environmental correlates of ST, a mixed-effects model was used, which included the variables of age, grade, school, class, media accessibility, and accompanying parents. A logistic model was applied to explore the correlates of prolonged ST (≥2 hours/day). Results: The ICCs of six of the eight indices (except for study-based ST in boys and non-study-based ST in girls) were more than 0.7 (acceptable level), and the level of variance increased marginally as the level of ST increased. Prolonged ST was observed in 14.7% of boys and 8.9% of girls. Of the total ST, weekend and mobile phone/pad use represented 80% and 40%, respectively. A positive relationship with a dose-effect was observed between media accessibility and ST in both boys and girls (p ≥0.10 hours, odds ratio = 2.434, p Conclusions: The results, based on data collected using our reliable questionnaire, indicated that boys, weekend use, greater media accessibility, and less time accompanied by parents were the strongest predictors of prolonged ST. New devices such as mobile phones and pads may have already become the main devices for screen viewing in children. Moreover, development of new and effective strategies for ST-related interventions is required in the future.

P2.01.17
PARENTAL PERCEPTIONS FAVOR WALKING COMPARED TO CYCLING TO SCHOOL AMONG ADOLESCENTS IN DUNEDIN (NEW ZEALAND)

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Objective: Parental support for active transport, perceptions of safety, confidence in the child's cycling skills and perceived convenience of driving influence how children and adolescents travel to school and may be context-specific. This cross-sectional study examined parental perceptions of active transport to school for adolescents in Dunedin, New Zealand. Methods: Parents (n=136; age: 47.5±5.1 years; 79.7% females; living ≤4 km from their child’s school) completed a survey about their child’s (age: 13-18 years; 47.8% boys) transport to school habits and parental perceptions of walking/cycling to school. Results: Most adolescents travelled to school on foot (50.0%) or by car (31.6%) whereas only 4.4% cycled. Most parents believed they should be involved in walking/cycling to school decisions (36.0% parent-only, 28.0% parent-and-adolescent and 22.4% adolescent-only decisions). Parents reported too much traffic (66.2%), dangerous crossing(s) (65.4%) and no bike lanes (68.1%) on the route to school, too many cars at school (59.7%), adolescents carrying too much stuff (56.0%) and driving their child to school being convenient (39.7%). Compared to walking, parents perceived cycling to school as more unsafe (8.1% walking, 52.8% cycling) and less desirable (61.0% walking, 35.3% cycling) and preferred their child not cycling to school (14.7% walking, 52.9% cycling) (all p < 0.05). Conclusions: Parents reported multiple barriers for adolescents’ active transport to school and favored walking compared to cycling. Future interventions should address parental barriers for active transport, and especially for cycling to school among adolescents, while taking into account the perceived parental responsibility in decision making about transport to school.

P2.01.18
KIDS, YOU DON’T NEED ELECTRICITY TO PLAY!: FINDINGS FROM THE BUILT ENVIRONMENT AND ACTIVE PLAY STUDY IN THE WASHINGTON DC AREA
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Purpose: While research regarding the relationship between built environment (BE) and youth’s physical activity is an expanding field, it is also important to consider the association between BE and youth’s sedentary behavior (SB). The Built Environment and Active Play (BEAP) Study examined the association of children’s SB in the Washington, D.C. metropolitan area (DMV) with features of BE, parental rules (PR), bedroom electronic presence (EP) and demographics (DE). The BEAP Study is the first study of its kind to be conducted in the DMV, an area of unique racial, ethnic, income, educational, and origin of birth diversity. Methods: With this cross-sectional study, a questionnaire was administered through mail delivery in 2014 to parents of children (7-12 years old) residing in the DMV. SB was assessed by two questions/subparts: (1) “...how much time/day your child...is mostly sitting/not-moving-around?” (SB-Hours); (2) "...how many days/week does your child sit/watch [electronic devices]?” (SB-Days). BE, EP, PR, and DE data were obtained through questionnaire items and ordered logistic regression models were used to examine whether these variables predicted SB. Results: The BEAP Study population (n=144) included a uniquely diverse population of children with 23.7% African Americans and 10.4% Asian Americans. The average age was 9.7 years (SD=1.6). Results found that 38.1% of sample reported daily solitary SB with car riding being the most frequently reported type of SB by hours/day. It was shown that children living on streets without a dead-end/cul-de-sac exhibited a higher odds in the number of SB-Hours using electronic media [2.49 (CI: 1.23, 5.04)] and having no television in a child’s bedroom predicted a lower odds in the number of SB-Days [0.021 (CI: 0.002, 0.223)] and SB-Hours [0.059 (CI: 0.012, 0.298)]. Non-Hispanic children were also found to have higher odds in the number of solitary SB-Days when parental rules of electronic use were modeled [11.13 (CI:1.38, 89.55)]. Conclusions: Our findings support the important role of home neighborhood built environment, bedroom electronic presence and absence of parental rules on childhood sedentary behavior.

P2.01.19
FOOD PARENTING PRACTICES FOR 5 TO 12 YEAR OLD CHILDREN: A CONCEPT MAP ANALYSIS OF EXPERTS INPUT
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Introduction: Parents are an important influence on children's dietary intake and eating behaviors. However, the
lack of a conceptual framework and inconsistent assessment of food parenting practices limits our understanding of which parenting practices are most influential on children. The aim of this study was to develop a food parenting conceptual framework using systematic approaches of literature reviews and expert input. Method: A previously completed systematic review of food parenting instruments and a qualitative study of parents informed the development of a food parenting item bank consisting of 3632 parenting items. The item bank was reduced to 110 key food parenting concepts using binning and winnowing techniques. A panel of 32 experts in parenting and nutrition were invited to sort the food parenting concepts into categories that reflected their perceptions of a food parenting conceptual framework. Multi-dimensional scaling produced a point map of the sorted concepts and hierarchical cluster analysis identified potential solutions. Qualitative modifications were used to identify two potential solutions, with additional feedback from the expert panel requested. Results: The experts came from 8 countries and 25 participated in the sorting and 23 provided additional feedback. A parsimonious and a comprehensive concept map were developed based on the clustering of the food parenting constructs. The parsimonious concept map contained 7 constructs, while the comprehensive concept map contained 17 constructs and was informed by a previously published content map for food parenting. Most of the experts (52%) preferred the comprehensive concept map, while 35% preferred to present both solutions. Conclusion: The comprehensive food parenting conceptual map will provide the basis for developing a calibrated Item Response Modeling (IRM) item bank that can be used with computerized adaptive testing. Such an item bank will allow for more consistency in measuring food parenting across studies to better assess the impact of food parenting on child outcomes and the effect of interventions that target parents as agents of change.

P2.01.20
THE TYPES OF FOODS SERVED AT FAMILY DINNER, FOOD HEALTHFULNESS AND ASSOCIATIONS WITH CHILD AND PARENT DIETARY QUALITY AND WEIGHT OUTCOMES
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Purpose: Although family meal frequency is positively associated with psychosocial and health outcomes, less is known about the associations between the types of foods served and their preparation methods with important dietary intake and weight outcomes of children and parents. Methods: The current study examined foods prepared at home for family dinner among families of 8-12-year-old children using a validated Evening Meal Screener over seven consecutive evenings. Assessments were made whether leafy green salad and fruit were served at home-prepared meals as well as the overall healthfulness of the meal (i.e., score based on types of foods offered, preparation methods and added fats). Study staff measured child and parent height/weight. Associations were examined between foods prepared for dinner and child dietary quality (Healthy Eating Index-2010) and body mass index (BMI) z-scores, and parent fruit and vegetable (FV) intake and BMI, adjusting for race/ethnicity and parent education using general linear modeling and linear regression analyses. Results/findings: Serving leafy green salad at a home-prepared family dinner was positively associated with child dietary quality (p=.04) and parent FV intake (p=.03) and inversely associated with child BMI z-score (p=.02) and parent BMI (p=.02). Overall meal healthfulness scores were positively associated with child dietary quality (p=.007) and parent FV intake (p=.02) but not weight outcomes. Conclusions: Teaching healthful food preparation techniques for foods served at family meals may improve healthful dietary intake for families. Encouragement to serve leafy green salads at family meals may be a good target for promoting positive dietary and weight outcomes among children and their parents.

P2.01.21
EATING IN THE ABSENCE OF HUNGER IN PREGNANT WOMEN IN THE PRESENCE OF HIGHLY-PALATABLE VERSUS NORMO-PALATABLE FOODS: CONSISTENT BEHAVIOR, VARYING IMPACT
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Purpose: Eating in the absence of hunger (EAH), the behavior of consuming highly-palatable foods (typically energy-
and Children’s Hospital, Singapore; Loo Lin School of Medicine, National University of Singapore; Godfrey Keith

SOCIODEM P2.01.23
reinforcement pathology”) in obesity.

especially when self
to better understand

impulsivity Scale (BIS
reinforcement value. Self
Choice Procedure (MCP) and th
assessing symptoms of addictive

Pregnancy (≤12 weeks). Food reward sensitivity measures included the Modified Yale Food Addiction Scale (MYFAS)
Pregnancy Eating Attributes (PEAS) study, a cohort of 458 women (mean±SD BMI 27.2±6.9) enrolled in early

moderated the relationships of food reward with BMI. Methods: Data are from the baseline assessment of the

examined associations among four measures of food reward sensitivity, and investigated their associations with

BMI during early pregnancy. EAH in the presence of only normo-palatable foods (e.g., nutrient-dense plant foods) has not
been examined. This study investigates whether EAH in pregnant women differs in the presence of highly-palatable
versus normo-palatable foods. Methods: Pregnant women in their 2nd trimester (n=46) completed two EAH
protocols in which foods were presented as a taste test following a standardized meal providing ~50%>estimated
daily energy needs. Two conditions (highly-palatable (HP): brownies, cookies, peanut butter cups, potato chips,
nacho chips, popcorn; normo-palatable foods (NP): grapes, apples, clementines, tomatoes, unsalted peanuts,
carrots) were presented in counter-balanced order with 1-week wash-out. EAH foods were presented in equal
volumes across conditions, representing 2836kcal in the HP-condition and 990kcal in the LP-condition. Linear mixed
models tested the effect of condition (HP vs. LP), visit number (2 vs. 1), and their interaction on EAH intake (energy,
EAH-kcal; percent offered, EAH-%) overall and separately for sweet and savory foods. Results: EAH intake was
16.4±7.8% (468.7±223.3kcal) in the HP-condition and 18.1±8.1% (120.9±66.5kcal) in the NP-condition; a main effect
of condition was observed on overall EAH-kcal (β±SE=354.1±50.0, p Conclusions: In the absence of hunger, pregnant
women consumed more energy when presented with highly-palatable versus normo-palatable options, despite
consuming similar proportion of foods offered across conditions. Findings support previous research showing
preference for sweet foods during EAH. The impact of EAH tendency on eating behaviors in pregnancy may depend
on the nutritional characteristics of foods in the environment.

P2.01.22
FOOD REWARD SENSITIVITY, SELF-CONTROL, AND THE HOME FOOD ENVIRONMENT: ASSOCIATIONS WITH BMI
DURING EARLY PREGNANCY
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Purpose: Neuroimaging research suggests that food reward sensitivity – the physiological reward response to food
stimuli – may influence diet and body weight. Multiple self-report measures have been developed to assess aspects
of this construct; however, the extent to which these reflect the same underlying dimension is unknown. This study
examined associations among four measures of food reward sensitivity, and investigated their associations with
BMI in pregnant women. We further examined whether self-control or an obesogenic home food environment
moderated the relationships of food reward with BMI. Methods: Data are from the baseline assessment of the
Pregnancy Eating Attributes (PEAS) study, a cohort of 458 women (mean±SD BMI 27.2±6.9) enrolled in early
pregnancy (≤12 weeks). Food reward sensitivity measures included the Modified Yale Food Addiction Scale (MYFAS)
assessing symptoms of addictive-like eating; the Power of Food Scale (PFS), measuring hedonic hunger; the Multiple
Choice Procedure (MCP) and the Relative Reinforcing Efficacy Questionnaire (RREQ), both reflecting food
reinforcement value. Self-control was measured by the Delaying Gratification Inventory (DGI) and the Barratt
Impulsivity Scale (BIS-15). Participants completed the Home Food Inventory (HFI), which was used to calculate
obesogenic HFI score. Bivariate associations were assessed using Kendall Tau b correlation coefficients. Regression
analyses examined modification of the association of food reward sensitivity measures with BMI (from measured
height and weight) by self-control and the home food environment. Results: MYFAS was weakly correlated with PFS,
(b=0.17, p Conclusions: Weak associations among alternative measures of food reward sensitivity indicate the need
to better understand the constructs they measure. Food addiction scores were associated with higher BMI,
especially when self-control was low, supporting the relevance of executive function and food reward (i.e., “food
reinforcement pathology”) in obesity.

P2.01.23
SOCIODEMOGRAPHIC DETERMINANTS OF SCREEN VIEWING TIME IN SINGAPOREAN TODDLERS
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that UK primary schools should embed and integrate PATL within the classroom environment. A small scale pilot accelerometer study showed a lack of sustained PA. Conclusions: The research thus far concludes that the complexity of curricula and time and resource pressure are contributing factors. Pupils would welcome more opportunities to engage in physical activity in classrooms as it is more fun and as such more likely to help remember core concepts. Results: Early results show that teachers are welcoming of PA in classrooms but unsure of the most effective methods of implementation. Complexity of curricula and time and resource pressure are contributing factors. Pupils would welcome more physical activity in classrooms as it is more fun and as such more likely to help remember core concepts. Results of a small scale pilot accelerometer study showed a lack of sustained PA. Conclusions: The research thus far concludes that UK primary schools should embed and integrate PATL within the classroom environment through more focusing on realist methods.

A REALIST EVALUATION OF EDUMOVE; AN INTEGRATED PHYSICALLY ACTIVE TEACHING AND LEARNING (PATL) MODEL

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Objectives: The childhood physical inactivity crisis has been well documented over recent times and much research has looked to address the problem and the interrelated issues (Designed to Move 2012; Mandic et al 2012). The school environment has been a regular focus for interventions (Thul & LaVoi 2011; Sproule et al 2013). The purpose of this PhD research is focused on an evaluation of a more physical activity (PA) biased curriculum delivery in UK primary school classrooms using EduMove products and programmes to ascertain what works for whom under what circumstances and why in more physically active teaching and learning classroom environments. This research aims to to address physical activity and health outcomes and increasing levels of attainment in core subjects through the following: · To use specified schools to understand the current landscape of classroom based movement and PA provision for primary school aged children. · To understand and analyse the perceptions and attitudes of all vested interests around a more movement centred pedagogy. · To undertake a realist evaluation of an integrated physically active teaching and learning (PATL) model. Methods (including type of data collected): A realist method (Pawson and Tilley 1997) of qualitative data collection will be employed focusing on realist interviews of teachers and active pupil focus groups in order to test programme theory around EduMove products and programmes. A planned accelerometer study will indicate quantitative data. Results: Early results show that teachers are welcoming of PA in classrooms but unsure of the most effective methods of implementation. Complexity of curricula and time and resource pressure are contributing factors. Pupils would welcome more physical activity in classrooms as it is more fun and as such more likely to help remember core concepts. Results of a small scale pilot accelerometer study showed a lack of sustained PA. Conclusions: The research thus far concludes that UK primary schools should embed and integrate PATL within the classroom environment through more
sustained and regular low intensity physical activity (LIPA) to raise attainment and engagement in core subjects and influence health and wellbeing.

P2.01.25
IS BMI A RELEVANT MARKER OF FAT MASS IN 4-YEAR-OLD CHILDREN?: RESULTS FROM THE MINISTOP TRIAL
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Purpose: Childhood obesity is a significant public health issue and the interest in early interventions to prevent or treat obesity through promoting a healthy diet and physical activity in children has increased during the last years. Normally, overweight and obesity in childhood are defined according to age and sex-specific cut-offs of body mass index (BMI). Although the associations between BMI and body fatness is fairly strong in adults and adolescents, corresponding associations have not been fully investigated in preschoolers. Hence, the aim of the present study was to examine the associations of BMI with fat mass and fat-free mass in healthy Swedish 4-year olds. Methods: Baseline data from the population-based MINISTOP trial was utilized for this cross-sectional analysis. Body composition was measured using displacement plethysmography. Fat mass index [fat mass (kg)/height² (m)] and fat-free mass index [fat-free mass (kg)/height² (m)] were used to provide height-adjusted measures of body composition. Results/Findings: The 303 children (168 boys and 135 girls) were 4.48±0.15 years old and had on average 26.0±4.4 % fat mass. Twenty-seven children were classified as overweight or obese. Average height and weight were 107.6±4.2 cm and 18.1±2.5 kg, respectively, and the children were comparable to Swedish reference data according to height (-0.04±0.97) and weight z-scores (-0.07±1.11). BMI had a positive and statistically significant, yet weak, association with percent fat mass (r²=0.144, b=1.24, P²=0.545, b=0.53, P²=0.496, b=0.48, P Conclusions: Our results from a population based Swedish sample show that BMI explains only 14.4% variation in percent fat mass. Importantly, BMI explained slightly more of the variation in the fat-free mass index (54.5%) than it did in the fat mass index (49.6%) and caution is therefore needed when interpreting BMI values in comparable preschool populations. Further studies are needed in other preschool populations where childhood obesity is more pronounced.

P2.01.26
BEYOND WEIGHT STATUS: A HOLISTIC EXPLORATION OF THE WAYS EVERYDAY DIETARY PRACTICES CONTRIBUTE TO ADOLESCENT FEMALES’ OVERALL WELL-BEING
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Objective: Dietary practices have been primarily conceptualized as the amount, types, and timing of consumed foods and macronutrients. While this conceptualization and its operationalization has contributed to our understanding of how these practices contribute to physical health, weight status, and caloric balance, it underestimates and disaggregates the human experience with food. To garner a more holistic understanding of the ways food and related practices coalesce to contribute to overall well-being, we explored everyday dietary practices among a sample of adolescent females. Methods: A mixed methods study using a multiple case study approach was conducted with 14 Black American adolescent female-mother dyads (seven adolescents with obesity). The everyday dietary practices examined included food consumption, planning, acquisition, preparation, and clean-up and were collected using the following methods: interviews, participant-recorded daily diaries, field notes, food frequency questionnaires, and questions from the Youth/Caregiver Impact Questionnaires. Anthropometrics and relationship/household environment questionnaires provided additional contextual description for each case. Analyses were conducted using the Framework Method along with within- and across-case techniques. Results: We identified two categories of everyday dietary practices—Nourishment and Fulfillment. Dietary practices related to nourishment primarily consisted of the "what" and "when" of food consumption, and patterns of the practices (e.g. ratio of fruit, vegetable, and bean consumption to calorically-dense, high fat starch consumption) across adolescents' weight statuses were identified. Dietary findings related to fulfillment examined the degree of contentment a daughter felt in her everyday experiences with food and how well her immediate social environment supported and agreed with her food values. Across case comparisons revealed varying combinations of the categories (e.g. Prominent Nourishment/Limited Fulfillment, Limited Nourishment/Prominent Fulfillment).
Conclusions: In this study, multiple components of everyday dietary practices contributing to the overall well-being among adolescent females were identified. As it relates to food, neither "Nourishment" nor "Fulfillment" alone can plausibly be all that matters for an adolescent's entire health and well-being. To effectively address the obesity epidemic and improve overall well-being, "Nourishment" and "Fulfillment" should be critical elements of both research and interventions. This includes developing new theoretical models, accurate measurement tools, and holistic interventions that address these key constructs.

P2.01.27
WHEN CULTURE SPEAKS: IMMIGRANT INDIAN FAMILIES' PARTICIPATION IN SPORT AND PHYSICAL ACTIVITY
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In Sport and Physical activity (PA), cultural features pose a challenge to behaviour change, particularly for South Asian immigrants who anchor to their cultural beliefs and practices in a western society. As most research recommendations have involved western communities, these may be of limited value when implementing interventions for increasing participation rates of non-western communities. With cultural influences largely unexplored, achieving success in implementing plans, policies and interventions remains a challenge. In New Zealand (NZ), the growth of social promotion of diverse ethnic communities in sport and PA is made evident with organizational plans and interventions reflecting goals that increase Maori and Samoan participation. Recently, the Indian population has become the most rapidly growing ethnic minority community in NZ. This necessitates the development of opportunities (e.g., facilities, programs, initiatives) adhering to the principles of partnership, participation, and protection that require identifying how Indian cultural values, practices and lifestyle factors impact their participation in NZ’s PA cultures. Our research is the first to explore the experiences of immigrant Indian families participation in NZ’s PA cultures. As an exploratory case study with embedded units, adopting the interpretive research paradigm, we are capturing in-depth, the values, beliefs, perceptions, practices and behaviours of each family member (parents, children) using interviews, conversational transcripts and self-reflective journals. This research highlights Indian perceptions of PA, and socio-cultural factors (school, organizational plans, network systems) that impact participation rates of Indian children and parents in NZ. The study unravels what current inter-generational practices and beliefs are impacted by immigration and how Indian perceptions have changed in relation to their participation in sport and PA. Drawing from a framework of themes are recommendations that will enable policy makers, community organizations, and healthcare providers make informed decisions in developing culturally appropriate services for successful behaviour modification at community levels involving Indians. As is a vital step in the planning of successful outcomes, it is imperative that cultural values and belief systems be well understood and reflected when implementing systems that engage Indian communities.

P2.01.28
EXPLORING THE PREDICTORS OF CHILDHOOD SEVERE OBESITY IN LOW-INCOME, ETHNICALLY DIVERSE CHILDREN IN THE TX CORD STUDY
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Objective: The goal of this study was to examine the predictors of childhood severe obesity in a low-income population in Texas. Methods: This cross-sectional analysis examined baseline data from the Secondary Prevention component of the Texas Childhood Obesity Research Demonstration (TX CORD) study (n=391). Using self-administered surveys, data were collected from parents of children aged 2-12 years and BMI>85th percentile living in Austin and Houston, TX. Multivariable logistic regression models adjusted for sociodemographic covariates were utilized to examine associations of child’s early-life (large-for-gestational-age (LGA) and predominant breastfeeding at least 4 months), and parental characteristics (maternal obesity, parent’s diet, physical activity, having a television in the room where child sleeps, concern about child’s weight, seeking advice and discussion with a healthcare professional regarding child’s weight) with childhood severe obesity status (BMI>120% of 95th percentile), by age group (2-5 years, 6-8 years, and 9-12 years). Results: 132 (33.8%) children were severely obese in this sample. Among 9-12 year olds (n=143), being LGA at birth (OR=2.7; 95% CI 1.1,6.6), having a morbidly obese mother (BMI>35 kg/m2) (OR=3.9; 95% CI 1.4,10.6), and having someone at child’s clinic talk to parent about weight-related
health problem (OR=3.5, 95% CI 1.4,8.4) were significantly associated with severe obesity. Having a physically active parent (OR=0.2, 95% CI 0.1,1.0; p-value=0.045), and having someone at child's clinic talk to parent about making changes in child's habit to reach a healthier weight (OR=0.2, 95% CI 0.1, 0.9; p-value=0.033) were protective factors in this age group. None of these factors were associated with severe obesity among the 6-8 and 2-5 year olds. However, having a parent seek advice from a healthcare professional about child's weight was a risk factor in both of these age groups (6-8 years: OR=3.0, 95% CI 1.2, 7.5; 2-5 years: OR=3.8, 95% CI 1.1, 13.8). Conclusions: In this low-income, predominantly Hispanic population, LGA, and maternal morbid obesity were risk factors and having physically active parent was a protective factor of severe obesity among children aged 9-12 years. Promoting physical activity in parents could be an important intervention strategy for addressing child obesity.

P2.01.29
DOES FOOD FUSSINESS MODERATE THE ASSOCIATION BETWEEN PARENTAL FEEDING PRACTICES AND BMI AMONG LOW-INCOME HISPANIC CHILDREN?
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Purpose: To describe the association between food fussiness, child dietary intake, and body mass index z-score (BMI-z) among a sample of low-income Hispanic children. Methods: Baseline data from 86 parents participating in an ongoing community program, Niño's Activos y Sanos, were analyzed. Parents completed a self-reported questionnaire that included socio-demographic questions, the food fussiness scale from the Children's Eating Behavior Questionnaire (CEBQ), 6 scales from the Comprehensive Feeding Practice Questionnaire (CFPQ), and the Healthy Children Healthy Families Behavior-Checklist, which asked about child's frequency of consumption for fruits, vegetables, soda and fast food. Parents and children's weight were measured using standardized protocol. BMI z-scores were calculated utilizing CDC references. Multiple linear regression models were used to assess the association between food fussiness, child dietary intake, and BMI-z. Results: Overall, the majority of parents were Hispanic (93%) mothers and were on average 37.7 years old. More than half reported having a high school degree or less (57%), and not being born in the US (80%). Over three-quarters (78%) were overweight or obese. Of the participating children, 53% were male, and 49% were overweight/obese. Food fussiness was negatively associated with reported frequency of family meals (ß=-0.35, p=0.05), frequency of fruit (ß=-0.49, p Conclusion: As has been suggested in previous literature, food fussiness may be an inherent trait and may not modify feeding practices. Food fussiness was a predictor of BMI-z, fruit, and vegetable intake. These findings are comparable to what has been seen in other studies with predominantly white middle class populations. However, food fussiness was negatively associated with frequency of family meals. Future interventions may consider tailoring based on a child's food fussiness.

P2.01.30
EXPLORING FAMILY CONTEXT AS A MODERATOR OF THE EFFECTS OF PARENTING PRACTICES AND PARENTAL MODELING ON ADOLESCENT WEIGHT-RELATED HEALTH OUTCOMES
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Background: The familial environment can influence an adolescent's risk for obesity. However, we do not understand the mechanisms through which parents can influence obesity-related adolescent health behaviours, specifically whether parenting practices (e.g., rules or routines) and/or their own health behaviours are associated with their adolescent's behaviours. Objectives: This study examined, in a sample of overweight/obese adolescents, whether parenting practices and/or parental modeling of health behaviours are associated with adolescents' health behaviours (physical activity (PA), dietary, sedentary and screen behaviours) while considering the moderating effects of parenting style and family functioning. Methods: Baseline data from 172 overweight/obese adolescents and one of their parents who enrolled in a lifestyle modification intervention were analyzed [Mean age=13.1 (1.8); Mean BMI=30.9 (6.0)]. Parent-adolescent dyads completed questionnaires about their PA and screen time, wore an accelerometer for 8 days to objectively measure PA and sedentary time, and completed three 24-hr dietary recalls online. Parents completed questionnaires about their family functioning, parenting practices and styles. Path analysis was used to model interrelationships among the variables in Stata 13. Results: Both parenting practices and
modeling of health behaviours were significantly associated with all adolescent obesity-related health behaviours. However, in many instances, these associations were significantly moderated by parenting style or family functioning. When both parenting practices and modeling of health behaviours were entered in the analyses, both modeling and parenting practices remained significant for PA and screen time; however parenting practices was moderated by parenting style for objectively measured PA (permissive style; p Conclusions: This work suggests that parenting practices and modeling of health behaviours are important; however, it is necessary to consider the broader emotional/relational context into which these are expressed since parenting style moderated these effects. This study provides insight into how parenting style may alter the effectiveness of parenting practices and parental modeling and highlight the need to account for parenting styles to improve the efficacy of current family-based interventions.

P2.01.31
TECHNOLOGY USE BY YOUNG ADULTS IN THE LONGITUDINAL RAINE STUDY IS RELATED TO THEIR TV VIEWING TRAJECTORIES ACROSS CHILDHOOD AND ADOLESCENCE
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Purpose: The purpose of this study was to assess the relationship between TV viewing across childhood and adolescence and technology use at age 22. Methods: Longitudinal assessments (at ages 5, 8, 10, 14, 17 and 20) of TV viewing were made in 2411 members (49% female) of a longitudinal pregnancy cohort (the Raine Study). Latent class analysis was used to identify patterns of TV viewing. Three trajectory classes were identified: consistently high (47.4%), increase over adolescence (37.9%), and consistently low (14.7%). Daily duration of technology use by device and purpose at 22 was assessed by self-report. The association between technology use at 22 and TV viewing trajectory membership was tested using general linear models. Results: Participants in the consistently low TV viewing trajectory had significantly lower overall technology use at 22 years of age (mean(SE) 6.6(0.3) hours/day) than consistently high (7.8(0.2) hours/day) and increase over adolescence (7.6(0.2) hours/day) groups. The consistently low TV viewing trajectory group had lower use of TV, mobile touch screen devices, electronic games and computers for gaming at 22 years of age, but greater use of computers for work (.034 > p > .001). Participants in the increase over adolescence TV viewing trajectory had significantly lower electronic game and computers for gaming use than the consistently high TV viewing trajectory (.040 > p > .002). There were no significant differences between trajectory groups for use of computers for social purposes or general internet use (p>.320). Conclusion: Patterns of TV viewing across childhood and adolescence were related to technology use at 22 years of age in this general population cohort. These findings suggest technology use habits formed over developmentally important childhood and adolescence periods track into adulthood. However the tracking of technology use appeared to vary with the nature of technology use such that pre-adult TV habits tracked positively to adult leisure use, but negatively to use of technology for work purposes. The consistently high TV viewing trajectory group may be at higher risk of sedentary-related health outcomes associated with higher technology use as young adults.

P2.01.22
ESSENTIAL CONDITIONS FOR THE IMPLEMENTATION OF COMPREHENSIVE SCHOOL HEALTH
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Objective: Comprehensive School Health (CSH) is an internationally recognized framework that holistically addresses school health by transforming the school culture. It has been shown to be effective in enhancing health behaviours among students, including physical activity, nutrition, and diet quality, while also improving educational outcomes. Despite this effectiveness, there is a need to focus on how CSH is implemented. Previous studies have attempted to uncover the conditions necessary for successful operationalization, but none have described them in relation to a proven best practice model of implementation that has demonstrated positive changes to school culture and improvements in health behaviours. The purpose of this research was to identify the essential conditions of CSH implementation utilizing secondary analysis of qualitative interview data, incorporating a multitude of stakeholder perspectives. Methods: This research involved inductive content analysis of interviews conducted with teachers (n=45), principals (n=46), and school health facilitators (n=34), all of whom were employed...
within successful CSH project schools in Alberta, Canada between 2008-2013. Results: Themes identified, here called conditions, were divided into two major categories: 'core conditions' (students as change agents, school-specific autonomy, demonstrated administrative leadership, dedicated champion to engage school staff, community support, evidence, professional development) and 'contextual conditions' (time, funding and project supports, background knowledge readiness and prior community connectivity). Core conditions were defined as those conditions necessary for CSH to be successfully implemented, whereas contextual conditions had a great degree of influence on the ability for the core conditions to be obtained. Together, and in consideration of already established 'process conditions' developed by APPLE Schools (assess, vision, prioritize; develop and implement an action plan; monitor, evaluate, celebrate), these represent the essential conditions of successful CSH implementation. Conclusions: This research contributes to the evidence-base of CSH implementation, ultimately helping to shape its optimization by providing school communities with a set of understandable essential conditions for CSH implementation. Such research is important as it helps to support and bolster the CSH framework that has been shown to improve the education, health, and well-being of school-aged children.

P2.01.33
A SYSTEMATIC REVIEW OF THE EFFECTIVENESS OF INTERVENTIONS TARGETING LUNCHTIME FOOD PROVIDED FROM HOME FOR CONSUMPTION BY CHILDREN AT SCHOOLS OR CENTRE-BASED CHILDCARE.

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Objective: This review aimed to assess the effectiveness of interventions targeting lunchtime food and beverages provided from home for children’s consumption during attendance at school or centre-based childcare on; the nutritional content of foods and beverages provided as well as the dietary intake of children. Methods: A systematic search was undertaken in ten databases as well as hand searching to identify randomised controlled trials published between 1995 and March 2016. Two reviewers independently selected, reviewed and assessed the methodological quality of the included papers. Due to differences in outcome measures a random-effects meta-analysis was conducted assessing the impact of included interventions on child vegetable and fruit intake and other outcomes were reported narratively. Results: From the 2280 records identified, nine trials were eligible, five of which were conducted in primary schools and four within the early care setting. Studies were conducted in Australia, Mexico, United Kingdom and the United States and interventions typically included one or more of the following; parent handouts, lunchbox resources, curriculum material and classroom promotional materials. Approximately 4,100 children participated across all trials. We judged all studies as having high risk of bias for at least one domain. Preliminary results suggest that interventions were able to improve the contents of children’s lunchboxes in particular in the provision of vegetables, fruits, wholegrain foods and water. Preliminary meta-analysis results show that of the 4 trials that looked at vegetable intake in packed lunches there was an overall moderate intervention effect (mean difference 13g (95% CI 7 to 19g)). Similarly, of the 4 trials that reported fruit intake in packed lunches the mean difference in lunchtime fruit intake in grams between groups was 10g (95% CI 1 to 20g). Conclusions: Findings suggest that interventions targeting lunchtime intake of children can achieve moderate improvements in diet quality particularly in vegetable consumption.

P2.01.34
PARENTING STYLE, PARENTING PRACTICES, AND PRESCHOOL-AGED CHILDREN’S SUGAR RICH FOOD AND BEVERAGE INTAKE

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Purpose: Parenting styles as well as food parenting practices have been associated with children’s food intake. How parenting style, parenting practices, and children’s food intake are linked to each other is less studied. The aim of this study was to examine whether parenting practices mediated the associations between parenting style and...
children's sugar rich food and beverage intake. Methods: A sample of 173 parents and guardians to 3-6-year old children participated in the study. Data was collected in autumn 2014 using a web-based questionnaire as a pilot study for the DAGIS study (Increased health and well-being in pre-schools). Parenting style (parental warmth, behavioral control, and psychological control), parenting practices (permissive practices for sugar rich food and drink intake, and using food as a reward), and frequency of intake of sugar rich foods and beverages were assessed. The mediation analyses was conducted by using the Hayes process-macro for SPSS. Results: Most respondents were mothers (92%), and 42% had at least a master's degree. The association between psychological control and children's sugar rich food and beverage intake was mediated by food rewards (mediated effect 0.78, 95% CI 0.27 to 1.59) and permissive sugar intake practices (mediated effect 1.12, 95% CI 0.45 to 2.27). Using less food rewards mediated the association between parental warmth and low intake of sugar rich foods and beverages (mediated effect -1.71, -3.52 to -0.61). The study found no correlations between the behavioral control style, food parenting practices and children’s food intake. Conclusions: It seems that parental warmth has favorable effects on children's eating habits, whereas psychological control makes parents more inclined to use parenting practices that link to a higher sugar intake. Food parenting practices, as well as the more distal parenting styles, seem to be important factors when developing interventions aiming to reduce children's intake of sugar rich foods and beverages.

P2.01.35
COMPOSITIONAL DATA ANALYSIS OF THE RELATIONSHIP BETWEEN HEALTH-RELATED QUALITY OF LIFE AND DAILY ACTIVITY BEHAVIOURS IN AUSTRALIAN CHILDREN.
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Objective: To evaluate the relationship between children's health-related quality of life (HRQoL) and their daily activity behaviours, using compositional analysis to account for the inherent codependence between daily behaviours which violates assumptions of traditional linear models. Methods: This study used cross-sectional data from the Australian arm of the International Study of Childhood Obesity, Lifestyle and the Environment. Participants: Children aged 9–11 years (n=435). Measures: HRQoL was self-reported (KIDSSCREEN-10). Daily activity (moderate-to-vigorous physical activity [MVPA], light physical activity, sedentary time and sleep) was determined by 24-hour accelerometer. Analysis: Compositional multiple linear regression. Regression coefficients were interpreted to quantify the estimated difference in HRQoL. Results: HRQoL was positively associated with time spent in MVPA, relative to remaining behaviours (beta=0.31, p=0.04). The compositional model predicted 0.1 units higher HRQoL (T-scores) with 26 min/day more MVPA and 0.1 units lower HRQoL with 20 min/day lower MVPA, when compared to the sample-mean daily activity composition. HRQoL was not associated with light physical activity, sedentary time or sleep duration. Conclusions: Taking all daily behaviours into account, children with higher MVPA had higher HRQoL Findings support physical activity interventions for children’s wellbeing, and suggest the maintenance of physical activity levels is an important area of health promotion.

P2.01.36
THE RELATIONSHIP BETWEEN DAILY ACTIVITY BEHAVIOURS AND ADIPOSITY: FINDINGS FROM TRADITIONAL AND COMPOSITIONAL MULTIPLE REGRESSION MODELS
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The relationship between daily activity behaviours and adiposity: findings from traditional and compositional multiple regression models. Objective: To assess the relationship between daily activity behaviours and adiposity using both traditional and compositional multiple regression models. Study Design: This study used cross-sectional data from the International Study of Childhood Obesity, Lifestyle and the Environment. Participants: Children aged 9-11 years from 12 nations (n=5828). Measures: Daily activity was determined by 24-hour accelerometry. Adiposity indicators were body mass index z-score and waist-to-height ratio (derived from objective measurements), and body fat percentage from impedance analysis. Analysis: Traditional regression models were constructed to iteratively include all but one activity behaviour as explanatory variables (to avoid multi-collinearity). Compositional models included all behaviours, expressed as log-ratios. Results: Traditional models consistently predicted adiposity
associations for moderate-to-vigorous physical activity (negative) and light physical activity (positive), however predictions for sedentary time and sleep differed in direction between models. Compositional models predicted negative adiposity associations for moderate-to-vigorous physical activity and sleep, and positive associations for light physical activity and sedentary time. The results from traditional and compositional models were graphically represented to demonstrate the differences between the two methods of data analysis. Conclusion: Compositional data analysis can be used to predict health associations for a daily activity behaviour, simultaneously accounting for all co-dependent remaining daily behaviours. Traditional regression is unable to include all daily activity behaviours, and thus findings may be spurious.

P2.01.37
THE ASSOCIATION BETWEEN PARENT DIET QUALITY AND CHILD DIETARY PATTERNS IN NINE TO ELEVEN YEAR OLD CHILDREN FROM DUNEDIN, NEW ZEALAND.
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Objective: Previous research investigating the relationship between parents' and children's diets has focused on single foods or nutrients, and not on global diet, which may be more important for good health. Therefore the aim of the study was to investigate the relationship between parental diet quality and child dietary patterns. Methods: A cross-sectional survey was conducted in 2015, in students from school years 5 and 6 (mean age 10.2 ± 0.6 years), and their primary caregiver/parent, from 17 primary schools in Dunedin, New Zealand. The survey collected information on food consumption, physical activity, health and correlates of these in children and their primary caregiver/parent. Anthropometric measurements were also undertaken on child participants. Principal component analysis (PCA) was used to investigate dietary patterns in children and diet quality index (DQI) scores were calculated for parents. Relationships between parental diet quality and child dietary patterns were examined in 401 child-parent pairs using mixed regression models. Results: PCA generated two patterns; 'Fruit and Vegetables' and 'Snacks'. There was no significant relationship between the 'Fruit and Vegetables' pattern and parental diet quality but a one unit higher parental (DQI) score was associated with a 0.03SD (CI: 0.02, 0.04) lower child 'Snacks' score. Conclusions: Lower parental diet quality was associated with a higher dietary pattern score in children that was characterised by a higher consumption frequency of confectionery, chocolate, cakes, biscuits and savoury snacks. These results highlight the importance of parental modelling on the diet of children.

P2.01.38
PROMOTING HEALTHY EATING AND PHYSICAL ACTIVITY IN THE AFTER-SCHOOL CARE SETTING: THE ROLE OF THE CARE PROVIDER
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Purpose: After-school care (ASC) programs have garnered interest in recent years as the hours of 3-6pm is an opportune time for children to engage in healthy behaviours, specifically healthy eating (HE) and physical activity (PA). School’s Out...Let’s Move (SOLMo) is an ASC intervention using the evidenced-based comprehensive school health (CSH) framework to improve HE and PA opportunities for children attending ASC programs. Within the ASC setting, care providers are important influencers with the ability to change the physical and social environments to better promote HE and PA opportunities for children. The purpose of this study is to examine the role of care providers and their ability to promote HE and PA opportunities for children in the ASC setting within the SOLMo intervention. As a subset of a larger study, SOLMo, results will be based on care providers from ASC centres in the Edmonton area. Methods: This multi-method study will utilize both quantitative and qualitative methods. Quantitative surveys (n=40) will be provided, pre- (November 2016) and late-intervention (May 2017), to ASC providers from participating SOLMo sites (n=8). The survey will be used to assess care providers' perceived level of knowledge, confidence, attitudes, and ability to improve HE and PA opportunities for children attending ASC. Focused ethnography will be employed to determine the impact of care provider on children's healthy behaviours within the ASC setting. Direct observation of ASC provider facilitation of HE and PA activities will also be completed at pre-and late-intervention. Semi-structured one-on-one interviews (n=10-15) followed by focus groups will be conducted with ASC providers from intervention sites (n=4) to explore their perceptions of SOLMo during the late-
EATING OUT: DO CONSUMERS KNOW HOW HEALTHY OR NOT KID'S MEALS ARE?

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Objective: Eating out influences healthfulness of the overall diet and is dominated by unhealthy options, especially for children (e.g. nuggets, chips and soft-drinks) – a pattern that could affect eating habits for life. One of the factors that could influence consumer preferences when eating out is the level of knowledge of what is/is not a healthy option. This research investigates how consumer knowledge of healthfulness of kids’ menu options when eating out compares with nutrition experts. Methods: A representative sample of South Australian adults (n=800) who have eaten out with children (under 18 years) in the past 6 months, were asked their perceived healthfulness of typical food and beverage options available on kid’s menus. To capture the typical ordering when eating out, both images and text descriptions were provided to highlight ingredients and cooking method (e.g. grilled calamari, juice with added sugar). Respondents were asked to rate perceived healthfulness of 19 foods and 8 beverages, using an 11-point scale (0=unhealthy, 10=healthy with a "don't know"). To determine the accuracy of consumers' perceived knowledge, a panel of nutrition experts (n=21) also judged the healthfulness of the same foods. Results: Consumers had similar healthfulness judgments to that of experts in foods that were in the middle of the "healthfulness" range (e.g. grilled calamari Mdif=0.68, p=.15, sushi Mdif=-0.75, p=.14). However, for foods and beverages at the extreme ends of the healthfulness scale, consumers overestimated healthfulness of unhealthy foods (e.g. chips (Mdif=-2.97, p<.05) and underestimating healthfulness of healthy foods (e.g. yogurt (Mdif=0.65, p<.05)). Conclusion: Consumers' knowledge of the healthfulness of common kid's menu options could be improved, particularly for the least healthy options, to improve the healthiness of the overall diet. Future research needs to investigate other factors (i.e. availability, kids taste preferences etc) that may be driving ordering of less healthy kids meals.
options when eating out.

**P2.01.41**  
**FOODS APPEARING IN CHILDREN'S TELEVISION PROGRAMMES IN ICELAND AND SWEDEN**  
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Objective Television viewing has been proposed to contribute to increased energy intake. Exposure to advertisements cannot fully explain the associations and studying other television content than advertisements is therefore necessary to better understand the relation between children's TV viewing and dietary habits. The aim of the study is to examine the nature and extent of verbal and visual appearance of food and beverages in children's programmes in Swedish and Icelandic public service television. Methods The study objects are popular TV programmes (domestic and international) in Swedish and Icelandic television, watched by children up to at least 10 years of age. The analysed material consisted of approximately 50 hours total, broadcast during wintertime (the most popular TV viewing months) in the two countries. All appearances and type of food and beverages were coded as well as the context in which the foods are discussed or appeared. Results Among the Swedish results are that high-calorie and low-nutrient foods (HCLN) constituted 19% of all food appearances (n=773) in the television programmes, and fruits and vegetables constituted 39%. More than half of the HCLN foods appearances were with children characters, while only one third of the fruits and vegetables were shown with children. In the Icelandic material, HCLN foods accounted for 26% and fruits and vegetables for 23% of the total food appearances (n=599). HCLN foods appeared more frequently with children characters and in active situations (consumed or craved for) than the food group fruits and vegetables in both countries. Conclusions HCLN foods seem to be represented as more attractive than other foods in the programmes aired in the two countries, by to a greater extent appearing with children. Fruits and vegetables appeared conversely more often with adults than with children. The idea of sweets as appropriate for children and "healthy foods" for adults could thereby be further rooted in the mind of the viewers. The results indicate the potential for public service television to improve the way food and eating are depicted on children's television.

**P2.01.42**  
**CHILDREN AND PARENT PERCEPTION ON AFTER-SCHOOL PHYSICAL ACTIVITY PARTICIPATION**  
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**PURPOSE**: The importance of after-school physical activity (PA) participation had been widely reported. However, the participation of sports-related activity during after-school hours is not in compulsory curriculum, in which the understanding on what are the children and parent perceptions may facilitate future intervention program design. The aim of this study was to examine the perception from children and parent perspective on after-school sports class participation. **METHODS**: Participants were 242 children (mean age = 8.7) studied in five primary schools in Hong Kong. Children's PA level was measured by accelerometer for four normal school days and they reported if they had participated in after-school sports class in the academic year. Data was collected through questionnaires completed by parents (perception on after-school sports participation) and children (self-rate competence) respectively. **ANOVA analysis** was conducted to compare the parent's perception and children's self-rated competence between the group with and without after-school sports class participation. **RESULTS**: From children perspective, children with after-school sports class participation were significantly had higher competence in sports skills (with =2.24; without = 2.02, p **CONCLUSION**: Higher self-rated competence in sports skills from children and positive view in the benefits of after-school sports participation from parent of after-school sports class participants were observed. This information implies the importance of highlighting the benefit of after-school sports participation in promotion and intervention design.

**P2.01.43**  
**WITHDRAWN**

**P2.01.44**  
**'WHAT A GIRL WANTS, WHAT A GIRL NEEDS...?' THE ROLE OF GENDER IN THE ASSOCIATION BETWEEN ACTIVITY PREFERENCES AND OBJECTIVELY MEASURED PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR IN 8-12 YEAR-OLD**
CHILDREN.

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Purpose: Effectiveness of many school-based physical activity (PA) interventions is limited, which may be clarified by a misclassification between intervention components and the target population. Most school-based PA interventions are implemented according a one-size-fits-all approach, whereas it may be argued that reaching out to specific target groups, such as girls, may be more effective. Girls tend to be less physically active than boys. Girls' determinants of PA and SB should be better understood to develop effective interventions that fit their needs to increase their levels of physical activity (PA) and reduce their time spent in sedentary behaviors (SB). Activity preferences (e.g. sports, reading) are considered as determinants of children's PA and SB. In this study, we investigated the extent to which boys' and girls' moderate-to-vigorous PA (MVPA) and SB were associated with activity preferences. Methods: Data were collected between September and November 2012. Children aged 8-12 years from 21 schools were measured. For 815 children, PA levels were objectively assessed during waking hours (6am-11pm) at school days using accelerometers (ActiGraph,GT3X+). In addition, children filled in a questionnaire measuring their activity preferences using a picture-sorting technique. Independent t-tests were performed to calculate gender differences. Gender-specific multilevel regression analyses were performed with time spent in MVPA and SB as outcome variables and activity preferences and age as predictors. Results: In total, data of 660 (81%) primary school children were eligible for analyses. The mean age of children was 10.18 years old (SD±0.70) and 357 (54%) children were female. Boys spent significantly more time per day in MVPA than girls (59 vs. 46 minutes). Moreover, girls spent more time per day (530 vs. 514 minutes) in SB compared with boys. Preferences for PA-involved activities (e.g. sports), predicted boys' MVPA five times better than girls' MVPA (7.3% vs. 1.4%). Preferences towards SB-involved activities (e.g. reading) predicted SB four times better for boys than girls (9.3% vs. 2.6%). Conclusions: Girls' MVPA and SB cannot be explained by activity preferences. Effective PA interventions for girls are desirable and improved understanding of mediating and moderating processes influencing girls' PA and SB is needed to develop effective interventions.

P2.01.45

CHANGE IN PHYSICAL ACTIVITY FROM ADOLESCENCE TO EARLY ADULTHOOD: A SYSTEMATIC REVIEW AND META-ANALYSIS OF LONGITUDINAL COHORT STUDIES

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Background A lack of understanding regarding change in physical activity (PA) over the transition from adolescence to adulthood hampers effective intervention development. The adolescence-adulthood transition is important to target potential behaviour change interventions due to increasing autonomy, and positive behaviours established over this time therefore potentially lasting into later adulthood. Objective To systematically review and meta-analyse the evidence describing how PA changes during the period from adolescence to early adulthood (age 13 to 30y). Methods Seven electronic databases were searched for English-language, longitudinal studies (from 01/1980 to 01/2016) assessing PA at least twice, with the mean age of at least one measurement in adolescence (13-19y) and at least one in young adulthood (16-30y). Full text inclusion and data quality were independently double-assessed and data extraction 100% checked for accuracy. Where possible, data were converted to moderate to vigorous activity (MVPA) min/day. Meta-analyses were conducted for WMD between adolescence and adulthood for MVPA min/day. Heterogeneity was explored using meta-regression (potential effect modifiers: age at baseline, follow-up time, sex, region, date, assessment method, extent of data conversion). Results Of 59 included studies, 45 were eligible for meta-analysis. This showed that PA was lower during adulthood than adolescence WMD (95%CI) -5.2 (-7.1,-3.3) min/day MVPA over Mean(SD) 3.6(2.6)y; heterogeneity was high (I2=99.0%) and none of the included predictors explained this variation (all p>0.05). Restricting to studies with objective data (n=9) suggested a comparable decline in WMD [-7.4 (-11.6,-3.1) min/day MVPA over 4.3(2.9)y] but heterogeneity was still high (I2=95.0%); longer follow-up indicated more of a decline in WMD (95%CI) [-1.9 (-3.6,-0.2) min/day MVPA, p=0.03]. This explained 27.0% of variation between studies. Of 14 studies not eligible for meta-analysis, 6 statistically tested
change over time; 4 showed a decline and 2 showed no change. Conclusions PA declines modestly between adolescence and adulthood. More objective longitudinal PA data over this transition would be valuable, as would investigating how change in PA is associated with various contemporaneous social transitions to better inform how PA promotion interventions might most effectively target this important group.

P2.01.46
ENHANCING PHYSICAL LITERACY THROUGH SPORT: ANTIGONISH MULTISPORT PROGRAM
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Purpose: This presentation shares the impact of the innovative Active Start: Multisport Pilot Program, a 10-month, 2x/week program designed to enhance fundamental movement skills (FMS) in children 5-6 years old. This program developed in collaboration with individuals from Sport Nova Scotia, municipal recreation departments, community sport organizations (CSO), and researchers promotes children's physical activity through a variety of positive sport experiences to enhance their confidence and competence in FMS. Recreation staff directly support CSO leaders in teaching the 12 sport-specific skills in 3-4 week slots over the duration of the 10-month program. Methods: In 2015-16, 27 of 30 children provided pre- and post-program data. Trained data collectors used the Test of Gross Motor Development-2 to determine performance of FMS. The TGDM-2 has established content, criterion-prediction, and construct-identification validity and reliability for measuring fundamental locomotor and object-control skills. Individual TGDM-2 scores are compared to established age- and sex-based normative data which accommodates for growth, maturation, and development. Using slightly modified versions of the Sport 4 Life 'Playparent' and 'Ask Your Coaches Quality Sport Checklist', parents self-reported their knowledge and attitudes towards their children's involvement in sport and their child's physical literacy. Results: The 14 boys and 13 girls were 5.6 ± 0.65 yrs pre-program and 6.37± 0.71 post program. Age and sex-adjusted locomotor skills increase significantly from 32.1±9.9 to 34.8±7.2 while the object control skills had a non-significant increase from 25.5±9.8 to 28.8±7.9. Parents' self-reported estimate of their child's physical literacy, measured on a scale from 1 to 10, increased from 7.3±1.0 to 8.0±0.8. Playparent scores increases from 50.1 to 54.2. Scores on the Ask Your Coaches Quality Program were relatively consistent (as expected) between pre and post-program data collection. Conclusions: Children's participation in the Antigonish Multisport Program improved their FMS beyond what was expected due to growth and development. Parents also noted an increase in their child's physical literacy and competence, motivation, and confidence regarding movement. As such this program expanded to include 60 participants this year with further plans for additional programs for older age groups (i.e., 7-8 yrs).

P2.01.47
OBJECTIVELY MEASURED PHYSICAL ACTIVITY OF 10-11 YEAR OLD CHILDREN: LEVELS AND NATIONAL GUIDELINE ADHERENCE. A COUNTRY-WIDE REPRESENTATIVE CROSS-SECTIONAL STUDY, SCOTLAND, UK.
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Objectiver The SPACES study (Studying Physical Activity in Children's Environments across Scotland) is the first accelerometry data collection in 10-11 year old children across Scotland. We present physical activity (PA) levels by gender, area deprivation, and urban/rural classification, and estimate the proportion of children who meet the U.K. Chief Medical Officer's (CMO) guidelines of at least 60 minutes of MVPA per day. Methods: 2,130 participants, aged 10-11 years old, were invited to participate (May 15- May 16). Participants wore the hip-mounted ActiGraph GT3X+ for 8 consecutive days: 4 weekdays and 1 weekday of data were required for inclusion. All analyses accounted for clustering and stratification of the sample, and were weighted to reflect representativeness of the population. Results: 774 participants (54% female) met the inclusion criteria. Boys spent more time in MVPA than girls (77.6 mins vs 68.0 mins, p 8.6% of all children (10.0% boys vs 7.4% girls) met the U.K. CMO guidelines using strict criteria of 60 mins of MVPA per day, whereas using average time spent in MVPA , 60.3% of all children (69.4% boys vs 52.4% girls) met the guidelines. Conclusions: 10-11 year old children across Scotland spend, on average, more than 60 minutes per day in MVPA. No significant differences were found by residential area level deprivation or urban/rural classification. However, given the gender differences observed, our results suggest the need to intervene earlier than the transition to secondary school at age c.12 if this particular inequality is to be addressed. The proportion of children meeting the U.K. CMO's PA recommendations range from 9% to 60% dependent on using either strict or average MVPA criteria. Both figures are lower than the 80% reported by our national health survey based on parental reported data, illustrating discrepancies between objective and parental-proxy methods,
and also highlighting the complexity involved in measuring and analysing PA data. The development, monitoring and evaluation of the success, or otherwise, of policies intended to increase PA levels requires careful consideration regarding measurement, methodology and analysis.

P2.01.48
INTERVENTIONS FOR INCREASING FRUIT AND VEGETABLE CONSUMPTION IN CHILDREN AGED 5 YEARS AND UNDER: RESULTS FROM A COCHRANE REVIEW UPDATE

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Purpose: Insufficient consumption of fruits and vegetables in childhood increases the risk of future chronic diseases including cardiovascular disease. An update of a previous Cochrane review published in 2012 which included five trials was undertaken. The aim of the review was to assess the effectiveness, cost-effectiveness and associated adverse events of interventions designed to increase the consumption of fruit and/or vegetables amongst children aged five years and under. Methods: The Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, CINAHL, PsycINFO and Proquest Dissertations and Theses, electronic trial registers and references lists of included trials were searched to identify eligible trials (up to July 2016). We included randomised controlled trials (RCTs), including cluster-randomised controlled trials, of any intervention primarily targeting fruit and/or vegetable consumption among children aged five years and under and incorporating a biochemical or dietary assessment of fruit and/or vegetable consumption. Two review authors independently screened the title and abstract of identified papers, extracted data and assessed risk of bias, with a third review author resolving any discrepancies. Fixed-effect models will be used to perform meta-analysis for the primary review outcomes where a sufficient number of trials with suitable data for pooling are identified. Results/findings: Forty-three trials (38 new trials) have been identified as eligible for inclusion, and a further 6 ongoing studies. Meta-analyses are currently being undertaken pooling suitable studies by intervention type to assess the impact of specific feeding practices (e.g. repeated food exposure) (n=20), effectiveness of home visiting programs (n=13), and effect of a preschool-based intervention (n=10) in increasing child fruit and vegetable intake. Meta-analysis results and the quality of evidence of included studies will be presented. Conclusions: The number of trials aiming to increase the consumption of fruit and vegetables of children five years and younger has increased substantially since 2012. The contribution and implications of the findings of this new synthesis of evidence regarding interventions encouraging fruit and vegetable consumption of children will be discussed.

P2.01.49
PHYSICAL ACTIVITY AND SEDENTARY TIME PATTERNS IN CHILDREN AND ADOLESCENTS WITH CYSTIC FIBROSIS AND AGE- AND SEX-MATCHED HEALTHY CONTROLS

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Purpose: Engagement in regular physical activity (PA) is increasingly recognised as a fundamental treatment strategy in patients with Cystic Fibrosis (CF). Nonetheless, despite this, there remains a dearth of evidence regarding physical activity levels (PAL), or the pattern in which these are accrued. Such information is pivotal to the design of optimal intervention and treatment strategies. Therefore, the purpose of the present study was to elucidate PA and sedentary behaviour patterns of children and adolescents with CF compared to their healthy age- and sex-matched counterparts, and to investigate whether PAL or patterns are significant predictors of lung function. Methods: Following standard measures of anthropometrics and lung function, physical activity was measured at 100 Hz by a hip-worn accelerometer for seven consecutive days in eighteen children with mild-to-moderate CF (10 boys; 12.4±2.8 years; FEV1: 80±9%) and eighteen age- and sex-matched controls (10 boys; 12.5±2.7 years). Time spent in moderate physical activity (MPA) and vigorous physical activity (VPA) was determined, with the remaining active time classified as low-light physical activity (LLPA) or high-light physical activity (HLPA). Patterns of sedentary time and PA accumulation were assessed according to the frequency and duration of breaks and bouts. Results: Overall, 44.4% of healthy and 38.9% of CF children met the current PA guidelines. Both CF and healthy children
demonstrated similar PAL and patterns of accumulation across the intensity spectrum, with higher levels of PA during weekdays in both groups. Specifically, weekdays were characterised by a greater frequency and duration of light physical activity (LPA) and MPA bouts and a lower duration of sedentary bouts compared to weekend days. Stepwise hierarchical analyses revealed that FEV1 was predicted by HLPA in children with CF. Conclusions: These findings highlight weekends and LPA as potential targets for the development of future PA promotion intervention strategies in youth with CF. Indeed, increasing LPA may be more feasible and constructive for the large proportion of patients not meeting current guidelines, although the potential benefits of targeting increases in LLPA and HLPA rather than increases in MVPA for health outcomes in CF warrant investigation.

P2.01.50
ACTIVITY BEHAVIOURS, GROSS MOTOR SKILLS AND BODY COMPOSITION OF PRESCHOOL CHILDREN FROM A LOW-INCOME, URBAN SOUTH AFRICAN SETTING
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Purpose The interplay between physical activity (PA) and sleep, and how these variables relate to body composition and gross motor skill proficiency, has not been investigated in South African pre-schoolers. The aim of this study was to investigate the relationships between body composition, gross motor skill proficiency, PA and sleep duration in pre-schoolers from a low-income, urban South African setting. Methods Pre-schoolers (n=84) were recruited from three preschools in Soweto, South Africa. Height and weight were measured, and the Test for Gross Motor Development-Version 2 (TGMD-2) was completed. Children wore an ActiGraph GT3X+ accelerometer for seven, 24-hour days. Results Seventy-eight pre-schoolers (aged 4.3±0.5; 50% boys) were included for analysis. Using IOTF cut-offs, 84.6% of the participants were classified as normal weight, 3.85% as overweight, 3.85% as obese and 7.7% as ‘thin’. All children ranked as ‘average’ or better in the TGMD-2, indicating adequate levels of proficiency. Girls performed significantly better in the object control component of the TGMD-2 (pALL children met the age-related recommended guideline of 3 hours/day of total PA. The participants slept for 8.2±1.0 and 8.8±1.5 hours on week- and weekend- nights, respectively. Percentage time in light PA and MVPA did not influence TGMD-2 rank, nor did hours of sleep (pseudo-R2=0.37), although boys were more likely to score ‘superior’ or better TGMD-2 rankings (p=0.02), and five year olds were more likely to score and ‘superior’ or better results than four year olds (p Conclusions Pre-schoolers in Soweto have adequate gross motor skills and achieve high volumes of PA. This is contrary to research from low-income settings in high-income countries. Pre-schoolers in this study slept for less than the age-related recommended amount of 10 hours/night, and longer sleep duration was associated with greater levels of vigorous PA in preschool-aged boys, but not girls.

P2.01.51
SEDENTARY BEHAVIOUR LEVELS AND PATTERNS IN A BI-ETHNIC SAMPLE OF CHILDREN FROM A DEPRIVED SETTING IN THE UK
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Objective: Reducing sedentary time in children is emerging as an important public health strategy, yet there is little objective evidence of the duration and patterns of sitting time in children to help inform intervention development. This cross-sectional study explored objective daily sitting time in predominantly South Asian children from two primary schools in a deprived area of Bradford, UK. Methods: Patterns of sitting time were explored in 79 children (42 boys; age, mean [SD]: 9.8 [0.3] years; 70% South Asian, 57% normal weight, 38% overweight/obese, 5% underweight) during the school term. activPAL inclinometers were worn for 7 days. Total sitting time, sitting time accumulated in different bout lengths, and proportion of wear time spent in these variables was explored across different periods of the week. Weekend days were compared to school days and school time to after school time.
Moreover, the impact of developing adequate cooking skills early on may extend to the next generation through adequate cooking skills by young adult was associated with more frequent preparation of meals with vegetables (p Conclusions: Developing sociodemographic variables. Reporting adequate cooking skills as a young adult was associated with multiple their cooking skills as "very adequate", 56% as "adequate", and 19% as "inadequate", with no differences by controlling for age, sex, ethnicity and socioeconomic background. Results: At wave 2 (2002/03), young adults (approximate age 20 years) reported on the adequacy of their cooking skills. During wave 4 (2015), participants reported on various cooking and eating behaviors, such as food preparation, home food environment, and family meals. Of the 1710 young adults completing the EAT II survey, 1158 completed the survey again during EAT IV and 54% of those were parents. Separate regression models estimated associations between self-perceived adequacy of cooking skills as a young adult and later cooking and eating behaviors, controlling for age, sex, ethnicity and socioeconomic background. Results: At wave 2, 25% of young adults described their cooking skills as "very adequate", 56% as "adequate", and 19% as "inadequate", with no differences by sociodemographic variables. Reporting adequate cooking skills as a young adult was associated with multiple indicators of better cooking and eating behaviors ten years later. For example, having adequate cooking skills as a young adult was associated with more frequent preparation of meals with vegetables (p Conclusions: Developing adequate cooking skills by young adulthood may have long-term benefits for cooking and eating behaviors. Moreover, the impact of developing adequate cooking skills early on may extend to the next generation through
healthier eating behaviors and home food environments.

P2.01.54
PERCEPTIONS OF VISUALISING CHILDREN’S PHYSICAL ACTIVITY AS A 3D OBJECT
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Objective: Current physical activity (PA) guidelines recommend that children engage in at least 60 minutes moderate-to-vigorous PA every day. However, the majority of children fail to meet these guidelines, with a frequently cited barrier being that they are difficult to measure, interpret and apply. 3D printing enables the creation of a tangible output, providing a novel and exciting way to conceptualise children's physical activity levels (PAL). The purpose of this formative study was to elicit children's, parents' and teachers' subjective views regarding the interpretation of 3D PA models and to inform intervention and model design. Methods: Twenty-eight primary school (15 boys, 8.4±0.3 years) and 42 secondary school children (22 boys, 14.4±0.3 years), 7 parents (2 male) and 8 teachers (2 male) participated in semi-structured interviews (group and individual) regarding PAL and intensities, motivation and 3D printing. All children were asked to create and describe a model to represent their PAL using Play-Doh. Data were transcribed verbatim and subsequently analysed using the Youth Physical Activity Promotion Model as a thematic framework, and then inductively to enable emergent themes to be further explored. Pen profiles were constructed representing analysis outcomes via a diagram of key emergent themes. Results: Analyses revealed an understanding of the concept of visualising PA through a tangible object, though primary school children struggled to differentiate between intensities. Views elicited by children and adults were generally consistent, with the majority of participants expressing a preference for the models to represent children's PAL across a week. Furthermore, participants highlighted the potential for such models to act as a motivational tool to promote PA in children. Play-Doh models provided an insight into key distinguishing features between primary and secondary school-children, with a preference for models based around abstract objects and bar charts, respectively. Conclusion: Both primary and secondary school children engaged in the concept of personalised 3D models displaying their PAL and felt it could not only enhance their understanding, but motivate them to increase the amount and intensity they engage in. This study therefore suggests that 3D printing may afford unique strategies for the promotion of PA in children.

P2.01.55
EFFECTIVENESS OF A PARENTAL SUPPORT INTERVENTION ON CHILD DIET OR PA DEPENDING ON PARENTAL PERCEPTION ON CHILD BEHAVIOUR IN NEED OF CHANGE
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Background Parental support has proven important in the promotion of healthy dietary and physical activity (PA), and prevention of childhood overweight and obesity. However, interventions need to be tailored to the parental needs. The Healthy School Start (HSS) intervention comprised motivational interviewing (MI) which is a person-centred style of communication flexible to the parents’ perceived concern for changing the child’s behaviours. In the MI session parents chose a target behaviour of their child that they wanted to influence or change in the home environment. This study aims to evaluate the effects the HSS intervention on child diet and PA according to parental targeted behaviour. We hypothesise that the intervention was effective on child diet for the group of parents who chose to influence their children’s dietary behaviours, and on child PA for the group of parents who chose to influence PA. Methods Families participating in the HSS intervention were included in the study, n=378. Child dietary behaviours were measured by parent-report and child PA was measured by accelerometry. Children will be grouped according to the behaviour chosen by the parent in the MI session; diet or PA. Effects of the intervention on dietary and PA outcomes will then be tested on the separate groups. Linear regression will be performed for continuous PA data and Poisson regression will be performed for dietary count data. All analyses will be adjusted for sex and baseline values. Results Analyses will be conducted during January and February 2017. Results can indicate the possible effectiveness of a component with extensive possibility for tailoring; MI. Conclusion Based on the results, this study provides information on a component with potentially used in the development of tailored parental support interventions.

P2.01.56
ASSESSING CHALLENGES IN LOW-INCOME FAMILIES: FORMATIVE RESEARCH TO INFORM THRIVE FOR HEALTH, A LIFE SKILLS-BASED INTERVENTION FOR PROMOTING HEALTHY WEIGHT IN EARLY CHILDHOOD

ISBNPA 2017 | Page 382
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Purpose: Prior interventions for promoting healthy weight in low-income children have focused on changing diet and physical activity behaviors, with mixed results. Interventions that provide low-income parents with life skills for navigating the challenges in their resource-limited lives could ultimately help support changes in the home environment that promote healthy weight in children. Such interventions, however, are lacking. We describe the formative research undertaken to prioritize the needs, concerns, and challenges of low-income parents of 3-5 year olds, to inform THRIVE for Health, a life skills based intervention for promoting healthy weight in early childhood.

Methods: Participants were from rural and urban North Carolina and included low-income parents of 3-5 year olds and stakeholders who are leaders of community organizations that provide social services to low-income families. Applying a mixed methods approach, 40 parents completed in-person surveys, 30 parents participated in focus groups, and 5 stakeholders participated in in-depth interviews. In each data mode, participants were asked to prioritize a list of challenges centered on parenting, family care, and self-care that was informed by a literature review and earlier research involving in-depth interviews with 10 low-income mothers. Data were analyzed descriptively in SAS and coded for emerging themes using ATLAS.ti. Results: Stakeholders perceived healthy eating to be a challenge for low-income parents, but most parents did not report this as being a major challenge. Parents reported needing strategies for managing children’s behavior, specifically around picky eating, limits/boundaries, tantrums, and routines. Parental troubles with managing children’s behavior was often compounded by their inability to find affordable fun activities to engage children in outside of the home, and difficulties in communicating child rearing expectations to a co-parent/relative who assisted with child care. Added on to these were other competing priorities (financial) that often resulted in the neglect of self, including the inability to find ‘me’ time, build relationships/friendships, and care for one’s emotional health. Conclusion: Providing life skills, resources, and support for managing parenting, family care, and self-care challenges could help enhance parental resilience and support positive changes at home that promote healthy child development.

P2.01.57
WHAT MATTERS MOST: WHAT PARENTS MODEL OR WHAT PARENTS EAT?
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Purpose: Parents have a strong influence in shaping their children’s eating habits; however, researchers are still struggling to identify which food parenting practices to recommend. Parent’s conscious modeling of healthy eating habits (“modeling”) and their actual intake (“parent diet”) are commonly examined practices. Studies often measure only one or the other, but rarely examine how they interact. The purpose of this study was to examine similarities between these practices and to explore how they work together to influence children’s diet. Methods: Baseline data from a larger intervention trial was used for this analysis. The Comprehensive Feeding Practices Questionnaire (Musher-Eizenman, 2007) was used to assess parent modeling. Three days of dietary recalls were used to collect parents’ report of their own intake and their children’s intake (excluding food at child care). Servings of healthy (fruits, vegetables, whole-grains, low-fat dairy) and less healthy (snacks, sweetened beverages) foods and 2010 Healthy Eating Index (HEI) scores were then calculated. Pearson correlations were used to explore associations between parent modeling and parent consumption (in servings) of healthy and unhealthy foods. Linear regression models were used to examine separate and combined associations between parent modeling and HEI score with child HEI score. Lastly, parents were categorized according to low vs. high modeling and low vs. high HEI score (based on the medians) to examine average HEI scores of children based on these categories. Results: Parent modeling was significantly associated with parent intake of healthy foods (fruit: r=0.20, vegetable: r=0.23, pFor every 1-unit increase in parent modeling, child HEI score increased nearly 3 points (b=2.96, SE=0.91, p Conclusions: Results suggest that parent modeling and dietary intake are distinct practices. Children likely benefit the most when their parents model healthy eating behaviors and consume a high quality diet.

P2.01.58
BASECAMP15 - UNDERSTANDING HOW HEALTH-ENHANCING ELEMENTS IN THE CLASSROOM SUPPORT WELL-BEING AND MOTIVATION TO LEARN AMONG AT-RISK STUDENTS
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Objective The benefits of physical activity for mental health and well-being among children and young people are well-established. Increased physical activity during school hours is associated with better physical, psychological and social health, and well-being. The aim of this project was to generate knowledge about how a four-week-long intensive learning camp, incorporating physical activity into the curriculum and serving healthy meals daily, affected the well-being, motivation for learning and attention span among 115 9th/10th grade students at risk of academic failure. Methods The study used qualitative methods including semi-structured group interviews and classroom observations to identify how teachers at camp incorporated physical activity like games and so-called brain breaks focusing on social and emotional skills throughout the school day and how these initiatives were received by students. Based on a resiliency framework, data was processed and analyzed using thematic analysis. Results Students reported that in-class physical activities helped them clear their minds, made the curriculum more fun, and made them discover their potential and capabilities in spite of personal and social difficulties. Furthermore, students reported that being served healthy meals helped them focus and concentrate better during class. Students discussed how they had initially considered the in-class physical activities to be "childish" and "too different" from what they were used to, which was also reported as the main reason for dropping out among the 14 percent of students who did not complete the camp. However, students completing the camp reported that they – in comparison with their home school environment – felt more happy, engaged, respected and included throughout camp and further that teachers' use of in-class physical activities had promoted positive behavior in the classroom. Conclusions The study contributes with inspiration to how in-class physical activities and daily meals can enhance well-being and create a safe and motivating learning environment for youth at risk. From a mental health promoting perspective, this knowledge can be used to qualify future decision-making related to how school environments can support educational resiliency among at-risk students.

P2.01.59
PREDICTORS OF SUCCESS IN A FAMILY-BASED WEIGHT CONTROL PROGRAM FOR OBESE CHILDREN
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Objective: To identify participant characteristics that predict treatment response in a six-month, family-based, group behavioral weight control program for 8-16 year old obese children. Methods: All participants from 2007-2016 were included. Children's weights and heights were measured throughout treatment and attitudes and behaviors were assessed at baseline, 3 months and 6 months. Baseline measures and changes from baseline to 3 months were tested as predictors of BMI changes over six months with mixed effects regression. Results: The analysis included 672 children (42.9% male; mean ± S.D. age: 11.3 ± 2.0 years; 48.3% Latino, 31.0% white, 4.7% black; BMI: 30.2 ± 6.0 kg/m2). The mean ± S.D. 6-month BMI change was -0.9 ± 1.7 kg/m2 (range -7.1 kg/m2 to +5.1 kg/m2). Baseline characteristics significantly associated with greater BMI loss (P higher parent education, family income, and parent age, married parents, greater starting weight and BMI percentile, older age of overweight onset, better school grades, more breakfast eating, less non-sugary cereal eating, less binge eating and fear of binge eating, more weekend TV, video, and video games, less outdoor play, and less weekly physical activity. Surprisingly, BMI loss was greater among children who were less confident to lose weight and placed less importance on losing weight, and those with lower self-esteem, more anxiety/depressive symptoms, and more somatic complaints, but less aggressive and delinquent behavior. Changes during the first 3-months that significantly predicted greater 6-month BMI loss included reduced breakfast, sugary cereals, regular soda, and fast food, and increased grilling, decreased somatic complaints, anxiety/depressive symptoms, social problems, and delinquent behavior, and increased self-esteem and weight loss confidence. Children who attended the program with a biological parent, step-parent or grandfather were more successful than those who attended with an adoptive parent, older sibling, or non-parent guardian. Multivariable results including interaction analyses will also be presented. Conclusions: A number of baseline characteristics may be used to help guide selection of children who are more likely to benefit from family-based, behavioral weight control programs, and early treatment changes can identify participants who may require additional attention.

P2.01.60
NUTRIATHLON: THE IMPACT OF A FAMILY NUTRITION INTERVENTION ON EATING HABITS

Objective: The impact of a family nutrition intervention on eating habits may require additional attention. From family number of baseline characteristics may be used to help guide selection of children who are more likely to benefit or non. Increased self-esteem, more anxiety/depressive symptoms, and more somatic complaints, but less aggressive and delinquent behavior. Changes during the first 3-months that significantly predicted greater 6-month BMI loss included reduced breakfast, sugary cereals, regular soda, and fast food, and increased grilling, decreased somatic complaints, anxiety/depressive symptoms, social problems, and delinquent behavior, and increased self-esteem and weight loss confidence. Children who attended the program with a biological parent, step-parent or grandfather were more successful than those who attended with an adoptive parent, older sibling, or non-parent guardian. Multivariable results including interaction analyses will also be presented. Conclusions: A number of baseline characteristics may be used to help guide selection of children who are more likely to benefit from family-based, behavioral weight control programs, and early treatment changes can identify participants who may require additional attention.
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Purpose: Parents play an important role in establishing healthy eating habits for their children. The family environment, particularly food availability at home and parental behaviour during meals are factors influencing children's eating habits. Behavioural interventions involving the family, such as the mutual reinforcement between parents and their children, are considered factors facilitating the acquisition and retention of a new behaviour. The objective of this study was to evaluate the efficacy of an innovative web-based nutrition intervention called “Family Nutriathlon” on diet quality and fruit and vegetable (F/V) and dairy product (DP) consumption among parents and their children. Methods: In a pilot project, 13 families (children, n=27) participated in either the intervention (n=9) or control group (n=4). Families in the intervention were guided to increase their consumption and variety of F/V and DP over an eight-week period by recording their daily F/V and DP consumption using a web-based platform. Three follow-ups were scheduled with a dietitian once every two weeks via Skype to assess the progress of the families and identify the strategies that allowed them to achieve Nutriathlon goals. Daily servings of F/V and DP were compared between groups at baseline, immediately after and 12 weeks after the program. Three-day dietary journals were completed by each family before and after the intervention to compare diet quality, as assessed by the Nutrient-Rich Foods Index, dietary intakes and consumption of F/V and DP between groups. A two-way repeated measures analysis of variance to assess group x time interactions followed by Tukey’s post hoc tests were performed to identify differences. Results: Children participating in Nutriathlon ate an average of 2.8 more servings of F/V (p=0.01) and 1.0 more serving of DP (p=0.10) twelve weeks after the intervention compared with the control group. Furthermore, children in the intervention had a significant improvement in diet quality compared with the control group (p=0.04). Conclusion: Family Nutriathlon represents an innovative program which positively impacts diet quality and F/V and DP consumption among children and their families leading to a better understanding of the parents' role in an intervention encouraging the adoption of healthy eating habits.

P2.01.61
UNDERSTANDING CHILDREN’S CALCIUM INTAKE: RELATIONSHIP TO PARENTAL ROLE-MODELLING AND SOCIAL SUPPORT

Dennis K.a, Locke S.r, Bourne J.e, Jung M.e. 1University of British Columbia, Kelowna, British Columbia. Children under the age of 10 acquire their eating habits predominantly from watching what their parents consume, following parental rules, and consuming what food has been purchased for the household by the parents (Birch et al., 2007; Dave et al., 2012; Arcan et al., 2007). Role modeling consumption of calcium products and providing parental social support may be a cost-effective means through which to increase calcium intake in young children who are not currently meeting the recommended daily intake of calcium. Surprisingly few studies have targeted parents' behaviour as a means to modify their child(ren)'s behaviour. Objective: The purpose of this study was to assess the relationship between parent's role modeling and social support behaviours and their offspring's calcium intake. It was hypothesized that parental role modeling and social support behaviors would be positively related to calcium consumption in children. It was also hypothesized that social support and role-modeling would account for a significant proportion of variance in children's calcium intake beyond the contribution of parent's calcium intake using a hierarchical multiple regression analysis (HMRA). Methods: Participating parents (n = 188) had at least one child under the age 10 who was not meeting the recommended daily intake of calcium. Parents completed an adapted version of the Social Support for Diet Survey (Sallis et al., 1987), Parent Role-Modeling (Cullen et al., 2001), and a 3 day food log for the parent and child. Milligrams of calcium was calculated using ESHA Nutrition Analysis software (version 11.0). Results: There was a significant positive relationship between children’s calcium intake and parent social support (r=.175, pp>.05). Parent social support accounted for a significant proportion of additional variance (R2change=.026, β=.162, p adjusted R2=.122). Conclusions: These findings highlight the relationship of parental social support and their child(ren)'s calcium intake. Results from the HMRA suggest that parental social support might manifest in ways beyond the instrumental support of mutual calcium intake. Future intervention research is warranted that assesses the impact of modifying parent's social support behaviours.

P2.01.62
COMPARING MONETARY EXPENDITURE ON MILK TO SUGAR-SWEETENED BEVERAGES IN CANADIAN FAMILIES
Oxland E.c.1, Locke S.r.1, Bourne J.e.1, Jung M.e.1. 1University of British Columbia, Kelowna, British Columbia. Obesity and diabetes have been linked to the intake of sugar-sweetened beverages (SSB) (Duffey & Poti 2016). Unfortunately, caloric contribution from SSB in North American diets continues to rise (Wang et al., 2008). Replacing habitual consumption of SSB with milk has demonstrated beneficial effects on children’s lean body mass and growth (Albala et al., 2008). In Canada, much of what is known about diet quality and intake patterns comes from self-reported, retrospective surveys (Moubarac et al., 2017; Slater & Mudryj, 2016). Objective: The aim of this study was to analyze how much Canadian families spend on milk alone, as compared to SSB (i.e. soda and juices) during a typical week by objective means. Grocery receipts provide a validated and objective way in which to assess food purchase behaviours. Methods: 420 Canadian families expressed interest in participating in a year-long dietary intervention. 180 families were eligible and sent in receipts from all grocery and restaurant purchases over a 7-day period. The total cash expenditure for liquid dairy products (milk) and for SSB was assessed in relation to the total bill. Amount spent on milk compared to SSB was assessed by student’s t-test. Results: Canadians in this study spent on average 4% of their total bill on milk as compared to 2% on SSB, and this difference was significantly different (pConclusions: These findings suggest that Canadian families are spending more on milk products than on sugar-sweetened beverages. Caution should be used when interpreting this finding, however, as SSB are much cheaper per litre than milk, hence Canadians could be purchasing more litres of SSB than of milk. Replacing calorically-dense, nutrient-poor SSB with liquid dairy products may be a viable public health strategy to improve diet quality for Canadians.

P2.01.63
THE SCHOOL MEAL PROJECT IN NORWAY: A QUALITATIVE EVALUATION
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Purpose: Norway does not have an organized school meal, and the children bring packed lunches from home. The School Meal project in Norway was an intervention study where 11-year-olds were served a free and healthy cold school meal every day for one year. The aim of the current study was to evaluate the implementation of the project to obtain experiences from participants directly or indirectly involved, with a focus on barriers and facilitators of the implementation and the intervention process itself. Methods: A qualitative design with interviews for data collection. A total of 14 respondents and informers were interviewed, including seven pupils, two teachers, three parents, the principal and the project’s chef. The data from the interviews was systemized according to the project phases, and further analyzed based on the content in the phases. Results/findings: Those involved in the school meal intervention received different information prior to the intervention. Some challenges occurred in the organization-part of the school meal, and the meals were not always carried out as planned. The food received positive feedback, and most of the interviews emphasized the meals’ social context as positive. The school meal project resulted in a more conscious behavior towards a healthy diet among the children. Conclusions: Information, communication and inclusion of those involved seem to be important factors in the implementation of a school meal intervention. The importance of the information delivered to children as participants is especially emphasized. Knowledge about the school context is considered important in research projects carried out in a school setting.

P2.01.64
MIDDLE-SCHOOL-AGED CHILDREN REPORT INCREASING FOOD-RELATED AGENCY: TARGETS FOR HEALTH PROFESSIONALS
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Purpose Middle-school-aged children (grades 6-8, 10-14 years) are experiencing important biological, social, and psychological transitions, making it a critical period for health behavior development. Among these changes is increased responsibility for food and nutrition decisions. The purpose of this formative qualitative study was to identify areas in which middle school students report food-related agency in order to identify targets for intervention and support. Methods Eligible participants were enrolled in a public middle school and were recruited by Cooperative Extension staff in New York State. One-on-one interviews were conducted using a semi-structured guide that included open-ended questions about household and school food environments and associated food practices. Interviews were audio recorded, transcribed verbatim, and thematic data analysis was informed by the Social Cognitive Theory agentic perspective. Results Interviews were conducted with 30 children from diverse sociodemographic backgrounds. Participants’ food behaviors were informed by a growing knowledge about nutrition, household food rules and resources, and school food environments. Food-related agency increased with age, but encouragement and support from adults at home and school influenced participants’ perception of agency.
Compared to experiences as elementary-school-aged children, participants were initiating or further developing household food roles and food-based decision making for themselves and their families. Participants described increases in personal agency in three areas – grocery shopping, cooking, and consumption decisions – with varying degrees of agency in each category. Grocery shopping activities ranged from making food requests to shopping independently to help meet household food needs. Though most enjoyed cooking, participants' roles in and attitudes about cooking were diverse. Consumption decisions included regulating their own intake by deciding when and what to eat at mealtimes, as well as informing decisions for other family members. Conclusions Results suggest nutrition education and skill-building activities with this age group are warranted and could target areas in which children are experiencing increases in personal agency, including grocery shopping, cooking, and consumption. Participant-informed information about areas in which they exercise agency is crucial for research and practice interventions that most effectively support the development of healthful behaviors.

P2.01.65
SCHOOL LUNCH AND COGNITIVE FUNCTION IN A NORDIC SETTING – RESULTS FROM THE PROMEAL-STUDY
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Objective: One of the most frequently used arguments when discussing advantages of school meals is its potential to improve cognitive function and school attainment. Overall, this is a research area where little research has been done and there is a need for studies evaluating the effect of school lunch on cognitive function with objective measures that are developed for children. The aim of the present study was to explore if energy and macronutrient intake from school lunch has any impact on cognitive function among boys and girls in a Nordic setting. Methods: This study is part of ProMeal ("Prospects for promoting health and performance by school meals in Nordic countries"), including 838 pupils of age 10–11 from Finland, Iceland, Norway and Sweden in their normal school setting. Integrated Visual and Auditory Continuous Performance Test was used for repeatedly assessing attention and response control in a subsample (n=205) on three days 1–3 hours after lunch. Energy intake was assessed with a validated photographic method and calculations based on national databases. Data was analyzed by gender and country perspectives and socio-economic background. General estimating equations were used in order to adjust for intra-class correlations between days with the addition of various confounding factors. Results: When considering energy- and macronutrient intake during lunch, the % energy (E%) from carbohydrates was found to be the single strongest predictor for response control while these associations were not seen for attention. Response control was lowest when E% from carbohydrate was high (>60E%) with a trend for u-shaped association. Other factors independently associated with response control were country, age and sex of child and maternal education. These were also associated with attention. Conclusion: Associations of school lunches with acute cognitive function are complex due to national dietary habits and related factors. Very low or high proportions of carbohydrates in the meal, which may be a proxy for less nutritious meals or less diversity of foods eaten, give rise to consider not only monitoring what the schools offer but also what is really being eaten at school lunches, which in turn may affect school attainment.

P2.01.66
FAMILY-LEVEL FACTORS AND DIETARY INTAKE AMONG LATINAS: AN AUTOREGRESSIVE LAGGED ANALYSIS
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Objective: Within traditional Latino culture, families tend to play a salient role in individuals’ daily lives. Thus, it is important to examine lifestyle behaviors through a family-context lens. This study examined the concurrent and predictive role of family-level factors on Latinas’ dietary intake and behaviors. Methods: We used longitudinal data
from 162 mothers enrolled in the delayed treatment group of a randomized controlled trial to promote healthy eating in Latino families. Diet and family-level factors were measured at baseline (M1), and four (M2) and ten (M3) months post baseline. Daily intake of fruits, vegetables, and sugary beverages, percent of calories from fat, weekly away-from-home eating, and percent of weekly grocery dollars spent on fruits and vegetables (FV) were examined. Family-level factors included family expressiveness and cohesiveness, family support for fruit and vegetable purchasing, and positive interactions regarding household dietary habits. Separate autoregressive lagged models examined the role of family-level factors on the diet variables concurrently and prospectively, adjusting for sociodemographic variables. Results: Significant concurrent associations varied by measurement point. Overall, greater family cohesiveness was associated with healthy dietary intake/behaviors (more intake of vegetables, greater percent of grocery dollars spent on FV and fewer percent of calories from fat). More positive interactions regarding dietary habits were also associated with healthy dietary intake/behaviors (more intake of vegetables, greater percent of grocery dollars spent on FV, less intake of sugary beverages, fewer percent of calories from fat, and less frequent away-from-home eating). Conversely, greater family expressiveness, cohesiveness, and support for fruit purchasing were associated with less fruit intake. At M2, greater family expressiveness and more positive interactions regarding dietary habits predicted greater percent of grocery dollars spent on FV at M3. More positive interactions regarding dietary habits at M1 predicted less frequent of away-from-home eating at M2. Conclusions: Research shows that families play an important role in children’s dietary intake/behaviors. Our study indicates that families may also be important to the dietary intake/behaviors of adult Latinas. Therefore, strengthening family relations should be considered when promoting healthy eating among Latinas. Future research should explore why positive family-level factors were associated with less fruit intake.

P2.01.67
POSITIVE CHANGES IN PARTICIPANTS’ DIETARY ATTITUDES AND BEHAVIORS AS A RESULT OF THE ILLINOIS JUNIOR CHEFS PROGRAM

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Purpose: The majority of children in the United States do not meet federal nutrition recommendations (Krebs-Smith et al., 2010), and many experts advocate for increased culinary skills education to address unhealthy diets and obesity among youth worldwide (Nelson et al., 2013). Illinois Junior Chefs (IJC) is a statewide hands-on culinary and nutrition education program implemented by the University of Illinois Extension. This study examined the impact of IJC on participants’ dietary attitudes and behaviors. Methods: IJC is a statewide cooking and nutrition education program for youth (n = 1082) aged 8-13. Participants were 62.7% female and 37.3% male (average age = 9.6). IJC is taught over five two-hour lessons, each of which includes nutrition education, hands-on cooking, and tasting. Lessons take place in a variety of community sites, examples include youth recreation sites, summer camps, libraries, churches, and local Extension offices. Each lesson includes nutrition education focused on a particular food group (i.e., fruit), paired with a recipe (i.e., fruit salsa) that uses a cooking skill (i.e., knife skills) taught during that lesson. Pre- and post-program surveys were administered to assess changes in cooking self-efficacy, fruit and vegetable preferences, cooking attitudes, healthy eating and cooking behaviors, and self-efficacy for selecting and eating healthy foods. Researchers also interviewed nutrition educators and observed classes at a subset of sites that varied in participant demographics and geography (urban vs. rural). Results: Paired t-tests indicated that participants experienced significant pre- to post-intervention changes in cooking self-efficacy (t(1062) = 18.28, p < .001), fruit (t(1041) = 4.57, p < .001), and vegetable (t(1044) = 9.63, p < .001). Conclusions: IJC positively influenced participants’ cooking self-efficacy, fruit and vegetable preferences, cooking attitudes, healthy eating and cooking behaviors, and self-efficacy for selecting and eating healthy foods and correspondingly positively impacted youth culinary skills and food behaviors which can have long term impacts on health. These findings will be used to further refine the program and inform future curriculum modifications.

P2.01.68
IMPROVED DIETARY PATTERN IN AMERICAN INDIAN FAMILIES AFTER THE HEALTHY CHILDREN, STRONG FAMILIES 2 HEALTHY LIFESTYLE INTERVENTION

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Objective: American Indian families experience extremely high rates of obesity, but few prevention approaches have been designed for use within the home or have examined health behaviors of adults and children.
simultaneously. This study examined dietary patterns before and after a home-based healthy lifestyles intervention in American Indian families as part of the Healthy Children, Strong Families 2 randomized controlled trial. Methods: Four hundred and fifty adult/child (2-5 years) dyads were recruited from five American Indian communities nationally. Dyads were randomized into the healthy lifestyles intervention group (Wellness Journey) or the active control group focused on child safety (Safety Journey). The intervention was delivered through monthly mailed lessons addressing both adults and children; dietary targets were increased fruit and vegetable intake and decreased added sugar intake. Diet screeners were administered before and after the 12-month intervention (based on NHANES 2009-10 for adults and 2010 National Youth Physical Activity and Nutrition Survey for children), and dietary patterns were assessed using principal component factor analysis. Results: At baseline, 6 patterns were determined for adults (‘fast food’, ‘healthy food’, ‘sweets’, ‘cereal/milk’, ‘meat/cheese’, ‘other’) and 4 for children (‘non-healthy foods’, ‘healthy foods’, ‘non-healthy beverages’, ‘healthy beverages’). Of these patterns, only ‘meat/cheese’ in adults correlated with adult body mass index. Comparable categories were significantly correlated between adult and child data (e.g., adult ‘fast food’ with child ‘non-healthy foods’, r=0.519, pWellness Journey group had a significantly improved post-intervention change score compared to the Safety Journey group for both adults (0.428 vs. 0.017, p=0.039) and children (0.535 vs. 0.079, p=0.013). Conclusions: Overall dietary patterns in American Indian adults and children were significantly improved after the Healthy Children, Strong Families 2 intervention, suggesting the efficacy of this home-based approach. Furthermore, these data support targeting adult nutrition as a method to improve child nutrition. The lack of association between dietary patterns and body mass index suggests BMI may not be a sensitive/ideal indicator of dietary behaviors in this population.

P2.01.69

GENDER RELATED DIFFERENCES IN ‘FUNDAMENTAL’ AND ‘FUNCTIONAL’ MOVEMENT WITHIN AN IRISH ADOLESCENT SCHOOL-BASED POPULATION.

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Purpose: The purpose of the current research was to gather baseline data on Irish adolescent youth, specifically in order to inform the development of a targeted movement-oriented intervention entitled Project FLAME. There is a specific gap in the literature, as no previous study to the researchers’ knowledge has collectively assessed Fundamental Movement Skills (FMS) and the Functional Movement Screen, as part of an existing adolescent motor development programme. Methods: Cross-sectional data were collected on post-primary adolescents (N=219; mean age: 14.47±0.99 years), enrolled in first, second and third year within two, mixed gender schools during April and May 2016. Data collection included FMS, FMS™, PA (accelerometry and self-report), perceived movement skill confidence and anthropometric characteristics (height and mass). The specific data in relation to adolescent movement was assessed using established instruments, namely the Test of Gross Motor Development-2 (TGMD-2) (Ulrich, 2000), and the Functional Movement Screen (Cook et al., 2006). Results: The mean overall FMS composite score was 68.72 (+7.54), out of a possible total of 84, with a Mann-Whitney U test revealing that males scored significantly higher than females (p=.001). Furthermore, males performed significantly higher than females in the overall subset object control domain (p=.001), the kick (p=.001), the strike (p=.001), the throw (p=.001) and the horizontal jump (p=.001); although females did perform significantly better in the catch (p=.003). In terms of functional movement, no student achieved complete mastery across all seven tests of the Functional Movement Screen. The mean composite score was 14.05+2.48, out of a possible total of 21, with independent samples t-tests revealing that females outperformed males overall (p=.011), in the active straight leg raise (p=.001) and the shoulder mobility assessment (p=.005); however, males performed significantly better than females in the trunk stability push-up test (p=.001). Conclusion: A strategic step towards creating a change to the low levels of fundamental and functional movement found in this study requires a multi-faceted approach (Bremer & Lloyd, 2014), specifically by creating developmentally and gender-appropriate activities (Barnett et al., 2010; Lai et al., 2014; Morgan et al., 2013; Robinson et al., 2015) that engage, challenge and ultimately positively impact movement competency.

P2.01.70

DYADIC EXAMINATION OF THE ENVIRONMENTAL AND BEHAVIOURAL FACTORS THAT INFLUENCE HEALTH BEHAVIOURS OF ADOLESCENTS BEFORE THEY TRANSITION TO SECONDARY SCHOOLS

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Purpose: We examined the environmental and behavioural factors that influence adolescent health behaviours (physical activity (PA), sedentary behaviours, and nutrition) as they transition from elementary to secondary school. Emerging evidence identifies this transition as a critical period where adverse changes to adolescent health behaviours associated with obesity can occur. Thus, we adopted qualitative methods to examine the influences on adolescent health behaviours during this transition from the perspectives of both parents and adolescents.

Methods: We recruited 28 dyads (child and one parent) from Surrey, British Columbia, Canada (68% mothers; 50% girls; 25% White; 54% income Results: Most adolescents viewed the school environment as the primary influence of their PA due to the availability of sports teams and equipment. Some, however, also mentioned that their parents played a key role in encouraging PA participation. Parents predominantly cited the home environment highlighting the facilitative role they played (enrolling in and transporting to activities). For sedentary behaviours, parents cited siblings and friends as primary influences and highlighted the role of social media on screen use. While some adolescents echoed these notions, more cited the availability of electronic devices and parental rules as being most influential on their behaviours. For nutrition, parents and adolescents viewed the home environment as the predominant influence on adolescents’ eating habits and emphasized how parents structured the home environment (availability and accessibility of healthy food, meal preparation, and expectations) and controlled food intake (restrictions and pressuring intake). Autonomy supportive strategies were rarely mentioned for each of the three health behaviours that we examined. Conclusions: Our results highlight that the obesogenic behaviours may be influenced by how parents structure and control their adolescent child’s home environments. It may be important for adolescents to be socialized through autonomy supportive practices to help them self-regulate their behaviours as they transition to secondary schools.

P2.02 Interventions: Adults, older adults and all ages

P2.02.1 REDUCING SITTING TIME IN MILD COGNITIVE IMPAIRMENT: A PILOT FEASIBILITY STUDY

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Purpose: Daily sitting time is a risk factor for poor glycemic control and insulin sensitivity, which are inexorably linked to Alzheimer’s disease and its preclinical stage, amnestic mild cognitive impairment (aMCI). People with aMCI engage in lower frequency and lower intensity physical activity compared to non aMCI older adults, making reduction of sitting time a practical platform for health improvement. Interventions to reduce or break-up sitting time have resulted in improved glycemic control and insulin sensitivity in older adults, but no studies have evaluated the feasibility of this approach in older adults with aMCI. Older adults with aMCI face challenges to adopting any health behavior change, including cognitive difficulties, dependence on others, comorbid chronic conditions, and dysregulation of sleep and mood (e.g., apathy). We report the design and feasibility data from our 12-week home and telephone-based randomized controlled pilot trial of an intervention to reduce sitting time in people with aMCI (ReST-aMCI). Methods: ReST-aMCI is innovative in that it: 1) uses objectively assessed thigh-worn electronic postural monitoring (activPALTM), 2) provides vibrotactile feedback to promote reduced sitting (Jawbone), 3) assesses insulin sensitivity and glycemic control, 4) is conducted in the home and targeted to individual habits and physical environments that reinforce sitting behaviors, 5) targets sedentary older adults with aMCI, and 6) capitalizes on the caregiver/patient dyad to help improve adherence to the behavioral change regimen. The control group receives printed educational materials and home visits only for assessment of outcomes. Results: To date three participants have been recruited and are completing the study. Some observed barriers to feasibility include difficulty with enrollment and retention (especially due to caregiver burden), the role of memory impairment in the ability to consistently modify behavior, participant confusion about body-worn devices, and longer visit duration and study staff demand than expected due to participant confusion. Overall, participants and caregivers report satisfaction with the intervention and cite the vibrotactile reminders as the most successful piece of the intervention. Conclusions: This intervention has the potential to improve the health of...
people with aMCI and other cognitive disorders. This approach needs to be validated in a larger trial.

P2.02.2
FEASIBILITY OF AN EVIDENCE-INFORMED, CO-PRODUCED PHYSICAL ACTIVITY REFERRAL SCHEME

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Objective: This study explores the feasibility of a novel evidence-informed physical activity (PA) referral scheme that has been co-produced by service users, policy-makers, practitioners and academics. Guided by the Medical Research Council, the study aims to explore delivery processes, recruitment and retention rates, specificity and sensitivity of health measures, as well as preliminary effects to inform a future controlled trial. Considering the growing importance of evidence-informed practice, pragmatic research is required that dedicates time to development and feasibility testing before evaluating interventions. Research that follows this method is more likely to produce interventions that are relevant, context sensitive and clinically effective. Methods: Patients with health conditions (n=30) will receive behavior change support from an Exercise Referral Practitioner (ERP) at weeks 0, 4, 12 (post-intervention) and 18 (follow-up). Consultations will aim to foster autonomous motivation for PA, with a focus on supporting sustainable changes to PA behaviors (through both daily PA and participation in leisure centre activities, e.g. swimming, classes, gym). Measures: Behavioral (7-day accelerometry), psychological (BREQ-2R; PNSE; needs support), and physiological (cycle sub-max VO2 test; blood markers (cholesterol, glucose, insulin, lipids and free-fatty acids); vascular ultrasound assessments (flow-mediated dilation, cold-pressor and intima-media thickness)) measures will be collected at 0 and 12 weeks in university laboratories. Self-reported PA (IPAQ) and wellbeing (WEBWMS) will be collected by ERPs at weeks 0, 12 and 18 to explore the feasibility of collecting evaluation data for the benefit of the scheme's stakeholders (as recommended by NICE, 2014). Qualitative interviews will be conducted with a subsample of patients (week 18) and staff (weeks 6 and 18) to explore delivery issues and acceptability. Analysis: Outcome measures will be recorded and analysed using statistics package SPSS. A one-way ANCOVA will be used to identify any significant change across time. Appropriate adjustments will be made for potential confounding variables. Semi-structured interviews will be transcribed verbatim and analysed thematically using NVivo electronic software. Results and Conclusion: Results are not yet available but will be presented for the first time at ISBNPA 2017. Study findings will inform a future controlled trial and long-term implementation of the PA referral intervention.

P2.02.3
COMMUNICATING AND RAISING AWARENESS ABOUT A ‘NEW’ PUBLIC HEALTH MESSAGE: A PLAYFUL ONLINE SURVEY ON SITTING TIME AND PHYSICAL ACTIVITY

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Purpose: There is a lack of research on how to raise awareness for guidelines encouraging physical activity and decreasing sitting time, especially using new media. In the present study, a playful web-based online survey on sitting and physical activity was developed as part of a national science event organised in Flanders (Belgium). Here, we aimed to understand if a broad audience and what audience could be reached. Methods: A short playful online survey hosted on the website of the science event contained a tailored health-related message associated to an ‘animal totem’ profile, based on the combination of self-reported sitting time and physical activity levels (koala: high sitting, low activity; gorilla: high sitting, high activity; zebra: low sitting, low activity; bee: low sitting, high activity). Different strategies were used to promote the online survey, including 2 tweets by well-known celebrities, 2 radio interviews with these celebrities, 242 radio advertisements, 3 press articles, 3 online advertisements and a press conference. Google Analytics and Facebook graph API (application programming interface) were used to report on the survey use and spread. Descriptive statistics were used to describe the characteristics of adult completers of the survey. Results: In total, 6,246 adults completed the survey, most of them did this in the month before the event, with a peak of views (n=5,103) and completions (n=1,209) of the survey a couple of days before the event. Completers were mostly female (65.8%), on average 37.5 years old, and healthy weight (body mass index: 23.8 kg/m²). The majority (46.4%) had the most beneficial profile ('bee') combining a low level of sitting with high level of physical activity, while 26.5% had the least beneficial profile ('koala'). Conclusions: A national science event is a good platform for health communication as 1 in 1,000 Flemish adults could be reached. However, those interested
in completing the survey were not representative of the general Flemish adult population in terms of socio-demographics and they reported to be more physically active and as sedentary compared to the general population.

P2.02.4
PROTOCOL FOR THE PROMPT RCT: FEASIBILITY OF A BRIEF INTERVENTION FOR THE PREVENTION OF WEIGHT GAIN POST RENAL TRANSPLANT EMBEDDED WITHIN FOLLOW-UP HEALTH CARE CONSULTATIONS
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Objective: There is good evidence that weight gain post renal transplant leads to increased patient morbidity and mortality as well as graft failure. Currently, weight management is not a consistent part of routine care for these patients and the level of intervention depends on the individual clinician. Here we present a protocol for a feasibility trial investigating a brief intervention embedded within usual healthcare contacts to prevent weight gain post renal transplant in adult patients. Method: We will recruit 60 patients who have recently had a renal transplant into a randomised controlled trial with participants allocated to either intervention or a usual care comparator group (2:1 randomisation). The intervention will be embedded into usual outpatient appointments and is based on self-monitoring with external accountability provided by their renal consultant. Participants will be advised to stay within 1kg of their baseline weight. Follow-up is at six months from baseline. The comparator group will receive usual care post renal transplant. At baseline and six month follow-up we will measure objective weight, % body fat, BP, blood tests including graft function parameters and metabolic profile. We will also collect data on quality of life, diet, depression, fatigue, sleep quality and physical activity. After follow-up is completed we will conduct semi-structured interviews with four clinicians delivering the intervention and up to 12 intervention participants to provide feedback on intervention acceptability. Patients will be eligible for the trial if they are over 18 years old and have been discharged following a single organ renal transplant. Results: The trial will show whether the proposed intervention based on self-weighing with external accountability is feasible and acceptable to patients and clinicians (primary outcome). We will measure the recruitment rate, intervention adherence and feasibility of delivering the intervention and collecting trial data. In addition, we will also assess if intervention contamination has occurred by questionnaire. Conclusions: If the intervention is shown to be feasible and acceptable a larger multicentre phase III trial with longer follow-up will be conducted to test both clinical and cost effectiveness of the intervention.

P2.02.5
EMOTIONAL EATING AND WEIGHT LOSS IN THE MCGILL CHIP HEALTHY WEIGHT PROGRAM
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Emotional eating is the tendency to overeat in response to negative emotions such as stress and anxiety. It has been shown to moderate weight loss in participants enrolled in behavioural weight loss programs, with emotional eaters losing less weight than non-emotional eaters. It is hypothesized that these programs are less effective for emotional eaters because they fail to teach emotional eaters the skills needed to cope with negative emotions without eating. The present study examined the effect of emotional eating on weight loss in overweight and obese individuals enrolled in an ongoing randomized controlled trial (RCT), the McGill CHIP Healthy Weight Study. This RCT tests the effectiveness of if-then planning for enhancing weight loss. If-then plans are a behaviour modification tool that commit people to an action, and have been shown to create habits. Emotional eating was measured using the Dutch Eating Behavior Questionnaire using a cut-off score of 3.25 or higher to classify individuals as emotional eaters. The association between emotional eating and weight was examined to test the hypotheses that emotional eaters will lose less weight in the program than non-emotional eaters at 3, 12, and 24-months. Preliminary results show that overall the program is effective, resulting in approximately 8% average weight loss. Emotional eaters lost significantly less weight at 12 months (approximately 4% less), but not at 3 months. At 12 months, emotional eaters endorsed more behaviours related to over-eating, such as failing to stop when full, and not eating during the first half of the day and then overeating in the later part of the day, than non-emotional eaters. Twenty-four month data are still being collected. These preliminary results indicate the need to develop weight loss programs in which emotional eaters can learn to cope with negative emotions in other ways than eating.

P2.02.6
EFFICACY OF PRIMARY CARE PHYSICIAN REFERRAL FOR EXPERT PHYSICAL ACTIVITY COUNSELING: OUTCOMES OF
THE NEWCOACH PRAGMATIC RANDOMIZED CONTROLLED TRIAL

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Objective Primary care physicians (PCP) are well placed to offer physical activity (PA) counseling but insufficient time is a barrier. Referral to an exercise specialist is an alternative. This trial aimed to 1) determine the efficacy of PCP referral of insufficiently active patients for PA counselling, compared with usual care (UC), and 2) compare the efficacy of face-to-face counseling with counseling predominately via telephone. Method: Two-hundred and three insufficiently active (The primary outcome was step counts/day at 12-months. Results: Retention was 80% (163/203). Intervention attendance was high (75% received 5 sessions). The estimated mean difference between UC and intervention groups at 12-months was 1002 steps/day (P=0.01). Conclusions: Provision of expert physical activity counseling to insufficiently active primary care patients resulted in a significant increase in physical activity (approximately 10 minutes of walking per day) at 12-months. Face-to-face only, and counseling conducted predominately via telephone were both effective. This trial provides evidence to expand public funding for expert physical activity counseling, and for delivery via telephone in addition to face-to-face consultations.

P2.02.7

METHODOLOGY AND SHORT-TERM RESULTS OF THE PARK PRESCRIPTION TRIAL: PRESCRIBING PHYSICAL ACTIVITY AND PARK USE TO COMMUNITY DWELLING INDIVIDUALS

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Purpose This Randomized Controlled Trial (RCT) investigates the effectiveness of Park Prescription, i.e., physical activity (PA) prescription with a focus on the use of parks and green spaces. Its aim is to motivate the target population to increase PA (primary objective), specifically in parks, and thereby improve physical and mental health (secondary objective). Methods Participants aged 40 to 65 years were recruited through a Population Health Community Screening Programme conducted by a regional hospital in Singapore. To be included in the study, people had to be physically inactive, pass the Physical Activity Readiness Questionnaire (PARQ) and have blood pressure and blood sugar values within healthy ranges. Participants were randomly assigned to one of the following two groups; 1) a face-to-face Park Prescription + participation in a weekly PA program conducted in the park, 2) control group. They were enrolled in the study for a period of 6 months and completed baseline, 3- and 6 months follow-up assessments. Process indicators, including reach, dosage, fidelity, and participant satisfaction, were additionally measured. Sample size calculation determined a target sample of 160 participants, 80 per group. Recruitment started in April 2016 and will be completed in December 2016. Hence, the current results focus on the baseline and 3-month follow-up outcomes only. Results Participants were predominantly female, of Chinese ethnicity and currently married. At baseline, both intervention and control participants did not visit parks and/or did not engage in PA in the park on a regular basis. At 3 months, the median time spent in visiting parks and doing PA in parks increased in the intervention group, but not in the control group. No differences between control and intervention group were observed in terms of moderate to vigorous PA at 3 months. Attendance of the weekly PA program was approximately 35%. The most frequently mentioned reason for not attending the weekly program in the park was inconvenient timing. Conclusion Park Prescription has the potential to be applied in large community screenings by regional health systems. Its effectiveness on health and health behaviour and its scalability will be further evaluated as part of our study.

P2.02.8

HAT TRICK: STUDY PROTOCOL OF A GENDER-SENSITIVE INTERVENTION TARGETING ACTIVE LIVING, HEALTHY EATING AND CONNECTEDNESS IN OVERWEIGHT AND OBESE MEN

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Purpose: Physical activity (PA), healthy eating, and maintaining a healthy weight are associated with reduced risk of cardiovascular disease, type 2 diabetes, cancer, and mental health illnesses. Despite these benefits, many men do not meet recommended PA guidelines (i.e., 150 min of moderate- to vigorous-intensity PA per week) and have poor eating behaviours. Men can also be reluctant and/or 'hard-to-reach', making it difficult to implement health promotion initiatives. Research has revealed that consideration of 'place' and 'product' that aligns with men's values and interests can advance health promotion behaviours. The purpose of this presentation is to outline the rationale and methodological protocols of HAT TRICK, a gender-sensitive intervention designed to engage men in improving PA, healthy eating, and connectedness. Methods: This study is a non-randomized, quasi-experimental intervention trial examining feasibility, acceptability, and estimated intervention effectiveness. The 12-week, face-to-face intervention was delivered in collaboration with a major junior ice hockey team in British Columbia (BC), Canada. Participants (N=60) are men 35+ years, residing in the BC's Okanagan Region, who accumulate 25kg/m2 and a pant size of >38”. Recruitment occurred via the hockey team (e.g., season ticket holders), male-dominated organisations, local print media, and social media (e.g., Facebook, Twitter). Each 90-minute weekly session was led by healthy lifestyle experts including research staff, hockey team representatives (e.g., trainers, nutritionists), and other community health professionals. During each progressive session, participants had an opportunity to be physically active, gain further health education (e.g., how to be active at home, appropriate portion sizes, etc.) and learn about behaviour change techniques (e.g., goal setting, self-monitoring). Results/findings: Program feasibility, acceptability, and estimates of program effectiveness will be evaluated using mixed-methods, including: accelerometry, questionnaires, semi-structured interviews, and objective measures of anthropometrics. Outcome measures of PA, diet, depression symptomology, social connectedness, quality of life, and anthropometrics will be collected at baseline, 12-week (post-intervention), and 9-month follow-up. Conclusion: Results will offer much needed insight into effective strategies for targeting this population and guide intervention refinement.

P2.02.10
DOES HOUSEHOLD COMPOSITION INFLUENCE WEIGHT LOSS PROGRAM SUCCESS?
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Purpose: While some research suggests that spouses living with weight loss program participants also lose weight, little is known about whether household size or composition present barriers to weight loss for adults in treatment. The purpose of this study was to determine whether household size, composition or weight status of co-inhabitants were related to the amount of weight lost by adult participants in a behavioral weight control program. Methods. 356 participants (BMI=35.7 kg/m2; 90% Female; 24% Minority) from 2 sites (Arkansas and Vermont) completing a six-month, online behavioral weight control program reported at baseline the number of individuals currently living with them as well as their age (infant, toddler, young child, adolescent, young adult, adult) and relationship (spouse, child, non-relative, other). They also indicated whether they were: 1) living with someone overweight trying to lose weight; 2) living with someone overweight not trying to lose weight; 3) living with others not overweight; or 4) living alone. Results. Participants lost a significant amount of weight (-5.9 kg ± 6.2). There was no relationship between household size (r=0.01, p=.84), relationship (r=-0.05, p=.14), age (r=0.04, p=.24), overweight status (r=0.03, p=.34), or current attempt to lose weight by co-inhabitants (r=-0.02, p=.51) and amount of weight lost by participants. Conclusion. Living with others, relatives or not, children or adults, overweight or not, did not adversely impact weight loss success in this online behavioral intervention. Previous research has evaluated the "trickle down" impact of weight loss program participation on family members. This is the first analysis that we are aware of to evaluate the opposite; the beneficial or adverse influence that shared co-habitation can have on the weight loss success of program participants.

P2.02.11
PHYSICAL ACTIVITY COUNSELLING DURING INPATIENT REHABILITATION DOES NOT IMPROVE PHYSICAL ACTIVITY AND HEALTH-RELATED QUALITY OF LIFE AFTER TOTAL KNEE OR HIP ARTHROPLASTY
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Objective Physical activity (PA) is reduced in patients suffering from knee or hip osteoarthritis (OA). After surgery, the vast majority of patients show less PA compared to healthy peers and PA recommendations. This study aimed
to improve PA during three weeks of inpatient rehabilitation directly following knee or hip arthroplasty. Methods 39 patients were pseudorandomized into an intervention group (IG; n=19, aged 70.9 ± 6.8 years, BMI 27.7 ± 3.6, 10 females) and a control group (CG; n=20, aged 69.4 ± 6.5 years, BMI 26.6 ± 7.3, 10 females). With respect to PA, the IG was monitored throughout the inpatient rehabilitation and received a face-to-face counselling based on their individual PA twice a week additionally to the standard treatment. In IG and CG, PA was measured by a Step Activity Monitor (OrthoCare Innovations, USA) and calculated as daily steps, active and inactive bouts, and gait intensity. Quality of life (SF-36) and clinical outcome (Oxford Knee/Hip Score) were assessed. All measurements were performed during the first days of inpatient rehabilitation, and three and six months after inpatient rehabilitation. Results PA improved from baseline to six months follow-up in both the IG (e.g. steps/day: 9336 ± 1640 vs. 11184 ± 2653, p). Conclusions Both groups improved in PA and quality of life similar to other OA patients in Germany. The individual counselling did not significantly improve the development of PA, quality of health and clinical outcome. Therefore, we hypothesize that the patients are not able to adopt the PA intervention during inpatient rehabilitation directly following surgery. Consequently, we suggest to place PA interventions after the inpatient rehabilitation.

P2.02.11
WEIGHT LOSS SUCCESS OF PARTICIPANTS RESIDING IN RURAL VERSUS URBAN AREAS
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Purpose: Rural residents are significantly more likely to be overweight and obese than are urban residents. However, few data have compared weight control program responses in these population groups. Therefore, the primary aim of this study was to evaluate the weight loss outcomes of participants in a multi-site, on-line behavioral intervention by residential location (rural vs. urban) and, secondly, assess any possible differences in adherence to treatment goals. Methods: 492 participants (Mean BMI = 35.7; 90 % Female, 24% Minority) >18 years with a BMI >25 (kg/m2) were categorized based on their home address and the 2010 US Census Urban and Rural Classification criteria (58.3.8% Rural; 41.7% Urban). Weight (kg) was measured in person at baseline and 6 months. Physical activity and calorie and fat intake were self-reported for 24 weeks. Weekly meeting attendance and completion of weekly self-monitoring were recorded. The presence of obesogenic foods in the home was self-reported at 6 months. Findings: There were no statistically significant differences in weight loss between rural and urban residing participants (-6.1 kg vs. -5.3 kg, p=0.16), nor were there differences in meeting attendance, self-monitoring, self-reported physical activity or calorie intake or obesogenic foods reported in the household. Conclusions: Overall, there was no difference in weight loss and adherence to treatment goals for rural and urban participants. Further research on rural and urban residents is necessary to explore the factors responsible for the disparity in obesity prevalence.

P2.02.12
THE IMPACT OF EDUCATION AND PROMPTS ON REDUCING UNHEALTHY PATTERNS OF SEDENTARY BEHAVIOUR IN THE WORKPLACE: A PILOT STUDY
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Objective: Office workers accrue high levels of sedentary time, often in prolonged, unbroken events, during working hours. There is evidence that prompts to remind workers to break up their sitting are effective in the short-term, but little is known about the long-term impact on sedentary behaviour (SB). This pilot study examined the impact of education, compared to the impact of education and prompts to objectively measured SB outcomes in a sample of office workers. Methods: An activPAL accelerometer was used to measure baseline SB of office workers (n=30) from the same worksite. All participants received feedback on their baseline activity and education about the health risks associated with SB. Subsequently, they were randomised into two groups: one group received no further intervention, whilst the other received hourly prompts on their computer reminding them to break-up their sitting, for a period of 10 weeks. Objective measurements of SB were repeated for all participants at 5, 10 and 24 weeks post-education. A one way ANOVA was used to examine between group differences in total and prolonged SB (events >20 minutes). Within-subject differences were examined using paired t-tests. Results: In this small pilot study no statistically significant differences were found between groups or within-subjects over time. However, there was a tendency for participants in both groups to reduce their total SB (-5.7% ± 14.2, p=0.056), and time spent in prolonged events (-3.4% ± 12.4, p=0.18) during working hours, from baseline to 5 weeks post-education. A reduction in total SB (but not prolonged SB) was maintained only by the prompt group at 24 weeks (3.6% ± 14.0,
p=0.4). Conclusions: Education on the health risks associated with SB has the potential to be effective at reducing sitting in office workers. Whilst prompts did not increase the immediate impact of education, they may serve to maintain improvements to SB in the longer-term. Future research should aim to examine the impact of education with/without prompts on a larger sample. A control group who receive no education would provide insight into whether there is any long-term value in educating office workers on the health risks of SB.

P2.02.13
COMBINED PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOR OUTCOMES OF A COMMUNITY-WIDE CAMPAIGN
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Purpose. The Community Guide recommends community-wide campaigns as a strategy for increasing physical activity. However, this strategy has not been tested extensively in Hispanic populations or for its potential impact on sedentary behavior. The purpose of this study was to test the effect of a community-wide campaign, Tu Salud ¡Si Cuenta! Your Health Matters! (TSSC) on simultaneously impacting physical activity and sedentary behavior in a Hispanic, U.S.-Mexico border community. Methods. TSSC used a quasi-experimental design of an intervention and comparison community, with cross-sectional panels taken at three time-points. Participants were sampled using a two-stage cluster design. We measured exposure to the campaign with a pre-existing, validated measure and grouped individuals based on both exposure to the campaign and site. Meeting physical activity guidelines (total MET mins/week in leisure-time ≥600) and excessive sedentary behavior (≥540 mins/day) were measured using the IPAQ short-form. Based on Time 3 data, a multivariable analysis using generalized logistic regression models, adjusting for covariates, was run. Results. The sample was N=676 and was predominately female (86%) and Mexican-origin (98%), with less than a high school education (76%). There was a significant difference between intervention exposed, intervention unexposed, control exposed and control unexposed; there was a higher percentage of individuals with high physical activity/low sedentary behavior in those exposed to TSSC in the intervention group (42%), as opposed to those unexposed in the control (23%) or intervention groups (32%). As compared to those in the control group, the intervention group had 6.45 (p Conclusions. The results indicate that community-wide campaigns are effective in Hispanic communities to simultaneously increase physical activity and decrease sedentary behavior. These campaigns should be used in the future with other Hispanic sub-groups and further studies should test their longitudinal effects on sedentary behaviors specifically.

P2.02.14
EFFECTIVENESS OF A COMMUNITY-BASED PROGRAMME INCLUDING ONE-TO-ONE MENTORING FOR ENGAGING INACTIVE ADULTS IN SPORT AND PHYSICAL ACTIVITY
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Purpose New approaches are sought which effectively engage inactive people in sport to increase physical activity levels. This paper outlines the effectiveness of a 3-year programme which aimed to develop and test a community model for engaging inactive adults in sport and physical activity. Methods Participants were recruited from two areas of Leicestershire and were screened using the single item measure of physical activity to identify inactive individuals. Eligible participants attended a one-to-one meeting with a Mentor, completed the baseline survey (which assessed sport participation and physical activity levels) and discussed their barriers to participation in sport and physical activity. A plan was established for the participant and the participant was provided with a free six month leisure pass. Participants took part in up to six further one-to-one mentor sessions, attended leisure centre activities and participated in activities offered in their local communities. Follow-up surveys were repeated after 3, 6 and 12 months. Continuous survey data were analysed using paired t-tests, or Wilcoxon Signed Rank Test for non-parametric data, and categorical data using McNemar test to assess changes in key outcomes between baseline and each survey time point. Results Overall, 533 participants were recruited to the programme. Participants were female (69.5%); mean age 37.7 ±14.0 years; from a white ethnic group (86.7%) and in full- or part-time employment (48.4%). Significant increases were observed in the proportion of individuals participating in sport at 3 months (baseline: 7.8%, 3 months: 41.3%; p= Conclusions The programme successfully recruited inactive individuals and increased sport and physical activity participation. These findings provide strong evidence for the utility of a community model which includes one-to-one mentoring combined with the provision of free access to local
opportunities to be active, for engaging inactive adults in sport and physical activity.

P2.02.15
ASSOCIATIONS BETWEEN PERCEIVED BENEFITS AND BARRIERS TO EXERCISE AND PERCENT WEIGHT CHANGE AMONG MEAL REPLACEMENT PROGRAM PARTICIPANTS
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Objective: To determine if perceived benefits and barriers to exercise vary by percent weight change among individuals participating in a proprietary meal replacement program that incorporates health coaching. Methods: An electronic survey containing the Exercise Benefits/Barriers Scale and self-reported program start weight and current weight was distributed to 20,000 program participants. Percent of starting weight was calculated. Results: Among the 1,300 individuals included in final analyses, weight change ranged from 51% to 152% of starting weight. When examining benefits scores by percent of starting weight, no differences were seen in the physical performance, social interaction or preventative health subscales. In the life enhancement subscale, those with greater weight loss agreed more with the statement "Exercise allows me to carry out normal activities without becoming tired" (p = 0.03). In the psychological outlook subscale, those with greater weight loss agreed more with the statements "Exercise gives me a sense of personal accomplishment" (p = 0.02) and "Exercising makes me feel relaxed" (p = 0.03). Overall benefits score was not a significant predictor of weight change. Regarding barriers, in the exercise milieu subscale, those with greater weight loss disagreed more with the statement "I am too embarrassed to exercise" (p = 0.008). In the physical exertion subscale, those with greater weight loss disagreed more with the statements "Exercise tires me" (p = 0.02) and "Exercise is hard work for me" (p = 0.001). No differences were seen in the time expenditure subscale. Overall barrier score was a predictor of weight change (p = 0.007). Those with the greatest weight loss reported the fewest perceived barriers. Total benefits and barriers score was a predictor of weight change (p = 0.04). Those with the greatest weight loss perceived exercise more positively. Conclusions: In weight management programs that utilize health coaches, opportunity exists for assessment of perceived barriers related to exercise, allowing coaches to identify and work to overcome specific barriers with individuals, ultimately enhancing weight management success.

P2.02.16
WHY DO MEN ENGAGE WITH PROFESSIONAL-SPORT BASED LIFESTYLE INTERVENTIONS? THE CASE OF RUGBY FANS IN TRAINING-NZ
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Purpose: Professional sport club-based, healthy lifestyle interventions designed for the needs of men have been developed to overcome barriers that contribute to limited male participation in traditional weight management programmes. The positive weight and lifestyle changes associated with these programmes are being realised (Hunt et al., 2014). Understanding why men engage with these programmes and why they bring positive results will inform and enhance their development and delivery. Extending research from the football context, this study explored the factors that contributed to the effectiveness of the Rugby Fans in Training NZ (RuFIT-NZ) programme. Methods: Eight focus groups were undertaken with 34 men (M age = 44.4 years, SD = 10.2, range: 27 – 63 years) who had completed RuFIT-NZ. A question-based discussion guide directed conversation to elicit detailed accounts of participant experiences. Based within a critical realism epistemology, a thematic analysis was undertaken using steps outlined by Braun and Clarke (2006) to identify key themes contained within the data. Results/findings: Four themes contributed to RuFIT-NZ effectiveness. 1) Team Atmosphere reflected the support, motivation and camaraderie that was created between the men who were "all in the same boat". 2) The Coach described the positive characteristics (attitude, energy, passion, humour) of the coach and the skills used to structure fun, challenging and individualised training sessions. 3) Knowledge Development related to the information and tools obtained from the education sessions to facilitate behaviour change. 4) Rugby Club Connection illustrated the draw of the Club to motivate initial sign up, the "privilege" of being in their Club's headquarters and the perception the Club cared and was supporting them. Conclusions: The themes reflect the importance of content (nutrition and exercise information, behaviour change tools), delivery mechanisms (coach behaviours, context) and participant behaviours for RuFIT-NZ's effectiveness. These themes mirror and, importantly, extend previous research (Wyke et al., 2015) and should inform future development of sport-based lifestyle programmes. Of particular interest for
future research is the crucial role of the participant created motivational atmosphere. It may be that men who engage with these programmes bring with them specific characteristics and philosophies that facilitate its success.

**P2.02.17**

**BEYOND POSTERS: STAIRTEMBER - A NOVEL, INTERACTIVE STAIR CLIMBING INTERVENTION**

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Purpose: Stair climbing is an established incidental form of physical activity, but the stairs in university buildings often seem deserted. Motivational posters have previously promoted stair use in public and university settings, to varying effect. This study aims to measure the effectiveness of an interactive, multi-faceted intervention on increasing stair climbing. Methods: A one-month intervention (Stairtember), which included posters, a team-based challenge, an app for tracking stair climbing, and multiple modes of communication, such as AV-screens and emails to engage the occupants of a new ‘active design’ University building in more stair climbing. Stair climbing was objectively measured on all levels, and lift use on two levels (ground floor and uppermost level) by infra-red people counters measuring all traffic during the baseline, recruitment and intervention periods as well as a 2-month ‘wash-out’ period, where only posters were present. 106 adult participants (75% female, 2/3 were 35 years or younger) in 19 teams signed up for the Stairtember team challenge and self-reported their daily stair climbing. Results: Occupants of the building climbed more than 80,000 floors in total throughout the study. Stair climbing increased by 24% from baseline to intervention (from 1093 to 1350 floors climbed on average per weekday). During wash-out an increase in stair climbing was still observed, although lower than during the intervention (average 1195 floors climbed per weekday). The ratio of ascending stair to lift users increased from 0.2 at baseline to 0.38 during the intervention at the uppermost level of the building. This was reduced to 0.31 during the wash-out period. 72% of the participants said they enjoyed the Stairtember challenge and 74% said they would be interested in taking part in the next Stairtember challenge. They reported enjoying ‘being part of a team’, ‘the challenge’, ‘the social aspect’, and ‘losing weight’. Conclusions: Preliminary descriptive analyses suggest that the effect of this intervention was higher than most stair use interventions using posters only (Bellicha et al, 2015). Implementing novel, interactive ways to engage with stair climbing, such as challenges, gamification and multi-modal communication may be the way forward in stair promotion program to contribute to better health.

**P2.02.18**

**IMPLEMENTING COMMUNITY SETTING-BASED INTERVENTIONS AT SCALE - WHAT IS THE CURRENT STATE OF EVIDENCE**

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Objective: While effective setting-based interventions to improve diet, activity and prevent excessive weight gain exist, few are successfully implemented in practice. The aim of this review was to describe the effectiveness of strategies to implement policies, practices or programs promoting diet, physical activity or the prevention of excessive weight gain across four community settings - childcare, schools, workplaces and sporting clubs. Methods: Review methods were conducted in accordance with the Cochrane Handbook, and protocols have been published in the Cochrane Library. A comprehensive search of electronic journal data-bases, grey literature, hand searches of journals and contact with leading researchers in the field was undertaken to identify relevant studies. To be eligible studies needed to employ randomised or non-randomised designs with a parallel control group, describe an implementation strategy and report between group differences of implementation of a diet, physical activity or obesity prevention targeted policy, practice or program. There were no limitations on publication language or date of publication. Data was extracted by 2 reviewers. Results: Despite screening over 20,000 citations few eligible trials were identified. For example, just 1 eligible trial was identified in the sporting club setting, 10 in childcare and 19 in schools. Trial heterogeneity precluded meta-analysis. Overall the quality of evidence (GRADE) was poor, and most trials reported a high risk of bias and few utilised implementation theory or frameworks in the design of implementation strategies. Few trials sought to achieve implementation ‘at scale’ defined as 50 or more organisations (e.g schools). The most common implementation strategies were educational meetings, resources and outreach visits, however effects of strategies in improving implementation of evidence based diet, physical
activity and obesity prevention policies, practice or programs were inconsistent. Conclusion: Collectively the finding demonstrate a limited evidence base to guide policy maker and practitioner decision regarding how to implement evidence based programs in community settings. Further research is urgently required if the benefits of investments in health research at to reach the community.

P2.02.19
EFFECTIVENESS OF A CLINICAL PRACTICE CHANGE INTERVENTION IN INCREASING THE PROVISION OF PREVENTIVE CARE ACROSS A NETWORK OF COMMUNITY HEALTH CARE SERVICES: A STEPPED WEDGE IMPLEMENTATION TRIAL.
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Objective Although clinical guidelines recommend the opportunistic provision of care to reduce patient chronic disease risk behaviours, such care is provided sub-optimally. A trial was undertaken to determine the effectiveness of a multi-strategic practice change intervention in increasing the provision of multiple elements of preventive care for inadequate nutrition and physical activity by a network of community healthcare facilities. Methods A stepped-wedge trial was undertaken in community healthcare facilities. A 12 month practice change intervention was implemented sequentially in each of three geographically defined groups of such facilities. The intervention was implemented sequentially across the three groups. Outcome data were collected continuously for a period of 48 Months (September 2009-2014). Client-reported receipt of three elements of preventive care (assessment, brief advice, referral/follow-up) for each of two behavioural risks (inadequate fruit and vegetable consumption, physical inactivity) were the outcomes of interest. Logistic regression analyses assessed the effectiveness of the intervention in increasing the provision of such care. Results For the three groups combined, there were significant increases in client reported receipt of assessment and advice for nutrition. No significant increases were observed for referral of any risk behaviour. Conclusions The intervention was effective in enhancing assessment of client risk status but less so for those elements of care that could lead to a reduction in risk, the provision of brief advice and referral to evidenced-based risk reduction services. Further research is required to identify the barriers to clinician provision of such care elements for multiple risk behaviours and the effectiveness of practice change interventions in increasing the provision of such care.

P2.02.20
A RANDOMISED CONTROLLED TRIAL OF A TELEPHONE-BASED LIFESTYLE BEHAVIOURAL INTERVENTION FOR LOW BACK PAIN PATIENTS, WHO ARE OVERWEIGHT OR OBESE.
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Purpose Low back pain is the leading cause of disability world wide and around 70% of patients with persistent low back pain are overweight or obese. Despite evidence showing a correlation between overweight and inactivity, and the development of persistent low back pain, only 21% receive care to address these. This may be because there are no randomised controlled trials of weight loss or lifestyle interventions for patients with low back pain. We conducted the first randomised controlled trial aiming to evaluate the effectiveness of a telephone-based lifestyle behavioural intervention targeting weight loss, physical activity and diet for patients with chronic low back pain, who are overweight or obese. Methods A randomised controlled trial of 160 patients referred to an orthopaedic outpatient clinic was conducted. The intervention group received clinical assessment and advice and a telephone-based behaviour change intervention, focusing on weight reduction and healthy lifestyle. The control group received usual care. The primary outcome, pain intensity, was measured at baseline, week 2 and monthly thereafter, for 26 weeks. A range of secondary outcomes were measured including weight and the key determinants of weight loss (physical activity and diet). Outcomes were assessed using longitudinal linear mixed models. Results There was no significant between group difference in pain intensity (mean difference= -0.08, 95%CI -0.04 to 0.21; p=0.19). There were also no differences between groups for any weight, physical activity or diet outcomes. Based on the mean number of calls received, adherence to the intervention was low (mean 5.1 (SD 4.5)).
Conclusions Referral to a telephone-based healthy lifestyle intervention targeting weight, physical and diet did not improve pain intensity in patients with low back pain. As clinically significant weight loss was not achieved it remains unclear if weight loss and its determinants (physical activity and diet) are important aspects in the management of low back pain. As this population is more likely to be overweight and inactive, further consideration of the best way to reduce these risks is required.

P2.02.21
THE RIPPLE EFFECT: EVALUATION OF THE INDIGENOUS MARATHON FOUNDATION IN THE TORRES STRAIT
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Objective: To examine health and community impacts of the Indigenous Marathon Foundation (IMF), a program that uses running and local role models to promote healthy lifestyles in a remote island community. Methods: Mixed methods approach. Exploratory qualitative interviews with community and program stakeholders (n=18) examined the influence of the IMF on the community and its broader effects and barriers and enablers to running. Data were analyzed using a grounded theory approach and thematic content analysis. A quantitative questionnaire asked running participants (n=42 Indigenous; n=62 non-Indigenous) about their demographics, physical activity behaviors, running motivation and perceptions of program impact. Quantitative data were analyzed using descriptive statistics. Results/findings: Interviews revealed five main themes around evidence of community readiness to adopt health lifestyles, changes in social norms to increase physical activity participation, the importance of social support, ability of the program to reach hard-to-reach population groups and the initiation of broader healthy lifestyle ripple effects beyond running through the IMF. Barriers to running in the community were both personal (initial cultural attitudes; shyness and embarrassment) and environmental (costs of a healthy lifestyle; insufficient footpaths; hot and wet weather; dog attacks). Enablers reflected the importance of local Indigenous role models; targeting key population groups; shifting cultural barriers; improved affordability and environmental infrastructure. The majority of questionnaire respondents were female, had participated in both IMF activities and personal exercise during the past year. The main motivation to run was fitness and the majority were inspired by local role models. Most indicated that lots of adults in their community run regularly (n=69), running has become more popular in their community in the past three years (n=88) and IMF had an impact in their community (n=89). Compared to non-Indigenous participants, Indigenous participants were more likely to run to tackle health problems (p=0.03) and to have been inspired by local Indigenous role models (p=0.04) but less likely to participate in personal exercise (p=0.009). Conclusions: These findings demonstrate positive ripple effects of the IMF on running and broader health and lifestyle factors in a remote Torres Strait Island community with a high initial level of community readiness.

P2.02.22
STIMULATING PHYSICAL ACTIVITY IN HARD-TO-REACH PHYSICALLY DISABLED PEOPLE; DEVELOPMENT OF A COMMUNITY-BASED INTERVENTION USING INTERVENTION MAPPING.
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Objective: Physically disabled people participate less in physical activity than healthy people. Most existing physical activity stimulating interventions are rehabilitation- or school based, what limits their reach. The current study aims to develop a community-based intervention for stimulating physical activity in hard-to-reach physically disabled people. Methods: Intervention Mapping was used for systematically developing a physical activity stimulating intervention. In the needs assessment (step 1) the actual physical activity level and health related quality of life of patients two to four years after rehabilitation was determined using questionnaires. Next, experts and physically disabled people were asked for their ideas about intervention objectives, determinants and design of the intervention using focus groups and interviews (steps 2 and 3). Since experts expressed no need for a new intervention, the final intervention was developed by adapting the existing intervention "Activity coach" (Dutch: Beweegcoach) to the specific target population (step 4). Within steps 5 and 6 plans for adoption, implementation and evaluation of the programme were developed based on the RE-AIM framework and the Theory of Planned Behaviour. Results: Within the adapted "Activity coach", participants will be reached by a network of intermediate
organisations from medical and social background, and referred to an activity coach. The participant will be individually coached by the activity coach, to overcome barriers, and emphasize facilitators on individual and environmental level. In order to change the attitude towards physical activity, participants will have a pre intervention assessment by physiotherapists. The participant will be accompanied to existing organized or non-organized activities by the activity coach, after which 4 counselling sessions are provided. In order to stimulate goal setting and stimulate physical activity in daily life, participants receive an activity tracker during the intervention. Training sessions for activity coaches and meetings between involved parties are organized to support adoption and implementation of the adapted "Activity coach". Conclusions: The adapted "Activity coach" will be implemented in community in February 2017, and evaluated using a mixed-method design. Outcome measures of the evaluation will be based on the RE-AIM framework and the Theory of Planned Behaviour.

P2.02.23
ASSOCIATION BETWEEN CARDIOPULMONARY AND MUSCULAR FITNESS AND DISTRIBUTION OF ABDOMINAL FAT IN OVERWEIGHT AND OBESE ADULTS
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Purpose: The purpose of this study was to identify the association between physical fitness and the distribution of abdominal fat in overweight and obese adults. Method: A total 102 overweight and obese adults participated in current study, and 99 participants completed anthropometric measurements, fitness test, and computed tomography. Results: Cardiopulmonary fitness significantly inversely correlated with both visceral adipose tissue(VAT) and subcutaneous adipose tissue(SAT), while muscular fitness only significantly inversely correlated with VAT. In the men, those with low cardiopulmonary or muscular fitness showed more SAT than those with high cardiopulmonary(282.17 ± 19.16 vs. 197.31 ± 17.87 cm2) or muscular fitness(264.60 ± 15.03 vs. 193.82 ± 14.47 cm2). In the women, those with low cardiopulmonary fitness had more VAT (108.41 ± 8.12 vs. 78.18 ± 7.98 cm2) and SAT (306.06 ± 16.46 vs. 206.75 ± 16.17 cm2) than those in the high cardiopulmonary fitness group. Multiple linear regression analyses showed that sex, age, and cardiopulmonary fitness, but not muscular fitness, were associated with VAT, and age, cardiopulmonary fitness and muscular fitness were significantly associated with SAT. Conclusion: Improving cardiopulmonary fitness, as opposed to muscular strength, is suggested for reducing the amount of visceral adipose tissue, which contributes to metabolic abnormalities.

P2.02.24
EVALUATION OF ROTHERHAM ACTIVE FOR HEALTH PROGRAMME; 12 MONTHS ON
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The Rotherham "Active for Health" Research Project aims to increase the physical activity of patients with long term conditions. It is evidence based, driven by local need and incorporates best practice. The programme offers a 12 week condition specific exercise programme across seven pathways (Stroke, COPD, Cancer, Falls Prevention, Muscoskeletal MSK, Cardiac and Heart Failure), linking closely with NHS rehabilitation services. The evaluation aims to assess the extent the Active for Health Pathway supports and sustains inactive individuals into physical activity opportunities and/or sport. The interim findings at 12 months are presented here. Method The evaluation is a mixed method parallel design. Primary outcome is impact on physical activity levels self reported through the IPAQ/IPAQ-E and Quality of Life (EQ5D) at baseline, 3 months and 6 months. Stakeholder perspective and patient experience were also explored through qualitative enquiry. Results 367 (Male n=152; average age 67yrs; Female n=215; average age 65yrs) engaged with the programme 1st November 2015 - 31st October 2016. Ethnicity amongst total sample involved 95% White Caucasian, 5% Pakistani, Indian and other. Average minutes per week of moderate intensity physical activity are reported as baseline; 6 months (mean ± SD). Cardiac phase IV (70.91 ± 46.79; 247.50 ±160.86); COPD (830 ± 943.10; 150± 108.17) MSK (214.55± 265.28) Stroke (140 ± 141.92; n=0) Falls (594 ± 515.44; 120 ± 84.85) Cancer (222 ± 287.12; 630±356.52 ) and Heart Failure (27.50 ± 17.68; 30± 42.43). Self-reported rating of perceived health status at baseline and 6months; Cardiac phase IV (63.09 ± 17.64; 75.19 ± 18.89); COPD (61.60 ± 18.24; 65.33± 16.37); MSK (66.12 ±16.36; 79 ±4.18); Stroke (62.91 ±16.13;60 16.13) Falls (60.38 ±18.28; 59.96 ± 19.73) Cancer (60.72 ± 18.95; 63.33 ± 5.77) and Heart Failure (57.18 ±16.69; 64.00 ± 11.94). 100% programme satisfaction was reported patients. Conclusion There is considerable variation in physical
activity self-reported by patients across the seven pathways. As a group, the majority of the current sample meets the UK government guidelines for physical activity each week. Self-reported health status is also high. Full results are expected December 2018.

P2.02.25
FOLLOW IN MY GREEN FOOD STEPS: CHANGING COOKING BEHAVIOURS IN NIGERIA FOR IMPROVED IRON INTAKE
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Title Follow in my Green Food Steps: changing cooking behaviours in Nigeria for improved iron intake Purpose In Central and West Africa, approximately 50% of women of reproductive age have anaemia. This study assessed whether a theory-based, branded school- and community-based behaviour change programme called "Follow in My Green Food Steps" increased intake of green leafy vegetables and Knorr iron-fortified bouillon cubes in South-West Nigeria in order to improve iron intake. The study is unique in that it tests the Theory of Planned Behaviour using structural equation modelling in a field experiment in Nigeria. Methods 603 pairs of mothers and daughters (aged 12-18 years) participated in a field experiment in Ile-Ife (intervention) and Osogbo (control), of which 519 participated in the post-intervention assessment. Determinants were measured based on the Theory of Planned Behaviour and use of iron-fortified cubes and green leafy vegetables were measured as part of an adapted Food Frequency Questionnaire focusing on stews and soups. Structural Equation Modelling was used to evaluate the impact of the intervention on behavioural determinants and behaviour. Results/Findings The intervention increased awareness of anaemia in the intervention group and positively influenced the determinants of behaviour. In the intervention group, there was a significant 41% increase of respondents adding the recommended bunch of green leafy vegetables to their stews compared to a 5% increase in the control group. Furthermore, there was a small decrease of green leafy vegetables in soups (-0.7 bunch per 2 weeks) in the intervention group vs an increase in the control group. There was also a significant increase (0.5 cube per stew on average) in the amount of iron-fortified cubes added to soups vs. the control group (0.1 cube per stew). There was no change for iron-fortified cubes added to stews, where use of these cubes was already high. Conclusions The intervention had a positive impact on awareness of anaemia, determinants of behaviour, self-reported intake of Knorr iron-fortified bouillon cubes and intake of green leafy vegetables. Results of the structural equation modelling will be discussed in light of the use of the Theory of Planned Behaviour for theory-driven interventions.

P2.02.26
ASSOCIATIONS BETWEEN PERSONALITY STYLE, PERCEPTIONS OF HEALTH COACHING AND PERCENT WEIGHT CHANGE IN MEAL REPLACEMENT PROGRAM PARTICIPANTS.
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Objective: To determine if personality style and perceptions of health coaching vary by percent weight change among individuals participating in a proprietary meal replacement program that incorporates health coaching. Methods: An electronic survey was distributed to 20,000 current and past meal replacement program participants. Personality style was assessed via the Ten Item Personality Inventory, providing individual perceptions of each of the Big Five personality domains (extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience). The Working Alliance Inventory-Short Revised was used to assess three key perceptions of health coaching: 1) agreement on the goals of coaching (goal), 2) agreement on the tasks of coaching (task), and 3) development of an effective bond (bond). Percent of starting weight was calculated from self-reported program start weight and current weight. Individuals were excluded if they had been on the program less than one month or had missing personality or health coaching data. Age and sex were controlled for in all analyses. Results/findings: Of the 1,639 individuals included in final analyses, 1,591 (97%) experienced some degree of weight loss. Current weight ranged from 51% of starting weight to 152% of starting weight. Personality type was not associated with weight change in either direction. Goal, task and bond were positively associated with percent of starting weight (p < 0.05). Conclusions: A positive perception of health coaches, evaluated through assessment of goal/task/bond, did not translate into increased weight loss success. Coaching techniques should be evaluated and new strategies or
techniques should be explored that enhance coaching effectiveness while building upon the existing client/coach relationship.

P2.02.27
TYPE SPECIFIC SITTING AND INCIDENT CVD IN THE WHITEHALL II COHORT: A 13 YEAR FOLLOW-UP STUDY
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Purpose: Existing prospective studies of sitting and incident cardiovascular disease (CVD) have tended to utilise single indicators of sitting such as TV viewing, or have examined all sitting time together. However different sitting behaviours may have differential associations with CVD risk. This study examined associations of 5 different indicators of sitting time: total and context specific sitting at work, during leisure time, watching TV, and during leisure time excluding TV. We studied risk of any cardiovascular disease (CVD) event in a cohort of middle-aged British Civil Servants. Methods: Participants (4084 men, 1557 women) from the Whitehall II cohort study provided information on sitting behaviour and covariates (age, sex, ethnicity, employment grade, smoking, alcohol intake, fruit and vegetable consumption, self-rated health, physical activity, and BMI) in 1997-99. Cox proportional hazards models were used to investigate prospective associations between sitting time (h/week) and Incident CVD until 31 August 2012. Results: During 75845 person-years of follow up (mean follow-up time 13.45 ± 4.31yrs) 627 incidents of CVD were recorded. No significant associations were observed between any of the five sitting indicators with CVD incidence in basic (adjusted for age, gender, ethnicity and socioeconomic position) or fully adjusted models (all covariates). Fully adjusted Hazard ratios [95%CI] for highest sitting groups relative to reference groups were; work 1.21 [0.94, 1.57] ptrend=0.53, TV 0.84 [0.63, 1.14] ptrend= 0.71, leisure time excluding TV 0.75 [0.58, 0.98] ptrend= 0.71, leisure time 0.84 [0.67, 1.04] ptrend= 0.43, total 1.07 [0.86, 1.35] ptrend=0.63). These findings persisted when analyses were stratified by physical activity level. Mean (±SD) reported moderate to vigorous physical activity (MVPA) was 32.41 ± 18.86 METHrs/wk. Conclusions: None of the five indicators of sitting predicted incident CVD risk. Potential explanations include the protective effect of high levels MVPA reported by the sample. These findings are consistent with previous studies which have observed little evidence of associations between sitting and health outcomes in physically active individuals. Policy makers and clinicians should be cautious about recommending sitting reductions as the sole intervention to reduce health risks.

P2.02.28
A RANDOMISED CONTROLLED TRIAL OF A TELEPHONE-BASED WEIGHT MANAGEMENT PROGRAM FOR PATIENTS WITH KNEE OSTEOARTHRITIS, WHO ARE OVERWEIGHT OR OBESE
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Objective: Overweight and obesity are major drivers for the development and progression of knee osteoarthritis (OA). Despite strong evidence showing weight loss is effective to reduce symptoms of knee OA, many patients do not receive such care. Telephone interventions offer a novel approach to improving the delivery of weight management care in these patients. This study was the first randomised controlled trial to assess the effectiveness of a telephone-based weight management and healthy lifestyle program in reducing knee pain intensity in patients with knee OA who are overweight or obese. Methods: 120 overweight or obese patients with knee OA referred for orthopaedic surgical consultation were randomised to a 6-month telephone-based weight management and healthy lifestyle program, or usual care (control group). The primary outcome was average knee pain intensity over 6 months. Secondary outcomes included disability, weight, diet, and physical activity. Outcomes were assessed using linear mixed models. Results: Data completeness for pain intensity was 91%. There were no significant differences in pain intensity between groups (MD -0.08; 95%CI -0.22, 0.07). Overall, no between groups differences in secondary outcomes were observed. The mean number of coaching calls was 4.7 (SD 4.7). Conclusions: Referral to a telephone-based weight management intervention did not improve pain intensity, weight, diet or physical activity in overweight and obese patients with knee OA. As weight is a primary driver of the development and progression of knee OA, one future research direction would be better understanding the best ways to provide these patients with weight loss services.
FIDELITY OF THE HOCKEY FANS IN TRAINING PROGRAM TARGETING OBESE AND OVERWEIGHT MEN

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Purpose: To examine the extent to which the Hockey Fans In Training (Hockey FIT) program was delivered as designed. Methods: We conducted a pilot pragmatic randomized controlled trial recruiting overweight and obese male hockey fans (35–65 years; BMI ≥ 28 kg/m2) from two local junior hockey teams (London Knights and Sarnia Sting) into a weekly, 90-minute classroom education and physical activity program for 12 weeks. A fidelity assessor observed all sessions at both sites, tracked delivery of key program tasks as per protocol, detailed factors influencing delivery of these tasks (content, timing, location, and style and methods of delivery), and interviewed Hockey FIT coaches after each session. This provided the ability to: a) determine the percentage of key program tasks delivered by coaches; and b) explore factors affecting delivery of key program tasks. Results: Of the 51 key program tasks to be delivered by the coaches, 46 tasks (84%) in London and 49 tasks (96%) in Sarnia were delivered as designed. Introductions to the Hockey FIT research team and tours of the hockey arena (by hockey team personnel) were missed at both sites (week 1). Introductions may have been missed as coaches were still becoming familiar with program protocol. Tours were missed because of a lack of available personnel. Coaches perceived time constraints (especially at the London site) and repetition of content affected delivery of tasks. Certain topics stimulated more participant discussion than expected requiring coaches to rush to stay on time. Other topics were exhausted in previous sessions, and may not have been fully explored again as per protocol. The assessor noted participants enjoyed sessions at the arena location, but cited difficulties with classroom setup and rooms being double booked at the fitness facility (Sarnia Site). The style and methods of delivering program content by coaches were consistent across both sites. The assessor noted as the program progressed, participants and coaches felt more comfortable with each other, making it easier to effectively deliver the program tasks. Conclusions: Hockey FIT was largely delivered as intended. Fidelity data will be used to inform further program optimization and scale up.
CYCLING UPTAKE AFTER CYCLING PROFICIENCY TRAINING: EARLY FINDINGS FROM A QUASI-EXPERIMENTAL STUDY

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BACKGROUND: Cycling proficiency training (CPT) can address important barriers to cycling, yet few studies assess effectiveness on increasing transportation cycling. We aim to assess impacts of a CPT on cycling uptake, and whether impacts vary by gender and time in Canada. Here we analyze impacts one month after the program. Three month follow up data will be presented in June. METHODS: We recruited participants from CPT courses delivered by a cycling advocacy organization in 2016. Courses involved a classroom session and road-based training (4.5 hours), and were offered through immigrant settlement agencies and to the general public. 104 participants were recruited from programs (77% female, 41% living in Canada less than 5 years) and 28 participants who did not attend sessions were recruited to the comparison group (75% female, 18% living in Canada less than 5 years). Participants completed questionnaires on cycling (days/month) at baseline and 3 follow up points (1, 3, and 12 months (complete summer 2017)) for 1) commuting to work or school and 2) errands/shopping. We compared pre-post changes (median [25th, 75th percentile]) between groups using Wilcoxon Signed-Rank tests, and Mann-Whitney U tests to assess group differences. We compared cycling uptake by gender and time in Canada using Fisher’s exact test. RESULTS: 128/132 participants provided 1 month follow up data. At baseline, 35% of intervention participants cycled at least once in the past month for commuting and 39% for errands/shopping; in the comparison group this was 37% and 32%, respectively. While cycling remained low, there was a significant increase in cycling in the intervention group versus the comparison group, for commuting (p=.008) and errands/shopping (p=.01). At 1 month follow up the intervention group cycled for commuting (0.5 [0,10]) days/month compared (0 [0,4] p=0.004) at baseline; and for errands/shopping (.5 [0,4] vs. 0 [0,2], p=0.04). There were no significant changes for the comparison group. Women had 4.2 times the odds (95% CI: 1.1-17.3, p=.02) of increased cycling for errands/shopping (inconclusive). CONCLUSION: Findings suggest CPTs may promote a shift transportation cycling mode share. Our 3 month and 1 year follow up data will provide insight on longer-term impacts.

P2.02.32
A FEASIBILITY STUDY OF A HOME-BASED SELF-MONITORING SEDENTARY BEHAVIOUR RANDOMISED CONTROLLED TRIAL IN COPD PATIENTS SUFFERING FROM AN ACUTE EXACERBATION: TRIAL RESULTS
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Purpose: Targeting sedentary behaviour in chronic obstructive pulmonary disease (COPD) patients admitted for an acute exacerbation (severe worsening of breathlessness) may be more feasible than the usually prescribed structured exercise. This randomised controlled trial aimed to evaluate the feasibility of an education and self-monitoring intervention using wearable technology to reduce sedentary behaviour in COPD patients hospitalised following an acute exacerbation: Methods: Patients were randomised in-hospital into a usual care, Education or Education+Feedback group with the intervention lasting 14 days post-discharge. The intervention groups received information about reducing prolonged sitting. In addition, the Education+Feedback group received real-time feedback on their sitting time, number of stand-ups and step count at home through a waist worn inclinometer linked to a smart device application. The inclinometer also provided vibration prompts to encourage movement at patient defined intervals of time. Feasibility of recruitment and intervention delivery and acceptability of the intervention technology were also examined. Semi-structured interviews were conducted with patients in the intervention groups as well as healthcare staff within the COPD care pathway after patient recruitment had ceased. Results: 31.5% of patients offered the intervention enrolled onto the study (n=33). Retention of patients at two-week follow-up was 51.5% and patients in the Education+Feedback group had the lowest drop-out (33%). Patients spent 559±115 minutes sedentary, 169±87 minutes in light activity and 2±3 minutes in moderate intensity activity; accruing 2272±1712 steps/day based on waist-worn ActiGraph. Patients wore the inclinometer for 11.8±2.3 out of 14 days. Overall, 325 vibration prompts occurred with patients responding 106 times (32.6%). 40.6% of responses occurred within 5 minutes of the prompt with patients spending 1.4±0.8 minutes standing and 0.4±0.3 minutes walking, taking 21.2±11.0 steps. Interviews revealed that patients who broke up their sitting found something natural to do (e.g. make tea) whereas the patients who did not respond to the vibration felt it awkwardly interrupted their activities. Some patients would have preferred a wrist band to the device worn around the waist. Conclusions: An intervention targeting sedentary behaviour in hospitalised COPD patients is feasible. A revised intervention, building on the successful components of the present feasibility study is justified.
P2.02.33
THE EFFECT OF PHYSICAL ACTIVITY ON CHANGES IN WEIGHT AND BONE MINERAL DENSITY FOLLOWING BARIATRIC SURGERY
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Bariatric surgery is an effective treatment for severe obesity, leading to weight loss, improvements in comorbidities, decrease in mortality and reduced health-care costs. Loss of bone mineral density (BMD) has been related to the surgery. The potential role of physical activity in these processes is unknown. Objective: to assess if physical activity affects weight loss and BMD loss in bariatric surgery patients. Methods: Participants underwent bariatric surgery at Reykjalundur, Iceland, during 2010-2012, a total of 70 participants (aged 18-65 years), 11 men and 59 women. BMD was measured by Dual Energy X-ray Absorptiometry (DXA) at wards triangle, trochanter, femoral neck, total hip and total spine at baseline, 12 and 24 months. Physical activity was assessed by the International Physical Activity Questionnaire (IPAQ). Results: Age adjusted weight loss from baseline to 12 months up for women was 35.3 kg and 41.4 kg for men (p. In women, weight loss and changes in BMD between baseline and 12 months correlated significantly in the femoral neck, wards triangle, trochanter and total hip (p. A significant decrease in weekly physical activity was observed from baseline (7,228 METmin) to 24 months (1,525 METmin) for men (p.05). Physical activity was not associated with weight or BMD changes. Conclusion: Further research is required to assess the potential protective role of physical activity on post-bariatric surgery BMD loss and its effect in enhancing weight loss after surgery.

P2.02.34
TECHNIQUES FOR MODIFYING IMPULSIVE PROCESSES ASSOCIATED WITH UNHEALTHY EATING: A SYSTEMATIC REVIEW
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Objective: This systematic review aimed to; (i) identify and categorize techniques used to modify or manage impulsive processes associated with unhealthy eating behavior, (ii) describe the mechanisms targeted by such techniques and (iii) summarize available evidence on the effectiveness of these techniques. Methods: Searches of 5 bibliographic databases identified studies, published in English since 1993, that evaluated at least one technique to modify impulsive processes affecting eating in adults. Data were systematically extracted on study characteristics, population, study quality, intervention techniques, proposed mechanisms of action and outcomes. Effectiveness evidence was systematically collated and described without meta-analysis. Results: Ninety-two studies evaluated 17 distinct impulse management techniques. They were categorized according to whether they aimed to (1) modify the strength of impulses, or (2) engage the reflective system or other resources in identifying, suppressing or otherwise managing impulses. Although higher quality evidence is needed to draw definitive conclusions, promising changes in unhealthy food consumption and food cravings were observed for visuospatial loading, physical activity, and if-then planning, typically for up to 1-day follow-up. Conclusions: A wide range of techniques have been evaluated and some show promise for use in weight management interventions. However, larger-scale, more methodologically-robust, community based studies with longer follow-up times are needed to establish whether such techniques can have a long-term impact on eating patterns.

P2.02.35
PHYSICAL ACTIVITY LEVEL IN PARTICIPANTS ATTENDING A PROGRAM FOR LIFESTYLE CHANGES AT HEALTHY LIFE CENTERS
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Objective Healthy Life Centers (HLCs) are public community-based health services providing lifestyle support including physical activity (PA), smoking cessation, and nutrition, to inhabitants with increased risk for development of non-communicable diseases. HLCs intention is to reach physically inactive people who need guidance to get more physically active, and provide a lifestyle program for three months or more. The aim of the present study is to assess level of PA among newly recruited HLC participants, and compare their level of PA to an age and gender matched sample from the general population in Norway. Methods The inclusion criteria for the sample were being ≥ 18 years of age, and starting at a HLC program for lifestyle changes. The participants were recruited to 34 HLCs in the period September-November 2016. Level of PA was assessed using an accelerometer (ActiGraph GT3X+) for seven consecutive days. Overall PA was measured as counts per minute (CPM) and steps per day (SPD) in all
participants providing at least one valid day (n = 196). The participants PA level was compared to general population's level of PA among a representative selection of the Norwegian population (n=3173) collected in the KAN-study in the period 2014-2015. Difference between the two populations PA level was analyzed using a One-Sample T-Test. Results Preliminary results show an overall mean (standard deviation) PA level of 292 CPM (121) and 256 CPM (236) for women (n = 147) and men (n = 49), respectively. The mean PA level for the total selection is 79 CPM (29%) lower than the general population (p Data collection is still running. We expect to present analyzed data from among 1,000 participants at the conference. Conclusions Participants starting a lifestyle program at HLCs have a significant lower PA level than the general population. It seems that HLCs reach physical inactive inhabitants.

P2.02.36
REACH OF PHYSICAL ACTIVITY PROGRAM IN OLDER ADULTS OF DIFFERENT COMMUNITIES OF FLORIANÓPOLIS, BRAZIL
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Purpose: To examine the reach of a different community physical activity programs in older adults' users of Primary Health Centers (HC) in Florianópolis, Santa Catarina, Brazil. Methods: Older adults were recruited in six HC of two regional districts, each of them including three HCs. The HC were randomly separated in three groups: Behavior Change (BC), Traditional Exercise (TE), and Control Group (CG). The recruitment strategies included local media advertisements and flyers distribution in HC and surroundings; invitations of physicians during medical appointments and visits of health agents in households. Among the 4,071 older adults across the 6 HCs, 985 older adults were considered to be eligible to participate of the study. Chi-square was used to compared the health centers with different programs. Results: The participants had an average of 69.2 years old, 57.0% was married with elementary school level (66.7%) and house income less than 4 salaries per month. The average BMI was of 27.9 kg/m2 and 57% were overweight or obese. In the six HC, 114 older adults accepted to attend the project, representing a reach participation of 11.6%. The reach in BC program in two HCs was 12%, The reach of TE in two HCs were 9.1% and 56.4%; there was statistical significance between the groups (χ2 64,51; p ≤0,000001). The reach of CG in two HCs was 5.7% and 25% (χ2 16,49; p ≤0,000049). The reach in the small communities was more significant than in bigger communities. Significant barriers were identified, such as: (i) lack of support from local health professionals; (ii) older adults are accommodated; and (iii) program is unfamiliar. On the other hand, facilitators were identified: (i) doctor invited the users to the program during appointments; (ii) health professionals invited other health professionals to attend the program; (iii) program have practical activities; (iv) health agents supported health professionals; and (v) possibility to spread flyers door to door and invite users mouth-to-mouth. Conclusions: The reach varied in different HC. In the small communities, the reach was bigger. The work of professionals in community health centers are different and depend of identifying barriers and facilitators.

P2.02.37
SHAPING THE FOOD ENVIRONMENT IN THE CANADIAN ARMED FORCES
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OBJECTIVE: Obesity is a public health problem that has reached epidemic proportions worldwide. Canadian Armed Forces (CAF) personnel are no exception. Based on self-reported height and weight, 49% of CAF personnel are classified as overweight and another 25% as obese (CAF-HLIS 2013/14). Employment in the CAF is a physically demanding occupation which includes rigorous training, yearly physical fitness testing, and an expectation to perform at any given time. A healthy body composition contributes to positive health-related fitness, an essential component of operational readiness. There is significant evidence that our food environment shapes our nutritional choices. The two main food retailers for the Canadian Armed forces are the CANEX stores in military communities and VENTREX vending machines. By increasing availability of healthier choices in these environments, identifying and promoting them, we could positively influence the nutritional choices made by our soldiers and their families.

METHODS: A working group was created forming collaboration between Strengthening the Forces Health Promotion, CANEX and VENTREX. We completed a literature review of the behavioural impacts of the food environment, benefits of offering healthy options in the workplace, and financial impacts for the industry. A thorough review of existing programs and food classification systems was completed. RESULTS: A classification tool was created by two Registered Dietitians to distinguish which foods earn the title of 'healthier choice'. Each of the
27 identified product categories uses a point system that takes into consideration total fat, saturated and trans fats, sodium, fiber, sugars (taking into account the source), artificial sweeteners, and additives. The point system allows for a product that falls short in one nutrient criteria to compensate by doing well in another. An 80% score is required for a pass. CONCLUSION: Our initiative to create a healthier food environment for the CAF community has fostered a new working relationship with CANEX and VENTREX where both Health Promotion and the industry benefit while supporting a healthier, more operationally fit defense team. Healthier choices are to be identified with the program’s brand in store and in vending machines to make the healthier choice obvious to consumers.

P2.02.38
THE EFFECT OF LUMBAR STABILITY EXERCISE PROGRAM ON SEDENTARY LIFE FEMALE, LUMBOSACRAL REGION ANGLE, MUSCULAR STRENGTH, PHYSICAL FITNESS AND PAIN SCALE
Oh J –1, Choi Dong-Gyun2, Suh Sang-Hoon2, Park Hyon2, Kang H –4, Song Wook1, Kim Y –1. 1Seoul National University, Seoul; 2Kyung Hee University, Gyeonggi-do; 3Yonsei University, seoul; 4Soochunhyang University, chungnam. Purpose: The purpose of this study is to evaluate the effect of lumbar stabilization exercise on lumbarosacral region angle, lumbar strength, lower muscle strength, physical fitness and low back pain of sedentary women. Method: 20 females who spend more than 6 hours/day as sedentary at working were recruited. The subjects were assigned to two different groups which are exercise group (n=10) and non-exercise group (n=10). Exercise program was consisted with Swiss Ball and lumbar stability exercise, and it was performed 60 min/day and 3 times/week for 8 weeks. In Brief, sessions consisted of 10min warm-up such as stretching, 40 min workout including Swiss ball exercise and lumbar stabilization, 10min cool-down such as stretching. Two-way ANOVA with repeated measures were used. Result/Findings: As a result, there was no significant difference between groups in lumbar lordosis angle, lumbar sacral angle and Sacral angle. However, The difference of the Isometric lumbar extension strength peak torque and total work % body weight between the two groups showed as p°, 12, 24°, 36°, 48°, 60°, 72°. Isokinetic knee flexion and extension peak torque and total work in angular velocity were significantly different between groups showed as p6.70±.823) and after(3.00±1.054 ) the Lumbar stability Exercise Program Conclusions: To conclude, this study identified the effectiveness of lumbar stabilization exercise on lumbar muscular, strength, sargent jump, sit and reach test and reduced pain. Sedentary Women require to do Swiss Ball and lumbar stability exercise which is focused on physical fitness improvement, reduction of muscloskeletal disease in order to prevent pain.

P2.02.39
USING A CO-CREATIONAL APPROACH TO PROMOTE PHYSICAL ACTIVITY IN ADOLESCENT GIRLS WITH A LOWER EDUCATIONAL LEVEL: A MULTIPLE CASE STUDY.
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participation and self-efficacy. Conclusions: Using a co-creational approach among lower educated adolescent girls can be considered a feasible strategy that deserves further attention in health promotion research. This approach could be applied to other schools, resulting in specific interventions tailored to the needs and interests of the girls and schools. Future co-creational projects should foresee sufficient amount of time to organise the working groups and to involve relevant stakeholders and should include an in-depth process and effect evaluation.

P2.02.40
KIDS ON THE MOVE! COLLABORATING WITH CHILDREN WITH A LOW SOCIOECONOMIC BACKGROUND IN THE DEVELOPMENT AND EVALUATION OF A SUSTAINABLE INTERVENTION TARGETING PREVENTION OF OVERWEIGHT/OBESITY: A PARTICIPATORY ACTION APPROACH.
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Purpose: To date, interventions targeting children’s physical activity and dietary behaviors have disappointing and short-term effects. Strikingly, these interventions are generally developed and implemented top-down, with limited involvement of children. By closely collaborating with children, as experts of their own lives, interventions may become more relevant, attractive and thus effective. Additionally, children will be empowered to improve their own health behaviors. Therefore, this study aims to develop, implement and evaluate intervention strategies together with children as co-researchers, targeting children’s physical activity and dietary behaviors. Methods: This participatory action research (PAR) consists of two phases. In phase I, determinants of unfavorable physical activity and dietary behaviors from the perspective of children, parents and health professionals were identified. At three schools in a disadvantaged neighborhood, six to eight child-researchers (9-12 years old) met over three to four PAR group meetings, facilitated by an academic researcher (Sept-Dec 2015). In phase II, PAR two-weekly group meetings will be continued to develop, identify and implement context-specific intervention strategies. Child-researchers will be encouraged to collaborate with relevant stakeholders, e.g. school staff, parents, and health professionals, to ensure sustainable embedding of the interventions in their daily life. Additionally, the effects of these interventions on physical activity and dietary behavior will be evaluated in a controlled trial. Results: Children, parents and health professionals indicated a need for (1) more opportunities for organized physical activity, and (2) education on a healthy diet and preparing healthy meals. Additionally, all stakeholders indicated that interventions might only be effective when organized activities are: accessible for all children, continuously organized, in their neighborhood, in a safe area, affordable/free and guided by professionals. Currently, PAR group meetings are continued and baseline measurements are finalized. Results on the process of developing and implementing interventions together with children as co-researchers will be presented at the ISBNPA conference. Conclusions: This study demonstrated that involving children as co-researchers is feasible and yields important insights in child- as well as parent- and health professional- perceived determinants of a healthy lifestyle. Additionally, children appreciate having a voice in interventions targeting their lifestyle.

P2.02.41
SCALE UP OF A MULTI-STRATEGIC INTERVENTION TO INCREASE IMPLEMENTATION OF A MANDATORY STATE-BASED HEALTHY CANTEEN POLICY
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Objective: Interventions to improve the dietary intake of children have been recommended as a key strategy in reducing the burden from chronic disease internationally. Accordingly, school healthy eating policies have been introduced internationally. Despite their popularity, studies indicate that the implementation of such policies is poor. Several barriers to schools’ implementation of these policies have been identified. A small number of trials have identified strategies that improve policy compliance however these have not been conducted at scale. The ability to deliver these strategies across a large number of schools and maintain effectiveness is unknown. The aim of this study is to assess the effectiveness of an intervention to support implementation, at scale, of a healthy canteen policy in Australian primary schools. Methods: A non-controlled before and after multi-strategic intervention, supporting implementation of a healthy canteen policy was delivered over a nine month period to 173 elementary schools (children aged 5-12 years of age) located in the Hunter New England (HNE) region of New South Wales (NSW), Australia. Rogers’ Diffusion of Innovations Theory was chosen to guide the development of the
intervention strategies that were adapted from previous successful randomised control trials. The RE-AIM evaluation model is broadly used to assess the impact of the intervention. The primary trial outcome is implementation of the state-based healthy canteen policy measured through menu audits. Results: One hundred and seventy three schools were eligible to participate in the study. Outcome results will be presented based on RE-AIM including pre-post differences at follow-up of policy implementation, intervention reach and level of policy adoption. Exploratory sub group analysis will describe intervention effects by school level characteristics. Conclusions: This study extends previous research by providing valuable information regarding how best to support schools at a population level to implement evidence-based policies to improve child obesity. These results have the potential to guide health promotion practitioners to facilitate wide-scale adoption and implementation of effective healthy eating interventions.

P2.02.42
PRAGMATIC EVALUATION OF THE GO2PLAY ACTIVE PLAY INTERVENTION: EFFECTS ON FUNDAMENTAL MOVEMENT SKILLS AND PHYSICAL ACTIVITY IN CHILDREN
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Purpose: Fundamental movement skills (FMS) and physical activity (PA) among children are of concern. Active play is a novel approach to improving FMS and PA in children. The primary aim of this research was to determine if a school-based, ‘Go2Play Active Play’ intervention improved FMS and school day PA. Methods: This study used a quasi-experimental design: children (n= 172; mean age= 7 years) were recruited from seven schools taking part in the Go2Play Active Play intervention which consisted of structured play activities and free play; 24 children were recruited from two classes not receiving the intervention to act as a comparison group. PA was measured using an Actigraph GT3X accelerometer during a ≥3 school days at baseline and again at follow-up 5 months later. School day PA was expressed as accelerometer counts per minute and percent time in sedentary behavior, light-intensity PA and MVPA. A sub-sample of children from both the intervention (n= 102) and comparison (n= 21) groups had FMS assessed using the TGMD-2 a few weeks into the intervention and then again at follow-up. FMS variables were expressed as scores and percentiles for: gross motor quotient (GMQ), locomotor and object control. Results: For school day PA there was a significant increase in mean counts per minute and percent time in light PA and MVPA (all p<0.01) and a significant decrease in percent time in sedentary behaviour (p<0.01) in the intervention group compared to the comparison group. For FMS there was a significant improvement on GMQ score (p=0.02) and percentile (p=0.04), and locomotor skills score and percentile (both p<0.02) in the intervention group compared to the comparison group. There was no significant improvement on object control skills score (p=0.1) and percentile (p=0.3) in the intervention group compared to the comparison group. Conclusions: The Go2Play Active Play intervention may be a promising way of improving FMS and PA in children and should be tested in a larger, longer-term, RCT.

P2.02.43
DEVELOPMENT OF A WEB-BASED SYSTEM FOR DOCUMENTING AND EVALUATING BEHAVIORAL AND ENVIRONMENTAL INTERVENTIONS FOR THE PREVENTION OF CHILDHOOD OVERWEIGHT AND OBESITY IN GERMANY
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Objective: Numerous behavioral and environmental interventions for the prevention of childhood overweight and obesity are currently in planning or at various stages of implementation in Germany. However, from a scientific point of view, these interventions often lack a theory-base and/or systematic evaluation of effectiveness in controlled clinical trials. To date, no structured (development/documentation/evaluation) system exists in Germany that is easy to use and can assist, both researchers and practitioners, in self-evaluating interventions and projects in this area. The aim of the current project funded by the Federal Agency for Health Education (BZgA) is to develop and pilot an easy to use web-based system for documenting development, implementation, and evaluation of behavioral and environmental interventions. Methods: National and international systems and frameworks (e.g., CDC frameworks, RE-AIM) form the basis for the beta-version of the website. Specifically, the website builds on components included in these systems and frameworks, such as planning, reach of the target population, implementation, efficacy (including the definition of relevant outcomes), and maintenance of interventions. Content is adapted to the national context and the website is tested using existing projects in this area. In addition, the website is reviewed with practitioners in the field to improve usability and implementation in practice. Results: In the presentation, the development process of the system will be outlined focusing on the evidence base of the
Building capacity among peer educators to implement a clinical intervention within community-based settings: the Food, Fun, and Families project

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Background: Tools, training, technical assistance, and quality assurance are critical strategies within the Evidence-Based System for Innovation Support (EBSIS) to build capacity to adopt and implement evidence-based interventions. Practitioner capacity, which includes knowledge, skills, values, and self-efficacy, is also key in effectively implementing a program, particularly with high fidelity. Purpose: The goal of this project was to develop and evaluate strategies and structures to optimize capacity building within the program and within practitioners in order to successfully translate a clinical behavioral intervention to community settings, using peers (para-professionals, lay leaders, community health workers) as educators. The intervention, Food, Fun, and Families (FFF), was designed to reduce intake of solid fats and added sugars among limited income mothers of preschool aged children, using a facilitated dialogue approach. Methods: A panel of experts in nutrition, behavioral psychology, and community-based programs, and field staff with expertise in clinical and community interventions, designed a comprehensive training and technical assistance program. The capacity building strategies included intensive trainings, educational resources, a training manual, ongoing coaching, mock intervention sessions, and monitoring of the delivery of programs. Process evaluation data were collected following the training and during the implementation of the intervention from all nine peer educators to elicit feedback on the delivery system, structures, strategies, and their capacity to implement the program as intended. Results/findings: Overall, the training and technical assistance program was found to be successful in building capacity of the overall delivery system and practitioners, particularly related to the nutrition content of the intervention. Additional technical assistance and adjustments were required to support facilitated dialogue techniques, such as problem-solving and using open-ended questions across all peer educators. Conclusions: The results provide insight into translating evidence-based programs into community practice using peers as educators. The results additionally contribute to the research on effective capacity building strategies. More descriptions of program design and delivery are needed to provide an evidence-base for capacity building in order to optimize the effectiveness of community programs.

Feasibility and acceptability of embedding high intensity interval training into the school day: findings from a randomized controlled trial

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Objective: Although the efficacy of high intensity interval training (HIIT) for improving metabolic health and health-related fitness for adolescents is now established, it is unknown if this type of activity is practicable and acceptable when delivered within a school setting. Therefore the primary aim of this study was to assess the feasibility and acceptability of embedding HIIT within the school day, for adolescents and teachers. Methods: A 3-arm randomized controlled trial was conducted in one secondary school (Newcastle, Australia). Participants (n=65; mean age=15.8(0.6)) were randomized into one of three conditions: aerobic exercise program (n=21), resistance and aerobic exercise program (n=22) or control (n=22). The 8-week intervention consisted of three HIIT sessions/week, delivered during PE lessons or lunchtime. Program feasibility and acceptability were determined based on: consent rate, retention rate and adherence. In addition, a post-program evaluation questionnaire was used to assess participants’ satisfaction, enjoyment, motivation, and perceived health benefits associated with participating in HIIT.
Studies varied in design, participant characteristics, and intervention characteristics. Of the 20 behavioral outcome interventions on at least one behavioral, psychological, or cognitive outcome in children aged 21 and under, limited to studies published since 2000 reporting a quantitative analysis of the effects of a physical activity methodology. References of included studies, as well as relevant reviews, were also examined. The review was limited to studies published since 2000 reporting a quantitative analysis of the effects of a physical activity intervention on at least one behavioral, psychological, or cognitive outcome in children aged 21 and under, diagnosed with a SEBD. Only studies with a control group were included. Results: We identified 24 eligible studies. Studies varied in design, participant characteristics, and intervention characteristics. Of the 20 behavioral outcome

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P2.02.46

**DOES CARDIORESPIRATORY FITNESS ATTENUATE THE ADVERSE EFFECTS OF OBESITY ON CARDIO-METABOLIC RISK IN CHILDREN? A POOLED ANALYSIS INCLUDING DATA FROM 3 DIFFERENT STUDIES**


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**Objective:** Establish that childhood obesity is associated with a cluster of cardio-metabolic risk factors, however few studies have considered the role of fitness in these associations. The aims of this study were to investigate: (i) if cardio-metabolic risk factors differ through different body mass index (BMI) categories; (ii) whether fit children have a lower cardio-metabolic risk score than unfit children in different BMI categories; and (iii) the fat but fit paradigm in relation to a cardio-metabolic risk score in children. Methods: This study is a pooled analysis using baseline data from three randomized controlled trials in Spain (MOVI-2, ActiveBrains, and EFIGRO). A total of 1170, normal weight, overweight, and obese (class I-III) 8-11 year old children were included in the analyses. A standardized cardio-metabolic risk score was computed using the sum of the gender-and-age-specific z-scores for triglycerides, HDL cholesterol, and the average of systolic and diastolic blood pressure. Cardiorespiratory fitness was determined using the 20m shuttle run test and the children were classified as fit or unfit based on the 20th percentile from the international reference values recently published by Tomkinson et al., 2016 for the number of completed laps. Analysis of covariance was then applied adjusting for age and sex. Results: A significant increase in the cardio-metabolic risk score was observed as the BMI category increased (i.e. from normal weight to severe/morbid obesity) (P<0.02). A trend was found showing that as BMI increased, fitness attenuated the risk score, with the biggest differences observed in the most obese children (i.e. morbid/severe obesity); however, this attenuation was significant only in obese class I or mild obesity (P=0.048). Normal weight unfit children had a significantly lower risk score than obese fit children (PP=0.023). Conclusions: As BMI status increased cardio-metabolic risk factors increased concurrently, which highlights the need for obesity prevention and treatment programs in childhood. Furthermore, cardiorespiratory fitness may play an important role in decreasing the risk of cardio-metabolic diseases in children, particularly in obese children.

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P2.02.47

**PHYSICAL ACTIVITY INTERVENTIONS FOR CHILDREN WITH SOCIAL, EMOTIONAL, AND BEHAVIORAL DISABILITIES- A SYSTEMATIC REVIEW**

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**Objective:** Perform a systematic review of the available literature regarding the effectiveness of exercise interventions on children with any type of social, emotional, or behavioral disability (SEBD), with attention to a range of physiological, behavioral, and mood outcomes. Methods: Six databases were searched using a systematic methodology. References of included studies, as well as relevant reviews, were also examined. The review was limited to studies published since 2000 reporting a quantitative analysis of the effects of a physical activity intervention on at least one behavioral, psychological, or cognitive outcome in children aged 21 and under, diagnosed with a SEBD. Only studies with a control group were included. Results: We identified 24 eligible studies. Studies varied in design, participant characteristics, and intervention characteristics. Of the 20 behavioral outcome
assessments, there was 1 negative finding, 12 null findings, 5 positive findings, and 2 mixed findings. For the 25 executive functioning outcome assessments, there were 5 null findings, 18 positive findings, and 2 mixed findings. For the remaining outcome domains, 1 of 2 studies looking at academic performance, 3 of 6 studies looking at objective neurological measures, and 1 of 3 studies looking at affect outcomes, found positive results. All other results were null or mixed. Conclusion: Although additional research is warranted to further understand the mechanisms by which physical activity affects behavioral and cognitive outcome measures in children with SEBDs, PA offers a safe and alternative form of treatment for this population.

P2.02.48
THE EFFECTIVENESS OF SCHOOL BASED PHYSICAL ACTIVITY INTERVENTIONS FOR ADOLESCENT GIRLS (11-18 YEARS): A SYSTEMATIC REVIEW

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Objective: Physical activity (PA) decreases during the transition from childhood to adolescence, with girls showing significant declines in participation. School-based interventions are seen as effective in increasing adolescent PA levels. The objective of this systematic review is to assess the effectiveness of school-based PA interventions for adolescent girls published since 2005. Methods: A systematic search was conducted using four electronic databases (PubMed, Web of Science, SPORTDiscus and PsychInfo). Studies were eligible if they contained an intervention where the main purpose was to promote adolescent PA in the school setting, with the primary outcome of changing objectively or subjectively measured PA levels. Studies must have included PA data on adolescent girls aged 11-18 years. Mixed sexed studies were included if girls’ data were presented separately to boys’. Studies published before January 2005 were excluded. This systematic review is registered with PROSPERO (Registration number: CRD42016037428) and PRISMA guidelines were followed throughout. Results: Twenty studies were identified as meeting the inclusion criteria and were included in a qualitative synthesis. All twenty studies reported positive results for impacting adolescent girls’ activity levels. Eleven studies reported significant improvements in activity levels. Several Physical Education (PE) lesson based interventions were found to increase girls’ moderate to vigorous physical activity (MVPA) levels. Thirteen of the included studies were underpinned by behaviour change theory but, this did not appear to impact the effectiveness of the interventions when compared to studies with no theoretical underpinning. Although, six studies with no theoretical underpinning were of a short duration (≤12 weeks) with small sample sizes (≤203). Twelve different outcome measures of PA were reported across all included studies with more recent studies adopting objective measures of PA. The study quality assessment suggested poor concealment, blinding procedures and a lack of detail in the explanation of the randomisation procedures. Conclusion: All school-based PA interventions included in the review regardless of design were effective in improving adolescent girls’ activity levels or attenuating the decline. More long-term, theory driven, multi-component school-based interventions should be conducted for adolescent girls which utilise modified PE lessons as the catalyst for increasing MVPA.

P2.02.49
PREDICTING FRUIT AND VEGETABLE INTAKE WITH THE NORTHERN FRUIT AND VEGETABLE PROGRAM: DOES PHYSICAL ACTIVITY BEHAVIOUR AND ATTITUDES MATTER?

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Predicting fruit and vegetable intake with the Northern Fruit and Vegetable Program: Does physical activity behaviour and attitudes matter? Christian Paton, Sarah J. Woodruff University of Windsor Abstract: Purpose: The purpose of this study was to determine the associations between fruit and vegetable (FV) intake and physical activity (PA) behaviour and attitudes among students participating in the Northern Fruit and Vegetable Program. Methods: In May 2016, grade 5-8 students (n= 1582) from Northern Ontario, Canada (under the catchment areas of Algoma, Porcupine, and Sudbury health units) completed a self-reported online/paper survey to examine FV intake (servings/day), in addition to PA behaviour (>60 minutes of moderate-to-vigorous activity) and attitudes (similar to Motl et al., 2000). A nominal logistic regression (OLR) was used to predict FV intake from PA behaviours and PA attitudes, controlling for gender, grade, ethnicity, and urban/rural status. Results/Findings: Approximately 25%, 56%, and 19% consumed 0-2, 3-4, and 5+ servings of FV servings/day and 31% (n=367) met current PA guidelines on all 7 days. Mean PA attitudes were 24.33 (SD 3.3; out of a possible 28), which slightly decreased with increasing grade (p Conclusion: Low FV intake and PA behaviour is concerning among this population. The associations between PA behaviours and attitudes and FV intake may suggest that these types of behaviours cluster together.
Future research should include more objective measures in addition to potentially looking at different age groups and other areas within Canada.

P2.02.50
THE ASSOCIATION BETWEEN THE LEVEL OF SCHOOL WELLNESS PROGRAM WITH ASTHMA DIAGNOSIS AND FREQUENCY OF HEALTHCARE UTILIZATION DUE TO ASTHMA
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Purpose: Although direct benefits of school wellness programs (SWP) on weight status and eating behaviors have been documented, we know little of the extended impact of such interventions on chronic illness in childhood. Since diet and physical activity has been implicated in the etiology of asthma, a common childhood illness, we assessed the association between the implementation of SWPs of varying intensities and asthma diagnosis and frequency of healthcare utilization due to asthma. Methods: Provincial administrative health records were linked with a province wide school based survey of grade five students (n = 5513) in Nova Scotia, Canada. Health records determined outcome measures as the frequency of physician visits from age 6-12 (when students are in elementary school) and the presence of an asthma diagnosis from age 6-12. There were three levels of SWP exposure: provincial policy, comprehensive school health (CSH) and no program. Analyses included logistic and negative binomial regression adjusting for gender, socioeconomic status of parents, and geographic location at the time of the school based survey. Results/findings: Among children aged 6-12y, the type of SWP was a significant predictor of asthma diagnosis, where CSH was associated (p Conclusion: Comprehensive school health programs are significantly associated with both a decrease in asthma diagnosis and in asthma-related health service use. These findings are of importance to public health stakeholders and policy makers, supporting the promotion of school based interventions. The reduction of asthma diagnosis and decrease in frequency of healthcare use paralleled improvements in diet, physical activity and weight status.

P2.02.51
IMPACT OF VIDEO-BASED WELLNESS TRAINING ON GIRL SCOUT LEADERS’ SELF-EFFICACY, INTENTION, AND KNOWLEDGE FOR WELLNESS-PROMOTING OPPORTUNITIES
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Objective: Implementation of wellness-promoting practices, such as increasing physical activity (PA) opportunities and fruit and vegetable (FV) availability, can be improved in Girl Scouts through leader wellness training. The present study sought to evaluate the effectiveness of a new training modality, video-based training, on troop leaders' self-efficacy, intention, and knowledge for offering PA opportunities and FV availability during Girl Scout troop meetings. Methods: Thirty Girl Scout leaders were randomized to the control (n=15) or theoretically grounded video intervention (n=15) conditions. The intervention group received six weekly tailored training videos on the implementation of wellness practices during troop meetings. Each video (approximately 4-5 minutes/video) featured an enthusiastic instructor highlighting either PA or FV topics. Leaders received three videos on each topic, in alternating order. Training videos identified areas for potential improvement, and provided strategies to overcome specific barriers identified by the leader. Leaders set goals for upcoming meetings, and self-monitored their progress each week. Questionnaires were completed at the baseline and post-intervention periods regarding troop leaders' task and barrier self-efficacy, intention, and knowledge in areas of physical activity opportunities, fruit availability, and vegetable availability during troop meetings. Results: From baseline to post-intervention, leaders in the intervention group improved their PA barrier self-efficacy, when compared to those in the control group (CON=-38.5±171.7; INT=132.0±193.0; p=0.036). Over the course of the intervention, control group leaders did not exhibit changes in any of the studied variables (p>0.05), while leaders in the intervention group increased vegetable availability self-efficacy (p=0.037), fruit and vegetable barrier self-efficacy (p=0.024), and intention for fruit availability (p=0.024). Changes from baseline to post-intervention in PA intention, PA knowledge, and FV knowledge were not significant for either group (p>0.05). Conclusions: Six weeks of individualized training videos increased Girl Scout leaders' self-efficacy for overcoming barriers related to implementing PA within their troop meetings. According to Social Cognitive Theory, the observed increases in self-efficacy may lead to changes in behavior, thereby increasing the wellness promotion opportunities of troop meetings. Future research should
assess whether or not tailored video training is effective for improving PA opportunities and FV availability for girls during troop meetings.

**P2.02.52 EFFECTIVENESS OF IN-PERSON AND ONLINE LEADER WELLNESS TRAINING FOR IMPLEMENTATION OF WELLNESS-PROMOTING PRACTICES**

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Objective: Implementation of wellness-promoting practices in Girl Scouts settings, such as including physical activity (PA) and healthy eating (HE) opportunities, has been shown to improve following leader wellness training. The present study sought to evaluate the effectiveness of two leader wellness-training delivery methods, in-person and online, for implementation of wellness-promoting practices during troop meetings. Methods: Eighteen Girl Scout troop leaders were matched and randomized to either in-person (n=9) or online (n=9) wellness-training delivery conditions. At baseline (January-February), leaders completed a questionnaire on implementation of troop meeting wellness-promoting practices. Eleven questions were scored as presence or absence of wellness-promotion practices (max score = 11) in the following areas: PA opportunity; sedentary breaks; use of electronic devices; leader promotion of PA; leader promotion of HE; availability of fruits; availability of vegetables; availability of water; availability of fruit juice; availability of sweets or salty snacks; and availability of sugar-sweetened beverages. Troop leaders attended two training sessions (first in groups, second individually) wherein leaders set troop-specific wellness implementation goals, self-monitored progress, and received guidance to assist with successful implementation. In-person troop leaders attended individual implementation goal setting and wellness face-to-face trainings, while online troop leaders received training through a dedicated website and emails from research staff. Following the completion of training sessions (April-May), leaders completed the questionnaire again. Results: At baseline, leaders did not differ in their wellness-promotion opportunity score by condition (in-person M±SD = 6.1±1.8; online = 6.3±2.1; p=0.830). After adjusting for troop grade level and leader socioeconomic status, there was a significant interaction between intervention condition and time, whereby the in-person group increased their wellness-promotion opportunity score more than the online group (in-person = 2.1±1.8; online = 0.2±1.2; p=0.022). The main effect of time was also significant (p=0.011), indicating higher scores at post-intervention across conditions. Conclusions: In-person training was superior to online training for improvements in wellness-promoting practices during troop meetings. A combination of group-based and individualized wellness training was effective for eliciting changes in health-promoting opportunities for girls. Future research should investigate how to disseminate leader wellness training most effectively for a cost-effective and larger-reaching public health impact.

**P2.02.53 THEORY-BASED DESIGN AND DEVELOPMENT OF A FACEBOOK APP FOR THE SECONDARY PREVENTION OF CARDIOVASCULAR DISEASE**

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Purpose Despite the benefits of cardiac rehabilitation (CR), 20-70% of eligible patients do not attend in-person services, due to scheduling of programs and conflicting interests. Mobile technology offers opportunities to engage and reach this population. The purpose of this study was to use previous research, formative evaluation, and behaviour change theory to develop the first evidenced-based goal-setting Facebook app, Back Me, targeted at patients eligible for CR. We designed the app to provide patients with social support to help achieve personalised behaviour goals. Methods This study was conducted in two parts. Firstly, a survey was conducted with patients attending CR services to assess their current use of social media. Secondly, a goal setting based Facebook app prototype, Back Me, was developed. Back Me allows patients to set personalised lifestyle behaviour goals specific to CR. The goals are posted automatically to CR Facebook group, where group members' support each other by clicking "back me". We are currently conducting focus groups with patients eligible for CR and who use Facebook. These will capture information on their social media experience, engagement and confidence and to identify the factors associated with social media acceptance. We will also test a Back Me prototype for functionality, design and
OF CONCEPT STUDY PROGRESS TO DATE.

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Purpose: Children suffer poor physical, social and mental health due to excessive sedentary behaviours. Sedentary behaviours are alarmingly high in the home environment, providing a key intervention setting. Sit-stand (height-adjustable) desks facilitate standing while performing typically seated activities and have been successfully trialled in schools but feasibility for home use is yet to be evaluated. This study aimed to determine the acceptability and feasibility of sit-stand desks in the home.

Methods: Fifteen families with a child (8-15 years) were recruited. The child and both parents were invited to participate. Families were provided with a sit-stand desk (Ergotron Learn Fit) in their home for 6-10 weeks. Beforehand and during the last week with the desk all participating family members wore an accelerometer (actiGraph GT3x) and inclinometer (ActivPAL) for 8-days and completed a log to record home time. A specifically developed excel macro will be used to extract the home-time accelerometry and inclinometer data from home time allowing for pre-post comparisons.

Participants completed a survey at each time point which also included process evaluation (e.g. potential barriers) items at follow-up. On up to three occasions parents were asked to report the use of the desk over the previous 24-hours. A family interview was conducted at follow-up which will be transcribed verbatim and coded to provide qualitative feedback.

Results: Preliminary 24-hour recall survey data suggest that sit-stand desks were used by 61% and 71% of participating parents and children on the previous day respectively. They were most commonly used in the main living areas (76% of parents and 65% of children). Parents most commonly used it for laptop/computer use (59%), whereas children used it for paperwork/writing/homework (75%). Parents self-reported and proxy-reported on behalf of their child that the sit-stand desks were easy and enjoyable to use, reduced their own and their child’s sitting time and increased standing time. The main barrier reported was that the desk was too small. Conclusions: Sit-stand desks in the home are well received and used by families. The next stage is to determine their potential for reducing sedentary behaviour and increasing interruptions to sitting in this setting.

P2.03.2

DETERMINANTS OF CHILDREN’S SLEEP BEHAVIOR: A SYSTEMATIC REVIEW OF LONGITUDINAL STUDIES.

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Objective: Healthy sleep behavior (i.e. adequate sleep duration, good sleep quality and healthy bedtime routines) is of significant importance for numerous health outcomes in children, such as psychosocial health, obesity and social development. To develop evidence-based interventions targeting healthy sleep behavior, insight in the determinants of child sleep behavior is urgently needed. Hence, our objective is to systematically review the literature on determinants of sleep behavior in children 4-12 years of age. Methods: Studies were identified from searches in PubMed, PsycINFO, and Web of Science, until January 2017. We included longitudinal studies investigating the association between healthy sleep behavior and its determinants in healthy children aged 4-12 years. In total 10,892 articles were identified and 52 full text articles were included. Included articles were scored on their methodological quality and the results were summarized with a best-evidence synthesis. The guidelines of the PRISMA statement were followed. Results: Several demographic (i.e. age, gender, socioeconomic status), biological (i.e. BMI, puberty), social (i.e. marital conflict, parent-child relationships, parental practices), and environmental factors (i.e. media exposure) were identified as determinants of children's sleep behavior.
Conclusions: Interventions that promote healthy child sleep behavior should take into account the identified demographic, social and environmental determinants.

P2.03.3
INDEPENDENT MOBILITY AND PHYSICAL ACTIVITY AMONG CHILDREN RESIDING IN AN ULTRA-DENSE METROPOLIS
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Objective The freedom of children to move around in their neighborhood without adult supervision, which is known as independent mobility, has been shown to be critical for cognitive, emotional, and social development in children. This pilot study aimed to investigate the association of independent mobility with physical activity and sedentary behavior among grade 6 schoolchildren in Hong Kong. Methods A total of 160 grade 6 children (mean age = 12.0 years, 76 boys and 84 girls) wore an ActiGraph accelerometer for a week and eventually provided valid data (a minimum 500 min/day) for at least 3 weekdays. Time spent in moderate-to-vigorous PA (MVPA), light intensity PA (LPA), and sedentary behavior (ST) was calculated for weekdays. Independent mobility was self-reported by the children and was defined as travel alone to and from school, respectively. Sociodemographic characteristics and travel mode to and from school were also collected through the questionnaire. Linear mixed models were conducted to assess the association of independent mobility with MVPA, LPA and ST on weekdays, while controlled for age, sex, number of siblings, body mass index (BMI), education level of mother, wearing time, travel mode to/from school, and clustering effect of school. Results Two third of the boys independently travelled to and from school, whereas approximately half of the girls did so. After controlling for other variables, children who travelled independently to school accumulated 7.9 more min/day in MVPA (95% Confidence Interval: 2.5, 13.2) on weekdays compared with those who did not. Having independence for travel from school was not associated with weekday MVPA. No associations were found between independent mobility and LPA or ST. There were no interactions between independent mobility and travel mode. Conclusions For children residing in an ultra-dense metropolis, independent mobility seems to be an important correlate of physical activity on weekdays. Understanding environmental factors that may influence independent mobility will be helpful to encourage children to be more physically active.

P2.03.4
THE UTILITY OF A COMMERCIAL ACTIVITY TRACKER TO PROMOTE PHYSICAL ACTIVITY IN CHILDREN AND YOUTH WITH CONGENITAL HEART DISEASE
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Objective To assess whether a 4-months physical activity intervention using a commercial activity tracker in conjunction with individualized, ongoing activity prescription increases physical activity levels in children and youth with congenital heart disease. Methods: Participants (10-18yrs) with congenital heart disease or cardiac transplant recipients were recruited from pediatric cardiology clinics across BC and the Yukon (n=93, 97% recruitment success). Participants were given a wrist-worn FitBit Charge HR to wear for 4-months, and an ActiGraph accelerometer for 1-week at baseline and follow up. FitBit steps were remotely monitored by an exercise physiologist who sent bi-weekly feedback emails. We defined compliance as having ≥1 month of valid Fitbit data, with a valid day liberally defined as ≥1,000 steps/d. We used multi-level regression to assess change over time (sign. at p Results: Thus far, n=48 participants have completed the study (13.1±2.6yrs, 51% male) and n=14 are ongoing (completion: April 2017); n=9 withdrew predominantly for medical reasons and n=22 were non-compliant with the study protocol. Non-compliant participants were significantly older than those who were compliant (15.0±3.0 vs. 13.1±2.6yrs, p=0.027), but there were no differences in baseline physical activity levels, sex or severity of cardiac defect. Within compliant participants, the FitBit was worn on 87% of possible intervention days (median 97 days; IQR 86-116), yielding 4,413 valid person-days of FitBit data. Six participants significantly increased their daily FitBit steps over the 4-months intervention period (+252 steps/week) and 28 maintained their steps counts (both ‘responders’); 14 significantly declined (‘non-responders’; -322 steps/week). There were no significant differences between responders and non-responders for age, sex or cardiac diagnosis, but non-responders tended to have higher physical activity levels at baseline (64 vs. 48 min MVPA/day, p=0.06). In a follow-up survey, 73% found the FitBit useful and nearly half stated they felt they were more active because of the intervention. Conclusions: While objectively measured physical activity levels improved only in a small proportion of participants, the device was well-received by participants and offers a promising approach to long-term and remote monitoring of physical activity in vulnerable clinical populations.
**P2.03.5**
OUTDOOR PLAY DETERMINANTS IN CHILDREN: ARE THERE GENDER DIFFERENCES?
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Objective: From an ecological perspective children's outdoor play (OP) might be determined by individual, societal and environmental aspects. This study aims to assess the association between children OP and distance from homes to Large Parks and Gardens (LPG), TV watching time, parents' socioeconomic status (SES) and mother obesity (MO).

Methods: Homes of 929 children, 465 boys and 464 girls with a mean age of 7.26 (±1.97) and 7.30 (±1.91) respectively, were geocoded using postal code information collected by questionnaire as well as, OP, TV watching time, SES and MO. Data on LPG was collected in Lisbon Municipality website. Distance between homes and LPG was computed using ArcMap and information was imported to SPSS to perform the statistical analysis. All variables were categoric so Chi-Square was used to compare proportions between categories. Binary Logistic Regression models were fitted to estimate associations (Odds Ratio (OR) and 95 % Confidence Intervals (CI)) between APT and all other variables. Results: Almost 73% of boys and 69% spent more than 1 h on weekdays in outdoor activities. No statistical differences were found between proportions of OP categories and TV watching time, SES and MO, for boys. Only the proportion of girls with 1h or more of OP was significantly higher in the underweight/normal MO class. Boys whose mothers were overweighted were less likely to have an OP higher than 1h (OR=0.54, 95%CI=0.31-0.94) even after adjusting for all variables. Girls with and OP higher than 1h was positively associated with high SES (OR=2.05, 95%CI=1.10-3.82) and inversely associated with obese MO (OR=0.36, 95%CI=0.18-0.73), but only the latter association remained statistically significant after adjusting for all variables. Conclusions: This study results suggests that societal aspects are more likely to determine girls OP compared with boys. OP is an important behaviour because it might prevent childhood overweight and obesity thus children should engage in active play activities regardless their gender.

**P2.03.6**
RELATIONSHIPS BETWEEN PARTICIPANT ENGAGEMENT AND CHARACTERISTICS OF INSTRUCTION: IMPLICATIONS FOR PHYSICAL ACTIVITY INTERVENTIONS FOR CHILDREN
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Purpose. There is ample research examining teacher behavior and student outcomes in educational settings, but there is little research studying this relationship in the context of physical activity (PA) interventions. The objective of this study was to apply educational research tools to the study of these relationships in PA interventions.

Methods. With video recordings of sessions from a PA intervention (therapeutic ballet) for children with cerebral palsy (CP), seven research-trained observers used Reeve et al.’s (2004) rating scale to evaluate qualities of instruction (autonomy support, involvement, structure) and child engagement (focused attention, active effort, verbal participation, persistent effort, positive emotional tone). Two intervention sessions occurring on different days were coded in segments corresponding with activities: stretching, exercises at the bar, exercises without the bar, and interactive group games. One instructor led both sessions and was rated independently by all seven raters. Nine children with CP (ages 9-14; 75% female) participated in the sessions, and research observers rated all nine children independently. In addition, at the end of two intervention sessions, children completed a Physical Activity Enjoyment Scale (PACES) brief questionnaire self-reporting their enjoyment and engagement. Results. The instructor’s autonomy support (e.g., nurtures intrinsic motivation, identifies value of task, uses informational language) was positively correlated with children’s engagement, r = .237, p = .353, p = .432, p = .432. Conclusions. These results indicate that children’s engagement in PA interventions is significantly related to qualities of instruction, particularly instructor involvement and use of appropriate structural tools (e.g., scaffolding). Our findings suggest that the use of educational research tools, such as Reeve et al.’s rating system, may benefit PA intervention research by providing methods for researchers to examine qualitative characteristics of training programs.

**P2.03.7**
ON DEVELOPING A NOVEL, PRACTICAL DIETARY MEASURE THAT MEETS PAEDIATRIC OBESITY TELE-HEALTH PROGRAM, RESEARCH AND CLIENT NEEDS
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Purpose: To describe the development and use of a novel, ethics approved dietary measure to meet the needs of researchers, practitioners and clients participating in a paediatric obesity tele-health program.

Methods: From
summer to fall, 2014, TM and GP reviewed the existing grey and peer-reviewed literature, and were unable to identify a validated diet assessment tool that would meet our unique research and program needs. To address this gap, TM developed an ethics approved, brief diet quality, quantity and patterns instrument, while considering pragmatic issues such as reduced burden to both dietitian practitioner and client. To meet program launch deadlines (early 2015), the instrument was developed in an abridged time frame and reviewed by a paediatric dietitian (GP) before use to enhance face and content validity. Dietary variables under study included those within and outside of Canada’s Food Guide (CFG). Dietitians had the opportunity to document client reported intakes via food frequency and 24 hour recall to enhance internal validity and reliability. Open ended sections were included to document key areas of practitioner impact, and prompt areas requiring further attention. When time permitted, and in going with a ‘client first’ philosophy, independent followed by group meetings were set up by TM with dietitian practitioners (DF, KK) to ascertain key themes emerging from the data, and to further enhance program implementation and impact. Results: To facilitate continued program, research and evaluation evolutions while experiencing ongoing staffing shortages, TM identified key independent themes (early 2016) that emerged from the dietitians’ (DF, KK) use of the instrument with clients, including low versus high trends in CFG group consumption, and consumption of nutrient poor, calorie dense items (e.g. sugary drinks; processed snack and meal food choices), and eating patterns (out vs. together; snacking; skipping meals). Conclusions: This brief, novel diet assessment aptly met the needs of our clients and diverse stakeholders. To move both research and program agendas forward, it may be necessary to balance tensions between innovation, external validation, and real-world practice constraints. Trade-offs between comprehensiveness of data reporting and the ability for research and related instruments to work in practice may be necessary.

P2.03.8
THE COMPOSITION OF MOVEMENT BEHAVIOURS IN A CHILD’S DAY AND THEIR MENTAL HEALTH
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Objective: The benefits of moderate-to-vigorous physical activity (MVPA) have dominated discussions on children’s health, even though it accounts for Methods: 434 children aged 10-13 years old were included in this cross-sectional study. MVPA, LIPA, and SB were objectively measured over 7 days using an Actical accelerometer. Sleep time was measured by verifying self-reported bed and wake up times against accelerometer counts. Participants completed a questionnaire that included several items that were combined to create externalizing positive emotions and internalizing negative emotions scales. Iso-temporal substitution models were used to estimate time-substitution effects of one movement type with another. Analyses were stratified by gender. Results: For girls, replacing 30 minutes/day of SB with 30 minutes/day of LIPA resulted in a decrease in externalizing positive emotions (b = 0.065, 95% CI = 0.011 to 0.269, p = 0.034). Furthermore, replacing 30 minutes/day of SB with 30 minutes/day of sleep resulted in a decrease in internalizing negative emotions (b = 0.125, 95% CI = -0.212 to -0.037, p = 0.006). There were no significant effects of substituting other movement behaviours in girls. For boys, there were no significant effects of substituting movement behaviours on either mental health outcome. Conclusion: For girls, substituting 30 minutes/day of SB with 30 minutes/day of LIPA had a negative effect on mental health, while replacing 30 minutes/day of SB with 30 minutes/day of sleep had a positive effect on mental health. No other substitutions of movement behaviours influenced the mental health of girls. Substituting movement behaviours in boys did not influence mental health.

P2.03.9
STABILITY OF PARENTALLY REPORTED CHILD EATING BEHAVIORS AND THE ASSOCIATION WITH BMI, OVERWEIGHT AND SKINFOLD OUTCOMES AT 5 YEARS
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Background: Little is known about the stability of children's eating behaviors in the first 5 years of life and their associations with adiposity outcomes. Objective: To track the stability of parent-reported child eating behaviors (enjoyment of food, slowness in eating, food responsiveness, satiety responsiveness and food fussiness) from age 1 to 5 years and examine their relationships with adiposity measures at age 5 years. Design: In 221 mother-dyads in the GUSTO study, a Singapore mother-offspring cohort study, the Child Eating Behavior Questionnaire (CEBQ) was administered at ages 1, 3 and 5 years and child anthropometry measured at age 5 years. Eating behavior subscales were derived using exploratory factor analysis (EFA), and the newly revised scales for this cohort were used for further analysis. The eating behaviors were categorized using a median split at each time point. Eating behavior patterns were defined by having consistently low scores [low-low-low] or consistently high scores [high-high-high], or showing another pattern. These patterns were then related to body mass indices (BMI) and skinfold thicknesses. Results: Of the 221 subjects studied, 24% of subjects with enjoyment of food scores, and 38% of subjects with slowness in eating scores had either stable low or high scores at all 3 time-points. However, the food fussiness behavior was only apparent at age 3 years. After adjustment for confounders, consistent low scores for slowness in eating behavior throughout 5 years were associated with higher BMI \( \beta=1.54 \) (95%CI 0.97, 2.10) and greater triceps \( \beta=2.62 \) (1.31, 3.93), subscapular \( \beta=2.90 \) (1.49, 4.31), biceps \( \beta=1.67 \) (0.71, 2.63)) and suprailiac \( \beta=2.45 \) (1.12, 3.78) skinfold thicknesses at age 5 years. In contrast, the tracking patterns of the enjoyment of food were not related to the child's anthropometry at age 5 years. Food fussiness at 3 years showed a trend with higher BMI at 5 years \( p=0.082 \), but only in an unadjusted analysis. Conclusion: Of the child eating behaviors, low slowness in eating scores was stable through the first 5 years of life and was associated with higher BMI and larger skinfold thicknesses at age 5 years.

P2.03.10
EXAMINING FACTORS THAT INFLUENCE PARENTS/CAREGIVERS INTENTION TO KEEP THEIR CHILD ENROLLED IN THE SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM FOR WOMEN, INFANTS, AND CHILDREN
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Objective: The third largest food and nutrition assistance program in the U.S., the Supplemental Nutrition Assistance Program for Women, Infants, and Children (WIC) provides supplemental foods, nutrition counseling, and medical referrals to low-income pregnant/postpartum women, infants, and children up to age 5. Although WIC’s positive contribution to lower infant mortality and child health have been well documented, since 2010 participation in the WIC program has continued to decline, particularly among children. Few studies have examined the factors that influence parents/caregivers intention to keep their child enrolled in the WIC program after age one. Methods: 160 parents/caregivers of infants’ ages 3-6 month old were recruited from 8 WIC sites across Illinois to participate in a 1-hour baseline survey as part WIC to 5, an intervention to improve WIC child retention in Illinois. Guided by the Integrative Model of Behavioral Prediction, measures included attitudes toward WIC services, perceived norms, barriers/facilitators to WIC participation, as well as access to resources (e.g. housing, food insecurity, SNAP/Medicaid/TANF participation), demographics, and other psychosocial factors (e.g. perceived stress). Logistic regression analysis was used to assess associations between the various factors and parents/caregivers intention to keep their children enrolled until the end of eligibility (ages 4-5). Results: 63% of participants were black/African American, 27% were white, 5% were Hispanic/Latino, and 5% were mixed race/other. Approximately 79% of participating parents/caregivers were formula-feeding with the remaining partial (9%) or fully breastfeeding (12%) and 78% participated in SNAP. Participating in SNAP, renting vs. owning a home, being married/living with a partner, being African American or mixed race/other race, having a higher perceived value of the WIC infant formula package, shopping weekly for WIC foods, and higher perceived stress was associated with a lower intention of keeping children enrolled in the program. Behavioral beliefs had a positive association with intention to stay enrolled but was not significant. Conclusions: Household resources, as well as parents/caregivers perceptions of WIC benefits may play a role in their decision to continue to access WIC benefits.
More research needs to be done in this area to ensure that WIC continues its positive contribution to child health.

**P2.03.11**

**COMPOSITIONAL ANALYSIS OF CHILDREN’S OBJECTIVELY MEASURED MOVEMENT BEHAVIOURS, FITNESS AND FATNESS**

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Objective: Compositional analysis acknowledges the collinear and co-dependent interactions between movement behaviours performed over a finite period such as a 24-h day. This study aimed to use compositional analysis to examine associations between children’s daily movement behaviours, adiposity, and cardiorespiratory fitness.

Methods: This study used cross-sectional data from the Active School: Skelmersdale study, which involved Year 5 children from a low-income community in northwest England (n=169). Measures included accelerometer-derived 24-h activity [sedentary time (ST), light physical activity (LPA), moderate to vigorous physical activity (MVPA) and sleep], cardiorespiratory fitness determined by the 20 m shuttle run test, objectively measured height, weight and waist circumference (from which zBMI and percent waist circumference-to-height ratio (%WHtR) were derived) and sociodemographic covariates. Compositional multiple linear regression models were used to explore the adiposity and fitness associations of time reallocation from one movement behaviour to another. Subgroup analyses were undertaken on the basis of weight status category (underweight, normal-weight, and overweight/obese) to explore whether isomtemporal substitution results varied according to weight status. Results: Replacing MVPA with any other movement behaviour around the mean movement composition was positively associated with adiposity and negatively associated with CRF. The compositional models suggested that the associations were asymmetrical: when MVPA substituted sleep, ST, or LPA, the beneficial associations in fitness and adiposity were smaller in magnitude than the detrimental associations seen when MVPA was substituted by sleep, ST or LPA. Compared to normal-weight and underweight children, the magnitude of the associations was greatest in overweight/obese children. Conclusions: Findings reinforce the key role of MVPA for children’s health and in particular, for overweight/obese children. Reallocating time from ST and LPA to MVPA in children is advocated in school, home, and community settings.

**P2.03.12**

**FARMERS MARKET FLASH: ENCOURAGING FAMILIES WITH YOUNG CHILDREN RECEIVING SNAP BENEFITS TO SHOP AT FARMERS MARKET THROUGH YOUTH ART WALK.**

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Purpose. The Farmers Market Flash (FMF) program incorporates a variety of strategies to encourage families with young children receiving SNAP-benefits to shop at local farmers markets to increase access to locally grown, fresh foods, build community relationships, and support the local economy. Methods. Through a partnership with Museum of Northwest Art (MoNA) and the FMF staff, a youth art program was offered at 12 summer meal sites, after school program locations, and youth camps in Skagit County, WA. Youth were taught basic art concepts and engaged in creating art pieces featuring fruits and vegetables using pastels, water colors, vegetable stamps and collage techniques. Following each art lesson, children’s art work was collected to display on panels at farmers market "Children's Art Walk". A letter was sent home inviting parents to view the art work their child created at an upcoming local farmers market, including information on the farmers market location, bus route, times of operation, and information about using SNAP benefits. Additional market day activities included cooking demonstrations, scavenger hunts and art activities with MoNA to engage community members in participating at the local farmers market. Results/Findings. A total of 187 letters were distributed to parents of art lesson participants. In this first year, a small portion of parents of children visited three of the four farmers markets as a result of the invitations/notification that their child’s art work was on display. A result of program promotion and outreach activities was an increase in SNAP benefits used to purchase local fruits and vegetables and an opportunity for children to participate in a “family outing” to the farmers market. Conclusions. Families with young children experience barriers to using their SNAP benefits at farmers markets, including limited hours (usually only one day a week for 4-6 hours), transportation, and a perception that the cost of produce is higher than at the supermarket. A successful strategy to engage families with young children to come to the weekly market is to organize an Art Walk featuring art projects prepared by children and displayed at their local farmers market.
**P2.03.13**

THE ROLE OF EMOTION REGULATION IN CHILDHOOD OBESITY: A REVIEW AND NEW STUDY DESIGN

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**Aims**: Stress and negative emotions pose a major threat to public health, by increasing the risk of obesity. Since the management process for emotions (emotion regulation, ER) is developed in childhood, we present a novel conceptual framework model and an innovative research project for the role of ER in the prevention and treatment of childhood obesity. Literature results: Literature suggests that childhood ER might be a link between stress and obesity (see Figure). Stress along with ineffective ER leads to abnormal cortisol patterns, emotional eating, sedentary lifestyle, reduction of physical activity, sleep problems and inflammation. In the development of obesity and ER, parents also play a role. By contrast, effective ER skills decrease obesity-related unhealthy behaviour like emotional eating and enhance protective psychological factors like well-being and self-esteem, which boost inflammatory and metabolic health. The literature contains some observational studies of children but very few intervention studies, most of which are pilot or on-going studies. New study: We aim to understand why in the current food environment and a highly demanding psycho-social climate, some, but not all, individuals evolve into overweight or a disease state, with focus on children 10-16 years. WP 1: A large follow-up study (N=500) to understanding the physiology and behaviour that have a crucial role in weight increase WP2: Impact of stress on physiology (including metabolomics), ER and food choices in selected groups via a lab-stressor and a food-lab WP3: Potential of an ER-training randomized control trial in at risk and obese adolescents

**P2.03.14**

ASSOCIATIONS BETWEEN OBJECTIVELY MEASURED SLEEP DURATION AND SLEEP EFFICIENCY AND LIFESTYLE FACTORS IN ADOLESCENT GIRLS

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**Objective**: To examine relationships between sleep duration and sleep efficiency and lifestyle factors of moderate- to-vigorous physical activity (MVPA), sedentary behaviour and adiposity. Methods: Adolescent girls (12-15 years) from 19 schools across the Midlands, UK who were participating in the evaluation of the 'Girls Active' intervention were used for this analysis. Data were collected from April-June 2016. Moderate-to-vigorous physical activity (MVPA; 200mg threshold), sedentary time (40mg threshold), sleep duration (calculated as the accumulated nocturnal sustained inactivity bouts; hours/day) and sleep efficiency (calculated from first sleep onset to last sleep onset; scored out of 100%) were assessed objectively (GENEActiv wrist worn accelerometer) for 7 days. GENEActiv .bin files were analysed with R-package GGIR version 1.2. Date of birth and ethnicity were self-reported and height and weight measured (BMI z-score calculated). Baseline characteristics are described by means (±SD) and percentages. Multilevel general linear models estimated the association between each of the independent variables (sleep duration, sleep efficiency) with adiposity and both MVPA and sedentary time while accounting for school level clustering and confounding variables (age, BMI z-score and ethnicity). Results: 1180 girls (mean age 13.9 ± 0.8 years; 70% White European; 23% overweight and obese) provided valid data. Participants spent an average of 42.4 ± 19.9 minutes in MVPA/day, 562.4 ± 63.6 minutes sedentary, 7.9 ± 1.0 hours asleep with a sleep efficiency of 81 ± 8%. After adjustment for confounders (age, ethnicity, bmi z-score, school level clustering, and all sleep, MVPA and sedentary time variables (mutually adjusted for each other), sleep duration was negatively associated with MVPA (-14.6, p Conclusions: This analysis suggests that longer sleep duration is associated with less MVPA and sedentary behaviour and having better quality sleep is associated with more MVPA and sedentary behaviour. In contrast to previous research, sleep variables were not associated with adiposity.

**P2.03.15**

PICTORIAL ASSESSMENT OF DIET QUALITY: CONTENT AND FACE VALIDATION

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**Background**: Practitioners of nutrition education programs for low-income families seek an assessment of diet quality to replace the time-intensive 24-hour diet recall. Our previous research indicated that ‘vegetable variety’ was a surrogate for diet quality with this audience. Purpose: Our objective is to establish content and face validity of a pictorial vegetable variety tool to assess diet quality among low-literate English speakers. Study Design, Setting
and Participants: A convenience sample of 16 parents were recruited at federally funded preschool sites (n=4) in northern California. Individual cognitive interviews of 30-45 minute duration were conducted. Measurable Outcome/Analysis: Development of an initial draft of the tool was tested with respondents employing a multistage, iterative process. For face validation, parent input from each set of interviews contributed to the next version of the tool with the final version achieving satisfaction and understanding by respondents. For content validation, conceptual consistency of the named vegetables with the original research was monitored by nutrition experts. Results: Based on respondent feedback, the initial 19 vegetable groups [from the Fred Hutchinson Cancer Research Center food frequency questionnaire] with 22 separate vegetable photographs and no text identifiers in the first version of the new tool were expanded to 28 groups with 31 vegetable photographs with one, two or three word identifiers. Modifications were made to 31 vegetables including vegetable renaming, photograph revisions, photograph additions and layout. For confirmation of results, additional questions (n=5 items) were added to the 28 vegetable groups. Instructions and title were tested and modified accordingly. The iterative process resulted in 8 versions of the tool. Conclusions and Implications: Face and content validation were achieved. Next steps include testing the final version for convergent validity with adults who complete 3 24-hour diet recalls.

P2.03.16
PARENT KNOWLEDGE AND CHILD WEIGHT-RELATED SUCCESS IN THE LET’S GET HEALTHY PROGRAM
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Purpose: Interventions have shown to be effective when they offer multiple components, including nutrition, physical activity and behavior change strategies, in addition to family involvement. The purpose of this study was to examine changes in child and parent variables to determine which components predicted child weight-related success. Methods: Participants completed questionnaires at baseline and 10 weeks. Data collected include height and weight, demographic information, knowledge and self-efficacy for healthy eating (HE) and physical activity (PA), social support for HE and PA behavior. Paired-samples t-tests were conducted to determine differences between baseline and post-program study variables among parents and children. Correlations were used to examine the relationship between changes in study variables and program success, and variables that were significantly associated with program success were entered into a binomial logistic regression to understand the unique contribution to child success. Results/Findings: Thirty-two children (mean age: 10.9 ± 1.7; mean BMI: 30.5 ± 6.0; 65.6% Black) and 31 parents completed both baseline and post-program questionnaires. Both children and parents significantly improved their program-specific HE and PA knowledge over the course of the program (Par-HE-K: (t(30) = -2.997, p = .005, d = .72; Child-HE-K: (t(31) = -4.500, p = .000, d = .80; Par-PA-K: (t(30) = -3.978, p = .000, d = .72; Child-PA-K: (t(31) = -2.647, p = .013, d = .47). Children increased their fruit and vegetable consumption over the course of the intervention by about 0.5 (t(30) = -2.706, p = .011, d = .49). Parents also reported an increase in HE behaviors (t(30) = -4.728, p = .000, d = .85). There were statistically significant strong correlations between program success and change in parent HE knowledge and change in parent HE behavior (rpb(20) = .553, p = .009 and rpb(20) = .526, p = .014). Significant variables were entered into a logistic regression predicting child success. Increased change in parent HE knowledge had a 3.95 times higher odds of their child being a successful weight maintainer. Conclusions: Findings from this study suggest that parent knowledge might be an additional key target for child success in multicomponent interventions.

P2.03.17
PHYSICAL ACTIVITY AND BEHAVIOUR OF YOUTH WITH AUTISM SPECTRUM DISORDERS
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Objective: Physical activity (PA) improves wellbeing; however, many individuals do not achieve Canadian recommendations for daily PA (participacttion.ca). Individuals with Autism Spectrum Disorder (ASD) are even less likely to engage in PA, which influences present symptoms and future health concerns. Therefore, the purpose of this study was to explore PA patterns of individuals with ASD. Methods: The Child and Youth Mental Health (ChYMH) assessment and the Child and Youth Mental Health Instrument for Developmental Disabilities (ChYMH-DD) for individuals aged 4-18 are comprehensive tools assessing a variety of mental health and developmental issues including mental health state indicators, cognition, and demographics. These assessment systems were created by interRAI (interRAI.org; Stewart, LaRose et al., 2016) and have demonstrated strong reliability and validity. This study
utilized ChYM/ChYM-DD data collected from 2013 to 2016. Individuals with a provisional diagnosis of ASD resulted in the sample of n=314. Ethical clearance was gained at affiliated institutions. Results: Youth with ASD had a mean age of 12.20 years (SD=4/-3.20). Many youth had multiple diagnoses, such as learning/communication disorders (n=111, 35.4%) and/or attention deficit/hyperactivity disorder (n=151, 48.0%). The primary measure, total hours of exercise or physical activity, indicated that 165 (52.5%) individuals achieved less than 60 minutes of PA on average per day. Spearman’s rho found that there was a negative correlation between PA and the following: age (rs=-.278, ps=-.130, p=.021); communication (rs=-.213, ps=-.252, ps=-.193, p=.001). Alternatively, PA was positively correlated with involvement in extracurricular activities (rs=.188, p=.001) and involvement in clubs/teams (rs=.172, p=.002). Conclusion: More than 50% of individuals with ASD aged 4-18 did not meet Canadian PA guidelines, with younger individuals being more active than older. Youth with more severe concerns had higher levels of PA than those with fewer concerns. PA increased for youth involved in extracurricular activities, clubs, and teams. Overall, the relationship between PA and personal factors for individuals with ASD appears complex. Further research is needed to understand causality of PA behaviours in those with ASD in order to increase PA in their day to day lives.

P2.03.18
FOOD SECURITY AT HOUSEHOLDS AND CHANGES IN DIET PREFERENCE IN NEPAL
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Objectives This study was carried out to explore the current food security status at household and understand the dietary patterns in Nepal. Methods A qualitative study was carried out in four districts of Nepal, purposively selected to represent three ecological zones also considering the different phases of food security status. Dolkha and Jumla were the mountainous district while Syangja and Kapiavastu districts represented hill and terai (plain) districts. Altogether, eight focus group discussions were carried out in the study, two in each district. Mother group members were the study participants. Content and framework analysis was done based on themes: food availability, food affordability, access to local market and changes in dietary pattern. Findings Study participants replied that nearly half of the households were food insecure. Rice was perceived as the food of wealthy and affinity towards it was increasing. Local foods like millet and maize, previously used as staple by many households, were now replaced by rice. Improved transportation network in mountains and hills and supply of rice from terai was identified as the major reason for dietary change. Gender discrimination in food distribution within the household was more in hills and terai. Consumption of less diverse diet and at a lower frequency was a common practice in all of the study districts. Conclusions Food security was a concern in most of the households in Nepal. Nutrition awareness programs could sensitize the households on the importance of locally produced foods and food diversity in order to address changes in diet preference.EK本書

P2.03.19
SELF-REPORTED PHYSICAL ACTIVITY AND NUTRITION BEHAVIOURS AMONG 12-14 YEAR OLD ADOLESCENTS: A COMPARISON ACROSS FIVE EUROPEAN SITES
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Objective: The PRE-START study aims to develop identification and prevention strategies for type 2 diabetes (TD2M) in 12-14 year olds. Phase 1 of this study involved assessing health and lifestyle behaviours in a sample of 12-14 years from five European countries. The purpose of this analysis is to compare physical activity and nutrition behaviours across the five European sites. Methods: Young people aged 12-14 years old were recruited from the local community in one location area in each of the five European counties involved in the PRE-START study (Leicester, UK; Leipzig, Germany; Lisbon, Portugal; Basque Country, Spain; Athens, Greece). Physical activity was self-reported using a validated 2 item questionnaire. Nutrition behaviours reported were: Consumption of breakfast (number of weekdays and weekend days), fruit and vegetables (portions/day), sugary drinks (number/week) and sweet and savoury snacks (number/day and week). Results: 635 adolescents (52% male, mean age 13.2 ± 0.8 years; mean body fat 24.8%) provided data. Across all sites only 7% of adolescents reported meeting the physical activity guidelines of 60 minutes of MVPA every day, ranging from 2% in Spain to 17% in the UK. The percentage of adolescents eating breakfast on every weekday was high (72-77%) in all countries except Greece where only 54%
met this. On weekends, 84-95% of adolescents reported eating breakfast on both weekend days in all five sites. Between 6% (UK) – 23% (Greece) and 2% (Germany) – 7% (Greece) of adolescents report eating no breakfast on any weekday and weekend day, respectively. Between 16% (Spain) and 57% (Portugal) of adolescents report eating ≥5 more portions of fruit and vegetables/day, with only 1% (Portugal) - 6% (Greece) stating zero portions. Snack consumption varied by site with between 0% (Germany) and 30% (Portugal) of adolescents reporting eating ≥5 snacks each day. Furthermore, between 6% (Basque Country) and 34% (UK) reported eating snacks every day. Consumption of at least one sugary drink every day was between 4% (Basque Country) and 27% (Portugal).

Conclusions: Whilst nutrition behaviours did vary across the five European sites, physical activity levels were consistently low across the five European sites.

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**P2.03.20**

**DIET AND PHYSICAL ACTIVITY PREDICTORS OF BODY FAT PERCENT VARY BY SEX IN A SAMPLE OF CANADIAN CHILDREN, YOUTH, AND YOUNG ADULTS**

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Purpose: Approximately 14% of Canada's children and youth have obesity. This places these young people at increased risk for a host of health problems that may track into adulthood. Physical activity, sedentary behaviour, and fruit and vegetable intake have all been associated with obesity in children and youth. However, most studies used proxy measures such as body mass index to classify children as overweight or obese. Thus, we used a gold standard tool (dual energy x-ray absorptiometry; DXA) to assess body fat (BF) % in an ethnically diverse cohort of Canadian children and youth. Our objective was to determine whether sedentary behaviour, physical activity, and fruit and vegetable intake predicted BF%. Methods: In this cross-sectional analysis, we included data obtained from 309 participants (145 boys) aged 9-20 years (mean = 14.4, SD = 3.7 years) of Asian (n=153) and European Ancestry (n=156) in the University of British Columbia's Healthy Bones III Study. Dietary recall (24-hr recall; n=307) measured fruit and vegetable intake (FV) as a percentage of age-specific recommendations and ActiGraph accelerometers (GT1M; n=200) measured time spent in moderate-to-vigorous PA (MVPA, min/day) and SED (min/day) adjusted for wear time. We fit sex-specific multivariable regression models controlling for age and ethnicity. Results: Independently, ST (β = -30.0, t(86) = -3.9, p<.001) and height were significant predictors (β = -.21, t(137) = -.39, p<.001) of BF% in boys. After adjusting for age (r=0.412), ST (β = -27.9, t(76) = -2.66, p<.05), and FV (β = -3.2, t(158) = 4.0, p<.001) demonstrated significant effects on BF%: For girls, height (β = .16, t(112) = -2.6, p<.05), MVPA (β = -72.0, t(112) = -2.6, p<.05), ST (β = 22.4, t(112) = 3.4, p<.001), and FV (β = -2.1, t(163) = -3.1, p<.05) were significant independent predictors in girls. After adjusting for age (r2 =0.195), no significant effects remained.

Ethnicity was not associated with BF% for boys or girls. Conclusions: The association between diet, PA and %BF is gender specific. In future, trials that use DXA-based measures of %BF and more robust measures of diet are needed to examine these complex associations more fully.

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**P2.03.21**

**ATTAINMENT OF '5-2-1-0' PEDIATRIC OBESITY RECOMMENDATIONS IN PRESCHOOL-AGED CHILDREN**

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Purpose: U.S. obesity prevention and treatment guidelines recommend children eat ≥ 5 servings of fruits and vegetables (FV), engage in ≤ 2 hours of screen time (ST), participate in 1 hour of physical activity (PA), and consume 0 sugar-sweetened beverages (SSB) daily, commonly known as '5-2-1-0'. Little is known about the extent to which U.S. preschoolers currently meet these guidelines, the predictors of attainment, and its association with BMI or weight status. We sought to examine these among a sample of preschool children attending full-time childcare using direct observation. Methods: A secondary analysis was conducted of a 24-hr observational study of 398 preschoolers from 30 childcare centers in an urban metropolitan area. Dietary intake and ST at childcare along with BMI was obtained by trained research staff. Dietary intake and ST at home along with demographic data was collected from parents. Physical activity was measured using accelerometers. Linear mixed effects models and generalized estimating equations were used to determine the associations between the '5-2-1-0' recommendations...
and race, household income, free-lunch eligibility, household composition, and BMI z-scores. Results: Average age was 4.3 ± 0.7 years. Mean BMI z-score was 0.5 (SD 1.0) with 26% of children overweight or obese. Of the 307 children with complete dietary data, 17% (n=53) consumed ≥ 5 servings (median 3.1 servings) of fruits and vegetables and 50% (n=153) consumed no SSB. Less than 1% (n=3) of the 381 children with complete PA data, attained at least 60 minutes of moderate-to-vigorous PA (median 14 min). Eighty one percent (n=308) of the 379 children with complete screen time data had ≤ 2 hours of ST (median 71 min). Only 1 child out of 295 with complete dietary, PA, and screen time data met all of the '5-2-1-0' recommendations. There were no consistent demographic predictors of fruit/vegetable, screen time, physical activity, or sugar-sweetened beverage intake. An additional hour of screen time was associated with a 0.112 (SD 0.057) increase in BMI z-score. Conclusions: Only one preschooler met the '5-2-1-0' recommendations for obesity prevention suggesting ample room to promote healthy diet and physical activity in preschool children.

P2.03.22
A CONCEPTUAL MODEL OF FRIENDSHIP NETWORKS AND THE PHYSICAL ACTIVITY AND SITTING-RELATED BEHAVIORS OF YOUNG PEOPLE
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Purpose: There is no comprehensive theory or model that describes how friends influence the physical activity and sitting-related behaviors of young people, and thus most research to date is atheoretical. As such, theory is needed to guide future research in this area. Therefore, the purpose of this research was to develop a conceptual model describing the role of dyadic friendships and friendship networks in the physical activity and sitting-related behaviors of young people. Methods: Drawing on concepts from several health behavior theories and a review of the literature a conceptual model was developed. Results/findings: The Youth Physical Activity and Friendship (YPAF) model has four components that represent the multitude of factors that explain how friendships shape the physical activity and sitting-related behaviors of young people. Specifically, the model includes the wider social-ecological context (home, school, neighborhood/community), friendship networks/group (network structure, network position, characteristics of network ties), interpersonal processes (influence, co-participation, support, barriers and opportunities, negative peer experiences), and psychological mediators (perceived competence, attitudes, feelings of self-worth). Each component has a bidirectional influence with every other variable. Several potential moderators (e.g., gender, age, weight status) are also proposed. Conclusions: This model will be important for guiding future research examining the role of friendships in the physical activity and sitting-related behaviors of youth. We recommend this model be tested empirically and revised over time as new evidence becomes available.

P2.03.23
FUEL FOR FUN CHILD ASSESSMENTS OF VEGETABLE PREFERENCES AND COOKING SELF-EFFICACY SHOW PREDICTIVE VALIDITY WITH TARGETED HEALTHY EATING INDEX COMPONENTS
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Purpose: Improving children’s dietary behavior through cooking interventions is gaining popularity, yet effect of these resource-intensive strategies is largely unknown because of few valid impact measures. We examined the ability of fruit and vegetable preferences (FP, VP), cooking attitudes (AT) and self-efficacy (SE) assessments to predict Healthy Eating Index (HEI) scores among 4th-graders. Methods: 1,409 children participating in Fuel for Fun, a school-based culinary intervention, completed classroom-administered baseline surveys: FP (7 items, range 7–35), VP (11 items, range 11–55), AT (6 items, range 6–30), and SE (8 items, range 8–40). A subset (n=101) completed 2 or 3 24-hour dietary recalls (diet assessments, DA) via telephone interview to obtain HEI scores. Data were transformed for normality, and linear regression examined predictive validity of FP, VP, AT and SE for targeted HEI components. Gender was a covariate for HEI whole fruit analyses. Results: DA (mean age 9.1 ± 0.4 y; 47% female, 78% white, 17% overweight/obese) and non-DA children did not differ except for lower DA BMI percentile (49.4 ± 30.8 vs. 57.1 ± 30.0, P= 10.9. HEI component mean scores (maximum 5) were: whole fruit 3.6 ± 1.7; total vegetables 3.7 ± 1.6; greens and beans 1.4 ± 1.8; and empty calories (maximum 20) 18.6 ± 2.4. FP mean was 29.3 ± 4.5, VP was 36.6 ± 8.2, cooking AT was 26.1 ± 3.4, and SE was 33.9 ± 5.8. No HEI or survey scores differed by gender except HEI whole fruit was greater in boys (P=0.04). VP predicted HEI total score, whole fruit, total vegetables, and greens and beans in anticipated direction (p Conclusions: Vegetable preferences and cooking self-efficacy predicted
new area of research and further studies are needed to unders
assessment and indicated no late onset of effect. The use of motivational interviewing in obesity prevention is a
effects on weight measures a
on social cognitive theory and motivational interviewing and delivered within child health services, did not result in
were no significant intervention effects at follow-up. Results were in line with the results obtained at post-
ment in their primary care and all were receptive to follow up in primary care or a weight
and reported an improved quality of life. There were no significant changes to other variables measured. Six of 12
screens (1.7 vs. 2.0 hours at baseline), spent less time on screens (1.7 vs. 2.0 hours at baseline),
and reported an improved quality of life. There were no significant changes to other variables measured. Six of 12
day fruit/vegetable servings daily (2.8 vs. 2.0 at baseline). spent less time on s
62.7% and 4 dropouts in monthly group. In the biweekly cohort, parents and children consumed significantly more
of barriers and successes to healthy eating and hands-on activities. Parents reported their
The current study was a one-
participated in nine sessions during a time frame of approximately 39 months, and the control group received care
in eight Swedish counties. Participa-
cognitive theory and motivational interviewing. Methods A cluster-RCT was carried out within child health services
Objective Childhood obesity is a serious public health concern, which calls for preventive initiatives. However, the
health services in eight Swedish counties. Participating families (n=1355) enrolled when the child was 9 months old. The parents
sessions during a time frame of approximately 39 months, and the control group received care
was one-year follow up of effect on children's weight measures. Regression analyses
were conducted using generalized estimating equations, including analyses of potential moderators. Results There
were no significant intervention effects at follow-up (BMI difference=−0.29, p=0.29). These results were in line with
those obtained at post-assessment. Maternal waist circumference and unhealthy eating, as well as paternal self-
efficacy and physical activity were significant moderators, but the result should be interpreted with caution due to
small differences and multiple comparisons. Conclusions A parent-focused universal prevention intervention based
on social cognitive theory and motivational interviewing and delivered within child health services, did not result in
effects on weight measures at one-year follow-up. The results were in line with the results obtained at post-
ment and indicated no late onset of effect. The use of motivational interviewing in obesity prevention is a
new area of research and further studies are needed to understand the best way to address the obesity epidemic.
P2.03.26
THE EFFECTS OF AN ACTIVE PLAY INTERVENTION WITH CHILDREN AND THEIR PARENTS ON FAMILY HEALTH BEHAVIOURS

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Purpose: Effective active play interventions are needed to increase physical activity (PA) levels and improve health and wellbeing in young children. The Ag Súgradh le Chéile (Playing Together) programme engages parents and children (aged 4-8 years) in active play during a school-based workshop including music, rhyme and traditional games. This study examined the effectiveness of the intervention in changing family health behaviours. Methods: The mixed-methods evaluation examined: parental knowledge of the PA guidelines for children (N=67; 27% fathers) via survey; children’s views of active play through a Draw & Write task (n=109; 51% boys); and baseline, 2-week and 3-month follow-up subjective measures of family PA and sedentary behaviour, and children’s consumption of fruit, vegetables, water, fizzy drinks and sweets/chocolate (n=20). Baseline and follow-up comparisons were tested using a related-samples Wilcoxon Signed-Rank test (p≤0.05). Results: Only 18% of parents correctly identified the PA guidelines. At baseline, 40% of parents and 4% of children were meeting PA guidelines. The workshop had no effect on parental PA, however 2 weeks and 3 months post workshop, the number of children meeting guidelines increased to 21% and 12%, respectively. Children spent less days engaged in low-intensity PA (p Conclusion: Engagement in active play with parents is vital for children’s healthy development and ways to encourage this should be considered within health promotion initiatives.

P2.03.27
GUELPH FAMILY HEALTH STUDY: RESULTS OF A PILOT STUDY OF A HOME-BASED OBESITY PREVENTION INTERVENTION

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Purpose: To examine the feasibility and effectiveness of a home-based obesity prevention intervention among a Canadian sample of families with preschool age children. Methods: Families with children ages 1.5-5 years were randomized to receive 4 home visits with a health educator, tailored emails, and mailed incentives (4HV; n=19); 2 home visits with a health educator, tailored emails, and mailed incentives (2HV; n=14); or general health advice through emails (control; n=12). Health educators employed motivational interviewing techniques to promote behaviour change. Parents completed post-intervention satisfaction surveys. At baseline and after the 6-month intervention, parents reported frequency of family meals via survey and their children’s fruit and vegetable and sugar-sweetened beverage (SSB) intake via 3-day diet records. We assessed children’s level of physical activity and sleep using accelerometers (Actigraph GT3X; 30 Hz; minimum 3 days, 24 hours wear time) and their adiposity using bioelectrical impedance analysis. Differences in outcomes from baseline to post-intervention between the intervention and control groups were examined using generalized estimating equations. Results: Of the 44 families enrolled, 42 (96%) had 6-month outcome data. At baseline, mean (SD) age of the children was 3.9 (1.1) years; 29% were overweight or obese; 80% White. Satisfaction with the intervention was high; 80% of parents were "very satisfied" and 20% were "satisfied". At post-intervention, children randomized to the 4HV and 2HV groups had significantly higher fruit intake and children randomized to the 2HV group had significantly higher light physical activity and lower body fat percent, as compared to control. No significant intervention effect was found for frequency of family meals, children’s intake of SSB or vegetables, or children’s sleep duration. Conclusions: Our pilot results suggest that a home-based intervention may be a feasible and effective approach to improve obesity-related behaviours and outcomes among Canadian families with young children. Clinical Trials Registration Number: NCT02223234

P2.03.28
SIMILARITY OF PHYSICAL ACTIVITY AND SCREEN TIME IN CHILDREN’S GRADE FIVE FRIENDSHIPS

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Purpose: In childhood, friends tend to participate in similar levels of physical activity (PA) and screen time. Examining whether this similarity exists for all domains of PA and screen activities, and whether there is variation by friendship closeness and gender can help inform theory and friendship-based programs. Therefore, the purpose of this study was to examine the similarity of different PA and screen time activities among friends and non-friends, and differences by gender and friendship closeness (best vs. close friendships). Methods: This is a cross-sectional study
of 33 schools and approximately 900 grade five children participating in the Alberta Project Promoting active Living and healthy Eating in Schools (APPLE Schools) in Edmonton and Fort McMurray, Canada. Students and their parents completed surveys, and the children wore time-stamped pedometers for 9 consecutive days. Each child nominated up to 10 close friends and 5 best friends in their school and grade. The PA variables include total, weekday, and weekend day steps/day, and organized and unorganized PA (parent and child reported). The screen time variables include total screen time, using the computer, playing video games, watching TV, and using a cell phone/tablet (parent and child reported). Close and best friendships were determined via incoming friendship nominations. The Multiple Regression - Quadratic Assignment (MR-QAP) Procedure in UCINET will be used to analyze the data from each school separately, and the results across schools will be combined using meta-analyses. Results/findings: For a subsample of schools, the number of participants per school ranged from 19 and 35, with a 90-100% response rate. For close friendships, the proportion of reciprocated dyads ranged between 28.8-53.9%, and the average number of incoming close friendship nominations ranged between 3.83-6.00. For best friendships, the proportion of reciprocated dyads ranged between 35.79-46.51% and the average number of incoming friendship nominations ranged between 2.43 to 3.54. The main findings across all schools will be presented at the conference. Conclusions: This research can help inform theory and friendship-based programs by providing specifications on the domains of PA or screen activities and types of friendships that are the most effective targets for change.

P2.03.29
OFFERING SALAD BARS INCREASED VEGETABLE VARIETY AND PREVALENCE OF 4TH-GRADE STUDENTS CHOOSING VEGETABLES AND DECREASED PLATE WASTE
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Purpose: Most U.S. school-aged children do not meet federal dietary guidelines for fruit and vegetable (FV) intake. School cafeteria salad bars are proposed to increase students’ lunch FV intake but evidence of their impact is inconsistent. We compared 4th-grade student FV selection, consumption, and plate waste between 2 school districts. One district served fresh FV from salad bars and the other served pre-portioned fresh FV. Both districts served pre-portioned hot vegetables from the tray line. Methods: Cross-sectional lunch plate waste collection occurred during fall of 4 successive school years. Before lunch, digital photographs were taken of all FV served. These “pre” photographs were compared to post consumption photographs of students’ trays and FV waste estimated to the nearest 10%. Gram weight of FV wasted and consumed were calculated from percent waste and portion weights. Data were transformed for normality and district means compared using independent samples T-test. Results: Of trays photographed (n=995; 54% from males, 58% from salad bar district), 92% included fruit, 60% included vegetables. More than twice as many students with the salad bar option chose vegetables (n=421) compared to the pre-portioned option (n=182). Selection of hot vegetables from both districts remained low. Proportion of students choosing fruit was similar for both districts (90% salad bar; 95% pre-portioned). Students with the salad bar option chose smaller vegetable portions (61.7g vs.78.6g; p Conclusions: Findings of this study support salad bars over pre-portioned fruits and vegetables as a delivery option in school meal programs because more students chose vegetables; students chose a greater variety of vegetables and in a preferred portion size, and wasted less.

P2.03.30
UNDERSTANDING DIFFERENCES BETWEEN SUMMER VS. SCHOOL OBESOGENIC BEHAVIORS OF CHILDREN: THE STRUCTURED DAYS HYPOTHESIS
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Although the scientific community has acknowledged modest improvements can be made to weight status and obesogenic behaviors (i.e., physical activity, sedentary/screen time, diet, and sleep) during the school year, studies suggest improvements are erased as children are released to summer vacation. Emerging evidence shows children return to school after summer vacation displaying accelerated weight gain compared to the weight gained occurring during the school year. Understanding how summer days differ from when children are in school is, therefore, essential. There is limited evidence on the etiology of this, with few studies comparing obesogenic behaviors on the same children during school and summer. For many children summer days may be analogous to weekend days throughout the school year. Weekend days are often limited in consistent and formal structure, and thus differ
from school days where segmented, pre-planned, restrictive, and compulsory components exist that shape obesogenic behaviors. The authors hypothesize that obesogenic behaviors are beneficially regulated when children are exposed to a structured day (i.e., school weekday) compared to what commonly occurs during summer. This is referred to as the 'Structured Days Hypothesis' (SDH). To illustrate how the SDH operates, this study examines empirical data that compares weekend day (unstructured) versus weekday (structured) obesogenic behaviors in U.S. elementary school-aged children. From 191 studies, 156 demonstrate U.S. elementary school-aged children's obesogenic behaviors are more unfavorable during weekend days compared to weekdays. In light of the SDH, this evidence demonstrates the structured environment of weekdays may help to protect children by regulating obesogenic behaviors, most likely through compulsory physical activity opportunities, restricting caloric intake, reducing screen time occasions, and regulating sleep schedules. Summer is emerging as the critical period where childhood obesity prevention efforts need to be focused. The SDH can help researchers understand the drivers of obesogenic behaviors during summer and lead to innovative intervention development.

P2.03.31
THE ROLE OF MOTIVATION AND ABILITY IN CHILDREN’S ENERGY BALANCE-RELATED BEHAVIORS
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Objective: Health intervention developers often target people's motivation and ability to change behavior because they are identified as important underlying mechanisms. The FOGG Behavior Model (FBM) suggests that people’s motivation and ability to perform certain behavior depends on several anteceding variables: motivation is suggested to be determined by 3 factors (e.g., enjoyment and potential benefits) and ability by 6 factors (e.g., time, money, habits). This study tests FBM in the context of children’s physical activity (PA), healthy snacking and water drinking behavior, as part of the ‘MyMovez’-research project aiming to develop a method for effective campaign implementation. Methods: An innovative smartphone-based research application (MyMovez-app) connected to an activity tracking bracelet enabled data collection on daily randomized and planned time points. Physical activity was measured during a 5-day period by the accelerometer. In total, 206 youngsters (68 boys, age: 9-14 y/o) participated in the study. Structural equation modeling (SEM; Mplus7.0) was used to examine whether FBM predicts children’s energy balance-related behaviors. Results: The PA-model showed the best model fit for intrinsic motivation [χ² (df = 20) = 41.80, CFI = 0.87 and RMSEA = .07], whereas FBM predicted healthy snacking and water drinking behavior less successfully. The results of the PA-model revealed that enjoyment to exercise and perceived benefits were the most important antecedent variables for intrinsic motivation, which in turn predicted higher levels of physical activity. Furthermore, important model modifications are discussed (e.g., antecedents predicting behavior directly) for the different energy balance-related behaviors, contributing to FBM theory development. Conclusions: Children’s physical activity can be predicted by the FBM. Findings imply that children’s physical activity depends on their intrinsic motivation. To increase children’s intrinsic motivation, intervention developers must take the importance of enjoyment of physical activity and perceived benefits into account. Dietary intake was not predicted by the FBM.

P2.03.32
EFFECTIVENESS OF COMBINED SCHOOL- AND HOME-BASED OBESITY PREVENTION INTERVENTIONS ON BMI AND ENERGY BALANCE-RELATED BEHAVIORS OF PRIMARY SCHOOL AGED CHILDREN – A SYSTEMATIC REVIEW
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Objective: Ecological systems theories emphasize the importance of targeting multiple settings to prevent obesity and improve energy balance-related behaviors of children. The aim of this systematic review is to provide an overview of the effectiveness of combined school- and home-based interventions on the Body Mass Index, physical activity behavior, sedentary behavior and/or nutrition behavior of children attending primary school. The EnRG framework was applied to categorize the targeted socio-cognitive determinants and environmental types. Methods: In June 2016, a systematic search was conducted in four electronic literature databases. Inclusion criteria were school-based interventions targeting physical activity and/or nutrition behavior; outcome measures are BMI (z-score), physical activity, sedentary behavior and/or nutrition behavior; children are aged 4 to 12 years and attend primary school; parents are directly involved in the intervention. Pilot studies and articles not written in English were excluded. Data on study, intervention characteristics and outcome measures were extracted and the quality of the studies was assessed. Intervention components targeting socio-cognitive determinants of the child and the
political, economic, physical and sociocultural school- and home-environment were identified. Effect sizes (Cohen’s d) were calculated. Results: The search resulted in 22 studies on the effectiveness of combined school- and home-based interventions. Nine studies found an effect on BMI (z-score) of which six were small. Negative effects on BMI (z-score) were found by four studies. In total, six studies showed small to large effects for physical activity behavior, whereas two studies found no effect or a negative effect. Effects on sedentary behavior were mixed, with small and moderate effects and no effect. The effects on fruit and vegetable consumption were inconclusive: four studies showed positive effects and four showed negative effects. Effects cannot be explained by certain essential intervention components. Conclusions: The combined school- and home-based interventions showed promising results on BMI (z-score) and physical activity behavior of primary school-aged children. No conclusions can be drawn on the effects of the interventions on sedentary behavior and fruit and vegetable consumption. The effectiveness of the interventions is probably explained by the comprehensive approach targeting socio-cognitive determinants of the child and different environmental types.

P2.03.33
CHANGES IN PARENTS’ CONFIDENCE FOR PERSONAL AND CHILD-LEVEL BEHAVIOR CHANGE AND THE HOME OBESOGENIC ENVIRONMENT FOLLOWING A BEHAVIORAL WEIGHT MANAGEMENT PROGRAM
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Observational studies demonstrate that parents’ obesity-related behaviors affect their confidence to support behavior changes in their child. However, prospective studies are lacking. Objective: To examine changes in parent confidence to modify their obesity-related behaviors, their children’s behaviors, and their home environment.
Methods: Data from thirty-six parents enrolled in a behavioral weight loss trial (age 47.4 ± 8.8 years, body mass index 38.4 ± 5.2 kg/m², female 88.9%, African American 66.7%) were analyzed. Parents self-reported confidence to improve five obesity-related behaviors for themselves and their children (physical activity, screen time, sleep, sugar-sweetened beverages, and fast food intake) at baseline and six months. Confidence levels were measured on a 4-point Likert scale (1= "not confident", 4= "extremely confident"). The home obesogenic environment and family practices were evaluated with the family nutrition and physical activity (FNPA) scale and higher scores indicated a healthier home environment (total FNPA range= 20–80, subscale range= 2–8). Children were not involved in the study. Nonparametric methods were used to analyze data. Results: There were no significant differences in parents' confidence to modify their own obesity-related behaviors. However, there was a decrease in parents' confidence to limit their child’s fast food intake to
Conclusions: Despite no changes in parent confidence to make personal obesity-related changes and a decrease in their confidence to limit their child’s fast food intake, favorable family practices were demonstrated by a reduction in high-calorie beverage intake in the home following a behavioral weight loss program. This suggests that supporting behavioral changes in parents through lifestyle interventions may positively influence some aspects of the obesogenic home environment for the children. Future studies should explore how to improve parents' confidence for and achievement of obesity-related behaviors and their effects on the home environment.

P2.03.34
EXECUTIVE FUNCTION IMPAIRMENT PROSPECTIVELY PREDICTS MULTIPLE HEALTH RISK BEHAVIORS ACROSS EARLY ADOLESCENCE
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Objective: Executive function (EF) impairment is independently associated with increased risk of substance use, obesogenic behavior, and insufficient sleep. However, less is known about the effect of EF impairment on multiple health risk behaviors (MHRB) during early adolescence—despite work suggesting that such behaviors co-occur and may share determinants. This study examines the longitudinal impact of EF impairment assessed at 4th grade on a cluster of 5 health risk behaviors assessed at 6th grade. Methods: Data were collected from 709 participants in the school-based Pathways to Health prevention trial followed from 4th through 6th grade. A self-report survey included 23 items taken from the inhibitory control, emotional control, working memory, and organization of materials subscales of the Behavioral Rating Inventory of Executive Function, which constituted a continuous indicator of EF impairment at 4th grade. Continuous indicators of average sleep duration, sedentary behavior and high-calorie/low-nutrient food intake, alcohol use and cigarette use were assessed at 6th grade via validated
questionnaires. SEM was performed using MPlus 7.4, adjusting for participant clustering by school. Participant age, gender, SES and ethnicity (White vs. non-White) were each associated with MHRB (p Results: A unifactorial measurement model employing the aforementioned 5 MHRB indicators (sleep duration, sedentary behavior, HCLN intake, lifetime alcohol use, lifetime cigarette use) demonstrated excellent fit to the data, as did a structural model adding 4th grade EF and the aforementioned covariates (CFI >.965; RMSEA th grade predicted 6th grade MHRB (β=.16; page=.11, pmale=.32, pβlowSES=.19; pwhite=.16, p Conclusions: EF impairment appears to be an important longitudinal predictor of MHRB among late elementary school youth. Interventions that promote healthy neurodevelopment during early adolescence may also be effective in reducing MHRB.

P2.03.35
FOOD LITERACY AND THE FAMILY ENVIRONMENT: ASSOCIATIONS WITH FRUIT AND VEGETABLE INTAKE AMONG ADOLESCENTS
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Purpose: Food literacy and supportive family environments may be critical for supporting a healthy diet throughout life, but have rarely been explored among adolescents. This study examined associations between food involvement and enjoyment and encouragement of cooking with fruit and vegetable intake in late adolescence, and whether these associations are mediated by confidence preparing food and understanding food labels. Methods: Cross-sectional survey of 1022 Year 11 secondary students (mean age 16.8±0.4 years) recruited via schools and social media. Participants self-reported: frequency of involvement in shopping/helping to shop for food, planning ahead for meals, making grocery lists for the household and helping to prepare or preparing family meals on their own; enjoyment of cooking (agree/strongly agree); frequency of family members encouraging them to cook (often/very often); confidence preparing food and reading/understanding food labels (3 items summed, Cronbach’s alpha=0.77); and number of serves of fruit and vegetables consumed per day. A series of linear regression analyses were performed controlling for sex, maternal education, mode of recruitment and clustering by school. The product of coefficients method was used to explore single mediation models. Results: Complete data were available for 938 participants. Participants consumed 2.2±1.3 serves/day of fruit and 2.4±1.3 serves/day of vegetables. Shopping/helping to shop for food (B=0.2), meal planning (B=0.3), making grocery lists (B=0.3) and helping to (B=0.5) or preparing family meals on their own (B=0.3) at least once/week were positively associated with vegetable intake, as were enjoyment of cooking (B=0.4) and frequent family encouragement to cook (B=0.04). The food confidence score mediated these associations (55-94% mediated, with the exception of enjoyment of cooked for which there was inconsistent mediation). Similar findings were found for fruit intake. Conclusions: Involving adolescents in food procurement, planning and preparation, and encouraging them to cook regularly may be important for developing confidence for meal preparation and understanding food labels. These aspects of food literacy and the family food environment appear to be important for healthy eating behaviours. Further research is required to explore whether such skills during adolescence support healthy eating habits later in life.

P2.03.36
SOCIAL NETWORK INFLUENCES IN A FAMILY-BASED CHILDHOOD OBESITY PREVENTION PROGRAM
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Purpose: Social networks have been found to influence eating behaviors, physical activity, and obesity in observational studies, yet are rarely the focus of obesity interventions. Social network characteristics likely to be important to the adoption and maintenance of a healthy weight and energy balance behaviors, and thus the success of obesity interventions, include: social support, because social connections provide resources needed to engage in healthy behaviors; and weight and behavior norms, because social connections are a source of influence through several mechanisms (e.g., normative influence, mimicry). Methods: This study builds upon a childhood obesity prevention program called COPE (Childhood Obesity Prevention at home), which is a new, add-on module for existing Home Visitation Programs (HVP). COPE incorporates evidence-based strategies to promote healthy eating and activity in families, and is delivered through existing HVP services in-home, to low-income mothers and their infants. This 6-month pilot study assessed if mothers’ social network characteristics were related to the focal intervention outcomes (mother diet, physical activity, weight status; infant diet, weight trajectory). Fifty mothers and infants (70% Hispanic/Latino) were recruited through our community HVP partner and randomized to receive (1) the HVP core curriculum only or (2) the HVP core curriculum + COPE module, for six months. Assessments,
conducted at baseline and post-intervention included: (1) mothers’ social network characteristics, (2) mother/infant food intake and mother physical activity (accelerometer), and (3) mothers’ postpartum weight retention and children’s growth velocity. Results: Our findings identify the types of social connections that are in a position to influence mother/infant health outcomes, via co-engagement in health behaviors and through the provision of health-related support. We also find that specific characteristics of mothers’ social networks are associated with intervention outcomes, including the proportion of females, the frequency of contact with network members, and the density of health-related social support (p Conclusions: Our findings suggest that family-based obesity interventions should consider the social networks in which families are embedded, and point to network intervention strategies to foster social connections that provide support and healthy social influence, to bolster healthy behaviors and ultimately enhance family-focused childhood obesity prevention efforts.

P2.03.37
KNOWLEDGE, ATTITUDES AND BEHAVIORS RELATED TO DIETARY SALT INTAKE AMONG SCHOOLCHILDREN FOLLOWING PARTICIPATION IN THE DIGITAL EDUCATION TO LIMIT SALT INTAKE IN THE HOME (DELISH) PROGRAM
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Purpose: Australian schoolchildren eat more than the recommended amounts of salt for health. We report on the change in child salt related knowledge, attitudes and behaviors (KABs) after participation in a web-based program (Digital Education to Limit Salt Intake in the Home). The DELISH program aimed to reduce salt intake among schoolchildren and improve child and parent salt related KABs. Methods: DELISH was a 5-week online interactive education program that targeted 3 key behaviors i) stop using the salt shaker ii) switch to lower salt foods by checking food labels iii) swap processed salty foods to healthier alternatives. The child/parent dyads (n=102) were recruited from 4 Victorian government schools. A pre and post online survey assessed the constructs of KABs and self-efficacy. McNemar test and a paired t-test were used to assess change in survey responses as appropriate. Intervention delivery was assessed via online session log-in rates. Results/findings: The intervention was delivered to 83 children (mean age 9.2 (SD 0.8) years, 59% girls) and 75 of these completed a pre and post online survey. Approximately two thirds of children watched the first 4 online sessions and of these children most (80%) viewed each session to at least 90% completion. Children’s total salt knowledge score increased (13.5(SE±0.3) pre vs. 17.1±0.3 post, p Conclusions: Overall children actively participated in the DELISH program and their knowledge, behaviors and self-efficacy related to salt intake improved. These preliminary findings indicate the potential for an online salt educational program to favorably alter salt related knowledge and behaviors which could result in lower salt intakes among children.

P2.03.38
HOW DO WE BUILD INFRASTRUCTURE FOR YOUTH-SERVING ORGANIZATIONS IN THE MIDWEST UNITED STATES TO DEVELOP AND IMPLEMENT CHILDHOOD OBESITY PREVENTION PROGRAMS?
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Background: Community-based obesity prevention efforts continue to be warranted. To address this issue, Children’s Hospital and Medical Center in Nebraska started a Preventing Childhood Obesity (PCO) grants program to support obesity prevention efforts by local youth-serving organizations. The purpose of the current evaluation was to collect process data on the PCO program, in order to identify capacity and evaluation needs among the grantee organizations. Methods: The mixed-methods evaluation included review of documentation from previous years of the PCO program and in-depth interviews with current grantees. Key topics for in-depth interviews included: use of evidence-based strategies, evaluation of outcomes, sustainability planning, and potential for shared measures. Interviews were digitally recorded, transcribed and coded. Twelve one-on-one interviews and one small group discussion (n=14 persons) were held with 8 (of 9) current grantee organizations. Results: Since inception, the PCO program has funded 34 obesity prevention projects conducted in schools, early care and education settings and youth serving community based organizations. Past and current grantees have proposed obesity prevention strategies in nutrition, physical activity, or both. In the current cycle, only three grantees reported using evidence-based strategies or programs and only one organization measured weight status. Grantee organizations were interested in shared measures; however, grantees do not have the capacity or expertise to increase evaluation efforts. Finally, no grantees engaged in sustainability planning and indicated they could not continue obesity prevention programming without this specific funding. Conclusions: Grantees employed a wide range of evaluation
approaches and tools, yet only one was tracking weight status and many metrics reported did not align with programming proposed. Without tracking weight status or behavior within the grants program or across years, it will be difficult to determine overall impact of PCO program. Moving forward, Children’s Hospital will continue to fund grants in this area but will also develop criteria for grant review, as well as provide external support for evaluation by grantees, along with trainings to enhance infrastructure within these organizations. The ultimate goal is to devise strategies to increase capacity among grantees to adopt, implement, evaluate, and sustain evidence-based obesity prevention strategies in these local organizations.

P2.03.39
DIFFERENCES, DYNAMICS AND DISCORDANCE: INTERPLAY OF MOTHERS’ AND FATHERS’ FEEDING PRACTICES AND CHILD FUSSY EATING IN A LOW-INCOME COMMUNITY
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Purpose: Child feeding studies have commonly limited their focus to dyadic parent-child feeding relationships and sampled parents from economically privileged communities. Yet children from socioeconomically disadvantaged families are at higher risk of overweight and more likely to be perceived as fussy eaters. Limited family economic resource places greater emphasis on food wastage and serves to restrict diversity of food choice in circumstances where children are fussy eaters. The current study of socioeconomically disadvantaged families asked three questions: i) Are there differences in feeding practices between mothers and fathers? ii) How do the dynamics between mother-father feeding patterns relate to child fussy eating? iii) What is the impact of inter-parental discordance and child fussy eating? Methods: Cohabitating mother-father pairs of children aged 2- to 5-years old (N=208) living in a socioeconomically disadvantaged community in Queensland, Australia, each completed surveys regarding their nonresponsive and structure-related feeding practices, and child’s ‘food fussiness’. Gender differences in feeding practices were examined using linear mixed models. Non-hierarchical k-means cluster analysis was used to identify mother-father feeding patterns. Differences in child ‘food fussiness’ across clusters were explored using ANOVAs. Discordance (difference between mothers’ and fathers’ feeding practice scores) was entered into linear regression models with child ‘food fussiness’ as the dependent variable. Results: Fathers were more likely to ‘reward for behaviour’ and less likely to use ‘covert restriction’, ‘structured meal setting’ and ‘structured meal timing’ than mothers (psh/FHi and MLo/FLo) and inconsistent (MHi/FLo and MLo/FHi) feeding practice patterns. Mother-father pairs who reported consistently high nonresponsive feeding practices (MHi/FHi) were more likely to have a child rated high in ‘food fussiness’ compared to pairs in the MLo/FLo clusters (p<0.05). Conclusions: Gender differences in feeding practices were found in socioeconomically disadvantaged families. Common goals between mothers and fathers, particularly around consistent, positive feeding practices and structuring mealtimes, may benefit the management of fussy eating behaviours.

P2.03.40
LONG-TERM EFFECTS OF COMPREHENSIVE SCHOOL HEALTH ON HEALTH-RELATED KNOWLEDGE, ATTITUDES, SELF-EFFICACY, HEALTH BEHAVIOURS AND BODY WEIGHT AND OF ADOLESCENTS
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Background: The Comprehensive School Health program, Alberta Project Promoting active Living and healthy Eating in Schools (APPLE Schools), has demonstrated beneficial effects on diet, physical activity (PA) and body weight among elementary school grade 5 students (10-11 years old). However, the long-term effects of APPLE Schools remain unknown. Objective: We assessed effects of the APPLE Schools program on diet, PA, body weight, and health-related knowledge, attitudes and self-efficacy, 7 years after the start of the program, when students were in junior high and high school. Methods: In the 2015/16 school year, junior high and high schools (grades 7-12) in Northern Alberta with both graduates from APPLE Schools and comparison elementary schools completed a cross-sectional survey including knowledge, attitudes and self-efficacy measures, a 24-hour dietary recall, pedometers to measure PA, and measured height and weight. Multilevel regression methods were used to assess differences in knowledge, attitudes, self-efficacy and diet between APPLE Schools graduates and comparison schools graduates in 2015/16. We also examined change in PA and body weights of APPLE Schools graduates between 2008/09 and 2015/16, relative to the change in these outcomes among comparison schools graduates. Results: PA declined between 2009 and 2015/16 but the decline was less pronounced among APPLE Schools graduates (-1257 steps/day; p=0.097) relative to graduates of comparison schools (-1633 steps/day; p=0.045). Obesity prevalence rates among
APPLE Schools graduates were 12.6% and 12.3% in 2008 and 2015/16 respectively and were 7.3% and 9.9% respectively in 2008 and 2015/16 for comparison schools graduates. The odds of being obese in 2015/16 relative to 2008 was 62% lower (OR: 0.38, 95% CI: 0.15, 0.94) among APPLE Schools graduates compared to attendees of comparison schools. No significant differences were found in the outcomes knowledge, attitudes, self-efficacy and diet between the two groups in 2015/16. Conclusion: Comprehensive School Health effects on PA and body weight are sustained into adolescence.

P2.03.41
THE ASSOCIATION BETWEEN FAMILY ENVIRONMENT, STRESS, AND DIET QUALITY: RESULTS FROM THE HCHS/SOL SOCIOCULTURAL ANCILLARY STUDY.
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Purpose: To test whether family environment (cohesion and conflict) modifies the association between stress and diet among Hispanic/Latino adults. Methods: Secondary data from the Sociocultural Ancillary Studies (n=5,313) to the Hispanic Community Health Study/Study of Latinos (HCHS/SOL), a multicenter, community-based cohort of Hispanic/Latino adults (18-74 year old) from four field centers. Response variable: diet quality as measured by the Alternative Healthy Eating Index ranging from 0 to 110 (lowest to highest quality). Exposures/effect modifiers: Family environment scale (cohesion and conflict subscales) and perceived stress scale. Statistical analysis: The cross-sectional association between stress scales and diet quality (continuous) was assessed using complex survey linear regression models adjusted for sociodemographic and behavioral variables that were independently associated with both exposure and response of interest. We included interaction terms between family environment and stress variables, as well as family environment and sociodemographic and behavior covariates (age, sex, Hispanic/Latino background, income, education, nativity, smoking, language preference). Models were also controlled for participants’ field center. Results/findings: In unadjusted analyses, family cohesion was positively associated with diet quality, whereas conflict and perceived stress were negatively associated with diet (Family cohesion β: 0.05; p-value: Conclusions: While family conflict and cohesion were not significantly associated with diet quality, our results encourage longitudinal studies and qualitative approaches to examine if and how Hispanics/Latinos backgrounds experience family conflict and cohesion differently in their association with diet quality.

P2.03.42
DEVELOPMENT AND ASSESSMENT OF A REWARDS PROGRAM TO PROMOTE HEALTHY MENU OPTIONS AND SUPPORT SCHOOL WELLNESS PROGRAMS
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Objective: Many schools participate in "Dine Out" promotions where families earn donations for their school by dining at a restaurant. While such promotions offer potential financial benefits for restaurants and schools, one concern is potential unintended negative consequences on diet quality and energy intake. The objective of this study was to develop and assess an alternative model aiming to retain the financial benefits while promoting healthy eating. We designed a program that collaborates with restaurants to promote healthy menu items and offer fundraising incentives to families benefiting their school wellness programs. We hypothesized that offering fundraising incentives with nutrition messaging would increase the selection of healthier meals when dining out.

Methods: A cross-sectional survey was distributed to parents/guardians to measure program awareness, use, and acceptability (May 2016). Focus groups were held with a subset of parents/guardians to obtain in-depth program feedback (October 2016). Stakeholder engagement was measured through interviews with restaurant managers and school principals (August 2016 to January 2017). To evaluate the effectiveness of fundraising incentives and
nutrition messaging, we conducted a randomized study to compare sales of healthy options during two intervention "dine out" periods. Twelve schools were paired and randomly assigned to either intervention A (nutrition messaging and a school wellness fundraising incentive for visiting the restaurant) or B (intervention A with an additional fundraising incentive to select healthier meals meeting specific nutrition criteria). Sales data were compared between the intervention periods and to baseline sales data. Participating families also completed a behavioral survey (March 2017). Results: Results of the initial parent survey (n=825) revealed low program awareness and use, suggesting initial communication strategies were not impactful. Focus groups (n=73) uncovered key insights to increase participation and improve programming through nutrition messaging and incentives. Stakeholder interviews (n=11) identified facilitators and barriers to implementing public health programs in restaurants and schools. Findings from the aforementioned formative research were used to inform the intervention (in process). Conclusions: Findings from this study can inform the development of collaborations between schools and restaurants that benefit each while promoting health and well-being among families in the community.

P2.03.43
PREVALENCE OF OVERWEIGHT/OBESITY AND DIETARY BEHAVIORS AMONG PUBLIC SCHOOL STUDENTS IN THE US VIRGIN ISLANDS
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Objective: Determine the prevalence of overweight/obesity and examine dietary behaviors among 4th, 8th and 11th grade students attending public schools on the Caribbean Island of St. Thomas, US Virgin Islands during the 2014-2015 school year. Methods: A representative sample of 314 students attending public elementary, middle and high school self-reported dietary intake and related behavioral determinants of overweight and obesity included in the School Physical Activity and Nutrition (SPAN-USVI) survey, modified for use in the USVI, a US territory located in the Caribbean. Anthropometric measures of height and weight were used to calculate body mass index (BMI, kg/m2). Centers for Disease Control and Prevention (CDC) percentile cut-offs for age-and-gender classified youth as overweight (85≤BMI<95th grade, respectively. All analyses were conducted with IBM SPSS 24. Results: Among 4th graders, 41% were overweight/obese, while 28% of 8th and 35% of 11th-grade students were overweight/obese. The percentage of 4th graders reporting eating fruits at least once was 76, compared to 60% of 8th/11th graders. Only 23% of 8th/11th graders and 36% of 4th graders ate orange vegetables, while 42% of 8th/11th graders and 40% of 4th graders ate green vegetables. Over 70% of 4th graders and 60% of 8th-11th graders drank fruit punch/fruit-flavored beverages at least once. Multiple logistic regression models controlling for gender and frequency of prior seven-day physical activity of at least 60 minutes revealed youth who drank fruit punch/fruit-flavored drinks at least once on the day before the survey were more than twice as likely (OR=2.5; p=.01) to be overweight/obese. Conclusions: SPAN-USVI is a reliable tool to measure dietary intake behaviors in this unique population. Overweight/obesity among this culturally-diverse sample is high and positively correlated with consumption of fruit/flavored drinks, to include popular local fruit-flavored beverages. Physically active youth may be consuming energy drinks perceived to be healthy. Culturally-relevant interventions to improve dietary intake, particularly in reducing consumption of sugary beverages are warranted.

P2.03.44
THE RELATIONSHIP BETWEEN PARENTAL EATING BEHAVIORS AND INFANT FEEDING PRACTICES
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Purpose: Feeding practices, the goal-directed behaviors parents use to influence their child’s eating, play a crucial role in a child’s risk for obesity. Parents who eat intuitively, eating when hungry and following satiety rather than emotional cues, are less likely to exert excessive control when feeding their children. This has not been examined among infants. Thus, we sought to examine the relationship between parental intuitive eating behaviors and how they feed their infants. Methods: Parents of healthy infants aged 5.5–12.5 months were recruited during well-child visits at two large urban primary care clinics. Parents’ intuitive eating behaviors were assessed with the Intuitive Eating Scale-2 (IES-2, range 1-5). The Infant Feeding Style Questionnaire (IFSQ, range 1-5) assessed how parents fed their infants (Indulgent, Laissez-faire, Responsive, Pressuring, and Restrictive). Demographic data, breastfeeding status, and junk food intake was also obtained. Spearman’s correlation were used to evaluate the relationship between IES-2 and IFSQ scores and Pearson’s chi-squared test was used to test the relationship between IFSQ scores, breastfeeding status and introduction to junk food. Results: Data from 137 dyads (90% female parents, 50%...
female infants) was available for analysis. Average parent age was 27 ± 7 years; average infant age was 9.1 ± 2 months. Mean total IES-2 score was 3.7 (SD 0.4). Parent's reported high mean Restrictive (4.3 ± 0.4) and Responsive (3.8 ± 0.6) infant feeding styles. Total IES-2 scores was not related to any infant feeding style. Subset analysis showed that parents who allowed themselves to eat freely when hungry reported higher Laissez-faire (p 0.22, p and Indulgent (p 0.25, p feeding styles and lower Restrictive feeding style (p -0.21, p. Parents who matched food choice to their body's needs had higher Restrictive feeding style (p 0.30, p. Laissez-faire (OR 3.36, 2.00-8.74) and Indulgent styles (OR 2.28, 1.19-4.37) were associated with increased odds of introducing junk food. Conclusions: Parents who ate without restriction are more likely to indulge their infants whereas parents who matched foods to their body's needs are more likely to restrict their infants' diets. Further studies are needed to understand impacts on infant weight outcomes.

P2.03.45
DOES THE EFFECTIVENESS OF A WEB-BASED NUTRITION INTERVENTION FOR ADOLESCENTS OCCURS THROUGH CHANGES IN PSYCHOSOCIAL DETERMINANTS?
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Introduction: We have previously shown that a school and web-based nutrition intervention for adolescents was effective in increasing short-term consumption of vegetables and fruit (VF) and dairy products and alternatives (DP). However, it is unknown whether changes in determinants of the Theory of Planned Behaviour (TPB) regarding VF and DP consumption contributes to the effectiveness of the intervention. Objective: The aim of this study was to investigate if baseline TPB determinants predict baseline and/or changes in VF and DP consumption in response to a nutrition intervention. Methods: High school classes of grades 7 and 8 were randomly assigned to an intervention (i.e. Team Nutriathlon; n=193) or control group (n=89). Team Nutriathlon is a web-based nutrition intervention aimed at increasing VF and DP consumption over a 6-week period: The control group followed the regular school curriculum. The actual behavior (i.e. the number of servings of VF and DP) was recorded in both groups before, at weeks 3 and 5 and after the intervention. TPB determinants (i.e. intention, attitude, subjective norm (SN) and perceived behavioral control (PBC)) were measured before and after the intervention. The association between TPB determinants and VF and DP consumption was assessed using Pearson correlations. Mixed models for repeated measures were used to investigate changes in TPB determinants between groups and over time. Results: Pearson correlations showed that attitude, SN and PBC were associated with baseline intention towards VF and DP consumption in the intervention group (r=0.33 to 0.73, p=0.04), attitude (r=0.22, p=0.01), and PBC (r=0.20, p=0.02) regarding VF consumption was associated with VF consumption at week 3 in the intervention group suggesting that TPB determinants predict VF consumption only in the short-term. Repeated measures ANOVA showed no group x time interaction for each TPB determinant. Conclusions: TPB determinants predicted intention towards VF and DP consumption, but not the actual behavior (i.e. baseline or increase in VF and DP consumption) suggesting that the increase in VF and DP consumption did not occur through changes in TPB determinants.

P2.03.46
THE IMPACT OF MATERNAL NUTRITION ON OFFSPRING’S RISK OF NON-COMMUNICABLE DISEASES IN ADULTHOOD: A SYSTEMATIC REVIEW
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Background: A growing body of evidence suggests the impact of maternal nutrition plays a role in determining offspring’s risk of non-communicable diseases (NCDs), including heart disease (CVD), type 2 diabetes (T2DM), cancer and chronic obstructive pulmonary diseases (COPD). We conducted a systematic review to fill the knowledge gap in this area. Methods and Findings: We systematically searched CINAHL, Cochrane Database of Systematic Reviews, Cochrane Register of Controlled Trials, Database of Abstracts of Reviews of Effects, MEDLINE, EMBASE, Web of Science Core Collection and Global Health for papers published before May 2016 (PROSPERO: CRD42016039244, CRD42016039247). Included studies examined the impact of maternal nutrition (diet, vitamin status and weight) on adult offspring’s NCD outcomes. Of 23,501 identified citations, 22 met our inclusion criteria. Included studies involved 1,939,786 participants. Heterogeneity of papers required narrative synthesis. Results
were presented by NCD. CVD: Four papers examined maternal exposure to famine during gestation, three identified a resulting increased risk of CVD in offspring. Five identified an increased risk of offspring CVD with increasing maternal weight. T2DM: Six studies investigated maternal exposure to famine during gestation, three identified an increase in offspring's T2DM risk. Three found no increased risk, two of these were in circumstances where famine states persisted beyond pregnancy. Three papers found an increased risk of T2DM in offspring with increasing maternal BMI. CANCER: Four papers investigated maternal famine exposure during pregnancy- two identified a reduced risk of cancer in male offspring, and two an increased risk in female offspring. COPD: One study found low maternal vitamin D status was associated with reduced use of asthma medication use. Conclusions: Findings suggested that both exposure to famine and maternal overweight during pregnancy is associated with offspring’s risk of CVD, T2DM and Cancer. In offspring exposed to famine during gestation, increased risk of CVD and T2DM appears dependent upon exposure to nutritional excess after birth. Funding Statement: This review was commissioned by the World Health Organization. The views expressed in the document are solely the responsibility of the author and they do not necessarily represent the views, decisions, or policies of the institution with which they are affiliated.

P2.03.47
FEEDING DURING INFANCY: DYADIC BEHAVIORAL AND PHYSIOLOGIC DATA INTEGRATION
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Objective: This study aimed to evaluate the feasibility, acceptability, and quality of data collection processes (integrated behavioral [video observations] and physiologic [electrocardiogram (ECG)] measures) for infants and their mothers as part of a larger study. Methods: Subjects were 10 mother-infant dyads with infants between 4-13 months of age. Dyadic exclusion criteria included: infants born more than 6 weeks earlier than their estimated due date; developmental delays or disabilities making it difficult for infants to eat, drink, or communicate; infants being 13 months old at the time of data collection; and mothers unable to read, understand, and speak English. Home visits started about 45 minutes before a normal feeding time. Upon arrival, two GoPro Hero SessionTM (San Mateo, CA) video cameras were set up in the feeding location. An ambulatory ECG waveform recorder (Actiwave Cardio; CamNtech, Cambridge, UK) was connected to two disposable ECG electrodes to record throughout the observation. Study personnel instructed mothers on how to place the 2 electrodes onto the infant’s chest and mother’s chest. Infants and mothers then watched a video with soothing music for a 5-minute baseline measurement; once complete, mothers were told they could begin feeding whenever they felt the infant was ready. Video recording began synchronously prior to the baseline measurement and continued until approximately 2 minutes after the infant’s last bite of food. Personnel left the room prior to feeding and returned when mothers informed them feeding was finished. Acceptability of data collection was assessed by maternal interview questions. Video and ECG data quality were assessed in the PI’s lab. Results: All infants tolerated the data collection procedures well. No mothers reported negative experiences with recruitment, interactions with study personnel, or data collection procedures, and the majority described these experiences as positive. Physiologic and video data were excellent and have been successfully synchronized and imported into Observer XT (Noldus Information Technology; Wageningen, The Netherlands) for behavioral coding. (Integration will be displayed.) Conclusions: The successful integration and synchronization of behavioral and physiologic data represents an advancement in biobehavioral methods and sociophysiological research in behavioral nutrition with broad potential applications.

P2.03.48
EAT SMART IN PARKS: GIVING VOICE TO YOUTH
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Objectives: Interest in healthy food and beverage options in parks, recreation centers and public spaces is growing. As part of Eat Smart in Parks (ESIP) -- a nutrition environment initiative named a promising practice by SNAP-Ed -- a youth photovoice engagement project launched in 2015 to help address the nutrition issues and needs identified by youth in Missouri. A goal of the photovoice project is to help empower youth to make changes in their community related to the food and beverage environment in and around parks. As such, this study examined the youth and community members’ perceptions of the project helping youth inform and make changes in their community.
Methods: Four photovoice projects (2 urban and 2 rural) with youth ages 10-17 (n=48) were conducted in
community centers and afterschool programs, examining the food environment in and around the park and recreation centers. Students took photos and later discussed photos as a group, identifying overall themes they wished to address with community key decision makers. Photos and themes were shared with the wider community (i.e., community residents, policy makers, teachers, parents/guardians, parks and recreation staff) at gallery event exhibitions. Questionnaires were administered to youth and community members (n=40) after the gallery event. Results: Youth strongly agreed that participating in the project changed the way they think about healthy eating, their community, and parks and recreation centers. They agreed that the gallery event helped them influence community members, and indicated intention to do more to encourage healthy eating in their community. Furthermore, community members indicated that they learned something new by attending the event, want to improve the availability of healthy foods in their communities, and think that it is important for youth to be involved in policy decisions. Conclusions: Findings indicate that the photovoice project indeed helped give the youth a voice regarding healthy food environments in parks. This study suggests that similar photovoice projects may be important ways to engage youth in making changes in their food environments.

P2.03.49
THE ASSOCIATION OF THE QUALITY OF THE DIET WITH THE COSTS OF THE DIET FOR CHILDREN IN CANADA

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Purpose: A healthy diet is essential to growth, development and prevention of disease. Higher costs for healthy foods are often quoted as a barrier to a healthy diet. In this study we assessed the association of quality and costs of diets of children in Canada. Methods: Between March and June 2014, we surveyed 2,731 grade 5 students, who are typically 10 or 11 years of age, and their parents. Students completed the Harvard Youth Adolescent Food Frequency Questionnaire that includes 147 food items, and had their heights and weights measured. Parents provided information on household income and educational attainment. We applied the Diet Quality Index-International (DQI) as a measure of diet quality. This DQI considers 14 nutrients and 71 food items, generates a score ranging from 0 to 100, with values of We used prices from 4 common Canadian retailers (Superstore, Walmart, Sobeys and Save on Foods) for each of the 147 food items to calculate the costs of the diet for each student. We applied linear regression methods to characterize the association of DQI with costs while considering gender, body weight, household income and parental education as potential confounders. Results: We estimated the average daily cost of children's diets to be CAD 13.19. This was CAD 12.12, 13.27 and 13.51 for students with poor, moderate and high diet quality respectively. For every 1 unit increase in DQI the costs of the diet increased with 7 cents (p Conclusions: We observed a gradient whereby diets of better quality are more costly. However, this gradient was very modest such that costs are unlike an important barrier to healthy diets if purchased in common supermarkets. We recommend education on where to purchase healthy food items as a strategy in reducing socioeconomic barriers to healthy eating.

P2.03.50
IMPROVING THE PHYSICAL ACTIVITY AND OUTDOOR PLAY ENVIRONMENT THROUGH THE NEBRASKA GO NUTRITION AND PHYSICAL ACTIVITY SELF-ASSESSMENT FOR CHILDCARE (GO NAP SACC)

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Purpose: The Nutrition and Physical Activity Self-Assessment for Childcare (Go NAP SACC) is an evidence-based approach shown to be effective in improving the nutrition and physical activity environments in childcare. Since 2010 Nebraska state and local partners have collaborated to offer Go NAP SACC statewide. However, little research has examined the overall effectiveness of this statewide initiative, specifically with physical activity. Therefore, the purpose of this study was to determine if the Nebraska Go NAP SACC intervention was effective in improving best practices in the areas of infant and child physical activity and outdoor play and learning in family childcare homes and childcare centers. Methods: Family childcare homes (n =201) and childcare centers (n =102) participated in the Go NAP SACC pre-post evaluation during 2014-2016. This study examined the results from 2 of the 5 Go NAP SACC self-assessments: Infant and Child Physical Activity and Outdoor Play and Learning. Answers were coded as 1 = barely met, 2 = met, 3 = exceeded, and 4 = far exceeded based on Go NAP SACC recommended best practices. Paired sample t-tests were conducted using SPSS statistical software to examine the extent to which Go NAP SACC scores differed significantly from pre-test to post-test. Results: At baseline, all family childcare homes and childcare centers met minimum standards for most of the best practices. Nevertheless, at post, family childcare homes
demonstrated significant improvements in 85% of the Infant and Child Physical Activity items (17 out of 20), and 80% of the Outdoor Play and Learning items (12 out of 15). Additionally, childcare centers demonstrated significant improvements in 91% of the Infant and Child Physical Activity items (20 out of 22), and in 80% of the Outdoor Play and Learning items (16 out of 20). Conclusions: After taking part in Nebraska Go NAP SACC a majority of childcare entities showed significant improvements and were at least meeting best practice recommendations. Future research should examine if there are differences between family and center-based childcare facilities as well as if disparities exist in urban and rural environments.

P2.03.51
PARENTAL OUTCOMES OF A HOME-BASED PHYSICAL ACTIVITY INTERVENTION TARGETING FAMILIES OF YOUTH WITH AND WITHOUT PRADER-WILLI-SYNDROME

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Objective: Outcomes for home-based physical activity (PA) interventions primarily focus on youth participants. However, parents play an integral role in the potential success of interventions; thus examining parent outcomes may inform future interventions. This study examined changes in parental efficacy (i.e., parents’ confidence to manage their child’s PA) and parental influences (i.e., attempts to prompt or persuade their child to engage in PA) during a parent-led home-based PA intervention. Methods: Parents (N=95; 85 female; 10 male) and youth with obesity (n=53; mean age 9.7± 1.1 years) or had Prader-Willi Syndrome (PWS; n=42; mean age 10.7± 2.5 years) participated in a 24-week intervention called Active Play at Home. The intervention provided a curriculum of playground games and interactive video games for the parent-child dyads to play together. At baseline, parents completed a questionnaire that assessed parental efficacy and influences: collaborative (offering to be active together), positive (encouraging) and negative (ordering). Dyads randomly assigned to the intervention group, returned for a training visit one week later and were introduced to the curriculum. After 24 weeks, the same assessments were completed. Generalized linear models evaluated changes in parental efficacy and influences with the intervention (intervention/control), visit (baseline/post) and child group (with/without PWS) as the independent variables. Results: For efficacy, no significant differences were identified. The intervention by visit interaction was significant for collaborative (p=.011) and negative (p=.010) influences. For collaborative influences, the intervention group reported using this type of influence more at post while the control group showed no change. For negative influences, the control group reported less use at post and the intervention group showed no change. Regardless of receiving the intervention, parents of youth with PWS reported more collaborative influence than those without PWS (p=.025) and parents of youth with PWS reported using less negative influences at post compared to baseline (p=.046). Conclusions: Although parents did not appear to become more confident in promoting their child’s PA, they appeared to report using types of influences perceived to be more beneficial for promoting PA in their children (i.e., collaborative influences). Training parents in their influencing behavior is recommended.

P2.03.52
ASSESSING THE MOVEMENT SKILL PROFILES OF CHILDREN AGE 3-5 ATTENDING FULL-TIME CHILDCARE

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Purpose The acquisition of fundamental movement skills provides a foundation for more complex motor skills and should be acquired during the early childhood years. While gross motor skills develop at different rates, it is suggested that mastery in early childhood is critical for reaching one’s full movement potential. Movement tasks related to locomotion tend to demonstrate earlier proficiency compared to tasks requiring the manipulation of objects. This investigation evaluated the trajectory of movement skill acquisition of children age 3-5 enrolled in full-time childcare. Methods: Thirty-two children were recruited and measured for motor skill competence (n = 14 f, n = 18 m) with a mean age of 4.1± 0.6. The Test of Gross Motor Development-2 (TGMD-2) was utilized to assess the children’s movement skill capabilities on 6 locomotor skills (run, gallop, hop, jump, leap, and slide) and 6 object control skills (strike, dribble, catch, kick, overhead throw, and roll). Results The TGMD-2 items with the lowest mean scores were the dribble (M = 1.09 ±,1.65), catch (M = 2.41, ±,1.16), and overhead throw (M = 1.13, ±,1.70). Participants demonstrated the highest mean scores on the test items of the run (M = 6.44 ±,1.70), gallop (M = 5.31 ±,2.10), and kick (M=5.25 ±,1.30). Conclusions Object control skills exhibited the lowest scores, which at young ages are less readily mastered than locomotor skills. Dribbling and catching in particular utilize coincident timing, requiring accurately anticipating the timing of an object with the output of the motor task in order to intercept it. Children are expected to be more proficient with such tasks in later childhood, however these skills may not be
inherently practiced and improved through physical activity opportunities as are other skills. Due to the low prevalence of mastery demonstrated in object control and coincident timing items during the preschool age, these skills would be of particular interest to target via early childhood intervention strategies.

P2.03.53
PARENTAL PERCEIVED BARRIERS/OPINIONS ON SPORT AND CHILDREN’S SPORT PARTICIPATION IN DIFFERENT GEOGRAPHIC SETTINGS
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Purpose: Majority of children are far from achieving the recommended levels of physical activity per day, inclusive in Portugal, and particularly girls and children from non-urban settings, compared with boys and urban children. The aim of this study was to identify parental perceived barriers and opinions, including gender stereotypes on sport, which could influence child's sport participation in urban and non-urban settings. Methods: A sample of 834 children (50.8% girls) aged 6-10 years was analysed in a cross sectional study of different geographic settings (urban and non-urban area). Using a questionnaire, parents self-reported perceived barriers and opinions on sport and physical activity, and stated children's extracurricular sport participation. Opinions were collected using a five-point Likert-Scale that was analysed by an exploratory factor analysis. Resulting factors were observed according to children's sex and place of residence. A multivariate logistic regression was used to observe the risk of not participation in sports with parental opinions and perceived barriers, adjusted for sex, age, and family monthly income. Results/findings: Parents perceived barriers differed within places according to children's sex. Non-urban parents of girls perceived less child interest than urban parents. Among boys, parents from the urban setting reported more lack of money and places, compared with their non-urban peers. Perceived barriers were inversely related to children's sport participation in the non-urban setting. Lack of time and money were associated with lower odds of boys participating in sport, while lack of places, child interest and more stereotyped ideas about sport were related with girls' participation in organized sport. Conclusion: Non-urban children, particularly girls, are at a greater risk of not being engaged in any sport if their parents perceived more barriers or have stereotyped ideas about sports. Present results suggest that parental support (e.g., interest, motivation) is more important for girls while parental logistic support (e.g., money and time) are major influences for boys' sport participation. Future interventions should include sex specific strategies, while addressing the family, economic, and environmental factors highlighted in this study.

P2.03.54
CREATIVELY ABLE: AN INNOVATIVE DANCE INTERVENTION FOR CHILDREN WITH AUTISM SPECTRUM DISORDER
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Purpose: Children with Autism Spectrum Disorder (ASD) have motor and psychological impairments that make it difficult to access and participate in community physical activity (PA) programs. These barriers such as impaired executive function may adversely affect their enthusiasm and enjoyment of standard PA programs. This pilot study evaluated the feasibility, acceptability, and enjoyment of an innovative dance class for children with ASD which engaged the participants in choreographing their own dance routine. Methods: Twelve children diagnosed with ASD (ages 7-12, 42% females) participated in the study. 44% were also diagnosed with ADHD. The dance intervention was designed by a professional choreographer and dancer and involved a multiple-component class, integrating basic technique training with children's creation of choreography. Each child in the group choreographed 4-8 counts of the dance, and their segments were combined to result in a complete thematic dance routine. Children participated in two dance sessions one week apart. Dance sessions were videotaped, and seven research observers rated children's engagement during the sessions. Questionnaires completed by children and parents were used to assess enjoyment of the intervention (Physical Activity Enjoyment Scale: PACES) and level of impairment (Repetitive Behavior Scale: RBS-R, Strengths and Weaknesses of ADHD and Normal Behavior Scale: SWAN). Results: Parent ratings on the RBS and SWAN indicated that the children had substantial deficits in executive functions, including attention and self-regulation. The majority of the children participated fully during the two dance sessions. Interviews with children
using the PACES indicated that children enjoyed the intervention, with 80% agreeing or strongly agreeing with the statement "I enjoyed it" and 20% indicating that they were not sure. Qualitative feedback from parents supported these reports, and parents expressed an interest in participating in a longer-term intervention. Conclusions: Participant and parent interviews indicated the intervention was both feasible and enjoyable for children with ASD. Preliminary results indicate that Creatively Able could provide an enjoyable and engaging form of PA for children with ASD, and future research should examine the effects of a longer-term intervention on physical and psychological outcomes.

P2.03.55 ASSOCIATION OF PROXIMITY TO SPORTS FACILITIES AND PARENTAL PERCEIVED BARRIERS WITH SPORTS PARTICIPATION FOR CHILDREN IN PORTUGAL

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Purpose: Few children worldwide as well in Portugal engage in insufficient levels of physical activity. In addition to individual characteristics, environmental factors are assumed to explain disparities in physical activity participation. The aim of this study was to observe the associations between children’s extracurricular sport participation and self-reported existence of recreational sport facilities and number of barriers in urban and non-urban settings. Methods: A sample of 834 children (50.8% girls) aged 6-10 years was analysed in a cross sectional study carried in the Midlands, Portugal. Through a questionnaire, parents reported barriers and existence of different recreational facilities as well as children’s sport participation (Yes/No). A multivariate logistic regression was used to observe the risk of children not being engaged in a sport with the number of barriers and the existent facilities reported by parents, according to children's sex. Results are presented crude and adjusted for children's age, family income, parental education, and urbanization of the place of residence. Results/findings: The inexistence of some facilities close to home was associated with lower sport participation. The results varied according to children’s sex. For girls, the inexistence of large open spaces in the place of residence was associated with half the odds of participating in an extracurricular sport. Among boys, gymnasium, pavilion, and football field were associated with sport participation, even after adjustment. Parental perceived barriers were inversely related with children's sport participation. Parents who did not reported any barrier had more than four times the odds of their sons and daughters being engaged in a sport. Conclusion: Improving the proximity of recreational facilities is likely to be important for children’s sport participation. However, the importance of facilities varied according to children’s sex. Future interventions and designs to improve children's physical activity should take in consideration children's sex. Also, those guidelines need to take into account parental concerns regarding the perceived barriers. We hope this study highlight some of the environmental factors that should be addressed in programs to promote child physical activity.

P2.03.56 ACUTE EFFECTS OF A BALLET INTERVENTION ON EXECUTIVE FUNCTIONS IN CHILDREN WITH CEREBRAL PALSY

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Objective: Children with cerebral palsy (CP) often have executive function (EF) deficits, specifically in processing speed, inhibitory control, and shifting. There is limited research on the effects of acute exercise on EF in these children. The purpose of the current study was to evaluate the effects of a single therapeutic ballet dance session on EFs in children with CP. Methods: This study included six children diagnosed with CP spastic diplegia and/or hemiplegia (ages 9-14) who had participated in a 5-week ballet intervention. Acute effects of a single dance session were evaluated using a crossover design with two conditions [a single 45-minute dance session (A) and a 45-minute control session where participants talked with a researcher and completed simple questionnaires (B)] separated by a 4-week washout period A computer-based EF test with three tasks (congruent, incongruent, and mixed trials) was administered immediately before and 15 minutes after each of two conditions. The congruent, incongruent, and mixed tasks measure primarily processing speed, inhibition, and shifting, respectively. Paired sample t-tests were used to analyze the change scores for conditions A and B. Results/findings: Response times improved on the congruent and incongruent tasks following both conditions A and B, suggesting a practice effect. Response times remained relatively the same across both conditions for the mixed trial. Across both conditions, accuracy remained
relatively similar for the congruent and mixed tasks, suggesting no acute effect of either condition on processing speed or shifting. Accuracy on the incongruent task improved following condition A (improving from 70±9.50 to 93.33±6.97), but not B (93±9.13 to 86.67±11.18), suggesting a positive acute effect of dance on inhibitory control, t (4) = -4.81, p d = -1.87. Conclusions: Findings suggest that there may be practice effects for response times, and that a brief bout of exercise (dance) may improve inhibition, while more complex EFs (such as shifting) may require longer periods of training to see positive effects. Future research should examine changes in EFs following brief periods of training as well as over longer periods of time in order to further understanding of how exercise impacts specific EFs.

**P2.03.57**

**“ARE THAI CHILDREN SUFFICIENTLY ACTIVE? PREVALENCE AND CORRELATES OF PHYSICAL ACTIVITY FROM A NATIONALLY REPRESENTATIVE CROSS-SECTIONAL STUDY”**

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Objective: The purpose of this paper is to investigate Thai children’s participation in PA and its correlates across socio-demographic characteristics and different PA domains. Methods: This study applied a cross-sectional study design with a multi-stage stratified cluster sampling. A national representative sample of 13,255 children aged 6-17 years were used for data analysis. A previously validated questionnaire was used to assess PA prevalence. Logistic regression was conducted to examine the relationships of socio-demographic factors, and participation in different PA domains with overall PA. Results: Only 23.4% of Thai children met recommended levels of PA and there were large gender and regional differences. PA levels generally declined with age, although a slight increase was observed in the 10-13 year group. A majority of children engaged in a large number of different activities across PA domains. Sex, age, BMI, geographical regions, organized sports, participation in sport and recreational activities were significant predictors of meeting the global PA guidelines, whereas participation in physical education, active transport, and the amount of screen time and sitting-down activities had no association. Girls were less likely to achieve sufficient PA levels (OR=0.49, 95%CI; 0.45-0.54, p Conclusions: Levels of PA in Thai children are low, despite the high levels of engagement in a large number of physical activities. The results indicate that policy and interventions aimed at increasing PA are needed with special attention required to address specific groups less likely to meet the PA guidelines. Strategies to promote all possible types of PA as part of Thai children’s daily life and to increase frequency and amount of time children engage in activities should be considered.

**P2.03.58**

**“I WASN’T SURE WHAT IT MEANT TO BE HONEST.” - FORMATIVE RESEARCH WITH PRESCHOOL EDUCATORS AND EXPERTS TO INFORM THE DEVELOPMENT OF A PHYSICAL LITERACY INTERVENTION FOR PRESCHOOL CHILDREN**

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Purpose: The early years represent a window of opportunity for the development of physical literacy, with preschool educators playing a critical role in supporting young children’s motivation, confidence, physical competence, and knowledge and understanding of and for physical activity. This study sought to gain the insight of academics/expert practitioners and preschool educators to inform the design of a prospective physical literacy intervention for preschool children. Methods: A two phase qualitative study was conducted. Phase one included semi-structured interviews (n=9) with academics and expert practitioners working within the field of young children's physical activity and/or physical literacy. Interview topics included experts’ perspectives on the concept of physical literacy, and recommendations for the design and development of interventions targeted at improving physical literacy among preschool children. Phase two of the study consisted of focus groups (n=4) involving preschool educators from four local children's centres. These focus groups explored perspectives on the feasibility and acceptability of the proposed physical literacy intervention. Results were analysed by thematic analysis and means of representation. Findings: Whilst there was limited understanding about the concept of physical literacy among preschool educators, knowledge of child development was evident. However, academics and expert practitioners felt there was a need for training. Perceived barriers to promoting physical literacy noted by preschool educators included funding, policy, curricular priorities, parent opinions, and the preschool environment. It was recommended that interventions should be: (i) designed using a participatory approach including both academics
and preschool educators, (ii) conducted over the long term, and (iii) incorporate opportunities for free and outdoor play. Conclusions: The primary goal of an intervention should be to educate preschool educators about the concept of physical literacy, whilst a collaborative approach to intervention design between academics and preschool educators is recommended to enhance acceptability, effectiveness and long-term sustainability. Further, any intervention should be flexible to allow for variation between centres, with children's centres provided with training and resources to overcome perceived barriers.

P2.03.59
WRITE, DRAW, SHOW AND TELL: A MIXED-METHODS CASE STUDY EXPLORING HABITUAL PHYSICAL ACTIVITY AMONG TWO FAMILIES
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Purpose: To develop effective family-based physical activity (PA) intervention programmes researchers need to understand the habitual PA behaviour, characteristics and socio-environmental constraints of individual families. However, effective approaches to capture the 'lived experiences' of families are not yet well established. Therefore, this study aimed to explore the habitual PA behaviour and experiences of a nuclear and single parent family, and in doing so 2) demonstrate how a write, draw, show and tell (WDST) methodology can be appropriate to family-based research. Methods: Six participants (including 2 'target' children aged 9-11 years, 2 mothers and 2 siblings aged 6-8 years) from 2 families were recruited through primary schools in Liverpool, UK. The families were purposefully selected based on their family structure. Participants completed a paper-based PA diary and wore an ActiGraph GT9X accelerometer on their left wrist for up to 10 weekdays and 16 weekend days. ActiGraph .csv files were analysed using the R-package GGIR version 1.1-4. Mean minutes of moderate-to-vigorous PA (MVPA) for each weekday and weekend of measurement were calculated. Diary responses were summed to produce frequency counts. A range of WDST tasks were undertaken by each family to offer contextual insight into their family-based PA. The WDST tasks generated three separate sources of data, a frequency count (ice breaker activity), visual data (write and draw activity) and narrative data (tell activity and children's write and draw narratives). The narrative data were analysed via thematic narrative analysis and presented in the form of 'realist tales'. Findings: The combination of accelerometry, diary, write and draw, and narrative data generated complimentary interconnected findings that uncovered new insights into family-based PA. The WDST tasks are appropriate for use with families to elicit their perceptions and experiences during the research process. Conclusions: Offering 'voice' via the PA narratives of two distinct families highlights the limitations of prescriptive family-based PA intervention programmes. These novel findings encourage researchers to tailor family-based PA intervention programmes to the characteristics of the family, and demonstrate the utility of PA diaries in conjunction with accelerometers to provide understanding of the mode and context of family-based PA.

P2.03.60
GAELIC4GIRLS*: RATIONALE FOR THE DESIGN AND DEVELOPMENT OF A COMMUNITY SPORTS-BASED PHYSICAL ACTIVITY (PA) INTERVENTION FOR IRISH FEMALE YOUTH (8-12 YEARS).
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Introduction: Studies continue to show that lack of physical activity (PA) among children is a global concern. Research consistently suggests that girls are less active than boys throughout childhood (Telford et al., 2016; Vella et al., 2014), and that the age-related decline in PA and sport participation is more apparent amongst girls (Jago et al., 2013; Bradley et al., 2011). Purpose: The purpose of the current baseline research was to gather data on female youth in order to inform the development of a targeted physical activity sports-based intervention, specifically identified as the 'Gaelic4Girls' (G4G) intervention. Methods: Cross-sectional data on PA levels (using self-report and accelerometry), psychological correlates, anthropometric characteristics, and fundamental movement skills (FMS) of 275 female youth (mean age: 10.92 ± 1.22 years) were collected. A sub-sample (n=37) participated in focus group interviews to explore their perceptions of health, sport, ladies Gaelic football, and identify barriers and motives to participation. Results: Findings indicate that the majority of youth (28.2%) were not meeting the minimum 60 minutes of daily PA recommended for health, and that 97.7% did not achieve the FMS expected for their age. Body mass index data showed that 26.8% of youth were classified as overweight or obese. Barriers and attitudes towards PA, and physical performance self-concept scores were significantly different (p Conclusion: Data show a need for targeting low levels of physical activity in youth through addressing self-efficacy levels, and low fundamental
movement skill proficiency. This is particularly important for girls, as research shows that they are less physically active than boys (Hardy et al., 2010). Participation in organised youth sports, specifically team sports (Eime et al., 2013) has been recommended as an opportunity to increase young peoples’ levels of PA participation (Marques et al., 2016). The G4G programme will be the first evidence-base in Gaelic Games for PA promotion in Ireland, particularly for vulnerable, at risk for drop-out girls and may hold promise as an innovative community sport-based, health-promoting intervention for children. The G4G intervention will be developed, as guided by the present study findings.

P2.03.61
ASSOCIATION BETWEEN SCHOOL HEALTH POLICY ENVIRONMENT AND STUDENT PHYSICAL ACTIVITY BEHAVIOR IN ELEMENTARY SCHOOLS IN TEXAS, USA
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Objective: The purpose of this study was to evaluate whether health-promoting physical activity policies in elementary schools were associated with physical activity (PA) behavior in a sample of fourth grade students in Texas. While school health policy indices have been used to assess changes in the policy environment, the indices are rarely linked to student outcomes. Methods: In this cross-sectional study, physical activity was assessed using self-report measures in 4th grade students in Texas (N= 1,958, x= 9.66 year) from the School Physical Activity and Nutrition (SPAN) survey. PA was assessed by measuring the number of days in the last week with at least 30 minutes of vigorous PA and outdoor PA. School PA policies, including programmatic support, physical education, structural support, activity breaks, and recess, were assessed using a questionnaire for school personnel from Texas elementary schools (N=59). A PA policy index score quantified the number of health promoting policies in place (range = 0-8). Multiple linear regressions adjusted for student and school level confounders were performed to assess relationship between school policy index and student PA behavior. Results: The average score on the PA policy index was 3.72 out of 8 possible points. Policy index scores were divided into tertiles. Schools with low index scores had mean of 2.00 points, schools with medium scores had a mean of 3.87 points, and schools with high scores had a mean of 5.74 points. In regression models, students attending schools with high policy index scores reported 1 day more per week with at least 30 minutes of vigorous PA (x= 4.00 days) than students attending schools with low policy index scores (x= 2.98 days). Conclusions: These results suggest that students attending schools with higher numbers of health promoting PA policies get more weekly vigorous and outdoor PA. Thus, school policy environments play an important role in the PA behaviors of children.

P2.03.62
PHYSICAL ACTIVITY INTERVENTIONS FOR AUTISM SPECTRUM DISORDER: A QUALITATIVE STUDY OF FAMILY EXPERIENCES AND PREFERENCES
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Purpose: Children with Autism Spectrum Disorder (ASD) have cognitive and motor impairments that may make it difficult to access community physical activity (PA) programs. This qualitative study was conducted to gather information that could be used to design more effective and accessible PA interventions for children with ASD. Methods: Parents of 17 children diagnosed with ASD (ages 4 – 12; 10 boys and 7 girls) participated in one of four focus groups where they discussed barriers to PA, perceived benefits of PA, prior positive and negative experiences with PA programs, and the characteristics of effective instructors and programs. Focus groups were audio-recorded and transcribed verbatim. Five researchers analyzed all transcripts using standard qualitative descriptive methods. Results/findings: Parents described characteristics of their children that they perceived as intrapersonal barriers to PA, including deficits in coordination, proprioception, attention, and muscle tone, as well as interpersonal barriers, such as poor social skills. Parents acknowledged that concerns regarding the safety of their children affected their pursuit of PA. Additionally, parents described practical barriers to participation, such as time constraints, financial costs, demands of multiple therapies, and travel time. Prior positive PA experiences included karate, swimming, and special-needs programs, which allowed children to progress at an individual level and provided higher levels of support. Parents believed these PA programs benefited their child’s self-confidence, self-regulation, language development, coordination and emotions. Parents described negative PA experiences (e.g., gymnastics and competitive sports) as having less support for or acceptance of their children, resulting in feelings of rejection. When discussing the qualities of an effective instructor, parents listed qualities such as practicing patience, using
positive reinforcement and understanding ASD. Parents expressed enthusiasm for future research related to PA interventions for children with ASD, noting that research could help parents prioritize interventions to improve target symptoms or behaviors. Conclusions: Results point to factors that may partially explain the lower rates of participation in PA in prior studies of children with ASD and identify key considerations for the development of future PA interventions. More research is needed to identify effective and accessible interventions that target improvement in both physical and psychological domains.

P2.03.63
ASSOCIATION BETWEEN PEDESTRIAN TRAFFIC SAFETY AND OBJECTIVELY MEASURED ACTIVE TRANSPORTATION AMONG 10-13 YEAR OLDS
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Purpose: Children and adolescents in many industrialized countries are performing poorly in the active transportation domain of physical activity. Research based on subjective reports suggests that parental concerns about traffic negatively influence their children’s active transportation. The purpose of this study was to determine whether objective measures of traffic volume and traffic calming are associated with objective measures of active transportation within children and adolescents. Methods: This is a cross-sectional study of 10- to 13-year-olds (N=388) from Kingston, Canada. Participants wore a Garmin Forerunner 220 GPS watch for 7 consecutive days. Data from the GPS watches were analyzed using Personal Activity Measurement Location System (PALMS) software to identify active transportation trips and the duration of these trips. A 1 km road network buffer surrounding each participant’s home defined their home neighbourhood and traffic volume and calming measures were measured inside these buffers. A traffic volume index was created based on the distances of arterial, collector, and local roads within each buffers and traffic volumes on these different types of roads. A traffic calming index was created based on the number of 4-way-stop intersections, speed humps, low speed zones, crosswalks, pedestrian signs, and children playing signs in the buffers. General linear models adjusted for age, sex, race, income, family structure and season were used to examine the relationships between the traffic volume and calming indexes and active transportation. Results: The median (interquartile range) active transportation was 7.5 min/day (2.8-16.0 min/d). There was a traffic volume X traffic calming interaction. A one standard deviation increase in the neighbourhood traffic calming index was associated with a 0.23 SD (95% CI: 0.10, 0.35) increase in active transportation within participants living in neighbourhoods with a moderate or high traffic volume (p Conclusions: The findings suggest that traffic calming measures may contribute to increased active transportation within pre- and early adolescents living in neighbourhoods with a moderate or high volume of automobile traffic.

P2.04 Interventions: All ages

P2.04.1
BEST PRACTICES AMONG FOOD-BASED COMMUNITY ORGANIZATIONS: A QUALITATIVE ANALYSIS
Poulos Natalie1, Golazsewski Natalie1, Laska Melissa2, Pasch Keryn1. 1University of Texas at Austin, Austin, TX; 2University of Minnesota, Minnesota, MN.
Purpose: Over the last 10 years, there has been an increasing focus on the food environment and how it may be associated with the health of the US population. Within food environment research, there is a growing interest in food-based community organizations (FBCOs), such as community gardens, farm to school programs, and cooking-based community programs, as they have the potential to increase access to fresh fruits and vegetables. Research on the benefits of these organizations is available, yet little research has focused on identifying strategies FBCOs use to support organizational strength and growth. Therefore, the primary aim of this study was to identify strategies across active FBCOs to better understand how they engage and retain current members, reach future members and participants, and support continued growth of organization programs. Methods: Key informants from four FBCOs in central Texas (USA) participated in in-depth interviews regarding their experiences with their respective FBCO. Semi-structured interviews lasted 45 minutes-1 hour, were digitally recorded, and transcribed. Grounded theory was used as a basis for formulating interview questions. Each transcript was reviewed for themes. Identified themes were used to code each transcript. Results: Results from eight interviews representing four organizations of varying sizes (1 large, 1 medium, 2 small) and ages (3 established: mean>24 years, 1 emerging: 4 years). Key themes around factors needed to sustain and grow an FBCO included: commitment to a defined mission, supportive leadership, physical meeting space, clear communication, and a focus on building community partnerships. Within the theme of
communication, appropriate use of digital media appeared to be valuable across all organizations. Conclusions:
Although FBCOs represent a small, yet growing proportion of community organizations, this study identified best
practices and strategies used by successful FBCOs in one region of the US that have direct implications on
organizational development as well as the day-to-day functioning. Therefore, future and current FBCOs can use
information generated from this case study to guide and improve their organization.

P2.04.2
ASSOCIATIONS OF SCHOOL LEVEL WEIGHT STATUS AND THE RESTAURANT FOOD ENVIRONMENT
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Purpose: Currently, food environment research has most often examined unhealthy components of the food
environment and youth BMI, yet has failed to consider healthy components or youth-oriented features of
restaurants and their association with weight status. Therefore, the purpose of this study is to describe the
prevalence of restaurants located within a half-mile of high schools and to examine associations of healthy/youth-
oriented features of those restaurants with school-level BMI. Methods: Primary restaurant data was collected on
restaurants located within one-half mile of all high schools within a single district (n=9). A healthfulness index and
youth-oriented index were created to measure the overall healthfulness and extent to which a restaurant was
youth-oriented. Variables included within each index were coded to reflect a higher score for a healthier or more
youth-oriented restaurant. School-level BMI was collected through FITNESSGRAM. A Wilcoxon rank sum test was
used to determine if differences existed in rank order of the restaurants by the healthfulness and youth-oriented
index measures. Pearson’s bi-variate correlations were used to examine associations of school-level BMI with
individual restaurant features and each overall index. Results: 58 restaurants around 9 high schools were
documented (m=4.5; range=0-10), with a mean healthfulness index score of 8.9 (range=2-14; max=19) and mean
youth-oriented index score of 5.5 (range=0-11; max=12). Significant differences were found in the rank order of
healthfulness and youth-oriented index scores for restaurants (-2.28, p=0.02), suggesting that restaurants with
higher healthfulness scores are different than those with higher youth-oriented scores. Increased availability of
drive thru windows (0.27, p=0.04), increased accessibility of free fountain drink refills (0.34, p Conclusions: Healthful
and youth-oriented components of the restaurant food environment are associated with school-level BMI,
therefore, a focus on specific restaurant environment measures may help explain some of the association between
the food environment and obesity among youth.

P2.04.3
HEALTH PROMOTION INTERVENTIONS FOR POLICE: A SYSTEMATIC REVIEW OF STUDY CHARACTERISTICS,
INTERVENTION DESIGN, AND IMPACTS ON HEALTH
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Campbelltown, NSW.
Objective: To systematically review health promotion interventions for police on study characteristics, intervention
design and efficacy. Methods: Four databases were searched for articles reporting on intervention studies with at
least one control/comparison group on police. Data were extracted to synthesise a narrative regarding study
characteristics, intervention design and efficacy. Risk of bias was also assessed using a 13-item tool. Results: Of
2,241 references identified from database searching, 2,143 were excluded based on initial title/abstract screening.
After further screening, 83 articles were excluded. The top 3 reasons for exclusion at this stage were studies did not
focus on police (n=47), they did not include a lifestyle behaviour change intervention (n=28) and they were of
single-group design (n=8). Thirteen studies were included, three of which targeted police academy trainees. One
study had a 24-month follow-up, whilst the remainder were ≤6 months duration. Seven studies comprised
structured interventions targeting physical activity (n=4), diet (n=2) or physical activity and diet combined (n=1).
Two studies combined structured physical activity programs alongside physical activity, diet and/or overall wellness
education/behaviour change support. Three studies delivered education and/or behaviour change support alone,
targeting several areas of health and wellness. Two studies used computer-based prompts to reduce sedentary
behaviour. A wide variety of outcomes were included, the most common being weight and/or BMI (n=7), fitness
(n=6), stress (n=5), blood pressure (n=4), and diet (n=4). At least one beneficial impact on outcome(s) was reported
in 11 studies. The two studies with the lowest risk of bias (rated low risk in 10 and 7/13 items), reported large
improvements (effect size (ES)=0.67) in blood pressure after 13 weeks of a computer-delivered sedentary behaviour intervention, and small improvements in healthy eating (ES=0.18), sleep quality (ES=0.20), stress (ES=0.13), and tobacco use (ES=0.09), 24 months after a 12-week peer-led wellness support program. Conclusions: The majority of lifestyle behaviour interventions targeting police were of short duration and utilised structured support. Meta-analysis was not possible due to heterogeneity in outcome measures and limited reporting. Findings from studies with lower risk of bias ratings suggest that workplace programs for police can improve some health outcomes.

P2.04.4
A RANDOMIZED-CONTROLLED TRIAL TO INVESTIGATE THE EFFECTIVENESS OF ADJUSTABLE WORKSTATIONS AND PROMPTS TO REDUCE SEDENTARY BEHAVIOUR AMONG OFFICE WORKERS
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Objective: Sedentary behaviour (SB) is a risk factor for many non-communicable diseases and all-cause mortality. We aim to assess the effectiveness of adjustable workstation with or without email prompts in reducing SB at work. Methods: This is a two-arm parallel group, two-stage RCT. Each intervention stage lasted 4 weeks. Assessments were conducted at baseline, end of each intervention and 3-5 weeks after end of the second stage. It was conducted at a tertiary education center in Singapore involving office-based staff. In the first stage, participants were randomly assigned to an adjustable workstation, or to a workstation where the adjustment had been disabled, followed by a 2-4 weeks washout period where all participants could adjust the workstations’ height. In the second stage, participants were randomly assigned to twice-weekly emails prompting them to use the adjustable workstation, or a control group without such prompts. Primary outcome was self-reported workplace SB. Secondary outcome was self-reported and objectively measured total SB. Participants were asked on ease of use of the adjustable workstation at the end of study. ANCOVA estimated changes in outcomes adjusting for baseline values, wear time and allocated group. Results: 24 participants were enrolled and randomized. The first stage showed a trend towards reduced workplace SB in the intervention group, compared to control, -58.8 minutes/8-hour workday (95% CI -139 to 21.4 min/8-hour workday). Similar result was noted at the end of the second stage, -40.9 minutes/8-hour workday (95% CI -110.7 to 28.8 min/8-hour workday) and at the last assessment -71.5 minutes/8-hour workday (95% CI -149.6 to 6.6 minutes/8-hour workday). Objectively measured and self-reported total SB also favoured intervention group at all assessments except for objectively measured total SB at Stage 1. Most participants (80%) agreed that the adjustable workstation was easy to use. Conclusion: Adjustable workstations appear to be a feasible and acceptable intervention among office workers. Findings provide some evidence for their effectiveness, especially when combined with other behavioral strategies. Larger studies with longer study duration are warranted to confirm these findings.

P2.04.5
LONG-TERM EFFECTIVENESS OF FOOD-RELATED IF-THEN PLANS FOR WEIGHT LOSS AND MAINTENANCE
Xu Zhen1, Saint-Martin Anna1, Sadikaj Gentiana1, Islam Farah5, Ames-Bull Anaïs1, Carrière Kimberly1, Salas A V1, Voloshyn Anastasiya1, Sasson Michelle1, Chamandy Mélodie4, Luszczynska Aleksandra3, Ivanova Elena6, Grover Steven1,2, Lowenstein Ilka1,2, Knauper Bärbel1. 1McGill University, Montreal, Quebec; 2McGill Comprehensive Health Improvement Program, Montreal, Quebec; 3University of Colorado, Boulder, Colorado; 4University of Ottawa, Ottawa, Ontario; 5University of Montreal, Montreal, Quebec; 6University of British Columbia, Okanagan, British Columbia.
Purpose: The purpose of the present study is to investigate the long-term effectiveness of food-related if-then plans for weight loss and maintenance of participants in the McGill CHIP Healthy Weight Program, a year-long 22-session lifestyle behavioral change randomized controlled trial. If-then plans are concrete action plans that specify in an if-then format where, when, and how one will act in order to achieve a specific goal-directed behaviour (Gollwitzer, 1993). Previous research has shown that more specific plans lead to greater behaviour change. Methods: Eligibility criteria were a BMI between 28 and 45 kg/m2, a waist circumference ≥ 88 for women and ≥ 102 for men, and age of 18 to 75 years. Participants in the intervention condition (N = 79) created individualized if-then plans for food, nutrition, and eating behaviours in each of the 22 sessions. We coded these plans for specificity using two different methods: (1) coding each plan as low or high specific (combined score of the cue and response components), and (2) assigning points for various components of each plan following Dombrowski et al.’s (2016) coding method. Participant weights were measured at every session and once more at the follow-up session a year from the end of
Additionally, the effect of PA on subjective burden measures approached significance. Here, we present a high associa

Of those low and medium quality interventions included in the review, it was found that PA was consistently associated with decreases in subjective distress and increases in perceived quality of life and well-being. However, the authors noted a dearth of interventions of high quality.

Objective: A recent systematic review found inconclusive results of physical activity (PA) interventions on caregivers' psychological and physical health. However, the authors noted a dearth of interventions of high quality. Of those low and medium quality interventions included in the review, it was found that PA was consistently associated with decreases in subjective distress and increases in perceived quality of life and well-being. Additionally, the effect of PA on subjective burden measures approached significance. Here, we present a high-
quality study, in the form of a randomized control trial, to examine effects of PA on a wider range of psychological assessments. Methods: Sixty-eight high-stress caregivers were randomized into either a waitlist control or aerobic exercise training (exercisers). Exercisers were assigned a volunteer coach who developed a 6-month aerobic exercise program that slowly increased the amount and intensity until reaching the international guideline of 150 minutes of moderate-to-vigorous PA per week. Prior to the intervention, participants from both groups completed the questionnaires to assess levels of perceived stress, depression, loneliness, trait anxiety, feelings of mastery, rumination, optimism/pessimism, trait anger, emotional regulation, positive aspects of caregiving, caregiver burden, social support, and stigma around caregiving. Results: Multilevel models revealed that changes over time were significantly different between controls and exercisers in perceived stress, trait anxiety, mastery, and caregiver burden (p<0.05). Exercisers improved in all domains (p'<0.05). Exercisers also significantly improved (p'<0.05) loneliness, rumination, anger, insomnia, positive aspects of caregiving, and perceived social support. Conclusions: Exercise is shown to positively affect several aspects of a caregiver’s psychological state. These findings have implications for prescription of exercise to high-stress populations, especially in family caregivers of persons with a progressive disorder.

P2.04.8
‘WHEN YOU PUT THE GROUP AND THE RUNNING TOGETHER...’: A QUALITATIVE EXAMINATION OF PARTICIPANT AND COACH EXPERIENCES OF THE CANADIAN RUN TO QUIT PROGRAM.
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Purpose: Run to Quit is a national community based program that combines smoking cessation support with physical activity through learning how to run, group-based curriculum, self-help materials and social supports. Outcome evaluation identified cessation rates comparable to reported interventions combining pharmacotherapy and behavioural support. The aim of the current study is to explore participant and coach experiences of participating in Run to Quit, and identify barriers and facilitators to implementation. Methods: Participants and coaches were interviewed at the end of the 10 week program. The coach (n=22) and participant (n=61 of 168 participants at baseline) interviews were recorded and transcribed. Thematic analysis was used to identify name, categorize and describe emergent themes. Results: The majority of participants found the program to be beneficial or very beneficial in assisting them with their quit smoking and physical activity goals. Irrespective of smoking cessation outcome participants enjoyed the benefits of becoming more physically active. Non-completers largely expressed concerns regarding the pace of run progression or had scheduling conflicts with group running sessions. Both coaches and participants identified the main strength of the program as the provision of group support through accountability and discussion. Coaches and participants felt the carbon monoxide assessments as helpful in terms of motivation. Both coaches and participants identified concerns with the Quit Smoking Line component of the program. Both also identified a need for better organization. Specifically, some participants expressed concerns with coach organization, and a lack of clarity regarding program structure. This theme was mirrored by coaches who identified challenges with time management and integrating the smoking and running curriculum. Conclusions: Overall, Run to Quit was well received by participants and the majority of participants would recommend the program to other smokers. Multiple health behaviour interventions at a scalable level appear feasible. Based on both participant and coach feedback, key recommendations to improve the program in the future include integrating the curriculum to assist coaches with time management, clarifying program structure, more frequent carbon monoxide assessments, and improving engagement with Quit Smoking Lines.

P2.04.9
NEIGHBOURHOOD-LEVEL CYCLING MODE SHARE OF MALE AND FEMALE COMMUTERS IN MONTRÉAL AND VANCOUVER: INFLUENCE OF PROXIMITY TO BIKEWAYS AND COMMUTE TIME
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Objective: Montréal and Vancouver have higher than Canadian average cycling mode shares and substantial between-neighbourhood variability in cycling. Both provide cycle tracks, painted bike lanes, residential street bikeways, and paved off-street bike paths, but their extent and network patterns differ. We examined the following questions: Are mode shares higher when bikeways are closer to where people live and does bikeway type make a difference? Are associations affected by neighbourhood commute duration or slopes on routes to bikeways? Do associations differ for male and female commuters? Methods: This study used 2011 National Household Survey...
data on commuting to work and used spatial data to calculate distances and slopes along routes from residential parcels to bikeways (ArcGIS). Inferential analyses (Poisson regression) examined associations between cycling commute mode share and the following: proximities to any bikeway and to each of four bikeway types, slopes to the nearest bikeway, and commute time. Results: Cycling mode shares at the neighbourhood level varied from 0 to 20.4%. The proportion of cycle commuters who were female ranged from 0 to 44% and was positively associated with overall mode share in the neighbourhood. A one-kilometer closer proximity to any bikeway was associated with four times higher mode share. Proximity to cycle tracks was associated with higher mode shares in both cities. Other bikeway types did not have similar associations in the two cities, and the pattern of results suggested that the networks formed were more important than specific bikeway characteristics. Uphill slopes to bikeways were associated with somewhat lower mode shares in bivariate analyses but not in adjusted models. Cycle commuting was most common in neighbourhoods with intermediate commute durations (20 to 29 minutes). Conclusions: Our results indicate that cycle tracks and bikeways that form a connected network are associated with higher neighbourhood cycling commute mode shares. These features appeared even more important to women, and their cycling (or not) was strongly related to overall mode share in their neighbourhood. Walking was more than twice as common as cycling, even in areas with the longest commute times, likely because sidewalks are more consistently provided than cycling infrastructure.

P2.04.10
ENCOURAGING ACTIVE TRANSPORTATION TO SCHOOL: LESSONS LEARNED FROM EVALUATING A PILOT WALKING SCHOOL BUS PROGRAM IN NORTHEASTERN ONTARIO
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Physical inactivity among Canadian children is a public health concern as only 9% of boys and 4% of girls meet the recommended 60 minutes of daily moderate-vigorous physical activity (MVPA; Colley et al., 2011). Active transportation to school (ATS) may be a way to increase daily PA; however only 24% of children use ATS to and from school (Gray et al., 2014). Walking school buses (WSBs) offer a way to increase ATS and have shown promise in large urban settings and warm climates (Smith et al., 2015), however few studies have considered the unique challenges of Northern settings. Objective: To explore the experiences of parents, students, and conductors involved with a 5-week WSB pilot program in 2 Northeastern Ontario elementary schools. Hypotheses were not suitable, given the exploratory nature (Creswell et al., 2007). Methods: Guided by a pragmatist framework (Martela, 2015), conductor (n=5) and student (n=15) focus groups, and one-on-one parent interviews (n=7) were conducted. Results: Thematic analysis revealed several key areas of interest. Despite initial challenges with communication and logistics, the pilot was described as well organized, with university student volunteers playing a big role in the success. Positive outcomes included increased PA, being outdoors, socializing and community involvement, mental health benefits, learning road safety, and an environmental impact. Students and conductors expressed some concerns over distance, despite parents' views as an appropriate distance. Environmental factors such as lack of sidewalks, busy streets, and changing weather conditions were also of concern. All agreed the program should continue during the Fall/Spring, and expressed the need for more volunteers so the number of WSB routes could be increased. Conclusions: In the context of Northern Ontario, opportunities for ATS and PA are influenced by many factors including perceptions of extreme weather, 'walkable' distances, and overall safety. Sustained initiatives (e.g. WSB) are needed to improve upon the determinants of ATS at the various ecological levels—from students' beliefs and attitudes, to the built environment—where they can be most effectively targeted.

P2.04.11
THE IMPACT OF THE GIRLS ACTIVE INTERVENTION ON OBJECTIVELY MEASURED MODERATE-TO VIGOROUS-INTENSITY PHYSICAL ACTIVITY: A CLUSTER RANDOMISED CONTROLLED TRIAL
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Purpose: Physical activity (PA) levels of UK adolescent girls are low. Evidence on the effectiveness of school-based interventions mainly comes from the US or younger children. The aim of this analysis was to determine the effectiveness of the 'Girls Active' school-based programme on moderate-to vigorous-intensity physical activity (MVPA). Methods: Twenty secondary schools from the Midlands, UK were recruited. A random sample of girls aged 11 – 14 were recruited from each school and evaluated (n=1752). Ten schools were randomised to receive 'Girls
Objective: This research developed a card sort kit (CSK) to investigate the key implementation factors for how men are Reached, Adopt, Change and Maintain physical activity and health behaviours within a bespoke men’s health improvement service delivered in English Premier League Football Clubs (EPLFC). Methods: A sequential and iterative three step process with 16 Health Trainers (HTs) delivering men’s health interventions in EPLFC led to the generation of a CSK to investigate the key implementation factors across four behavioural phases. A Delphi poll (DP) involved three steps, (Gilson et al., 2009). Step 1, used data collected through semi-structured interviews with n=13 HTs. Thematic analysis by two researchers generated a list of key implementation factors. Step 2, involved n=15 HTs, each delivering a 20 minute presentations regarding how men are Reached, Adopt, Change and Maintain health interventions in EPLFC. The list of implementation factors was subsequently refreshed. Using the revised 'list', a CSK was professionally produced showing: (I) Images and words representing the key implementation factors and (II) a map showing the four behavioural phases, (Reach, Adopt, Change and Maintain). Step 3, following piloting and fine-tuning, further semi-structured interviews were undertaken with n=14 HTs responsible for delivering the interventions (Pringle et al., 2014). Using the CSK, HTs identified and ranked the top five key implementation factors in four behavioural phases (1 = Most Important-5 = Least Important). Scores from HTs on the key implementation factors across each phase were aggregated and ranked. Results: The 'top five' key implementation factors in each behavioural phase were: Reach: 1.The Club, 2.male friendly, 3.comfortable for men, 4.partner with men’s health agencies, 5.use existing channels to reach men. Adoption: 1.Flexibility, 2.delivery staff, 3.weekly programme, 4.the Club, 5.male friendly. Change: 1.Delivery staff, 2.meeting men’s needs, 3.goal setting/self-monitoring, 4.weekly programmes, 5.building self-confidence. Maintenance: 1.Delivery staff, 2.keeping men involved, 3.goal setting/self-monitoring, 4.partnerships, 5.social support. Conclusions: Identifying the active ingredients of health interventions is crucial for implementation. This study provides insights into the methods to achieve this, that is engaging for its participants, and informative for health systems looking to provide health improvement outcomes.
modeling with Mplus. Results: Three trajectories of PA (i.e., persistently high, 15.3%; persistently moderate, 60.7%; and persistently low, 24.0%) and four trajectories of TV time (i.e., consistently low, 38.6%; consistently moderate, 48.3%; consistently high, 11.6%; and consistently very high, 1.5%) were identified. Compared with persistently low active participants, persistently moderate and high active participants had a consistently lower level of high TV time for both genders, had a consistently higher level of low TV time for women, and had a consistently higher level of moderate TV time for men. Men with persistently moderately and high active maintained a consistently higher level of moderate or high TV time than that of women. Conclusion: Participants with a persistent low level of PA had a higher level of prolonged TV time than those with persistent moderate and high levels of PA. Maintaining moderate- and high-intensity PA may reduce the health risks of prolonged TV time during adulthood, particularly for women.

P2.04.14
INTERVENTIONS OUTSIDE THE WORKPLACE FOR REDUCING SEDENTARY BEHAVIOUR IN ADULTS UNDER 60 YEARS: A SYSTEMATIC REVIEW AND META-ANALYSIS
Murtagh Elaine1, Murphy Marie2, Foster Charles3, Milton Karen3, Roberts Nia3, O’gorman Clodagh4. 1Mary Immaculate College, University of Limerick, Limerick; 2University of Ulster, Jordanstown; 3University of Oxford, Oxford; 4University of Limerick, Limerick.
Purpose: Excessive sedentary time is associated with increased risk of morbidity and mortality. As adults spend approximately 70% of their non-work time being sedentary (Parry and Straker 2013) there is great scope for changing behaviour to improve population health, however a synthesis of intervention effectiveness is required to inform appropriate action. This systematic review aims to evaluate the effectiveness of interventions for reducing sedentary behaviour in non-occupational settings in community-dwelling adults under 60 years. Methods: The following databases were searched, unrestricted by language or publication status: CENTRAL, MEDLINE, Embase, Cochrane Database of Systematic Reviews, CINAHL, PsycINFO, SportDiscus. Randomised Controlled Trials (RCT) and Cluster RCTs that aimed to change sedentary behaviour in community-dwelling adults aged 18 – 59 years and free from pre-existing medical conditions that may limit participation in the intervention, were eligible for inclusion. Two reviewers independently screened studies, extracted data and assessed risk of bias. Study authors were contacted to clarify missing or unclear data when necessary. Behaviour change strategies incorporated in the interventions were classified according to an existing taxonomy (Michie et al, 2013). Results will be reported as mean treatment effects and 95% confidence intervals using a random effects model. Subgroup analysis will be conducted to examine evidence of differential responses to the interventions. Sensitivity analysis will explore the impact of risk of bias on study findings. GRADE will be used to assess the quality of the body of evidence for each outcome. Results: Following removal of duplicates the searches yielded 7151 hits. An additional 502 potentially relevant studies were identified from a search of the NIH Clinical Trial registry. Results of the meta-analysis and narrative synthesis will be presented. This will include assessment of heterogeneity, reporting biases, subgroup analysis and sensitivity analysis. Conclusions: At present there is some evidence that interventions targeted in the home and leisure environment may reduce sedentary time in the short term. The present study augments the existing evidence base by synthesising available research and will therefore aid evidence-based decision making by policy-makers and practitioners working to address sedentary behaviour worldwide.

Jun 10, 11:00 - 12:00: Poster Presentation
P3.01 SIG: Policies and environments
P3.01.1
HEALTH EQUITY IN ACTION OR REACTION? REGIONAL FUNDING COLLABORATIVE APPROACH TO ADDRESS HEALTHY EATING AND ACTIVE LIVING IN THE UNITED STATES
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Purpose: A movement towards equity-focused, place-based strategies to improve community health has emerged as a priority among national funders in the United States (US). The purpose of this session is to describe the evaluation of two funding collaboratives: the Regional Convergence Partnerships and Innovation Fund grantees, which are regional and local groups in the US, collectively pooling intellect and funding to address healthy eating and active living with a health equity overlay, and helping to demonstrate the power of philanthropy in this work.
Methods: Qualitative key informant interviews were conducted with representatives from the 14 Regional Convergence Partnerships, and with additional stakeholders with knowledge of history, impact, and challenges of the regions’ work (n=33). Site visits were conducted in four regions to gain contextual information. A sample of eight of 28 Innovation Fund grantees were interviewed to assess overall progress in achieving proposed goals, application of equity, and facilitators and barriers encountered. Findings: Out of 14 partnerships, nine were active, three were in re-development, and two were inactive. Active partnerships (e.g., those collective funders meeting regularly, working toward a common goal, developing products or action) have attributed success to the leadership and facilitation within their partnership. Re-developing partnerships cited that they could not sustain a strategic direction, funding partners, or a leader/facilitator. Other challenges included differing funding priorities within the region, perceived inadequate progress by the partners, and a general uncertainty around focus and application of health equity. Innovation Fund grantees reported making concrete progress in the promotion of equitable policy and practice change in these local areas, such as creation of a food hub, restructuring public transportation in low-income areas, and development of a community leadership program. Conclusion: Characteristics of successful collaboratives and lessons learned from those experiencing challenges can be shared and applied to newly forming funding, research, and/or community collaboratives in the areas of healthy eating and active living. A specific focus with regard to conceptualizing and operationalizing health equity-based approaches will be discussed, along with application strategies both within and outside of the US.

P3.01.3
IMPLEMENTATION OF THE NETHERLANDS NUTRITION CENTRE GUIDELINES FOR HEALTHIER CANTEENS IN SECONDARY SCHOOLS IN THE NETHERLANDS: A PROCESS EVALUATION.

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OBJECTIVE The Netherlands Nutrition Centre has developed Guidelines for Healthier Canteens. Corresponding implementation strategies were developed in collaboration with stakeholders from practice to facilitate dissemination. This study aimed to evaluate implementation of the Guidelines using these strategies by assessing process evaluation concepts and the effect on the healthiness of the school canteen. METHODS Ten intervention schools implemented the Guidelines for six months. The intervention consisted of an advisory meeting and report by the Netherlands Nutrition Centre, a school and canteen characteristics questionnaire, the Canteen Scan (an online tool to assess the healthiness of the canteen), communication materials (brochures, leaflets), an online...
community (Facebook), newsletters and a factsheet about current students' purchasing behaviour. Ten control schools only received the Guidelines. The implementation materials were evaluated and perceived barriers and facilitators regarding implementation of the Guidelines were assessed by interviews and with questionnaires for involved stakeholders (teachers, caterer, school management). Fidelity, dose delivered, exposure and satisfaction were measured. Moreover the Canteen Scan was used to assess the visible food and drinks offer and the incentives the canteens provide. Data were analysed quantitative and qualitative using respectively the Wilcoxon test and the framework approach. RESULTS Of all implementation materials, the Canteen Scan (100%, 40%, 7.63), advisory meeting and report (78.6%, 95.5%, 8.47) and factsheet (100%, 75%, 8.62) scored the highest on the process evaluation concepts dose delivered, exposure and satisfaction (10-point scale) respectively. Most mentioned barriers were postpone actions for the canteen, involvement of relevant stakeholders and understanding the incentives of the Guidelines. Further, improvements were found in the intervention group on the percentage of better food and drink options offered (intervention from 45% to 77%, p=0.00 vs control from 50% to 60%, p=0.09 and incentives to stimulate healthier choices (intervention from 44% to 60%, p=0.03 vs control 43% to 50%, p=0.26). CONCLUSIONS Especially the Canteen Scan, the advisory meeting and report and the factsheet about students' purchasing behaviour seemed to support implementation of the Guidelines for Healthier Canteens. Implementation of these guidelines is feasible and related to an increase in better food and drink options and a healthier appearance of school canteens.

P3.01.4
THE INFLUENCE OF NEIGHBORS ON SPORT MEMBERSHIP
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Objective. Sports and physical activity have been positively associated with health. Recently, an interest has emerged in the social role of sport clubs, as they not only provide opportunities to be physically active but also facilitate social interactions. This is of interest as social capital is declining. Dominant institutions that traditionally united people, such as churches and trade unions, saw their numbers decline. In the Netherlands, sport clubs are one of the largest and stable civil societal organizations. Associations with a close and strong member structure like sport clubs are assumed to contribute to the social and political integration in society and hence, policy makers and sociologists attribute an important role to sport clubs in increasing social capital. Therefore, investigating factors that influence sport club membership are highly relevant. Known factors that influence memberships are personal characteristics, distance, and opportunities to practice sport. A factor that has received limited attention in the context of membership of sport clubs are one's neighbors. This paper hypothesizes that the composition of one's neighbors, combined with one's personal characteristics influences sport club membership. This influence may arise from two mechanisms. First, if neighbors fall into social classes that more often engage in sport membership (e.g. higher education groups), this may lead to a higher chance of sport club membership. Second, neighbors in more homogeneous environments tend to have more contact and may therefore have more influence on each other's behavior compared to more mixed neighborhoods (neighborhood effect). This study aims to investigate how composition of neighbors influences membership of sport clubs. Methods. Two secondary data sets of 12 sport federations and the Dutch Central Bureau of Statistics were matched. This resulted in a big data set of 13.391.513 participants of 18 years and older (the total Dutch adult population), of whom club membership is known, as well as personal characteristics and composition of the neighbors. Multilevel logistic regression analyses will be performed to measure the association between composition of neighbors and sport club membership. Results and Conclusion. Results of the relation between composition of neighbors and sport membership will be presented.

P3.01.5
TEST-RETEST RELIABILITY OF SELF-REPORTED NEIGHBOURHOOD-SPECIFIC PHYSICAL ACTIVITY
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Purpose: Few self-report tools exist that capture neighbourhood physical activity (PA), potentially resulting in an underestimation of the associations between neighbourhood characteristics (i.e., built environment) and PA. The purpose of our study was to modify items from an established and widely-used self-report tool (International Physical Activity Questionnaire – IPAQ) in order to capture neighbourhood PA, and to estimate the test-reliability of
these modified items. Methods: A convenience sample of n=68 adults (age ≥20 years) from four Calgary
neighbourhoods completed the same questionnaire on two occasions, 7-days apart. The questionnaire included
IPAQ items capturing days/week and usual minutes/day of transport cycling (TC), transport walking (TW), leisure
walking (LW), moderate physical activity (MPA), and vigorous physical activity (VPA) undertaken during the last 7
days. IPAQ items were modified by adding “inside your neighbourhood” within each question. To estimate the
consistency (i.e., test-retest reliability) in reported neighbourhood PA, days/week, duration/day, and duration/week
(days/week x duration/day) between the two occasions, we conducted Wilcoxon signed-ranked tests and
Spearman’s rank correlations (r). Moreover, percent of overall agreement and Kappa statistics (κ) estimated the
consistency in reported participation (“none” versus “some” days/week). Results: The sample consisted mostly of
women (63.2%) and those with university-level education (80.8%). The mean ±standard deviation) age was
56.0±13.2 years. Consistency in participation in neighbourhood PA ranged from poor (κ=0.23 for MPA) to moderate
(κ=0.59 for VPA), while proportion of overall agreement ranged from moderate (64% for MPA) to excellent (81% for
TC). Correlations between reported neighbourhood PA between the two occasions ranged from poor (r=0.22 for
MPA) to moderate (r=0.62 for VPA) for days/week, poor (r=0.22 for MPA) to moderate (r=0.58 for VPA) for
minutes/day, and poor (r=0.19 for MPA) to moderate (r=0.60 for VPA) for minutes/week. Excluding the non-
participants from the analysis improved the correlations for 8 of the 15 tested PA variables. Despite being small in
magnitude, Wilcoxon sign-rank tests detected significant (p Conclusions: With the exception of MPA, our findings
suggest that IPAQ items can be modified to provide reliable estimates neighbourhood physical activity

P3.01.6
DESCRIPTION OF RETAILER PERSPECTIVES OF ENVIRONMENTAL CHANGES IN U.S. FOOD-STORES USING BEHAVIORAL
ECONOMIC DOMAINS: A SYSTEMATIC REVIEW OF LITERATURE, 1980 TO 2016
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Food environment research and interventions to promote healthful consumer food and beverage purchases are
expanding in the literature; however, there is a noted lack of information from the retailer perspective. It is
imperative to understand the economic opportunities and barriers from the proprietor (i.e., owners, managers, and
employees) perspective in order to support effective partnerships and the financial stability of involved businesses
to inform health promotion interventions targeted at low-income consumers. Purpose: to examine the perspectives
of food retail proprietors in relation to choice architecture and marketing mix strategies used to encourage healthy
food retail purchases in order to understand factors that influence program feasibility and effectiveness, and to
guide future behavioral economic interventions. Methods: A systematic literature review of food environment
research using the Preferred Items for Systematic Reviews and Meta-analysis guidelines. United States
food retail establishment research inclusive of proprietor perspectives from years 1980-2016 were included per
review criteria. Perspectives were categorized using eight defined choice architecture and marketing mix strategies
(i.e., place, profile, portion, pricing, promotion, priming, prompting, and proximity). Co-investigators reviewed the
outcomes data independently, and U.S. Department of Agriculture’s nutrition evidence library checklist was used to
evaluate study quality. Results: Of the articles that met inclusion criteria (n=21), promotion, price, profile, and place
were strategies most often discussed by proprietors. Portion, priming, prompting, and proximity were infrequently
described. Several community and consumer factors may influence feasibility and effectiveness of strategy
implementation. For example, community and/or economic context of food retail store, interpersonal or
community relationships, store or supplier policies, space and structures, and the convenience, demand,
profitability, and shelf-life of unhealthy products might influence the success of applied interventions. Conclusion:
Further research is needed to understand how food retail proprietors can use comprehensive strategies to
implement sustainable interventions that promote healthy food retail environments for low-income Americans.

P3.01.7
PARENTAL PERCEPTIONS OF CYCLE SKILLS TRAINING FOR ADOLESCENTS
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Objective: In most developed countries, cycling to school is less common than walking. In New Zealand, less than
5% of children and adolescents cycle to school. Traffic safety is one of the key concerns regarding cycling for
transportation, especially in children and adolescents. Parental confidence in the child’s cycle skills mediates the
association between parental perceptions of safety and cycling in children. Cycle skills training (CST) programmes
improve cycling skills and knowledge in children, but data in adolescents are lacking. Adolescents have positive attitudes towards CST whereas parental perceptions of CST for adolescents remain unknown. This study examined parental perceptions of CST for New Zealand adolescents. Methods: Parents (n=292; age: 47.8±5.5 years; 76.0% females) of adolescents (age: 15.1±1.6 years; 52.7% females) from Dunedin (New Zealand) completed a survey. Questions assessed demographics, travel to school habits and parental perceptions of cycling to school, their adolescent’s cycling skills, and CST (perceived benefits and provision of CST at school). Data were analysed using linear mixed models. Results: Adolescents’ common modes of transport to school were being driven to school (46.2%), walking (29.8%) and school/public bus (19.9%) whereas only 2.7% cycled. Overall, 76.3% of adolescents had at least one bicycle at home and 72.6% had ≥2 vehicles at home. More than half of parents perceived that their adolescent had very good or excellent cycling skills (58.6%). Overall, 72.3% of parents believed their adolescent would benefit from CST and out of those parents three quarters believed their adolescent would take such training at school (76.7%). In a multivariate analysis, parental perceptions that cycling to school is important and unsafe and having fewer vehicles at home were positively associated with parental perceptions that CST would make adolescents safer in traffic (all p Conclusions: Nearly three-quarters of parents perceived that their adolescents could benefit from participation in CST. Parental perceptions that cycling to school is important and unsafe and having fewer vehicles at home were associated with favourable parental perception of CST for adolescents. Future interventions should involve parents and consider offering CST in secondary schools as a part of promoting active transport to school.

P3.01.8
TIME USE, LIFE TRANSITIONS, AND ENVIRONMENTAL FACTORS RELATED TO MOTIVATIONS FOR DROPOUT IN YOUTH SPORT
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Objective Dropout rates in sports are especially high during adolescence, when interests of many youngsters are shifting. It is likely that these shifts in interests are accompanied by changes in time spent on various activities and locations visited. The effects of time use and spatial context on sport dropout have received limited attention in the literature. This study therefore investigated how factors related to time use, life transitions, and the spatial environment were related to motivations of adolescents to dropout of soccer or tennis. Methods Data was derived from an online survey among boys and girls (N=993; age 13-22) who have dropped out from soccer (N=339) or tennis (N=594) over the past year (2014/2015). A principal component analysis on 28 items of motivations for dropout resulted in seven factors, representing main motivations for dropout. Associations of time spent on various activities, life transition factors (change of schools, started/increased working), and environmental factors (proximity to the sports club, urban density) with the seven factors of motivations for dropout were analyzed in multivariate multiple linear regression analyses (GLM), for former soccer and tennis players separately. Results Motivations for dropout were identified as related to: competition/training schedule, communication/policy of the sports club, personal motivation/competence, trainer, team, (travel) time spent on education, and financial reasons. Tennis players who had to travel further to the sports club, spent more time on other sports, social activities, other hobbies, or who started a job were associated with having more dropout motivations related to personal reasons and time spent on school. Motivations related to time spent on school were also associated with change of schools (tennis and soccer), age (soccer) and education level (tennis). Conclusions Soccer and tennis dropouts vary in their motivations for quitting sports, and different determinants are influencing these motivations for dropout. Results of this study suggests that potential interventions aimed at retaining youth at sports clubs may be aimed at 1) improving the flexibility of the supplied activities, and 2) providing a better match of training and competition schedules with the interests of youngsters. Different approaches may be needed for different types of sports.

P3.01.9
IMPLEMENTING A FOOD ASSORTMENT SCORING TOOL (FAST) IN FOOD PANTRIES TO MONITOR NUTRITIONAL QUALITY
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Objective: Hunger relief agencies (e.g., food pantries, food banks) face a number of challenges in their efforts to monitor the nutritional quality the food they offer. Agencies have a limited and variable capacity for self-monitoring their food assortment, and instruments that have been used to date have demonstrated a number of shortcomings.
For example, the U.S. Department of Agriculture's Healthy Eating Index-2010 (HEI-2010) is a useful measure for identifying areas of improvement for food pantries, but is far too complex and time-consuming to use for regular self-monitoring. A recent study proposed a new instrument – a Food Assortment Scoring Tool (FAST) – that could serve as a more feasible alternative for hunger relief agencies. Using predictive models from pantry ordering receipts, the FAST tool correlated well with the HEI-2010. The current study tested the actual implementation of the FAST measure in a diverse set of 5 food pantries and assessed the measure's correlation with HEI-2010 in the sample of food pantries. Methods: The FAST measure sorts foods into 12 categories (e.g., dairy, beverages, whole grains, non-whole grains) and uses gross weights to score food categories. Like the HEI-2010, FAST has a possible range of 0 – 100. The proposed FAST food categories were refined based on input from 5 food pantries in greater Minneapolis/St. Paul, MN. The FAST scores were collected at each food pantry for: (1) inventory available to clients ("availability."), (2) product moved over 5 days ("flow."), and (3) food selected by 12 clients at each pantry ("client carts"). HEI-2010 scores were also collected for availability and cart measures. The correlation of HEI and FAST scores were calculated. Results: With reasonable modifications, implementation of availability, flow, and client cart measures was feasible and acceptable at each food pantry. Average FAST scores were 63.4 (range 60.6-76.8) for availability measures, 61.9 (range 54.0-67.7) for flow measures, and 62.9 (range 57.3-65.5) for client cart measures. The FAST scores correlated well with HEI scores (overall r = 0.64). Conclusion: The FAST measure is a flexible, valid instrument that can allow food pantries to monitor the nutritional quality of their food assortment.

P3.01.10
ASSESSING VALIDITY OF A NEW WEB-BASED SELF-ADMINISTERED 24-HOUR DIETARY RECALL AGAINST FOOD RECORDS FOR ENERGY AND NUTRIENT EVALUATION IN THE FRENCH CANADIAN POPULATION
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Purpose: To assess the validity of a new web-based self-administered 24-hr dietary recall, the R24W, for assessment of energy and nutrient intakes among French Canadians. Methods: Seventy-five women and 75 men from the Quebec City metropolitan area (mean age 47.2 ±13.3 years) completed 3-day food records (FR) and a newly developed web-based 24-hour dietary recall (R24W) on three occasions during the same 4-week period. Intakes of energy, macronutrients and 19 micronutrients assessed by both methods were compared using a Student's paired T-Test. Correlation coefficients were calculated. Cross-classification and Bland-Altman plots were used to assess agreement between methods. In order to identify under and over-reporting, reported energy intakes (rEI) obtained from both methods were compared to the basal metabolic rate (BMR) calculated based on bio-impedance measurements. The cutoffs used for implausible ratio of rEI:BMR were >2.4 (above the PAL corresponding to highly active leisure). Results: Mean energy intake derived from the R24W was 10.3% higher than the value obtained with FR (2637±825 vs. 2390±676 kcal/d; P=84.7 vs. 271.0±76.6 g/d, P=1±28.4 g/d, P=0.12). Differences in mean intakes of micronutrients between R24W and FR ranged from -21.4% (vitamin C) to +21.1% (saturated fat). Correlations between the two methods were significant for all nutrients, ranging from 0.25 to 0.61 (P< 4th quartile). Results of Bland-Altman plots revealed no systematic bias between the two assessment methods. Equivalent proportions of subjects reporting plausible energy intakes were seen with the R24W (79.0%) and the FR (79.5%). Conclusion: Energy and nutrient intakes assessed with the R24W agreed well with values obtained by FR. These data suggest that this new web-based tool is suitable for reliably estimating the dietary intakes in cohort studies of French Canadians.

P3.01.11
LAYING DOWN THE CONTEXT: BASELINE FINDINGS FROM NATURAL EXPERIMENT STUDY OF BIKETORIA, A CITY-WIDE CYCLING NETWORK IN VICTORIA, BRITISH COLUMBIA
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Purpose: Cycling is promoted as a population health strategy. Yet cycling has low uptake in North America (1-2% of trips) compared with European cycling cities (15-40% of trips). Many cities are making major investments in cycling infrastructure. Such interventions hold promise for improving population health, but have been largely unstudied. The City of Victoria is investing $9M in Biketoria, a cycling network for ‘all ages and abilities’ to be built over 2016-2020. We describe our natural experiment study design and the context in terms of current cycling, perceived safety, and support for cycling investment. Methods: We completed a baseline population-based telephone survey...
with 1000 residents/city in three cities (Victoria as the experimental city and Kelowna, British Columbia, and Halifax, Nova Scotia as the control cities) in fall 2016. We conducted descriptive analyses of outcomes by city and sex, using chi-square tests for differences. Results/findings: In total, 51.1% of respondents in Victoria had cycled in the previous 12 months, compared with 35.6% in Halifax and 50.4% in Kelowna (chi-sq, difference between cities, p<0.05). Conclusions: Residents living in mid-sized Canadian cities express a desire to cycle more and show support for cycling investment. Our ongoing study will gather data until 2021 to assess population health impacts, changes in equity of spatial access to cycling infrastructure, and economic impacts of Biketoria.

P3.01.12
EXERCISE IS MEDICINE! WHY ARE PEOPLE NOT BUYING INTO THE PRESCRIPTION?

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Purpose: Since 2007, Exercise is Medicine (EIM), an American based now global health initiative, has irrefutably substantiated the importance of exercise as a means of treating and preventing chronic diseases while improving quality of life. Unfortunately, only 15% of Canadians currently meet the recommended physical activity (PA) guidelines. The purpose of this research was to examine adults’ association with descriptive statements and certain activities relating to exercise, PA, and the gym environment to ultimately assess and evaluate the needs of the public to effectively promote PA. Methods: In the first phase of the study, qualitative methods with phenomenological underpinnings were used. Facilitated group discussions were conducted with 234 participants from 13 diverse focus groups regarding their connection with exercise versus PA and thoughts of the gym environment. Using the results from phase I (transcribed notes from participant feedback), a research generated survey designed by three content experts was administered to the same community groups in phase II of the study. Results: Over 300 Canadian adults completed the survey. Certain activities were more associated with PA (rather than exercise) such as walking, (men 75%, women 92%), taking the stairs (men 60%, women 81%), gardening, shoveling snow, and other yardwork (men 62%, women 85%). Although males and females associated exercise with stress relief (52% and 57% respectively), and happy feelings regarding accomplishment afterwards (50% and 70% respectively), men and women still found exercise to be planned, structured, regimented, routine and repetitive (51% and 70% respectively) and 50% of women found exercise to be hard work, sweaty and required maximal intensity. Moreover, on a Likert scale of 1-5, where 5=strongly agree, men (3.92) and women (3.8) indicated a preference for PA outside the gym such as walking, hiking, raking leaves, and playing with children. Conclusions: The benefits of exercise are evident and appreciated but most adults prefer day-to-day PA as well as PA outside the gym environment over traditional exercise. This means greater marketing, educational and intervention strategies from EIM should reflect PA around the home and work site if we aim to increase the percentage of Canadians meeting the PA guidelines.

P3.01.13
COMPARISON OF VARIOUS NUTRIENT PROFILING MODELS (OFCOM, FSANZ, PAHO) IN ASSESSING THE NUTRITIONAL QUALITY OF THE CANADIAN FOOD SUPPLY

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Objective: Nutrient profiling (NP) is a useful tool for evaluating the healthfulness of foods. Although many NP models exist worldwide, most have not been validated. The objective of this study was to determine the suitability of the NP models developed by Food Standards Australia New Zealand (FSANZ) and Pan American Health Organization (PAHO) in assessing the nutritional quality of the Canadian food supply. Methods: Data were obtained from the 2013 University of Toronto Food Label Information Program, which contains nutrition information on 15,401 pre-packaged products from the four largest national grocery retailers. Foods were categorized into 22 main groups according to Schedule M of the Food and Drug Regulations. NP ratings generated using the two test models (FSANZ and PAHO) were compared to those generated using the extensively validated UK-Ofcom model, which served as a reference. The strength of association between models was assessed using Pearson’s correlations. Chi-square tests were used for between-model comparisons of the proportions of foods classified as “healthier”, based on pre-determined cutoffs. Results: NP scores generated by the FSANZ and Ofcom models were highly correlated for all 15,234 foods included in the analyses (r=0.973) and across all food categories with coefficients ranging from...
0.807 (fats/oils) to 0.999 (sugars/sweets) (all P
Conclusions: Overall, these findings suggest that the FSANZ and Ofcom models generate similar assessments regarding the nutritional quality of the Canadian food supply, although the FSANZ model is less stringent than Ofcom in certain categories containing high fat foods. In contrast, the PAHO model appears to be much more stringent than Ofcom across the entire food supply. These results may be useful in informing the selection or adaptation of NP models for use in front-of-pack labelling and other nutrition policies requiring a NP system.

P3.01.14
INSIGHTS FROM 12 BRANDED MARKETING AND MEDIA CAMPAIGNS CAN BE USED TO INFORM FUTURE EFFORTS TO PROMOTE A HEALTHY DIET IN THE UNITED STATES

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Objective: Integrated marketing and media campaigns have been used to encourage a healthy diet in the United States over 25 years. Cross-cutting insights from these campaigns have not been summarized. This study examined the health-branding components of 12 U.S. campaigns used to promote the sales and consumption of fruits and vegetables, whole grains, peanuts, milk and water; and to reduce meat consumption. Methods: A mixed-methods research design was used to collect evidence through a comprehensive literature review and key informant interviews (n=11). We reviewed eight electronic databases and relevant gray literature and media releases between January 1990 and October 2016. Evidence selection was guided by the National Academy of Medicine's LEAD principles (i.e., locate, evaluate, and assemble evidence to inform decisions), five qualitative-research criteria, and validated by data and investigator triangulation. Investigators selected 60 data sources that were analyzed in a health-branding framework by brand development, marketing execution, and monitoring and evaluation metrics. Key informant interviews were analyzed using NVivo 11.0 software and grounded theory to identify insights to complement the literature review findings. Results: Brand development for nine campaigns used either health behavior (n=4) or communication (n=3) theories, or marketing concepts (n=2). Nine of 12 campaigns conducted formative research; and all campaigns used taglines, images, or logos to convey dietary messages. Five campaigns reported using celebrity endorsement. Marketing execution included: use of paid (n=10) or unpaid (n=12) mass media, earned media (n=12), community outreach (n=6), audience segmentation (n=8), and integrated marketing communications (n=10). Consumer-targeted communications conveyed diet-related messages emphasizing health, convenience, relevance, and environmental benefits. Nine campaigns were monitored and/or evaluated and reported metrics examining changes in consumers' awareness (n=5), attitudes (n=3), consumption (n=5) and product sales (n=6). Conclusions: The 12 campaigns examined used various health-branding strategies but no campaign used all health-branding framework components. Increased commercial marketing and public health sector collaboration may improve the design of healthy diet campaigns by leveraging each sector's unique assets and expertise. More rigorous evaluations and timely dissemination of findings are needed to understand the impact of branded marketing and media campaigns on the dietary behaviors and health outcomes of Americans.

P3.01.15
BUILDING CAPACITY FOR SHARED MEASUREMENT ACROSS FOOD SYSTEM STAKEHOLDERS: LESSONS LEARNED FROM A COLLECTIVE IMPACT FRAMEWORK

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Purpose: Measurement is an important step in assessing behavior change and implementing food system programs. Aligning measurement and building capacity among stakeholder groups, otherwise known as shared measurement, is one strategy using a Collective Impact framework. The purpose of this presentation is to provide a synopsis of methods employed to establish a shared measurement system with statewide partners working towards the goals of the Michigan Good Food Charter in the United States. Methods: Stakeholders with activities contributing to the Michigan Good Food Charter participated in a series of steps to build capacity for measurement, starting with key informant interviews (N=44) and surveys (N=71). These assessments helped to identify areas related to Charter goals that stakeholders were working on (e.g., food access) and gaps in measurement and capacity. Subsequent steps were further narrowed and delineated through consensus building with an advisory council. Results: Key informant interviews revealed that stakeholders were working across goal areas: promoting food access (28%), supporting agriculture-food businesses (23%), supporting Michigan farmers (21%), institutions sourcing 20% of their food from Michigan growers (17%), meeting nutrition standards in schools (8%), and implementing food/agriculture
school curriculum (3%). The interviewees also conveyed an interest in participating in shared measurement, but several barriers exist including, limited resources and capacity. Survey results further define areas of interest, within food access including, capacity of retailers to sell "good food" to low-income populations, factors driving food purchasing decisions, and fruit and vegetable intake. Through consensus building with the Advisory Council, the next phase included a series of trainings that addressed areas, such as utilizing secondary data, program evaluation, and selecting measurement tools. Finally, a shared measurement food access pilot focusing is currently being implemented in three communities across Michigan. The piloted survey assesses food access, shopping patterns, and related factors. Results from this survey are currently being analyzed, and capacity being built for survey design, data collection, analysis, and sharing. Conclusions: Community-based food systems strategies can inform evidence through capacity building for measurement and evaluation. Best practices and strategies for engaging various stakeholders and developing a shared measurement system will be discussed, and findings described.

P3.01.16
ASSOCIATIONS BETWEEN PERCEIVED FOOD ENVIRONMENT AND FRUIT AND VEGETABLE INTAKE AMONG MIDLIFE AND OLDER RURAL WOMEN
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Objective In comparison to their younger rural counterparts, midlife and older rural women tend to be less aware of community food resources; therefore, it is important to examine whether perceptions of the food environment influence their dietary behaviors as much as physical access issues are known to do. This study examined the associations between the perceived food environment and fruit and vegetable (FV) intake among midlife and older rural women. Methods Data were collected among 190 rural women (mean age = 58.7, mean BMI = 34.8) participating in the Strong Hearts, Healthy Communities study in Montana and New York, USA, which is a community-randomized trial. Validated survey questions were used to assess participants' perceived availability, variety, quality, and cost of FV in their communities. Perceived availability, variety, and quality were summarized into a single variable, called "perceived access", by averaging the three variables' responses (Cronbach α = 0.91). Perceived cost was treated as a binary variable (very expensive vs. somewhat expensive or inexpensive). Healthy Eating Index-2010 (HEI-2010) scores were used to measure FV intake and were computed from multiple dietary recalls. Linear mixed models were used to examine the multivariate association of FV intake as a function of perceived access and perceived cost, controlling for age, education, and income, with a random site effect. Results In comparison to participants who perceived FV cost to be very expensive, those who perceived FV cost as less expensive had higher HEI-2010 scores for total FV (β = 0.97, SE = 0.37, p = 0.01) and total fruit (β = 0.89, SE = 0.29, p = 0.003). However, no associations were found between perceived cost and HEI-2010 score for total vegetables (p = 0.721) or between perceived access (i.e., availability, variety, and quality) and any of the HEI FV measures (all p > 0.05). Conclusions Our findings suggest that future interventions should aim to improve the actual as well as perceived affordability of FV in rural settings. Although perceived access was not significantly associated with FV intake in this study, additional research is needed to further understand these complex relationships.

P3.01.17
ARE MESSAGES ABOUT PHYSICAL ACTIVITY IN POPULAR TELEVISION SUPPORTING OR HINDERING PUBLIC HEALTH EFFORTS?
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Objective Audience research in Australia has found that the most salient information about physical activity is that broadcast on television, particularly through the high ratings reality program The Biggest Loser (TBL). Because of the prominence of TBL in the media landscape, this study investigated audience interpretations of physical activity elements on the program and the understandings that were generated, in order to consider its potential contribution to physical activity promotion. Methods A qualitative audience reception study, using in-depth interviews, was conducted in New South Wales, Australia. A sample of 46 adults was recruited, stratified by gender, age group, area of residence, and body mass index. Interview data were thematically analysed concerning content about physical activity recalled and the inspiring or discouraging aspects of this. Results Participants identified positive aspects of the presentation of physical activity to be the effort, discipline and teamwork among contestants, but did not refer to these as personally influential. The shortcomings of the content were that this was considered unrealistic for ordinary people, apparently painful and potentially dangerous. The process of behaviour change, and the level of personal support given to contestants, was inconsistent with the experiences of
participants. Conclusions The presentation of physical activity in TBL does not appear to be supporting physical activity promotion. Viewers were able to discern the shortcomings of the physical activity and lifestyle change process depicted in the program, and reported reactions to this content which indicated that it was personally discouraging. This highlights the paucity of popular media in Australia that offers practical, persuasive and evidence based messages concerning physical activity, and demonstrates the need for physical activity practitioners and researchers to more successfully engage with the mass media about this public health priority.

P3.01.18
THE IMPORTANCE OF PHYSICAL AND SOCIAL ENVIRONMENTAL FACTORS FOR ADOLESCENTS' CHOICE TO CYCLE FOR TRANSPORT: AN EXPERIMENTAL STUDY USING MANIPULATED PHOTOGRAPHS
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Purpose The current study was the first to apply an experimental design using manipulated photographs to investigate the importance of individual, physical and social environmental factors for adolescents' choice to cycle for transport. This study investigated (a) which physical and social environmental factors determine adolescents' environmental preferences towards cycling for transport and (b) which individual, physical and social environmental factors are associated with their intention to actually cycle for transport. Methods A structured online questionnaire consisting of questions on individual and social environmental variables, and 15 choice-based conjoint tasks with manipulated photographs was completed by 882 adolescents. These manipulated photographs were all modified versions of one semi-urban street which differed in seven physical micro-environmental attributes (type of cycle path, evenness of cycle path, speed limit, speed bump, traffic density, amount of vegetation and maintenance). In addition, each photograph was accompanied by two sentences which described varying cycling distances and co-participation in cycling (i.e. cycling alone or with a friend). Participants were asked to indicate which of two situations they would prefer to cycle to a friend's house. After each choice task they were also asked if they would actually cycle in that situation in real life (i.e. intention). Hierarchical Bayes analyses were performed to calculate relative importances and part-worth utilities of environmental attributes (research question a). Logistic regression analyses were performed to investigate which individual, physical environmental and social environmental factors are associated with adolescents' intention to actually cycle for transport (research question b). Results Adolescents' preference was predominantly determined by type of cycle path, followed by cycling distance and co-participation in cycling. Clear preferences were observed for a separation between the cycle path and motorized traffic by means of a hedge, curb or marked line, respectively. Similar findings were observed for intention to cycle. Evenness of the cycle path and maintenance of the street were also of importance, but to a lesser extent. Conclusions Results of this experimental study highlight the responsibility of local authorities to invest in proper cycling infrastructure, i.e. provision of well-separated cycle paths, when aiming to promote transport cycling among adolescents.

P3.01.19
DRINK-UP: DETERMINING THE NATURE AND EXTENT OF CHILDREN'S BEVERAGE CONSUMPTION USING WEARABLE CAMERAS
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Purpose Children's high consumption of sugar-sweetened beverages in high-income countries presents significant risks for obesity. But there is incomplete information about the presence of such beverages in the overall obesogenic environment. Furthermore, much current evidence is based on self-report, which is subject to bias and inaccuracies. The purpose of this study was to provide objective evidence on children's beverage availability, purchasing and consumption throughout their day by using wearable cameras for data collection. Method This study used data from the Kids'Cam Project, in which a total of 169 randomly selected children (mean 12.6y; SD=0.46; 89 girls, 80 boys) recruited from 16 randomly selected schools in the Wellington region, wore cameras for four days that automatically took pictures every seven seconds. Using bespoke software, instances of non-alcoholic beverage availability, purchasing and consumption, and setting and beverage type, for one week day, were coded
and sleep) as determinants. Titles, abstracts and full papers were screened by two independent reviewers and

3) built environmental characteristics that potentially influence lifestyle behaviours

reporting: 1) populations >18 years old, 2) T2D prevalence, T2D incidence, or glycaemic markers as outcomes, and

Methods: A literature search was performed in

on built environmental characteristics related to T2D incidence, prevalence and glycaemic markers in adults. Consequently, built environmental characteristics may be related to lifestyle related

diseases such as type 2 diabetes (T2D). We aimed to systematically review the current state of evidence

and blood lipid profiles in adults. The main research question is which and to what extend are potential built environmental determinants of physical activity, sedentary and dietary behaviours associated with blood lipid (HDL, LDL and total cholesterol and triglyceride) levels in adults. Methods: We systematically searched PubMed, EMBASE and Web of Science. Full-text articles in English, Dutch and French were retrieved. Population

based studies with adult participants (≥18 years) from both sexes were include

d, or those with mixed age groups drawing separate conclusions/results for adults. There were no restrictions with regard to ethnicity or nationality. Risk of bias was assessed using the Quality Assessment Tool for Quantitative Studies. A narrative synthesis of the findings from the included studies is provided, structured around the type of outcome and built environmental characteristic, as well as by the measurement method of the explanatory variables (objective/subjective) and high

versus low quality research. Results/findings: A total of 6448 titles/abstracts, and subsequently 106 full-texts were screened for eligibility. Most of these studies were cross-sectional. The majority of the included studies explored associations between urban versus rural aspects lipid levels. Although a consistent definition of rural and urban was lacking in the reviewed studies, the results indicate that people living in urban areas had higher total and LDL cholesterol levels compared to people living in rural areas. HDL-cholesterol and triglyceride levels did not show a consistent difference between urban and rural residents. Conclusions: Both total and LDL cholesterol levels were consistently higher in urban than in rural residents. HDL cholesterol and triglyceride levels were not consistently associated. These results indicate that urban residents have a less favourable lipid profile as compared to rural residents. Universal definitions to distinguish between urban and rural are needed for further research.

Objective: Blood lipid profiles are influenced by diet and physical activity behaviours. Socio-ecological models suggest that these behaviours are, in turn, influenced by contextual factors such as built environmental characteristics. This review aims to systematically review the evidence on associations between built environmental characteristics and blood lipid profiles in adults. The main research question is which and to what extend are

P3.01.20

BUILT ENVIRONMENTAL CHARACTERISTICS ASSOCIATED WITH BLOOD LIPIDS: A SYSTEMATIC REVIEW

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Objective: Blood lipid profiles are influenced by diet and physical activity behaviours. Socio-ecological models suggest that these behaviours are, in turn, influenced by contextual factors such as built environmental characteristics. This review aims to systematically review the evidence on associations between built environmental characteristics and blood lipid profiles in adults. The main research question is which and to what extend are potential built environmental determinants of physical activity, sedentary and dietary behaviours associated with blood lipid (HDL, LDL and total cholesterol and triglyceride) levels in adults. Methods: We systematically searched PubMed, EMBASE and Web of Science. Full-text articles in English, Dutch and French were retrieved. Population

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P3.01.21

BUILT ENVIRONMENTAL CHARACTERISTICS AND TYPE 2 DIABETES RISK: A SYSTEMATIC REVIEW

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Purpose: Socio-ecological models suggest that the built environment contain important upstream drivers for individual lifestyle behaviours. Consequently, built environmental characteristics may be related to lifestyle related to chronic diseases such as type 2 diabetes (T2D). We aimed to systematically review the current state of evidence on built environmental characteristics related to T2D incidence, prevalence and glycaemic markers in adults. Methods: A literature search was performed in PubMed, Embase and Web of Science. We included studies reporting: 1) populations >18 years old, 2) T2D prevalence, T2D incidence, or glycaemic markers as outcomes, and 3) built environmental characteristics that potentially influence lifestyle behaviours (diet, physical activity, stress and sleep) as determinants. Titles, abstracts and full papers were screened by two independent reviewers and
disagreements were solved by consulting a third reviewer. Data were extracted by one reviewer according to a standardized protocol and quality of the studies was assessed by two reviewers according to the Quality Assessment Tool for Quantitative Studies. Results: After screening 9,089 studies, 86 studies were eligible for data extraction. The majority of studies investigated the level of urbanisation (n=49), where 53% of the studies found a higher T2D risk/prevalence in urban compared to rural areas. These findings were most prominent in studies from lower-middle- (22%, e.g. India, Ghana) and upper-middle income countries (18%, e.g. China, Iran). Forty percent did not find a difference in T2D risk/prevalence between urban and rural areas, most of these studies originated from low income (13%, e.g. Uganda, Colombia) and lower-middle income countries (13%). Higher availability of fast-food outlets (n=11) and noise levels (n=2) were relatively consistently associated with an increased T2D risk, while higher walkability (n=8), recreational/sports facilities (n=8) and green space (n=4) was associated with lower T2D risk/prevalence. Supermarkets/grocery stores and infrastructure did not show consistent associations. Conclusions: A large body of literature is available linking built environmental characteristics with T2D and T2D risk. Most studies investigated urbanisation, where T2D risk/prevalence in urban areas is generally higher than rural areas, especially in middle-income countries. Studies also indicate that specific built environmental characteristics related to lifestyle behaviours are associated with T2D risk.

P3.01.22
MOVE THE NEIGHBOURHOOD: A NOVEL STUDY DESIGN OF A PARTICIPATORY PUBLIC OPEN SPACE INTERVENTION IN A DANISH DEPRIVED NEIGHBOURHOOD TO PROMOTE ACTIVE LIVING
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PURPOSE: A limited amount of research has examined the effect of changing public open spaces on active living. This abstract presents the study protocol of an intervention study designed in an interdisciplinary collaboration built on principles of Community-Based Participatory Research (CBPR) to develop urban installations highly tailored to promote active living among children (10-13-years-old) and seniors (>60-years-old) in a deprived neighbourhood in Copenhagen. METHODS: The study builds on a quasi-experimental study design including two sub-studies: 1) a children study and 2) a senior study. During spring 2017 the interventions will be developed, designed and implemented in collaboration with local children and seniors, respectively, using different co-design tools and methods. We will evaluate the effect of the interventions on children's and senior's use of the new-built urban installations using accelerometers in combination with GPS and the System for Observing Play and Recreation in Communities (SOPARC). A process evaluation based on elements from the re-aim model will be conducted with focus groups consisting of the various stakeholders in the two sub-studies. The process evaluation will be used to gain knowledge of the intervention processes. DISCUSSION: The study presents new methods and approaches in the field of public open space interventions through interdisciplinary collaboration, participatory co-design approach and combination of measurements. Using both effect and process evaluations the study will provide unique insights in the role and importance of the interdisciplinary collaboration, participatory processes, tailoring changes in public open space to local needs and wishes. These results can be used to guide urban renewal projects in deprived neighbourhoods in the future.

P3.01.23
UNDERSTANDING THE INTERPLAY OF INDIVIDUAL, SOCIAL AND ENVIRONMENTAL FACTORS WHEN EVALUATING A WEIGHT MANAGEMENT INTERVENTION.
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Purpose Policy makers have engaged with the idea that individual, social and environmental factors contribute to obesity. However, almost all the research evaluating weight management interventions fails to consider this interplay and focus on individual factors only. This study will investigate if the environment in which an individual lives is associated with attendance to and effectiveness (in terms of weight loss) of, a UK community weight management intervention. Methods Participants were recruited from MoreLife, the analysis is currently underway but the final sample is expected to be circa 3000 children aged 5 – 16 years from 10 locations in the UK. MoreLife is a 12 week community weight management intervention with a focus on diet, physical activity and behaviour...
change. BMI is calculated from measured height and weight, and weight status is defined using the UK90 reference curves. Weight loss will be calculated as change in BMIsds units for those that complete the programme. Attendance will be calculated as the number of sessions attended. The individual environment of each participant will be characterised using Middle Super Output Areas (MSOAs, administrative boundaries) and 2KM circular buffers based on residential postcode. Physical features of the environment thought to contribute to obesity including, food outlets and access to physical activity and green space will be integrated using the Points of Interest (Pol) data. All locations will be geo-coded based on postcode using GIS. Additional features of the built environment including, area deprivation, property values and street connectivity will also be calculated. Results Hierarchical generalised models, which offer statistical inference, informed by directed acyclic graphs (DAGs) will be utilised to consider the association between the exposure (environment) and the outcome (weight loss and attendance in separate models). Conclusions Understanding the association between the environment and outcomes of weight management interventions is a new area of research and presents considerable methodological challenges. The findings from this national study in the UK will inform intervention design but also be of interest policy makers in terms of increasing the effectiveness of public services and policy decision focused on obesity.

P3.01.24
USING NUDGING AND SOCIAL MARKETING TECHNIQUES TO CREATE HEALTHY WORKSITE CAFETERIAS IN THE NETHERLANDS: INTERVENTION DEVELOPMENT AND STUDY DESIGN

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Objective: The worksite cafeteria is a suitable setting for interventions focusing on changing eating behavior, because a lot of employees visit the worksite cafeteria regularly and a variety of interventions could be implemented there. The aim of this paper is to describe the intervention development and design of the evaluation of an intervention to make the purchase behavior of employees in the worksite cafeteria healthier. The developed intervention called “the worksite cafeteria 2.0” consists of a set of 19 strategies based on theory of nudging and social marketing (marketing mix). The intervention will be evaluated in a real-life setting that is Dutch worksite cafeterias of different companies and with a number of contract catering organizations. Methods/design: The described study is a randomized controlled trial (RCT), with 34 Dutch worksite cafeterias randomly allocated to the 12-week intervention or to the control group. Primary outcomes are sales data of selected products groups like sandwiches, salads, snacks and bread topping. Secondary outcomes are satisfaction of employees with the cafeteria and vitality. Results: The developed intervention is described together with the study design of an RCT. Conclusions: When executed, the described RCT will provide knowledge in the effect of the intervention “the worksite cafeteria 2.0” on the purchasing behavior of Dutch employees in the real-life setting of worksite cafeterias.

P3.01.25
CHANGES IN LUNCHTIME FRUIT AND VEGETABLE INTAKE ACROSS THE SCHOOL WEEK: COMPARISONS BETWEEN SCHOOL AND PACKED LUNCHES

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Objective: Growing evidence suggests the nutritional quality of packed lunches brought to school in the U.S. falls short of standards for school-prepared lunches, but few studies have directly compared consumption from these lunches. Further, consumption can vary day-to-day, but limited research has examined changes over the school week and its relationship to lunch type. The purpose of this study was to compare fruit and vegetable consumption from school and packed lunches while considering variation across the week. Methods: Participants were fourth-through sixth-grade students (N=315) from three elementary schools. Each student was observed over a period of five consecutive days (N=1,164 lunch observations). Trained analysts estimated food consumption using digital images and written records collected before and after lunchtime. Mixed model logistic regression, accounting for multiple observations nested within student, was used to examine odds of consuming fruit and vegetables as a function of lunch type (day-level) and day of the week, after controlling for student-level characteristics (gender, grade, household income, and school). Results: Averaged across the week, students were less likely to consume fruit (odds ratio [OR], 0.27; 95% CI, 0.14-0.54) and vegetables (OR, 0.46; 95% CI, 0.27-0.80) at lunchtime when choosing packed over school lunches. However, this pattern differed across the week for fruit consumption, such that consumption did not differ by lunch type on Mondays, but odds of fruit consumption increased with each day.
later in the week when school lunches were chosen daily (OR, 1.26; 95% CI 1.08, 1.46), whereas odds of fruit consumption decreased when packed lunches were chosen (OR, 0.72; 95% CI, 0.58-0.90). Meanwhile, odds of vegetable consumption were consistently lower across the week for packed lunches. Conclusions: As with prior studies, students choosing packed lunches were less likely to consume fruit and vegetables than those choosing school lunches. By examining students over multiple, consecutive days, this study suggests that the extent to which students’ eating behaviors differ by lunch type may depend on the day of the week, at least for fruit. Further research should examine how environmental characteristics such as changes in home and school food availability may account for these patterns.

P3.01.26
ACCESS TO AND PROMOTION OF FRUITS AND VEGETABLES AT KANSAS WORKSITES
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Objective: Employees spend most of their waking hours at work, making it an essential place to evaluate how employers contribute to their employees' health. One of the most important ways in which an employer can support their employees' health includes providing access to and promoting healthy foods, including fruits and vegetables, to employees. It is unknown the extent to which worksites offer and promote fruits and/or vegetables.
Methods: A 38-item online assessment was administered to each worksite participating in a four-hour WorkWell KS Food and Beverage workshop. Members of the worksite's wellness committee or executives with knowledge of the company's wellness efforts were asked to complete the survey. The assessment was designed to determine which best practices gleaned from the scientific literature were in place at each worksite regarding healthy foods and beverages. Assessment items were primarily closed-ended, allowing for employers to select the best practices in place at their worksites.
Results: Among the 84 worksites that participated in the workshops, 54% (n=45) reported offering any kind of food. Among those worksites, 76% (n=34) indicated they had fruit and/or vegetables available. Among those worksites, 56% (n=19) indicated they had fruits available in sufficient quantities, and 50% (n=17) reported promoting the consumption of fruits; 53% (n=18) of worksites reported having vegetables available in sufficient quantities, and 41% (n=14) reported promoting vegetables.
Conclusions: Although some worksites in Kansas make fruits and vegetables available to their employees, few worksites offer fruits and/or vegetables in sufficient quantities and promote their consumption. Efforts to make fruits and vegetables available will be important for developing a healthier workforce.

P3.01.27
ARE CAFFEINATED ENERGY ‘SHOTS’ THE SAME AS ENERGY DRINKS? PATTERNS AND PERCEPTIONS OF USE AMONG YOUTH AND YOUNG ADULTS.
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Purpose: In Canada, caffeinated energy drinks (CEDs) are covered under Food and Drug regulations, whereas caffeinated energy shots are regulated as Natural Health Products and subject to relatively fewer regulatory requirements. The products were classified differently by Health Canada on the assumption that, unlike energy drinks, energy shots are not consumed or perceived as food. The current study examined patterns of consumption and perceived reasons for use of CEDs and caffeinated energy shots to determine whether there are differences in how the products are used and perceived by youth and young adults.
Methods: An online survey was conducted in 2015 using a national commercial online panel of youth and young adults aged 12-24 (n=2,041 retained for analysis). Prior to any description of the products, participants were randomized to view an image of either an energy shot (n=990) or energy drink (n=1,051), of the same brand, and were asked about 16 ‘reasons for use’ of the product. Past consumption of energy shots and CEDs was also assessed. Chi square and ANOVA tests were conducted to examine differences in past use and reasons for use between CEDs and energy shots. Results: Overall, 15.6% of respondents reported using both energy shots and energy drinks; less than 1% had tried only energy shots, whereas 58.0% had tried only energy drinks. Among those who had tried both, CEDs were more likely than energy shots to be used at an earlier age (p Conclusion: Although some differing patterns of consumption exist between users of CEDs and energy shots, youth and young adults reported similar perceptions of the purpose of both products. Overall, the findings provide little or no support for regulating energy shots differently than CEDs.
P3.01.28
WHAT IS A NUTRITIOUS FOOD? EXPERTS AND LAY PERCEPTION IN COMPARISON
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Purpose: Snacking has increased in western societies and while poor food choices pose a health risk, choosing foods high in nutrients and fibre and low in energy can improve diet quality thereby may prevent the development of chronic diseases. Healthy choices should be promoted and the term ‘nutritious’ is increasingly used in product marketing. However, the term ‘nutritious’ is not currently regulated as a claim and it is unclear how lay consumers and experts define the concept and how they evaluate the nutritiousness of various foods. The current study used a mixed methods design to explore this question with nutrition experts lay consumers providing definitions of the term ‘nutritious’ and evaluating the ‘nutritiousness’ of 20 different snack foods. Methods: Cross-sectional survey with 207 nutrition experts and 270 lay consumers. Content analysis of nutritiousness definitions using the software Leximancer. Comparison of expert and lay evaluations with the Ofcom nutrient profile scores and the Australian Health Star Rating system using correlation analysis and T-tests with Bonferroni correction. Results: The expert and lay definitions differed considerably, with experts using terms such as nutrient density, macro- and micronutrients, kilojoules/calories and unsaturated fat and lays using holistic descriptions such as fuel, fresh, natural and body needs and functioning. The evaluations of the snacks were highly correlated between experts and lay consumers (r=.75, psexpert=70.6, SD 17.6 and Mlay=43.7, SD=20.4) and bread (Mexpert=62.4, SD 20.5 and Mlay=47.8, SD=22.1). Conclusions: There are large discrepancies between the understanding of the nutritious value of food between experts and lays and perceptions of most foods differed considerably. The findings of this study provide insight into consumer perceptions and might help to design more effective nutrition education materials and labels that guide healthy choices. The results also highlight a potential need for definition and regulation of the term nutritious in food marketing.

P3.01.29
BARRIERS AND SUPPORTS TO PHYSICAL ACTIVITY IN ADULTS FOLLOWING RESIDENTIAL RELOCATION: A MIXED METHODS STUDY
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Objective: The purpose of this sequential mixed methods study is to understand the determinants of physical activity (PA) in adults who have moved between Calgary neighbourhoods and self-reported a change in PA. This study has two objectives: 1) Estimate the associations between self-reported changes in walking and cycling for transportation and overall physical activity with changes in objectively-assessed neighbourhood walkability (i.e., Walk Score®). 2) Describe perceived individual, social and environmental barriers and supports to PA. Methods: In 2014, a random sample of n=1023 Calgary adults completed an online and postal survey capturing PA and sociodemographic characteristics. Participants also reported whether they had relocated neighbourhood in the past 12 months and whether their walking, cycling, and total PA had changed since the relocation. N=63 reported relocating to a new neighbourhood. Fisher’s exact test and ANOVA were used to estimate the associations between Walk Score® change and PA change. Of the 63 participants, 14 who agreed to be contacted for further research participated in semi-structured narrative interviews, conducted by telephone, about barriers and supports to PA following neighbourhood relocation. Interview data were analyzed thematically for evidence of barriers and supports to PA. Results: Self-reported reductions in transportation cycling and walking, despite not reaching statistical significance (p Conclusions: Our preliminary qualitative findings help to explain why changes in transportation cycling and walking were observed following participants' relocation to less walkable neighbourhoods. Specifically, the interplay of family structure, pet ownership, attitudes towards car use, and the built environment before and after relocation appear to contribute to changes in PA. Our study will inform urban and transportation policy for improving the supportiveness of neighbourhood built environment for PA.

P3.01.30
ADOLESCENT AND YOUNG ADULT PERCEPTIONS AND ATTITUDES TOWARD CAFFEINE
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Purpose: There are growing concerns regarding the potential adverse health effects of increasing caffeine
consumption among young people, particularly from sources such as caffeinated energy drinks (CEDs). Although Health Canada and other regulatory agencies recommend limits on caffeine consumption, there is very little evidence about knowledge and perceptions of caffeinated food and beverages among youth and young adults. The aim of the current study was to assess young people's perceptions and attitudes toward caffeine, with a focus on CEDs. Methods: A cross-sectional online survey was conducted in October 2015. A total of 2,181 respondents aged 12-24 were recruited via email through a consumer panel, and 2,055 were retained for analysis. The survey included measures of perceived side effects of caffeine, perceptions of CED safety, knowledge of CED ingredients, and knowledge of the recommended daily intake of caffeine. Analyses included descriptive statistics, as well as linear regression models examining sociodemographic correlates of perceived caffeine effects and an index of perceived CED safety. Results/findings: Few respondents (5.6%) reported knowing Health Canada's recommended daily limit for caffeine intake for their age, and only 2.1% were able to correctly state the recommended daily limit (of up to 400mg, depending on age). Most participants (64.9%) were able to correctly state the maximum number of CEDs that should be consumed in one day. When shown four beverages (CED, coffee, cola, sports drink) and asked to identify the one with the most caffeine, only a minority (17.5%) were able to correctly identify the beverage with the highest caffeine content. The majority of respondents felt that CEDs were not safe to use in a variety of situations (such as while pregnant, playing sports, or combined with alcohol). Older respondents and Aboriginal respondents were significantly more likely to perceive CEDs as safe, and older respondents and males were more likely to perceive side effects from caffeine. Conclusions: This study suggests that young people generally have low levels of knowledge about specific caffeine intake recommendations and caffeine content in different beverages. However, many knew to limit CED consumption, and could identify concerns and potential negative effects from caffeine intake.

P3.01.31
TRUTH IN MARKETING? EXPLORING ‘HEALTH’ LABELING OF FOODS AND BEVERAGES IN VENDING MACHINES IN CANADIAN RECREATION AND SPORT SETTINGS
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Purpose: Product labeling is a promotional strategy that can influence consumer purchases. We aimed to explore health labeling of foods and beverages in vending machines and evaluate whether products’ healthfulness labelled by the vending operator accurately represented its nutritional quality based on provincial nutrition guidelines. Methods: Audits of randomly sampled vending machines in 25 recreation facilities in two Canadian provinces were used for this cross-sectional analysis. Foods and beverages for sale, and presence of a health label beside products' prices were recorded for all machines. Products’ nutrient content, obtained from a publicly funded "Brand Name Food List" (https://bnfl.healthlinkbc.ca), was compared to nutrition guidelines for the province the machine was located in. All foods (n=371) and beverages (n=154) from machines that labeled product healthfulness (n=17/81) were included. Cross-tabulation was used to assess agreement between the products' health label and its actual provincial nutrition guideline category. Independent t-tests compared the nutritional quality of products labelled "healthy" compared to "unhealthy". 106 foods (20%) were excluded from the nutrient analysis due to inadequate product information and/or lack of nutrient criteria in guidelines. Results: Health labels in British Columbia were based on 2008 provincial nutrition guideline categories (choose most/choose sometimes/choose least/not recommended), but health labels in Alberta used only one label (which may not match the provincial nutrition guidelines). One-third of all products were mislabeled by the vending operator and 72% of those products were labelled as healthier than their actual guideline category. These mislabeled products violated guideline nutrient criteria for calories, sugar, sodium, and total fat 19%, 33%, 34%, and 50% of the time, respectively. When nutrient criteria were violated, products had on average 34 calories, 13g sugar, 46mg sodium, and 6g fat more than recommended by provincial nutrition guidelines. However, regardless of products' actual guideline category, products labelled as "healthy" were significantly lower in calories (44kcal), sugars (12g), and sodium (47mg) compared to "unhealthy" (p Conclusions: Some vending operators promote healthier options in their machines through labeling but additional support may be necessary to ensure that products are accurately labeled according to provincial nutrition guidelines. Future research should explore why products are misclassified.

P3.01.32
FACILITATORS, BARRIERS, AND BENEFITS TO INTEGRATIVE KNOWLEDGE TRANSLATION WITHIN THE CONTEXT OF AN INTERNATIONAL RESEARCH PARTNERSHIP
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Objective: The Grupos de Ayuda Mutua (GAM) is a national Mexican policy addressing type 2 diabetes and chronic disease management that presents an opportunity to explore the real-world implementation of a policy. Involving local decision makers in the research process can increase the prospects of research use and application and is a form of integrated knowledge translation (IKT; Bowen & Graham, 2013b). However, there is a lack of models for IKT in international settings where diverse cultures, norms, and values may conflict. The purpose of this study was to explore the facilitators, barriers, and benefits to IKT for chronic disease management within an international research partnership between the Secretary of Health of Jalisco, Mexico and researchers from Queen’s University, Canada. Methods: A series of ethnographic field notes and observations were taken throughout the planning and execution of a research project that included 20 interviews with physicians working in GAMs. Interactions between research team members from Mexico and Canada, project progress, interviewer and participant dynamics, interview environment, and interactions between staff and patients were recorded. Notes and interviews were transcribed, organized, and analyzed using an inductive thematic analysis (Braun & Clarke, 2006). Results: A principal facilitator to IKT within this international research partnership was the collaborative development of research questions and design, and intercultural openness and understanding. Using external researchers for evaluation of a government policy was an asset that allowed for researcher objectivity and participant willingness to speak openly within a guarantee of confidentiality. Cultural differences between Mexican and Canadian research team members and ethical issues related to power differentials between research team members and study participants represented challenges to overcome. Logistical and communication challenges also created barriers to the progress of the project. Exchange of knowledge and resources between countries and reduction of bias in evaluation of the policy were key benefits. Recommendations for international IKT for chronic disease management within an international context were generated. Conclusion: Findings offer insight into the benefits and complexity of conducting research in an international setting and highlight recommendations that can help researchers better navigate IKT research partnerships in international contexts.

P3.01.33
WHY IS IT SO HARD TO GET PEOPLE TO EXERCISE? EXAMINING ADULTS’ BELIEFS, PERCEPTIONS AND PREFERENCES TOWARDS PHYSICAL ACTIVITY AND EXERCISE
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Most Canadians adults (85%) do not obtain the recommended 150 minutes of moderate to vigorous physical activity (PA) each week, as advocated in the Canadian PA guidelines. Recognizing this low level of PA participation, the purpose of this research project was to learn more from Canadian adults about their attitudes, values, and behaviours regarding the types of PA and/or exercise needed to meet the PA guidelines. Methods: In the first phase of this study, qualitative methods with phenomenological underpinnings were used. Facilitated group discussions were conducted with 234 people from 13 diverse focus groups regarding their understanding of, values and preferences for physical activity. Three content experts analyzed the data from these discussions to create a PA preferences questionnaire. This newly formed questionnaire was then completed by individuals from the same community groups for the second phase of this study. Results: More than 300 Canadian adults, ages 18 and older, completed the newly created questionnaire. Almost half (45%) of the respondents were 65 years or older, 67% were urban dwellers, and the sample was biased towards men (63%). Results indicated that at least 80% of the sample, men and women of all ages, perceived a difference in PA and exercise and preferred to obtain their PA through household or lifestyle physical activities rather than structured or specifically planned exercises. Further, most women (78%) and men (77%) thought it easier to include moderate or more intense PA in their day than exercise and most men (72%) and women (59%) thought Canada’s guidelines for PA could be achieved by PA alone. There was considerable interest (64% women; 49% men) in learning more regarding how lifestyle physical activities contribute to meeting the PA recommendations and thereby to their overall health. Conclusion: Given the overwhelming preference for lifestyle physical activities, it may be necessary to emphasize and endorse household, work-site, leisure, and active transportation as valuable methods of PA that contribute to meeting the current PA guidelines. These results should also direct PA promoters to address the value and potential of lifestyle PA in fostering optimal health through movement.
P3.01.34
FEASIBILITY STUDY OF ELECTRICALLY-ASSISTED CYCLING IN PEOPLE WITH TYPE 2 DIABETES
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Objective: Cycling is associated with better cardiovascular fitness and lower disease risk. However there are potential barriers to cycling including hilly routes and perceived effort to cycle. Electrically-assisted bicycles (EABs) provide graded assistance and may help overcome some of these barriers. EABs may therefore offer a novel approach to increasing PA in clinical populations with low fitness such as people with type 2 diabetes (T2D). The purpose of this research is to explore the uptake, use and any aerobic fitness gains of electrically assisted cycling in people with T2D. Methods: Twenty participants (12 men and 8 women) with T2D aged 58.1± 7.9 years and with a mean BMI of 30.2 ± 5.1 kg/m2 took part. They were provided with an EAB free of charge for 20 weeks and were given cycle training before taking the bikes home to use as desired. They were also given the opportunity to take part in group rides. Before and after the intervention, study participants completed a submaximal cycle ergometer test to assess changes in aerobic fitness (Council of Europe. 1995. Eurofit for adults. Finland). The participants pedalled at three progressive workloads for 4 minutes and heart rate across the three workloads was used to estimate maximum work output (watts). Distance cycled was measured using a bike computer and interviews were carried out with all participants before and after the intervention. Results: Participants cycled on average 520 km (range 38 to 1659km) over the 20 week period with a 10% improvement in aerobic fitness (baseline 157.5 ± 55.7 vs follow up 174.3 ± 70.8 watt max). Participants were positive about using the EABs with the majority of participants deciding to purchase the bikes after the intervention finished. Individuals were positive about the individual support they received but none of the participants took part in the group rides that were offered. Conclusions: Cycling on an EAB as part of normal daily activities is an acceptable and potentially sustainable intervention to encourage people living with diabetes to take up active commuting.

P3.01.35
REFRESH: RECREATION ENVIRONMENT AND FOOD RESEARCH EXPERIENCES FROM HOCKEY, ADOLESCENT PERSPECTIVES REVEALED THROUGH PHOTOVOICE
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Purpose: Unhealthy dietary behaviours are prevalent among adolescents participating in organized sports. Recreation facilities are often described as "obesogenic" and some Canadian provinces have introduced recreation facility food policy, but Ontario has not yet done so. The purpose of this photovoice study was to explore, from the perspective of adolescent hockey players, broad social and physical environmental influences of exposure to recreational food environments on food choices and behaviours. Parent perspectives of players' experiences were also explored. Methods: Adolescent hockey players (n=24) aged 12-15 were recruited from 5 Ontario leagues to describe their food experiences related to recreational hockey participation. The approach included taking photographs representing their experiences, one-on-one interviews to interpret and contextualize photographs, and 2 focus group discussions of representative photographs guided by SHOWeD (Wang, 2006). Parent (n=5) interviews explored their insight into the experiences illustrated in an exhibit of exemplar photographs. Interview and focus group transcripts were thematically analyzed. Findings: Players perceived recreational facility food options as unhealthy and as intended mainly for spectators, not players. Travel and time constraints were identified as contributing to less healthy choices. Dominant influences among players included: their perceived importance of nutrients (e.g., protein) or foods (e.g., chocolate milk) for performance and recovery; media and branding (e.g., the pro-hockey aura of Tim Horton's®; "healthy choice" perception of Subway®); social aspects of tournaments and team meals; and, moral values around 'right' and 'wrong' food choices. Parents' perceived that tournament meals and recreation food and recreation facility foods were generally unhealthy, but part of the tradition of the sport. Conclusions: Recreation facilities are clearly only one of a range of environments influencing eating behaviour of adolescent hockey players. Players motivation by perceived benefits of healthy eating on performance can inform messaging and intervention strategies targeting healthy eating behaviours. Adolescents' vulnerability to advertising and promotion could also be leveraged to support healthy eating choices. Understanding gained for adolescent perspectives can help inform policy and intervention strategies that support healthier eating behaviours, particularly in recreation facilities. Finally, facility management and vendors have a significant opportunity in providing and promoting healthy food options players value.

P3.01.36
INCREASING FRESH FRUIT AND VEGETABLE PURCHASING AMONG LOW-INCOME FAMILIES: EVALUATION OF THE
LINK UP ILLINOIS FARMERS MARKET INCENTIVE PROGRAM

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Objective: Farmers markets have been mentioned as a strategy to increase healthy food purchasing in under-resourced communities. Several incentive programs have been established in the US to promote farmers market usage among low-income families. LINK Up Illinois is the largest farmers market incentive program in the state of Illinois. Formally titled the Double Value Coupon Program (DVCP), this grant-supported program matches the US dollar amount Supplemental Nutrition Assistance Program (SNAP) recipients spend at a farmers market so they can purchase double the amount of locally grown food. This project aimed to examine the demographics, shopping behaviors, and fruit and vegetable consumption patterns of current DVCP users. Methods: During the 2016 Illinois farmers market season, a volunteer sample of 134 DVCP users were surveyed at participating farmers markets. Study participants were recruited from farmers markets located in 6 cities: Chicago, Springfield, Northbrook, Woodstock, Aurora, and Urbana. The survey collected information on demographics, shopping behaviors, social support for healthy eating, program satisfaction and fruit and vegetable consumption. Descriptive statistics (means and frequencies) were tabulated for all variables of interest. Results: Study participants were, on average, 42.5 (±16.5) years old and 81.7% female. About 47.5% were Non-Hispanic White, 28.7% were Non-Hispanic Black, and 18.0% were Hispanic. While 90.2% of study participants mentioned that the DVCP greatly increased the amount of fruit and vegetables they consumed, only 22.2% consumed vegetables ≥ 3 times per day and 35.1% consumed fruit ≥ 2 times per day. The barriers to DVCP usage most often listed by study participants were the DVCP match limit (38.5%), farmers market hours of operation (21.2%), and lack of transportation (16.3%). Conclusions: The DVCP was established 6 years ago to increase the affordability and accessibility of locally grown foods at farmers markets in low-income communities. Since its establishment, the amount money SNAP recipients spend at Illinois farmers markets has greatly increased. While satisfaction with the DVCP is high among users, it appears that users may face barriers that impede their ability to use the program more often. Additional research is needed to understand how the program impacts fruit and vegetable consumption.

P3.01.37
ASSESSING THE RETAIL FOOD ENVIRONMENT AS A PREDICTOR OF PARTICIPATION IN A COMMUNITY-BASED FOOD ACCESS INTERVENTION

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Purpose: Many studies have examined the impact of the neighborhood retail food environment on dietary intake and as a risk factor for other diet-related diseases. However, few studies have examined whether the local food environment predicts participation in interventions aiming to improve access to healthy foods. Methods: Participants were recruited from low-resource communities in North Carolina for Veggie Van (VV), a randomized mobile market food access study. Residential addresses were geocoded with the Google Maps Application Programming Interface (API) through BatchGeo. GIS mapping determined the number of supermarkets and corner stores in a 1- and 3-mile Euclidean radius from participants’ homes, and Google Distance Matrix API determined distance from participants' homes to their self-reported preferred food store. Census tract level Modified Retail Food Environment Index (MRFEI) scores were obtained for each participant, providing a rating of the healthiness of their proximal retail food environment (lower score= less healthy). VV usage was objectively derived from sales data. Logistic regression tested each food environment variable as a predictor of VV usage, controlling for clustering by site. Results/Findings: Participants in the intervention group who had reliable GIS data were included (N=106). On average, participants traveled 4.37±5.41 miles to their preferred food store and the average number of supermarkets within 1-mile was 0.9±0.91 and 5.6±3.23 within 3-miles. Corner stores were more prevalent (4.68±4.22 within 1-mile; 30.05±19.09 within 3-miles), and the average MRFEI score was 9.81±6.10, indicating a dearth of healthy food establishments. Distance traveled to participant’s preferred food store did not predict VV usage nor did the presence of supermarkets or corner stores. However, the MRFEI did significantly predict VV usage (β =-0.73(0.036), p=0.042). Conclusions: Targeting participants in communities with a low MRFEI could be a promising strategy for food access interventions as a predictor of mobile market usage. Using 1- and 3-mile radius mapping may not capture the food environment in areas where people are actually purchasing food or predict intervention participation. More research is needed to understand how the local food environment and shopping location choices may affect intervention participation for programs targeting food access.
P3.01.38
SUGAR-SWEETENED BEVERAGE CONSUMPTION IN CANADA
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Objective Excess sugar-sweetened beverage (SSB) consumption is associated with poor dietary intake and has emerged as an important public health issue. The Canadian government has announced several policy measures to reduce SSB consumption. However, to date, there is a lack of data on SSB consumption in Canada to guide policies or to evaluate their impact. The purpose of this study is to characterize Canadians’ dietary intake of SSBs. Methods SSB consumption data were collected from the nationally representative 2004 Canadian Community Health Survey (CCHS; n=35,107). The analyses examined 10 individual SSB categories, as well as four different ways of classifying total SSB intake, included products containing ‘free sugars’. The analysis compared total intake, as well as the contribution of SSBs to total energy intake by sex, age, BMI category, food security status, and province. Analyses also examined trends in national SSB sales to determine correspondence with CCHS intake data. Results SSBs accounted for a substantial proportion of energy intake among Canadians, exceeding 10% of total energy intake for many consumers. SSB consumption was highest among youth and young adults. The average Canadian young adult reported consuming more than 600 ml of SSBs per day, with substantial levels of consumption even among young children. The total volume of SSBs sold in Canada has remained steady over the past 15 years, although the per capita sales have decreased due to increasing population. After accounting for population increases, per capita sales of SSBs in 2015 still remain near historic highs. Non-diet soft drink sales have decreased over the past 15 years. However, the decrease in non-diet soft drink has been offset by the emergence of newer beverage categories, including flavoured waters, energy drinks, flavoured dairy products. In 2015, these beverage categories accounted for approximately 10% of all SSB sales. Conclusions SSBs account for a significant proportion of energy intake in Canada, with very high levels among young people. Despite modest declines, per capita sales of SSBs remain near historic highs. The 2004 CCHS intake data will be updated to examine changes over time in SSB intake among Canadians using new 2015 CCHS nutrition data.

P3.01.39
PREDICTING THE IMPACT OF A SUGAR-SWEETENED BEVERAGE TAX ON HEALTH AND HEALTH COSTS IN CANADA: A MODELING STUDY
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Purpose Sugar sweetened beverages (SSBs) account for a substantial proportion of energy intake in Canada. Taxation has emerged as a primary policy measure for reducing SSB consumption at the population level. To date there are no estimates of the health care costs of SSB consumption in Canada or the potential impact of SSB taxes in Canada. The purpose of this study was to conduct a simulation of the health care costs associated with Canadians’ SSB consumption, and to model the potential impact of a SSB tax intervention on health outcomes and expenditures. Methods The Assessing Cost-Effectiveness model (ACE model) was used to simulate the 2015 Canadian adult population over their remaining lifetime. The ACE model is a Markov cohort macro-simulation with a proportional multi-state life table. The model compares the effects of the SSB tax intervention to a counter-factual scenario of no tax policy. Using estimated 2015 per capita SSB consumption, the model predicts changes in consumption due to the intervention and the impact of SSB intake on 19 diseases, mediated through body mass index (BMI). Health costs model inputs were derived from national estimates of health expenditures and inflated to 2015 values. The modelling will be completed in December 2016. Results The model will provide projections of disease morbidity, mortality, disease burden (i.e. disability adjusted life years, DALYs), prevalence of overweight and obesity, and health care costs attributable to Canadians’ consumption of SSBs. Results also include changes in these outcomes resulting from the SSB tax intervention. Tax revenue will be estimated. Conclusions The health care costs model will provide evidence directly applicable to SSB policy decisions in Canada. The model will also provide estimates that can be compared to similar models conducted for other countries, to facilitate international comparisons in SSB consumption, health effects, and health care costs.

P3.01.40
INCREASING ACCESS TO LOOSE EQUIPMENT IN PUBLIC PLAYGROUNDS USING PLAYBOXES: A PILOT STUDY.
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Purpose: Exposure to a broad variety of movement patterns can influence children’s movement competence and
physical activity (PA) over time. "Playboxes" full of loose equipment were designed by a community-based obesity prevention initiative (www.live5210.ca) to encourage PA on public playgrounds. Another community adopted and installed Playboxes in three public parks. Playboxes contained 44 pieces of loose equipment and were accessible via combination locks (combination obtained by phone). This study explored the use and short-term impact of the Playbox on children’s PA, parent/child engagement, equipment and movement skill use. Methods: Use was assessed using ‘phone call’ tracking and a sign-up /comment sheet in each box. A pre-post matched comparison design (n=6 parks) with 4-week follow-up was implemented. The System for Observation of Play and Leisure Activity in Youth (SOPLAY) was adapted to include movement skill, equipment and parent engagement observations and measured play for 4 days/park (3 randomized times/day). Descriptive analysis, correlations and Repeated Measures ANOVAs were conducted. Results: Playboxes were used by 332 people during the study period and were in use on 8/12 follow-up days. Park use was low overall. Comparison park use dropped significantly from 798 children at baseline to 256 at follow-up. At baseline, boys’ sedentary time was negatively associated with equipment pieces per child (r=-.470, p Conclusion: The results suggest that equipment provision relates to the types of motor skills children engage in at the park. Measurement issues, weather, park use patterns and the number of park observations limited conclusions about the impact of the Playbox on PA, movement skills and equipment use. More research is needed.

P3.01.41
NATIONAL REPRESENTATIVE STUDY ON OBJECTIVELY ASSESSED PHYSICAL ACTIVITY OF CZECH ADOLESCENTS IN HOME AND SCHOOL NEIGHBORHOOD ENVIRONMENTS

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Purpose: The aim of this study was to find out whether Czech adolescents meet the recommended level of physical activity on national level in different types of neighborhood environments. Further aim was to differentiate the level of physical activity in school and home neighborhood environments Methods: Standardized method using the IPEN adolescent protocol was used to get the subjective and objective measures on physical activity (PA) and neighborhood environments in eight Czech regional cities (Olomouc, Brno, České Budejovice, Hradec Králové, Plzeň, Ústí nad Labem, Liberec and Ostrava). The research was running from 2014 to 2016. Total of 1772 adolescent respondents participated in the study. Current results include only sample of 558 respondents who met the criteria for wearing the pedometer Yamax SW700 to get objective measures of physical activity and fulfilled the IPEN questionnaire in online system INDARES.com to get the neighborhood characteristics. Results: Only 18 % meet the recommended level of at least 12500 steps/day. They were more likely to meet the recommended level of steps during working days (average 9885 steps/day for boys and 8668 steps/day for girls) than during weekends (average 7797 steps/day for boys and 6868 steps/day for girls). The analyses of various neighborhood environments (school and home) were not available before the deadline of the abstract and will be included in final presentation. Conclusions: The research on the level of physical activity of adolescents in Czech Republic indicate its decrease. The Czech society is still not well prepared to deal with epidemics of obesity and unhealthy lifestyle in youths. It is possible that the various environments influence the level of physical activity in adolescents and the policy and school intervention programs should reflect these indicators in creation more physical activity friendly and safe environments.

P3.01.42
HOW TO PROMOTE SUSTAINABLE FOOD CHOICES: USING TRAFFIC LIGHT LABELS TO STIMULATE CONSUMPTION OF OPTIONS WITH THE BEST ENVIRONMENTAL FOOTPRINTS

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How to promote sustainable food choices: Using traffic light labels to stimulate consumption of options with the best environmental footprints Helena Slapø, Knut Ivar Karevold & Brian Wansink Objectives: To test how a simple, low-cost environmental food labeling intervention can stimulate consumers to purchase food products that are less harmful to the environment. Across the world, there is increasing awareness of how food production emits high levels of greenhouse gases and causes environmental damage. However, it is unclear how to influence consumers how to prefer more environmentally friendly diets and reduce consumption of foods with poor environmental footprints. This study investigates how environmental prompts and signals can stimulate changes in food choices. Methods: Three different labeling interventions were tested on three sets of dishes in a menu-based restaurant.
during 42 days: 1) green, yellow and red traffic lights with relative ranking of the CO2-emissions of three dishes, 2) green-labeling of the single most environmentally friendly option, and 3) red-labeling of the single least environmentally friendly option. During all intervention days, the number of guest who purchased the three sets of dishes was measured, and the intervention was split in two periods of equal length. Findings: 63% of baseline sales were red-labeled products (meat dishes) and 18% were green-labeled products (vegetarian dishes). Intervention 1) with three traffic-light labels significantly reduced sales of red-labeled dishes with 9% during the first period of the experiment, but not the second. Intervention 2) and 3) did not influence sales of the green and red labeled dishes. Conclusion: Framing of food choices as an environmental contribution might be inconsistent with consumers' beliefs and needs associated with selecting which meal to eat; taste, price, and convenience are probably more central influencers of food choices. The study also shows how the effects of food-signs can fade over time due to habituation. We suggest that traffic light labeling focused on clearer consumer benefits such as health can be used together with other choice-stimulating interventions such as priming, positioning, placing, promoting and portioning.

**P3.02 SIG: Early care and education / Ageing**

**P3.02.1**

A HEALTH BEHAVIOUR SCORE IS ASSOCIATED WITH HYPERTENSION AND OBESITY AMONG AUSTRALIAN ADULTS

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Purpose: Unhealthy lifestyle behaviours often cluster together and their combined effect may be detrimental to health. This study aimed to investigate associations between a Health Behaviour Score (HBS) and prevalence of hypertension and overweight/obesity in a nationally-representative sample of Australian adults. Methods: Adults (n=4609; 19-85 years) from the Australian Health Survey 2011-13 were included in the present cross-sectional analysis. A HBS (1-5) was derived based on whether individuals met recommendations for established risk factors (diet quality, smoking and physical activity) and emerging risk factors (sedentary time and sleep duration). Poisson regression estimated the prevalence of hypertension and overweight/obesity according to total HBS and HBS components. Results/findings: Thirteen percent, 26%, 31%, 23% and 7% of individuals met one (or zero), two, three, four and five HBS recommendations, respectively. Hypertension prevalence was 17%, 30%, 20%, and 31% lower in individuals meeting two, three, four and five of recommendations, respectively (P-trend=0.037). Prevalence of overweight/obesity was 0%, 4%, 12%, and 14% lower in individuals meeting two, three, four and five of recommendations, respectively (P-trend=0.002). Only diet quality and smoking were independently associated with hypertension and overweight/obesity prevalence, respectively. Conclusions: Prevalence of hypertension and overweight/obesity were lower in individuals who had above average diet quality, never smoked, were physically active, spent less time sedentary and got adequate sleep. The combined impact of meeting more recommendations was stronger than that of individual behaviours. Our findings support the need for a holistic approach to public health recommendations that accounts for the correlated nature of these behaviours.

**P3.02.2**

WASTE NOT, WANT NOT

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Objective: Identify food-related behavioral characteristics of elderly consumers in the home, and suggest solutions to mitigate possible negative outcomes connected to food safety, food waste and spoiled food. Methods: Qualitative study among retired elderly consumers in Norway. In-depth interviews (n=15, 67-84 years), in-home visits (n=3), idea iteration discussions and rapid prototyping (n=4). Results: The consumers expressed strong aversions against wasting food. Concerns were linked to large package sizes and portions, which were not compatible with small one-person households and reduced appetite of the respondents. Strategies for using leftovers to avoid waste were actively addressed by the respondents. The strategies included planning for dinners where leftovers were combined, portioning the food and storing it in the freezer if possible. "I put the cheese in the freezer, so I didn’t have to throw it away" (Female 69 y). In the fridge of one of the consumers, an open can of beer was elaborately covered in cling film. Observations indicate that food may be forgotten or stored inconveniently by elderly consumers. Thus, a product was designed through a user-centered approach, as a case study to investigate a best practice combining food preparation, storage and eating. This product could ease food handling and provide better control with leftovers. Conclusions: Food that is stored beyond use-by date, and specifically food that has...
been cooked and served once, or twice, and then stored in the fridge, constitutes a food safety hazard. This is particularly a problem among elderly consumers as they may have reduced sensory abilities, memory, or knowledge to know or detect obvious clues for when a product is no longer safe to eat. Knowing that elderly prefer not to waste food, providing implements that combine several food-related activities may be one solution to control food waste while at the same time reducing food safety hazards. The combination of consumer research, nutritional science and design thinking disciplines makes it possible to identify behavioral characteristics/patterns and address them in a user-centric way to support mitigation of several issues.

P3.02.3
INFLUENCE OF SENSORY INTEGRATION ON BEHAVIOR, COGNITION AND MOOD IN CHILDREN DIAGNOSED WITH AUTISM

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The treatment of autism is still poorly understood. The condition is typically characterized by developmental disruptions in social-emotional behavior and communication. Sensory integration can be used to improve children with ASD's difficulties in coping with every day activities. The purpose of this pilot study was to determine if a change in young children's behavior, cognition and mood arises after they experienced a sensory integration intervention program. The study was designed also to determine the time frame within which the effects of such a program can be observed, as well as which tests elicited the greatest improvement in sensory integration in children with ASD. Twelve children, 11 boys and one girl, between the ages of 2 to 7 years from different ethnic groups were initially recruited from special-needs schools in the Richards Bay area of northern KwaZulu-Natal, South Africa. The children were tested over a period of 4 weeks using the Sensory Processing Disorder Checklist for the baseline measurements and the Short Sensory Profile Checklist for the pre and post-results. Included in the checklist was signs of tactile, vestibular and proprioceptive dysfunction. A strong, positive correlation was observed between pre- and post-test results for behavior, mood, and cognition ($r = .761$). Movement sensitivity though, significantly increased in the post-test ($r$). Paired t-tests demonstrated no significant changes in baseline and post-test results for tactile sensitivity, taste/smell sensitivity, unresponsive sensations, auditory filtering, low/weak energy and visual/auditory sensitivity. The sensory integration intervention program therefore positively influenced an autistic child's movement sensitivity, which assists with mood control, cognition and overall behavior.

P3.02.4
WHAT MUMS THINK MATTERS: A MEDIATING MODEL OF MATERNAL PERCEPTIONS OF THE IMPACT OF SCREEN TIME ON PRESCHOOLERS' ACTUAL SCREEN TIME

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Objective Screen during the preschool years is detrimental to a number of well-being outcomes. The impact of parental perceptions on preschoolers' screen time is unknown. This paper explores maternal perceptions of the impact of screen time on their preschoolers' wellbeing and if an association between perceptions of the impacts of screen time on wellbeing with preschool children's screen time is mediated by perceptions of the appropriate amount of screen time. Methods In 2013-2014, mothers of 575 preschoolers (2-5 years) reported: their perceptions of the impact of screen time on 11 aspects of well-being (e.g. weight status, social competence, cognitive development; conceptually grouped to physical, social and cognitive well-being); their perceptions of the appropriate amount of screen time for preschoolers; and their child's actual screen time. Regression analyses investigated associations between perceptions of the impact of screen time and children's screen time. Mediation by perception of the appropriate amount of screen time was examined using indirect effects. Results More than 75% of mothers believed that screen time had an adverse effect on aspects of children's physical wellbeing; 37%-51% of mothers believed screen time was detrimental to aspects of children's cognitive wellbeing; and 36%-74% of mothers believed screen time was detrimental to aspects of children's social wellbeing. The majority (67%) believed that one hour per day or less was an appropriate amount of screen time for their child. Children spent 2.0 (95%CI 1.9, 2.2) hours per day in screen time. Mothers' perceptions of the impact of screen time on social and cognitive wellbeing had a significant indirect effect on children's actual screen time through mothers' perception of the appropriate amount of screen time for their child. Conclusions Findings illustrate the potential impact of parents' perceptions on their children's behaviors. Further exploration of the direction of association to determine causality, and interventions targeting parental perceptions, are warranted.
P3.02.5
EFFECTS ON DIETARY HABITS, SEDENTARY BEHAVIOR AND PHYSICAL ACTIVITY FROM A STRUCTURED LIFESTYLE INTERVENTION PROGRAM

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Purpose: According to current guidelines for prevention of cardiovascular lifestyle intervention form the basis as modifiable lifestyle habits, such as physical activity, diet and smoking are central in the etiology of cardiovascular diseases. However, prevention and lifestyle interventions are still neglected in clinical practice. The aim of the study was to introduce a structured intervention program in a clinical setting and to evaluate changes in lifestyle habits after six months and one year in individuals with increased cardiovascular risk. Methods: One hundred participants (64 females, 36 males; mean age 58±11) with increased cardiovascular risk were included. The program consisted of three individual visits to a nurse at baseline, six months, and after one year for a health check-up and a person-centered lifestyle counseling based on motivational technique. The objective was to strengthen the participant’s ability to identify and change unhealthy lifestyle habits. The program also comprised of five group education sessions covering; nicotine, alcohol, physical activity, eating habits, stress, sleeping habits, and behavioral change. The changes in lifestyle habits were evaluated from questionnaires. Results: Compared to baseline all lifestyle habits improved after one year. Exercise levels were significantly higher after one year (p for trend 0.012) and were accompanied with a significant decrease in time spent sedentary from 7.4 to 6.3 hours per day (p for trend 0.001). There was an overall improvement in eating-habits, with a significant increase in the intake of vegetables (p for trend 0.041), more healthy types of fats was chosen (p for trend 0.001) and more fiber rich bread was chosen (p for trend 0.003). The intake of sausages and bacon was reduced (p for trend 0.001). Conclusion: It was possible to introduce a structured lifestyle program in a clinical setting. The program resulted in significantly improved lifestyle habits over one year in individuals with increased cardiovascular risk who participated in the program.

P3.02.6
FUNDAMENTAL MOVEMENT SKILL INTERVENTIONS IN EARLY CHILDHOOD: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Purpose: Proficiency in fundamental movement skills (FMS) lays the foundation to be physically active and develop more complex motor skills. Improving these motor skills may provide enhanced opportunities for the development of a variety of perceptual, social, and cognitive skills. The objective of this systematic review and meta-analysis was to assess the effects of FMS intervention on FMS targeting healthy young children. Methods: Systematic searches in seven databases (CINAHL, Embase, MEDLINE, PsycINFO, PubMed, Scopus, WoS) from the year of their inception up to August 2015. Trials with healthy children (between) using random-effects models. Certainty in training effects was evaluated using GRADE. Results: Thirty trials (15 RCTs and 15 CT involving 6126 preschoolers (3.3-5.5 years)) revealed significant differences among groups in favor of the intervention group (INT) with small to large effects on overall FMS (SMDbetween 0. 94). Our certainty in the treatment estimates based on GRADE is very low. Conclusions: Although there is a relevant effectiveness of programs to improve FMS proficiency in healthy young children, they need to be interpreted with care as they are based on low quality evidence and immediate post-intervention effects without long-term follow-ups.

P3.02.7
A BIOCHEMICAL AND SOCIO-BEHAVIORAL ANALYSIS OF NUTRITIONAL HEALTH STATUS OF ELDERLY INDIAN DIABETICS

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Purpose: Prevalence of Diabetes mellitus has reached epidemic proportions globally of which developing Countries are likely to bear maximum burnt in 21st century. Along with this, elderly population is also gaining very sizable proportion and is going to increase in future. Aging causes physical, physiological, and psychological changes which leads to changed needs and require constant and regular health supervision and the diabetes a metabolic disorder in conjunction adds to various health problems. Elderly diabetics are also likely prone to frailty. Looking at their
specialized nutritional and psychosocial needs, the study of elderly diabetics was done to assess their nutritional status and psychosocial behavior. Method: For a case controlled study, 45 diabetic elderly (> age Results: Results analyzed in line with Indian lifestyle and dietary habits shows that 77% of diabetic elderly have high waist circumference and 63% are overweight or obese, 82% suffers from hypercholesterolemia quite higher to control group. 65% of Diabetics are mild to moderately frail. A positive correlation with HbA1c and depression score (r = -0.98) was found. Conclusions: Elderly Indian diabetics are having central obesity with higher cholesterol levels and are likely to be more prone to frailty and depression.

P3.02.8
INFLUENCES AND DETERMINANTS OF EATING BEHAVIOURS IN THREE TO FIVE YEAR OLDS IN EARLY EDUCATION AND CARE SETTINGS.
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Objective: In Australia, the majority of Australian children aged less than five years attend early childhood education and care (ECEC) services. The ECEC sector is regulated with assessable standards for all aspects of early childhood health and education, including nutrition. In consideration of nutrition, national guidelines support the notion that, by focusing on the acquisition of skills in early life, it may be possible to establish patterns of lifelong healthy eating behaviour. Whilst eating occasions are a feature of every child’s day when attending ECEC programs, little is known of how guidelines are interpreted, the impact on children’s eating behaviours or how mealtimes are perceived by children, caregivers and parents. The overarching research question identified for this research is: “What are the environmental, cultural and carer influences on children’s eating behaviours?” Methods: Guided by a Constructivist Grounded Theory approach to data collection and analysis in two centres, four qualitative studies were undertaken to collect a variety of textual, observational and interview data to describe eating occasions in ECEC services; explore interactions between educators and children at mealtimes; and identify perspectives of children, parents and educators. The research occurred by examining policies and procedures in two ECEC services, direct observation and interviews with children, educators and parents. Results: Emergent themes identified the caregiver, educator and director to have roles for what was eaten in a centre where food was produced in a kitchen. Children had limited input in the preparation of food, but were able to choose what or how much to eat. The educator had a central role during mealtimes, with the educator either eating with the children and/or providing supervision for children. Mealtime practices were varied at the two centres included in this research. Conclusions: This research will contribute to the limited body of research regarding mealtime practices and acquisition of children’s healthy eating behaviours in ECEC services in Australia and internationally, and provide perspectives to gauge the practice outcomes associated with the nation-wide implementation of assessable guidelines for practice and curriculum.

P3.02.9
PROMOTING HEALTH LITERACY IN OLDER ADULTS – PARTICIPATORY INTERVENTION DEVELOPMENT WITHIN THE STUDY “GEWINN”
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Purpose Especially older adults have a high risk of a low health literacy level. The development of health literacy interventions, primarily for vulnerable groups, is still at an early stage. The study (GeWinn) aims at strengthening health literacy through the promotion of self-management competencies for chronic diseases, community participation and media literacy in people aged 60 years and above through a participatory approach. Methods In a total of nine guided focus group discussions the contents of the intervention were discussed and planned. The aim was to reveal resources and barriers of older adults concerning the process of accessing, understanding, assessing and applying health information and to identify relevant areas in the fields of well-being and health promotion as well as strategies to deal with chronic diseases. A total of 83 people aged 56 to 88 years participated in the focus group discussions. One third were men and three quarters had chronic diseases. The participants were recruited by practice partners in the participating communities. The answers of the participants were summarized and clustered. Findings The evaluation of the focus group discussions revealed that older people have numerous health literacy problems. They do not have adequate strategies to access trustworthy sources of information. Furthermore, older adults experience the assessing of information as particularly difficult. It also became evident that social contacts are the most important resources for the participants. They contribute to a healthy well-being and give support in handling chronic diseases. The following themes could be identified as relevant for the intervention: physical
activity in everyday life, eating a balanced diet, strategies for well-being and relaxation, generic competencies to handle chronic diseases, how to get involved and do fulfilling work, how to find and assess (health) information, i.a. with the help of digital media. Conclusions The participatory proceeding is an important process for an intervention that is adjusted to the needs of the target group. The close collaboration with the practice partners in the communities ensured the successful implementation of the focus group discussions and an effective recruitment of older adults.

P3.02.10
CHILD CARE CENTERS PROMOTING PHYSICAL ACTIVITY: DEVELOPMENT OF A QUALITY CERTIFICATION PROCESS IN BAVARIA
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Purpose The research project QueB aims at developing an innovative quality certification process for physical activity promotion in childcare centers that uses a participatory approach and addresses organizational development. It is part of the joint research project CAPITAL4HEALTH – Capabilities for active lifestyles. Methods In the first project phase round table discussions with educational staff, childcare consultants, training providers, sponsors of childcare centers and researchers were conducted in order to identify their needs and priorities and consider them in the development of supporting measures in the certification process. Six moderated discussions took place in two model regions in Bavaria. Results Support is needed for the setting of goals and the development of a clear vision of what can and should be changed in the childcare center. The educational staff also asks for self-assessment tools and help in finding qualified trainings based on their needs. They consider the involvement of parents to be crucial for the intervention’s success. Conclusions Based on the results of the round tables supportive measures and tools have been developed, e.g. a customized coaching concept and an app-based self-assessment tool targeting the childcare centers’ physical activity environment and routines. These tools are used in the certification process for the purpose of encouraging the educational staff to overthink the actual conditions and initiate changes.

P3.02.11
EFFECT OF TRAINING WITH WEIGHT AND PELVIC FLOOR MUSCLES ON URINARY LOSS AND QUALITY OF LIFE OF OLDER WOMEN WITH URINARY INCONTINENCE
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Objective: To verify the effect of weight training (WT) associated with the training of pelvic floor muscles (TPFM) on urinary loss and the impact on the quality of life of older women with urinary incontinence (UI). Methods: Two-arm, parallel, randomized controlled trial without intention-to-treat analysis. Randomization was performed using computer-generated random numbers in three blocks of 10 older women. Twenty-six older women with stress urinary incontinence. The Intervention Group (IG) received training with moderate intensity weights associated with TPFM, while the Control Group (CG) received only TPFM. The intervention was performed twice a week for twelve weeks. The International Consultation on Incontinence Questionnaire - Short Form was used as the main measure. UI healing was determined when the score totaled zero. The cure rate was found at four weeks out of twelve weeks and after one month of treatment completion. There were also activities of urinary loss, use and exchanges of daily protection and muscle strength of the muscular groups exercised in the WT. Results: Cure rates were significantly higher in IG after 4 weeks (58.3%) and at the end of treatment (75.0%) compared to the CG (14.8% and 35.7%, respectively). The relative risk indicated that the possibility of cure in the first four weeks of intervention was 4.1 times higher in the IG (RR = 4.1, 95% CG 1.08-16.06). There was improvement of muscle strength of all muscle groups only for IG. Between the pre- and post-test, both IG (10.0 and 2.0, respectively) and CG (13.46 and 3.7, respectively) showed an improvement in the frequency and amount of urinary loss and, consequently, improved the quality of life of the older participants. Conclusions: The complementarity of WT and TPFM provided early improvement in IU and quality of life and increased muscle strength in the older women.

P3.02.12
ANALYSIS OF RURAL CHILD DAYCARE CENTERS ADHERENCE TO RECOMMENDED DIETARY INTAKE
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Introduction: Childhood obesity is a complex problem and researchers have conducted numerous studies towards its elimination. Still, reversing this issue continues to elude us and the occurrence among children remains high. Studies have suggested a higher prevalence of overweight or obese children exist in rural America. Nutritional intake can play a major role in children becoming overweight or obese. Objective: In that regard, this study was conducted to examine the nutritional quality of meals served in daycare centers located in a rural county. Method: Using a convenient sample of 10 rural located childcare centers, a cross-sectional descriptive study design was implemented. The nutritional adequacy of breakfast and lunch menus and the types of foods offered were assessed against the national standards indicated by Child and Adult Care Food Program (CACFP) for daycare centers. Three weeks daily menus were collected and on-site meal-time observation ensued in selected facilities. Menus were analyzed for nutrient content using Nutritionist Pro Software (Axxya Systems, Stafford, Texas) and data analyzed using the Statistical Package for the Social Sciences (SPSS). Results: Nutrition analysis indicated the nutrition analyses of the daily menus differed from the standards indicated by CACFP. The average daily consumption of the major nutrients (protein, carbohydrates, fat) were in excess of the recommended amounts for more than 75% of the days counted. The average sodium levels was significantly (p = .000) higher in most facilities, while vitamin D, calcium, and fiber were significantly (p = .000) lower than the recommended daily intake in all the centers for the period measured. Conclusion: Researchers are concerned with the overconsumption of the major calorie-contributing nutrients in the diet; however these results show focus should also be given to the inadequate amounts of vitamin D, calcium, and fiber, and the high amounts of sodium being consumed by this young population.

P3.02.13
AN INTERVENTION TO IMPROVE NUTRITION GUIDELINE COMPLIANCE IN CHILDCARE SERVICES

Seward K1,2, Wolfenden L1,2,3,4, Finch M1,2,3,4, Wiggers J1,2,3,4, Wyse R1,2,3,4, Jones J1,2,3,4, Gillham K1,2,3, Yoong S1,2,3,4. 1Hunter New England Population Health, Wallsend, New South Wales; 2School of Medicine and Public Health, University of Newcastle, Callaghan, New South Wales; 3Hunter Medical Research Institute, Newcastle, New South Wales; 4Priority Research Centre for Health Behaviour, The University of Newcastle, Newcastle, New South Wales. Objective: To assess the effectiveness of a theory informed multi-strategy childcare-based intervention on improving compliance with nutrition guidelines in long day care services; and the impact of improved nutrition guideline compliance on child dietary intake while in care. Methods: This study was conducted in random sample of 52 long day care services in the Hunter Region of NSW. Services were randomly allocated to a 6-month guideline implementation intervention. The intervention was designed utilizing the theoretical domains framework and consisted of numerous intervention strategies including securing executive support, provision of staff training, provision of resources, audit and feedback and ongoing support. To assess the effectiveness of the intervention, comprehensive two week menu reviews were completed by a dietitian, blinded to group allocation, at baseline and post-intervention (6 months post baseline). Child dietary intake was assessed via aggregate plate waste measures and educator completed child usual food intake questionnaires. Results: The trial had a significant increase in childcare service menu compliance with 3 of the 5 Australian Guide to Healthy Eating food groups (Fruit (p =.01), Carbohydrates (p = .001), and Fruits & Vegetables (p = .04)) and a significant decrease in the amount of sodium being consumed (p = .000). Conclusion: Researchers are concerned with the overconsumption of the major calorie-contributing nutrients in the diet; however these results show focus should also be given to the inadequate amounts of vitamin D, calcium, and fiber, and the high amounts of sodium being consumed by this young population.

P3.02.14
MEASURING IMPLEMENTATION BEHAVIOUR OF MENU GUIDELINES IN THE CHILDCARE SETTING: CONFIRMATORY FACTOR ANALYSIS OF A THEORETICAL DOMAINS FRAMEWORK QUESTIONNAIRE (TDFQ).

Seward K1,2,3, Wolfenden L1,2,3,4, Wiggers J1,2,3,4, Finch M1,2,3, Wyse R1,2,3,4, Oldmeadow C3, Presseau J4,5, Clinton-Micharg T1,2,3,4, Yoong S1,2,3,4. 1Hunter New England Population Health, Wallsend, New South Wales; 2School of Medicine and Public Health, University of Newcastle, School of Medicine and Public Health, University of Newcastle; 3Priority Research Centre for Health Behaviour, the University of Newcastle, Newcastle, New South Wales; 4Hunter Medical Research Institute, Newcastle, New South Wales; 5Ottawa Hospital Research Institute, Ottawa, Ontario; 6School of Epidemiology, Public Health and Preventive Medicine, University of Ottawa, Ottawa, Ontario. Objective: The large number of available theories and frameworks examining constructs of behaviour change represents a significant impediment to the application of theory in implementation research. The Theoretical
Domains Framework (TDF) is an integrative framework that combines a multitude of behaviour change theories, allowing for comprehensive assessment and explanation of barriers and enablers to provider behaviour change. This aim of this study is to develop and psychometrically assess a scale measuring each domain of the TDF for use in assessing the implementation of dietary guidelines within the childcare setting. Methods: The research team developed a theoretical domain framework questionnaire (TDFQ) consisting of 14 domains and 75 items. The TDFQ was developed by adapting two previously published questionnaires that had shown to have sound construct validity and internal consistency in the health-care setting. A random sample of long day care service cooks, located in New South Wales, was selected. The survey was administered via a computer assisted telephone interview (CATI) over a 3 month period. Confirmatory factor analysis (CFA) was undertaken to assess the reliability, discriminant validity and goodness of fit of the 14-domain TDFQ measure. Results: Of the 342 eligible service cooks 202 completed the CATI. For the CFA, five iterative processes of adjustment were undertaken where 14 items were removed. For the final measure: the Chi-Square goodness of fit statistic was 3447.19; the Standardized Root Mean Square Residual (SRMR) was 0.070; the Root Mean Square Error of Approximation (RMSEA) was 0.072; and the Comparative Fit Index (CFI) had a value of 0.78. While only one of the three indices support goodness of fit of the measurement model tested, a 14-domain model with 61 items showed good discriminant validity and internally consistent items. Conclusions: While previous attempts to develop valid measures to assess TDF domains exist, there has been no previous validation of such measures in non-health care settings. Such measures are of particular relevance to public health researchers who wish to apply the TDF to support the implementation of evidence-based practices in these settings. Future research should assess the psychometric properties of the TDFQ in other community-based settings.

P3.02.15
SEDENTARY TIME AND HEALTH OUTCOMES IN OLDER ADULTS: AN UPDATE OF THE EVIDENCE
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Purpose. Sedentary time has emerged as a risk factor for health. Adults aged over 60 years spend the most time sedentary, and this increases with age. A previous systematic review found that sedentary time was positively associated with all-cause mortality, metabolic syndrome, and overweight/obesity in older adults. There has been a recent, rapid increase in the body of evidence examining associations between health outcomes and sedentary time in older adults. This review aimed to systematically update the evidence for associations between sedentary time and multiple health outcomes in adults aged over 60 years. Methods. This systematic review was conducted according to PRISMA guidelines. Medline, PubMed, CINAHL, and Scopus were searched from 2013 for observational studies investigating associations between sedentary time and health outcomes in older adults. Two reviewers independently assessed citations against pre-defined eligibility criteria, and a third independent reviewer was used to resolve disagreements. Experts were contacted to identify further potential studies. Included studies were appraised for risk of methodological bias by two independent reviewers. Associations between sedentary time and health outcomes were qualitatively synthesised. Results. Thirty studies were included in the review, twelve (40%) of which provided evidence with low to very low risk of methodological bias. Higher sedentary time was associated with decreased physical function (n=7 studies) and kidney function (n=2), and increased rate of overweight/obesity (n=5), all-cause mortality (n=2), cardiovascular disease risk (n=5), metabolic syndrome (n=2) and type 2 diabetes (n=4). There were conflicting findings in studies examining associations between sedentary time and cognitive function (n=2), and mental health (n=4). There was no association between sedentary time and brain atrophy in one study. Conclusions. This updated systematic review supports a relationship between sedentary time and physical function, kidney function, overweight/obesity, mortality, cardiovascular disease risk, metabolic syndrome and type 2 diabetes in older adults. There is insufficient evidence to draw conclusions for cognitive function and mental health. This review provides important information which may inform guidelines for sedentary time in older adults.

P3.02.16
8-YEAR TRENDS IN PHYSICAL ACTIVITY, NUTRITION, TV VIEWING TIME, SMOKING AND ALCOHOL IN OLDER COMPARED TO YOUNGER QUEENSLAND ADULTS
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Objective: Lifestyle behaviours significantly contribute to high levels of chronic disease in older adults. The aims of the study were to compare the prevalence and the prevalence trends of health behaviours (physical activity, fruit
and vegetable consumption, fast food consumption, TV viewing, smoking and alcohol consumption) and a summary health behaviour index in older (65+ years) compared to younger adults (18-65 years). Methods: The self-report outcomes were assessed through the Queensland Social Survey annually between 2007-2014 (n=12,552). Regression analyses were conducted to compare the proportion of older compared to younger adults engaging in health behaviours in all years combined and examine trends in the proportion of younger and older adults engaging in health behaviours over time. Results: Older adults were more likely to meet recommended intakes of fruit and vegetables (OR=1.43, 95%CI=1.23-1.67), not consume fast food (OR=2.54, 95%CI=2.25-2.86) and be non-smokers (OR=3.02, 95%CI=2.53-3.60) in comparison to younger adults. Conversely, older adults were less likely to meet the physical activity recommendations (OR=0.86, 95%CI=0.78-0.95) and watch less than 14 hours of TV per week (OR=0.65, 95%CI=0.58-0.74). Overall, older adults were more likely to report engaging in 3, or at least 4 out of 5 healthy behaviours. A decline in the prevalence of older adults engaging in healthy behaviour was observed for physical activity (45% to 36%; OR=0.97, 95%CI=0.95-0.98), TV viewing time (38% to 33%; OR=0.96, 95%CI=0.94-0.99), fruit and vegetable intake (19% to 11%; OR=0.90, 95%CI=0.84-0.96) and fast food consumption (76% to 70%; OR=0.94, 95%CI=0.88-0.99). A decline in the prevalence of younger adults meeting the physical activity recommendations (49% to 47%; OR=0.94, 95%CI=0.91-0.97) and engaging in less than 14 hours of TV viewing per week (62% to 55%; OR=0.94, 95%CI=0.90-0.90) was also observed. Conclusions: Although older adults meet more health behaviours than younger adults, the decreasing prevalence of healthy physical activity, TV viewing and nutrition behaviours in this age group needs to be addressed. The decreasing prevalence of healthy physical activity and TV viewing behaviours in younger adults also requires public health action.

P3.02.17
FEASIBILITY OF USING GPS, SKIN-TAPE ACCELEROMETERS AND VERITAS IN A COMMUNITY-BASED PARTICIPATORY INTERVENTION STUDY ON OLDER ADULTS
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OBJECTIVE: Objectively evaluating the effect of changes in the built environment on behavior is challenging. As part of a multicomponent built environment intervention study among older adults living in a deprived neighborhood of Copenhagen, we wanted to assess the feasibility of using GPS, skin-taped accelerometers and VERITAS (a digital map based survey) to objectively evaluate the effects. METHODS: Older adults (51-90 years old) were recruited from two housing areas for elderly through letters, local stakeholders and existing social activities. Participants could choose if they wanted to participate in all three methods or only some of them. Those who agreed on participating in everything, completed a VERITAS questionnaire, wore two skin-taped Axivity AX3 accelerometers and a Qstarz GPS device for seven consecutive days. We assessed feasibility of the three methods by evaluating recruitment and compliance, as well as feedback from participants. RESULTS: Recruitment was difficult and time-consuming, as none responded to letters in their mail. 34 older adults (10%) agreed to participate in the study and completed the VERITAS questionnaire. Of those, 12 wore both the GPS and accelerometers, 11 only wore the GPS device, and 1 only wore the skin-taped accelerometers. Almost half of the participants who wore the accelerometers took them off early due to irritation or itching, and over 25% of those with a GPS device forgot to wear it. Participants not wearing the devices, found it weird to have something taped to their skin, or would not take the responsibility of remembering to charge the GPS. Attaching the devices to the participant and completing the VERITAS questionnaire, took between 1 – 2 hours in participant’s homes. Remembering street names and drawing specific routes in VERITAS was difficult for a few participants, but most of them found the visit to be an enjoyable experience. CONCLUSIONS: Our findings suggest that using the combination of these three methods on older adults living in a socially deprived community on a large scale is not feasible. Recruitment was very difficult and the data quality from the accelerometers and GPS devices was low. Using the VERITAS questionnaire with assistance, does seem feasible.

P3.02.18
IMPACTS OF A NEW GREENWAY ON OLDER ADULT MOBILITY: A MIXED-METHODS ANALYSIS IN VANCOUVER, BC
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Objective: Supportive built environments can promote walking, active forms of transportation, and increased physical activity, yet little work leverages construction of new infrastructure to study this relationship. We address
the gap in longitudinal data by using a natural experiment study to assess change in physical activity among older adults after the 2013 development of the Comox Greenway, a 2km corridor in the West End of Vancouver. Methods: We acquired GPS and accelerometry data from older adult residents (≥60 years) in the Active Streets, Active People study (n=121, mean age 69.9 ± 6.6 years at baseline). We used date and time stamps to combine GPS and accelerometry data before importing it into Geographic Information System software for analysis. We used fixed-effects linear regression models to measure within-person changes in transportation-related physical activity from 2012 to 2014. Our analysis on older adult physical activity change focused on two outcomes: 1) change in the number of outdoor trips per week (trips) and 2) change in total minutes of trip-based physical activity per week (transportation-related physical activity). We modeled our two outcomes among three geographic areas: all travel, travel along the Greenway, and travel along a parallel comparison corridor. Results: This group of older adults was highly active, accruing a mean of 287 (±205) minutes per week of transportation-related physical activity in 2012 and a mean of 253 (±174) minutes per week in 2014. Our regression models found no significant change in total transportation-related physical activity in the three geographic areas. In particular, we did not see any significant decline in physical activity, which may be expected given age-related changes. Conclusion: Our analysis found that the development of a Greenway in a highly walkable neighbourhood did not demonstrate a significant change in physical activity in a group of community-dwelling older adult participants. There may be a lag between infrastructure and adaptive behavioural changes. Alternatively, the setting may already be very supportive for walking, there may be other impacts aside from physical activity (e.g., travel behaviour, social connections), and it is possible that other population groups are impacted.

P3.02.19
EXAMINING KINDERGARTEN READINESS AND LEVEL OF PHYSICAL ACTIVITY WITH THE INTRODUCTION OF AN ONLINE PHYSICAL LITERACY INTERVENTION IN THE EARLY CHILDCARE SETTING.

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Purpose: The preschool age period (3-5 yr) is considered important in many developmental areas: formal school preparation (kindergarten readiness), health promoting physical activity participation, and fundamental movement skill (FMS) acquisition, a component of physical literacy. Real or perceived time management conflicts may arise when attempting to meet the range of learning outcomes. Moreover, early childhood educators (ECEs) receive limited training in physical literacy. The purpose of this investigation was to determine if kindergarten readiness and moderate-to-vigorous physical activity (MVPA) levels are negatively impacted by a physical literacy intervention within a childcare setting. Methods: Children aged 3-5 yr (n = 17 boys, n = 18 girls) and ECEs (n = 11) from four childcare centres were recruited, and assigned to an intervention (n = 2) or control (n = 2) group. ECEs from intervention centres participated in a pilot 16-week online training program in physical literacy. Data were collected pre- and post-intervention and included measures of FMS proficiency (Test of Gross Motor Development 2), MVPA (Actigraph wGT3X-BT accelerometers), and kindergarten readiness (Head Toes Knees Shoulders Task). Results: Gross motor quotient scores increased for children attending intervention centres from 96.5 ± 10.4 to 99.3 ± 8.2, and decreased for children attending control centres from 95.9 ± 8.4 to 93.8 ± 8.2. This difference was not significant (p=0.18); however, a moderate effect size was demonstrated between groups (ƞ²=0.06). Percentage of time in MVPA increased significantly for both the intervention group from 12.6 ± 4.5% to 13.7 ± 4.6%, p=0.04 and the control group from 12.3 ± 5.5% to 14.1 ± 1.9%, p=0.00. Kindergarten readiness scores trended towards improvement for both groups from 16.0 ± 15.1 to 23.2 ± 14.0, p=0.69 for the intervention group and from 17.3 ± 14.4 to 22.8 ± 13.7, p=0.10 for the control group. Conclusion: The findings show that the introduction of a physical literacy intervention, focusing on the development of FMS in early childhood, did not impact negatively the children's kindergarten readiness development or MVPA participation. This suggests that an online training program in physical literacy is feasible for implementation in the early childcare setting.

P3.02.20
PARENT PERCEPTIONS OF MOBILE DEVICE USE AMONG YOUNG CHILDREN IN RURAL PRESCHOOL CENTERS

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Purpose: To explore the feasibility of using mobile devices, such as smartphones and tablets, and applications (apps) with limited resource audiences as a mode of delivery for nutrition and physical activity education for parents and young children in rural communities. Specific aims focused on understanding: 1) the types of electronic devices young children are using; 2) the frequency and patterns of young children’s technology use; and 3) parent beliefs and comfort around preschoolers' use of electronics. Methods: This was a descriptive, cross-sectional study targeting rural, low-income families. The survey, which consisted of 18 multi-part questions, was distributed to families at five Head Start/preschool centers in Colorado. Descriptive statistics and sum scores for frequency of use and comfort were calculated. Chi square tests, logistic regression, and ANOVA were used to assess differences by demographics, beliefs, and frequency and comfort with technology (SPSS v23). Results/findings: In total, 192 surveys were returned (28.5% response rate). Most children (92%) used a smartphone or tablet at some frequency and they most commonly used technology to play games to learn, play games for fun or watch movies, videos or shows. Many children (89%) used devices on their own with some frequency and most parents (90%) had downloaded apps specifically for their child. Hispanic parents were less likely to co-use technology because they enjoy it (p=0.02) or view it as "together time" (p=0.04), but were more likely to be concerned with inappropriate content (p=0.01). Higher educated parents were more likely to answer that there were better ways for their child to play (p Conclusions: Results have implication for researchers and practitioners as relatively high technology use among study participants indicate it is feasible to use mobile devices as a mode of delivery for nutrition and physical activity education in low income, minority audiences. Ensuring parent comfort with technology, encouraging co-use of electronics and culturally tailoring messages for Hispanic parents will all be important considerations.

P3.02.21
A RANDOMISED CONTROLLED TRIAL OF A WEB-BASED MENU PLANNING, SYSTEMS INTERVENTION TO IMPROVE CHILDCARE SERVICE ADHERENCE TO DIETARY GUIDELINES
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Objectives: Poor nutrition is a major contributor to the burden of disease internationally. The implementation of evidence-based dietary guidelines in childcare settings is recommended to improve child public health nutrition, and avert social, health and economic harms to the community. However, research consistently indicates that foods provided in childcare services are not consistent with dietary guidelines. This trial will assess the effectiveness of a web-based menu planning, systems intervention in increasing the mean number of food groups included on childcare service menus that comply with best practice guidelines regarding food provision to children in care. The intervention approach is novel and challenges conventional, ineffective and costly methods of providing ongoing support to childcare services to implement dietary guidelines. Methods: A parallel group randomised controlled trial will be undertaken with approximately 56 Australian childcare services that provide food to children. Childcare services will be randomised to receive a 12-month intervention or usual care. The experimental group will receive access to a web-based menu planning and decision support tool, and online resources linked to a computer program already utilised within services. To support uptake of the web program, services will be provided with training and follow up support. The primary outcome of the trial will be the number of food groups included on the menu that meet guideline recommendations within a week-long menu cycle at 12-month follow up. A nested evaluation of child dietary intake in care and child body mass index will be undertaken in 35 randomly selected childcare services and up to 420 children aged approximately 3-6 years. Results: Baseline service menu compliance to guidelines and service engagement with the web-based menu planning program will be presented. Conclusions: The trial will provide high quality evidence of the impact of a web-based menu planning, systems intervention in facilitating the implementation of dietary guidelines by childcare services. Given increasing use and reliance on web-based information technology to guide activities of community organisations, evaluation of this technology to support the implementation of guidelines is timely, will inform future interventions in this setting, and has the potential to improve child public health nutrition.

P3.02.22
THEORY INFORMED ASSESSMENT OF BARRIERS AND ENABLERS TO IMPLEMENTATION OF DIETARY GUIDELINES IN CHILDCARE CENTRES
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Objective: Implementation of dietary guidelines in childcare centres is recommended to improve children’s diets and prevent the development of chronic disease. However, little is known about the factors that may impede or promote guideline implementation in this setting. This study aimed to apply the Theoretical Domains Framework (TDF) to identify the following among childcare centre cooks: i) perceived barriers and enablers to dietary guideline implementation; and ii) barriers and enablers associated with ‘higher’ implementation of dietary guidelines.

Methods: A telephone interview was undertaken with a randomly selected sample of childcare centres in one Australian state. Childcare centre cooks responsible for menu planning completed a 61-item adapted measure assessing fourteen TDF constructs, on a seven-point Likert scale ranging from "strongly disagree" to "strongly agree". Higher (≥6) mean scores are indicative of potential enablers, with lower (≤4) scores indicative of potential barriers. The questionnaire and 70 centres provided a copy of their menu. Cooks scored the lowest on domains of ‘reinforcement’ (mean 5.85 out of 7; sd 0.87), and ‘goals’ (mean 5.89; sd 0.91), indicating these domains may be potential barriers to guideline implementation. ‘Beliefs about consequences’ (mean 6.51; sd 0.57) and ‘social/professional role and identity’ (mean 6.50; sd 0.49) were scored highest by cooks, signifying these domains may be potential enablers to guideline implementation. Despite perceived barriers and enablers, only the ‘skills’ domain was positively associated with higher implementation of dietary guidelines based on menu reviews (p=0.00). Conclusions: This study highlights behavioural domains including ‘reinforcement’ and ‘goals’ are potential barriers that could be targeted in future interventions to improve dietary guideline implementation in this setting. While cooks perceive ‘social/professional role and identity’ and ‘beliefs about consequences’ to be enablers, only ‘skills’ was significantly associated with higher implementation of dietary guidelines. Interventions should address both perceived and actual barriers and enablers to implementation to improve childcare service menu compliance with dietary guidelines, with the potential to improve child dietary intake.

P3.02.23
BUILDING THE CAPACITY OF AUSTRALIAN CHILD CARE CENTRES TO SUPPORT HEALTHY EATING
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Purpose: Significant societal changes in Australian mothers workforce participation over the last two decades has resulted in more than half (54%) of children aged 1-4 years receiving formal child care for a medium of at least 18 hours per week. The home environment and parents have been considered the primary influence on children’s developing food preferences and dietary intake patterns, but now the child care setting is increasingly influential. The observation that children aged 2-5 are starting to learn and make their own decisions while under the guidance of child care staff in the child care environment makes this setting ideal for early intervention to promote healthy food preferences and dietary intake patterns. For more than a decade, a successful multi-strategy nutrition incentive scheme was implemented in South Australia to strengthen nutrition practices in long day child care centers, with 88% of centers participating (n=313/355). At the end of the grant-funded initiative the program was assessed to identify the capacity building strategies used to improve the ability of child care staff, centers and statewide systems to achieve the program’s goals. Method: An analysis of the capacity–building strategies used was undertaken against a set of capacity determinants derived from two similar conceptual frameworks to build capacity to improve health used in Australia Results: The program utilized a number of capacity-building strategies. In partnership with centres and the sector, the intervention supported centres to develop and enact relevant policies, procedures and practices. Within the centres, staff’s capacity and competency was enhanced through training, skill development, management support, professional development and professional support. Wider supportive system changes resulted such as the development of state-wide healthy eating policy criteria and statewide training. Conclusion: This multi-strategy program built the capacity of individuals, centers and the sector to strengthen nutrition practices as both a process and as an outcome. As a result of this study, a capacity-building framework is suggested for use with other interventions. Evidence for the long-term effectiveness of building capacity will be to measure the sustainability of this initiative following its completion after more than a decade of implementation.

P3.02.24
LEARNING TO SWIM - LEARNING OUTCOMES AND SELF-PERCEIVED SWIMMING PROFICIENCY
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Objective: The health and well-being benefits of physical activity for children are well established. Furthermore, recent research has shown that physical activity is associated with improved learning and cognitive function. In
DENMARK SWIMMING IS AN INTEGRATED PART OF PHYSICAL EDUCATION, MAKING SCHOOL SWIMMING AN OBVIOUS OPPORTUNITY FOR INCREASING CHILDREN'S PHYSICAL ACTIVITY LEVEL, MOTIVATION AND SELF-EFFICACY FOR BEING ACTIVE. HOWEVER, THE TRADITIONAL DANISH SCHOOL SWIMMING FORMAT IS NO LONGER ECONOMICAL Viable AND NEW APPROACHES TO AQUATIC LEARNING ARE NEEDED. THEREFORE, ONE OF THE PURPOSES OF THE RESEARCH PROJECT LEARNING TO SWIM, LAUNCHED BY THE DANISH SWIMMING FEDERATION AND THE DANISH FOUNDATION TRYGFONDEN, IS TO SUPPORT DANISH MUNICIPALITIES IN LAUNCHING EVIDENCE-INFORMED INITIATIVES IN RELATION TO SCHOOL SWIMMING. METHODS IN THE PERIOD OF 2015-2017 APPROXIMATELY 2200 DANISH CHILDREN (5-12 Y) FROM 16 MUNICIPALITIES WILL PARTICIPATE IN THE PROJECT. THE STARTING POINT IS ACTION RESEARCH. TWO TESTS ARE CONDUCTED MEASURING CHILDREN'S LEARNING OUTCOMES GAINED FROM SWIMMING LESSONS AND SELF-PERCEIVED SWIMMING PROFICIENCY. A LEARNING RATING SCALE (LRS) IS USED AS A MEASURE FOR CHILDREN'S LEARNING OUTCOMES, WHEREAS SELF-PERCEIVED SWIMMING PROFICIENCY IS USED AS A MARKER FOR THE ASSOCIATION BETWEEN LEARNING OUTCOMES, MOTIVATION AND SELF-EFFICACY. STATISTICAL ANALYSES WILL BE MADE TO INVESTIGATE THE IMPACT OF VARIOUS SCHOOL SWIMMING MODELS ON GENERAL LEARNING OUTCOMES AND SELF-PERCEIVED SWIMMING PROFICIENCY. RESULTS FIVE DIFFERENT AND INNOVATIVE SCHOOL SWIMMING MODELS WAS DEVELOPED AND TESTED. THE MODELS WERE DESIGNED VIA COLLABORATION BETWEEN RESEARCHERS, END USERS AND OTHER RELEVANT STAKEHOLDERS. THIS PROCESS WAS GUIDED BY TWO PRELIMINARY STUDIES 1) A SYSTEMATIC LITERATURE REVIEW OF THE CURRENT KNOWLEDGE ABOUT HOW AND WHEN CHILDREN MOST EFFICIENTLY LEARN TO SWIM AND 2) A MAPPING OF CHALLENGES AND OPPORTUNITIES ASSOCIATED WITH SWIMMING LESSONS IN DANISH PUBLIC SCHOOLS. THE FIVE MODELS ARE: OPEN WATER, THE PARTNERSHIP MODEL, TECHNO SWIM, MULTI SWIM AND EXPLORATORIUM. CONCLUSIONS SCHOOL SWIMMING IS ONE WAY TO INCREASE CHILDREN'S PHYSICAL ACTIVITY LEVEL. NEW WAYS OF ORGANIZING SCHOOL SWIMMING MAY BE A PATH TO ENHANCE THE QUALITY OF SWIMMING EDUCATION FOR CHILDREN AND YOUTH, WHICH PROBABLY WILL LEAD TO INCREASED LEARNING AND MOTOR DEVELOPMENT OUTCOMES AND HOPEFULLY MOTIVATE MORE CHILDREN TO BECOME PHYSICAL ACTIVE.

P3.02.25
ENVIRONMENTAL CORRELATES OF PHYSICAL ACTIVITY FOR CHILDREN IN FAMILY CHILD CARE HOMES
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Purpose: Family child care homes (FCCHs) serve about 1.5 million U.S. children and are emerging as a key setting to foster healthy physical activity (PA) and screen time (ST) habits in young children. Children attending FCCHs have low levels of PA, but little is known about how FCCHs support or hinder children's activity. This study aims to quantify the FCCH environment and its relationship with children's PA. METHODS: Baseline data from a larger intervention trial were used for this analysis. FCCH providers (n=166) and children 18 months to 4 years (n=496) were recruited in North Carolina. The FCCH environment was assessed for 2 full days using the Environment and Policy Assessment and Observation modified for use with FCCHs (EPAO-FCCH). EPAO data were used to calculate 10 subcomponent scores and an overall PA environment score. Child PA was assessed via accelerometry (ActiGraph GT3X+) using 15-second epochs and applying Pate cutpoints. Associations between EPAO-FCCH subcomponent scores and FCCH-level moderate-to-vigorous PA (MVPA) minutes per hour were calculated, restricting PA to waking hours spent in FCCH. RESULTS: PA data from 165 FCCHs were adequate for analysis. Children on average were 2.7 ± 0.7 years old and accumulated an average of 29 ± 10 minutes of MVPA per FCCH day. MVPA min/hr was significantly associated with outdoor playtime (r=0.20, p=0.01), PA time provided (r=0.19, p=0.01), and daily ST practices (r= -0.19, p=0.02). Children in FCCHs that provided any outdoor teacher-led PA averaged 0.4 min more MVPA/hr than those providing no outdoor teacher-led PA, but this was not a statistically significant difference (p=0.09). CONCLUSIONS: Results reinforce findings in the broader child care literature regarding the importance of providing time for PA. The negative association between child MVPA and ST practices (e.g., not using screens as a reward, engaging with children about what was watched) was unexpected and requires further investigation. Better ST practices may indicate that screen use is more frequent. Alternatively, ST practices like engaging with children may have differential effects based on how screens are being used (e.g., sedentary vs. active activities).

P3.02.26
THE ACCEPTANCE OF PERSONAL HEALTH DEVICES AMONG ELDERLY POPULATION
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Objective Personal health devices(PHDs) are rapidly developing and getting smarter. However, elderly do not widely
adopt and use. And little is known about elderly acceptance to PHDs. So, we tried to find out suitable way wearing PHDs to help health workers or family monitoring elderly’s health. Methods A questionnaire survey was conducted to identify the main factors that affect elderly’s acceptance of PHDs. Thirty-five valid responses from exercising elderly randomly were collected and the data were analyzed using exploratory Chi-square test. The questionnaire also included questions about respondents’ experience of PHDs, usage intention of PHDs and whether elderly live with their family. These questions help to understand lived experience of PHDs users and to explain the factors that influence their use intention. Results Thirty-five participants were in this project with an average age of 69 years (69.68±10.33). In the group of living with their family, ninety-two percent of them (23/25) said that they would remember carrying their wallet or bags when going outside, only 40% (4/10) of the group that not living with their family would remember (p = 0.0028). Among those who lived with their family, sixty-eight percent (11/16) of people not having a watch were willing to wear such products; eighty-nine percent (8/9) of people who do not want to wear these products but wear watches. In the group of not living with their family, forty of them would not forget to bring their watches and 40% of them won’t forget wallet or bags when they go out are both four people. Conclusions People who have willing to wear a PHDs and live with their family are eligible for a wallet-type device; and those who do not want to wear PHDs and live with their family can use a watch-type device helping them for adopt it. People not living with family had the same opportunity to adopt to these two types of PHD. The results would provide suggestions for the design of PHDs and e-health services for helping health care worker and their family to monitor elderly’s health.

P3.02.27
ONGOING UNIVERSITY AND CITY PARTNERSHIP ESTABLISHES BMI MONITORING SYSTEM: DOWNWARD TREND FOUND AMONG PRESCHOOL CHILDREN IN HARTFORD, CT

Ferris Ann1, Havens Erin2, Wakefield Dorothy2, Quesada Catalina3, Schilling Elizabeth2. 1Center for Public Health and Health Policy, UCONN Health, Farmington. Hartford, CT is a financially strapped city with a large minority population and high poverty rate. Seventy-five percent of children, aged 3-5, are enrolled in center- or school- based care where they spend most of their recreational time and eat much of their food. The authors coordinated a preschool BMI surveillance in 2012 to support citywide efforts to reduce childhood obesity and again in 2016 to monitor the effectiveness of those efforts. Protocols included selecting a random sample of the early care programs and repeated measures of child height and weight. Staff measured height with a stadiometer (Shorr Products, Olney, MD, Model 420) and weight with an electronic self-calibrating digital scale (Healthometer, Bridgeview, IL, Model 349KL). Undergraduate students provided a cost effective, energetic personnel pool. The 2012 surveillance included all selected sites, and in 2016, only one site declined. In 2012, 1,589 children participated and in 2016, 2,051 children at 40 sites participated. In 2012, 37% of the children were overweight or obese compared to 32% in 2016. The 2016 data included more 3-year-olds and fewer 5-year-olds (p=0.01), and more Latinos (ponly ethnicity predicted BMI percentile. Latino children measured 7.3 percentiles higher than African-American children, and 7.9 percentiles higher than Asian/Caucasian children when controlling for age group and gender. Latino children were also more likely to be “super obese” (exceed the 99th percentile) (9%) than either African-American (6%), or Asian/Caucasian (5%). Monitoring child weight, using appropriate sampling and measurement techniques provides adequate data to guide community efforts. Next steps include sustaining the monitoring system and examining the intensity of interventions and policy changes to determine the association, if any, with decreases in mean BMI percentile by site (USDA [SNAP-Ed], City of Hartford.)

P3.02.28
THE NEEDS OF PARENTS AND PRESCHOOL TEACHERS REGARDING NUTRITION AND PHYSICAL ACTIVITY IN PRESCHOOLERS: A QUALITATIVE EXPLORATION.

Van de Kolk I1, Manders R M1, Gerards S M1, Kremers S P1, Gubbels J S1. 1Department of Health Promotion, NUTRIM School for Nutrition and Translational Research in Metabolism, Maastricht University, Maastricht. Objective: From an ecological perspective, factors in different environmental microsystems interact to influence human behaviour. For preschoolers these microsystems are often limited to the home and (formal) childcare setting. Socio-ecological models assume that behavioural change interventions are more effective when children receive the same message in different microsystems. This study aims to explore the needs of parents and preschool teachers regarding nutrition and physical activity (PA) in the home and preschool setting as input for intervention development. Methods: A qualitative study was performed. Semi-structured interviews were held with parents of
preschoolers (2-4 years old) and preschool teachers in the Netherlands. All interviews were audiotaped and transcribed verbatim. Content analysis was performed using the Environmental Research framework weight Gain prevention (EnRG) as a theoretical framework to guide the analysis. Two researchers independently analysed the data and NVivo 11.0 was used to structure the analysis. Results: Thirty-two parents (six fathers) and twenty-three female preschool teachers participated in the interviews. Parents perceived the nutritional behaviour and PA of their children as healthy. According to parents, factors from the physical (e.g. neighbourhood safety) and social environment (e.g. modelling of food consumption by siblings) were important influences on their child's behaviour. Parents expressed few needs, for example regarding what preschools should do related to nutrition and PA. Needs in this respect are rarely explicitly communicated with preschool teachers. The preschool teachers perceived the nutritional behaviour and PA of preschoolers as relatively unhealthy and expressed particularly more unhealthy behaviour in the home setting (e.g. skipping breakfast and inactive transportation). Most teachers experienced an influence of the home setting on the preschool setting; in particular regarding dietary habits (e.g. not being used to eat at the table). In the preschool setting, they expressed the need regarding PA possibilities, in particular for the outdoor playing area. Further, preschool teachers indicated a need for clear policies regarding nutrition and PA.

Conclusions: At present, congruence of healthy nutrition and PA-related practices between parents and preschool teachers appears to be lacking. A mesosystem approach is advocated in which intervention components are aligned in both the home and preschool setting.

P3.02.29
SYSTEMATIC REVIEW OF COMBINATIONS OF MOVEMENT BEHAVIOURS AND HEALTH IN THE EARLY YEARS (AGED 0-4 YEARS)
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Purpose: A recent review highlighted the importance of the combinations of movement behaviours (i.e., sleep [SP], sedentary behaviour [SB], and physical activity [PA]) on health indicators among school-aged children and youth. It is unclear whether similar relationships exist in early years children (aged 0-4 years). Therefore, the purpose of this review was to determine the relationships between the combinations of movement behaviours and health indicators in the early years. Methods: Online databases (Medline, EMBASE, PsychINFO, and SportDiscus) were searched for relevant studies up to November, 2016. Included studies met the a priori-determined population (apparently healthy children aged 1.0-59.9 months), intervention (the combination of ≥2 movement behaviours [i.e., SP+SB; SP+PA; SB+PA; and SP+SB+PA]), comparator (various levels and combinations of movement behaviours), and outcome (critical: adiposity, motor development, psychosocial health/emotional regulation, cognitive development, and growth; important: bone and skeletal health, fitness, cardiometabolic health, and risks). Quality of evidence was assessed by study design for each outcome using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) framework. Results: A total of 10 studies (n=7283 participants; n=5 countries) were included, representing toddlers (aged 13-35 months) and preschoolers (aged 36-60 months) in 3/10 studies, and preschoolers alone in 7/10 studies. Interventions targeting PA+SB were favorably associated with adiposity in 2/3 studies, motor development in 1/1 study, and growth in 0/1 study. For observational studies, combinations of higher PA and lower SB were favorably associated with adiposity in 2/4 studies, growth in 0/1 study, and fitness in 1/1 study. Combinations of higher SP and lower SB were favorably associated with adiposity in 1/1 study. No other combinations of movement behaviours, or health indicators were found. Quality of evidence was rated from “very low” to “moderate”. Conclusions: High levels of SP, low levels of SB, and high levels of PA may be important for optimal physical health in the early years. Findings will help inform Canadian 24-hour Movement Behaviour Guidelines for the Early Years. Given the limited evidence, and that no study included the combinations of all movement behaviours, future research is needed to determine the ideal distribution of daily movement behaviours for optimal health in the early years.

P3.02.30
EDUCATOR CHARACTERISTICS THAT PREDICT IMPLEMENTATION FIDELITY TO A NUTRITION CURRICULUM IN HEAD START
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Purpose: Fidelity in implementation of a nutrition intervention can moderate the impact of the intervention on targeted outcomes. The purpose of this study was to understand characteristics of early childhood educators (ECEs) that predicted fidelity to implementation of an evidence-based curriculum (WISE) designed to promote fruit and vegetable consumption among Head Start children in two Southern states. Methods: Monthly, for 8 months, trained observers rated a WISE lesson and recorded the use of three intervention core components (i.e., Role Modeling, Use of Mascot, Hands-on Exposure) using a 1 (Not at All) to 4 (Very Much) scale. Fidelity summary scores were created for each core component by averaging observed scores across the school year. Prior to the study, ECEs completed a survey measure assessing demographic characteristics (i.e., race, years of experience, education), beliefs about malleability of child dietary preferences, personal dietary intake, confidence in implementing a nutrition curriculum, and concern about dietary intake for families. Scales were created for each of these constructs and entered into regression models with demographics as predictors for each of the three fidelity outcomes. Results: For Use of Mascot, race and years of experience were significant predictors of fidelity with African Americans [β = 0.47, t(29) = 2.28, p = .03] exhibiting greater fidelity than Whites and increasing years of experience relating to greater fidelity [β = 0.55, t(29) = 3.27, p = .003, R2 = 0.40, F (9, 29) = 2.17, p = .05]. Race was also a significant predictor of Hands On Exposure with African Americans [β = 0.67, t(29) = -3.42, p = .002] exhibiting less fidelity than Whites and other races exhibiting more fidelity than Whites [β = 0.63, t(29) = 4.16, p = .047, F (9, 29) = 2.89, p = .01]. The set of predictors did not account for a significant portion of variance in Role Modeling. Conclusions: This study suggests that predictors of implementation fidelity may vary depending on the components of the intervention. Future studies should explore if organizational characteristics can explain the racial differences we observed given that ECE race and site of implementation were confounded.

P3.02.31
SOCIAL DANCE FOR OLDER ADULTS: WHAT IS THE VOLUME AND INTENSITY OF PHYSICAL ACTIVITY PERFORMED?
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Purpose: This study aims to measure the volume and intensity of exercise in social dancing. Methods: All the older adults groups of social dancing running in the afternoon and performed in community centers located in Florianópolis, São José and Palhoça were selected. The sample consisted of 69 older individuals. In order to measure the activity at social dancing and the level of physical activity per week, accelerometers Actigraph GT3X (512MB) were used 5 days/week for ≥ 10 hours/day period. The intensity was measured by the speed of steps and estimated using the classification established by Buman et al. (2010) and Copeland and Esliger (2009) to identify moderate activity. The volume was calculated by means of time spent in the activity; counts and total number of steps. Lastly, a descriptive and inferential statistical analysis was carried out. Results: The total physical activity per week resulted in 2912.4 ± 872.8 minutes, 12989.6 ± 6454.1 steps/day; the average speed of steps was 3.7 ± 2.1 counts/minute. The majority of older women regularly attended social dancing from 2 to 3 times/week for a period ≥ 6 years. In social dancing, older women practiced 29.3 ± 3.4 minutes of moderate continuous activity; performed four bouts of 14.4 minutes in moderate intermittent activity; and walked 3593.1 ± 267.8 steps/dance at a speed of 15.1 ± 1.1 steps/minute. Conclusions: The characteristics of the physical activities performed at social dancing, in terms of volume and intensity, are positive for an active lifestyle and enables the practice of physical activity within the guidelines towards a healthy aging.

P3.02.32
FAMILY CHILD CARE HOME PROVIDER ATTITUDES AND PRACTICES RELATED TO FEEDING, PHYSICAL ACTIVITY AND SCREEN TIME OF THE 2-5 YEAR OLD CHILDREN IN THEIR CARE
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Objective: Healthy Start is an intervention in family child care homes (FCCH) to help family child care providers (FCCP) change their food and physical activity (PA) environments to improve diet and PA of children aged 2-5 years in their care. This is the first intervention trial including Spanish speaking FCCP and the first to use tailoring and peer support coaches. Methods: Cluster randomized trial (66 intervention and 66 comparison sites). All complete telephone and in-person surveys and undergo two days of FCCH observation at 3 time-points to measure environments, policies, practices, attitudes, barriers, and children’s eating, PA and screen-time using validated measures. So far, 73 FCCP have been recruited: 97% female, 96% Hispanic, 12% Black, mean age 49, 23% no high
school education, 23% income Results/findings: Baseline surveys demonstrate room for improvement. Practices not meeting guidelines: fried foods (40%) and sweets (39%) served > 1/week; not limiting fruit juice to recommended amounts (80%); children watching TV daily (74%); FCCP at least sometimes: promising children rewards for eating (30%); managing children so they don’t eat too little (81%); encouraging children to finish meals even if they aren’t hungry (64%); Rarely/never letting children decide how much to eat (44%). Attitudes: If water is the only drink offered during play, children won’t drink enough (69%); if 100% fruit juice is limited, children won’t get enough vitamins (79%); if children serve themselves, they make a mess (71%) and waste food (57%); children would rather have screen-time than do PA (45%); it’s OK to let children watch educational TV (80%); how children eat at childcare has little effect on their food habits (54%). Barriers: Fresh fruits and vegetables spoil quickly (49%) and are expensive (36%); healthy foods are wasted because children won’t eat them (47%); worry about children’s safety playing outside (94%); parents don’t want children playing outside in cold/rainy weather (81%); children eat unhealthy foods (60%) and are not active (47%) at home. Conclusions: Findings clearly demonstrate the need for nutrition and PA interventions with FCCH, which have largely been ignored in comparison to child care centers.

P3.03 Physical and mental health / Assessment and methodologies: Adults, older adults and all ages

P3.03.1
ASSESSMENT OF FUNCTIONAL OUTCOMES IN PATIENTS WITH MUSCULOSKELETAL DISORDERS USING ACCELEROMETRY
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Purpose: The limitations of self-report instruments for assessing physical activity (PA) and health outcomes in patients with musculoskeletal diseases have necessitated the use of more objective measures such as accelerometers. There is a paucity of literature that has examined the relationship between low PA, high levels of sedentary behaviour (SB) and disease activity in people with rheumatoid arthritis (RA). Furthermore, studies that have used objective measures for the assessment of PA after total knee arthroplasty (TKA) in patients with osteoarthritis (OA) have often reported no or very little change in physical activity. The use of objective measures (accelerometers) in the assessment of PA and SB in patients with musculoskeletal diseases may highlight inadequacies in daily activity while the effects of treatment can be quantified. Methods: Data were collected from two ongoing studies in two public hospitals. One study was conducted in patients who had been newly diagnosed with RA and initiating DMARD therapy; while the other was conducted in patients with knee osteoarthritis scheduled for TKA. An ActiGraph and activPAL accelerometer were worn for 24 hours a day for seven days, before and after treatment. Various disease specific questionnaires were also completed at baseline and follow up timepoints. Results: Total volumes of activities as well as patterns of accumulation were recorded. Change in activity and sedentary behaviour before and after treatment are reported for both groups of patients. The relationship between objectively measured physical activity and sedentary behaviour and functional outcomes (OA) and disease activity (RA) were also determined. Conclusions: Accelerometry may provide a method of assessing subtle changes in PA and whether recommended treatments are effective in alleviating the burdens of low levels of physical activity and high levels of sedentary behaviour that may not be detected by self-report questionnaires. Measuring patterns of accumulation of sedentary time may also be a better way of assessing sedentary behavioural change and its implication on health outcomes before and after treatment. The findings from these studies will help to inform policy makers about appropriate PA and SB guidelines for patients with mobility problems in South Africa.

P3.03.2
THE UTILITY OF ACCELEROMETRY IN CANCER PATIENTS WITH MALIGNANT PLEURAL EFFUSION: THE POTENTIAL ROLE IN RESEARCH AND CLINICAL PRACTICE
Peddle-McIntyre Carolyn1, Jeffery Emily1, Lee Y G2,3, McVeigh Joanne4, Straker Leon5, Wooding Troy2, Newton Robert1,6, 1Exercise Medicine Research Institute, Edith Cowan University, Perth, WA; 2Respiratory Department, Sir Charles Gairdner Hospital,, Perth, WA; 3School of Medicine and Pharmacology, University of Western Australia,
HEALTH
P3.03.4
physical activity are substantial. Conclusions: Applying the COI literature to modeled health investments, $5.96 will be gained in induced sales output. Comparatively, induced economic growth directly from healthcare expenditures of $226M and annual increased productivity of $111M for the Southern Californi
be applied to extend health impact predictions. A case study of modeling health impacts (see presentation #2) for the Southern California Association of Governments’ (SCAG) 2016 Regional Transportation Plan (RTP) is used to illustrate the approach. Methods: The California Public Health Assessment Module (CPHAM) was used to predict the number of avoided cases of diabetes, hypertension, and cardiovascular disease from implementing the adopted RTP. Health predictions were extended to monetization in two ways. First, direct health care expenditures and indirect productivity gains were sourced from the cost-of-illness (COI) literature; COI values were sourced from well-regarded organizations and to minimize double counting from comorbid conditions. Applying COI to predicted reduction in disease facilitated an estimate of regional annual savings for direct and indirect health benefits associated with the RTP in the horizon year (2040). Second, the direct and indirect health benefits were then used as inputs into the REMI Transight econometric input-output model. REMI predicts induced regional demand (sales output and employment) using sector multipliers that are region specific. To understand the relative impact of health, the induced demand of direct and indirect health benefits was compared to direct infrastructure spending using REMI Transight. Results: The application of CPHAM to SCAG’s 2016 RTP predicted percent reductions in adult prevalence for hypertension (1.2%), heart disease (1.0%), and diabetes (1.0%). Application of cost-of-illness suggests annual prevented healthcare expenditures of $226M and annual increased productivity of $111M for adults ages 18-64. Health gains induce regional economic growth: for every $1 spent in active transportation investments, $5.96 will be gained in induced sales output. Comparatively, induced economic growth directly from construction, maintenance, and programmatic investments is only $1.97 per $1 spent. Induced health benefits are driven by productivity gains of a healthier workforce. Conclusions: Applying the COI literature to modeled health outcomes facilitates using input-output economic modeling. The induced impacts from health due to increased physical activity are substantial.

P3.03.3
MONETIZING HEALTH USING COST-OF-ILLNESS AND INPUT-OUTPUT ECONOMIC MODELS
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Purpose: Decision makers seek monetized information to inform public decisions about land use and transportation investments. This presentation shows how cost-of-illness research and input-output economic modeling tools can be applied to extend health impact predictions. A case study of modeling health impacts (see presentation #2) for the Southern California Association of Governments’ (SCAG) 2016 Regional Transportation Plan (RTP) is used to illustrate the approach. Methods: The California Public Health Assessment Module (CPHAM) was used to predict the number of avoided cases of diabetes, hypertension, and cardiovascular disease from implementing the adopted RTP. Health predictions were extended to monetization in two ways. First, direct health care expenditures and indirect productivity gains were sourced from the cost-of-illness (COI) literature; COI values were sourced from well-regarded organizations and to minimize double counting from comorbid conditions. Applying COI to predicted reduction in disease facilitated an estimate of regional annual savings for direct and indirect health benefits associated with the RTP in the horizon year (2040). Second, the direct and indirect health benefits were then used as inputs into the REMI Transight econometric input-output model. REMI predicts induced regional demand (sales output and employment) using sector multipliers that are region specific. To understand the relative impact of health, the induced demand of direct and indirect health benefits was compared to direct infrastructure spending using REMI Transight. Results: The application of CPHAM to SCAG’s 2016 RTP predicted percent reductions in adult prevalence for hypertension (1.2%), heart disease (1.0%), and diabetes (1.0%). Application of cost-of-illness suggests annual prevented healthcare expenditures of $226M and annual increased productivity of $111M for adults ages 18-64. Health gains induce regional economic growth: for every $1 spent in active transportation investments, $5.96 will be gained in induced sales output. Comparatively, induced economic growth directly from construction, maintenance, and programmatic investments is only $1.97 per $1 spent. Induced health benefits are driven by productivity gains of a healthier workforce. Conclusions: Applying the COI literature to modeled health outcomes facilitates using input-output economic modeling. The induced impacts from health due to increased physical activity are substantial.

P3.03.4
HEALTH-ENHANCING PHYSICAL ACTIVITY IN FINLAND: FINDINGS FROM A NATIONAL SAMPLE OF 64,380 ADULTS
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Purpose: The Finnish guidelines for health-enhancing physical activity for adults (≥18 years) recommend: (i) ≥150 minutes of moderate to vigorous-intensity physical activity (MVPA); (ii) muscle strengthening activity ≥2 days per week; and (iii) activity that requires or develops balance on ≥2 days per week. However, population adherence to these guidelines among the Finnish adults is currently unknown. This purpose of this paper is to report the adherence to the physical activity guidelines and their associations with sociodemographic factors among a large sample of Finnish adults. Methods: Data were used from the Finnish 'Regional Health and Well-being Study'. In 2013-14 postal questionnaires were sent to 132,560 persons, with 69,032 responding (response rate =52.1%). The weighted proportions adhering to; (i) aerobic MVPA guideline, (ii) muscle strengthening activity-balance activity guideline, and (iii) combined aerobic MVPA, muscle strengthening activity-balance guidelines (combined guidelines) were calculated. Associations with sociodemographic variables (e.g. age, education level, self-rated health) were assessed using multiple logistic regression analyses. Results: Of 69,032 respondents, 92.6% (n=64,380, 18-98 years) reported on their physical activity levels. A total of 31.2% (95% CI: 30.8%-31.6%) met the aerobic MVPA guideline, 17.2% (95% CI: 16.9%-17.6%) met the muscle strengthening-balance guideline, and 8.1% (95% CI: 7.8%-8.3%) met the combined guidelines. In the adjusted analysis, those with poorer self-rated health, older age, lower education levels and those classified overweight or obese were independently associated with lower odds of meeting the combined guidelines. Conclusions: Most Finnish adults do not meet the full physical activity guidelines. Public health action is needed to reduce physical inactivity in Finland. Future public health interventions should primarily focus on older age groups, lower educated populations, those reporting poor self-rated health and overweight and obese individuals.

P3.03.5
THE RELATIONSHIP BETWEEN SEDENTARY BEHAVIOUR AND PSYCHOLOGICAL DISTRESS IN ADULTS AGED 45 YEARS AND OLDER

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OBJECTIVE: In terms of burden of disease, depression is ranked third highest in Australia, after cancer and cardiovascular disease. It is important to establish the factors that can influence depression given its high lifetime prevalence and the significant financial and productivity impact. Sedentary behavior is one factor shown to be associated with depression and psychological distress. The purpose of this study is to investigate the prospective association between sedentary behavior and psychological distress in middle-aged and older adults in Australia.

METHODS: Participants were 36,600 adults aged 45 years and older (mean age = 65.6± 10.5 years) with complete data drawn from the baseline survey of The 45 and Up Study (a large-scale longitudinal cohort study of health and social indicators in adults aged 45 years and older across New South Wales, Australia), and who completed the follow-up (mean = 3.4 years later) Social Economic and Environmental factors (SEEF) study. Self-reported sitting time was used as a measure of sedentary behaviour (categorised as 0-5 hours/day and >5 hours/day), and psychological distress was measured with the Kessler Psychological Distress Scale (Kessler-10). Data were analysed using linear regression analysis. RESULTS: A significant association was found between psychological distress at baseline and sedentary time at follow-up, while controlling for baseline sedentary time (p CONCLUSIONS: The findings demonstrate that psychological distress can impact on sedentary behaviour in middle-aged and older adults. These findings can be used to inform the development of interventions to reduce sedentary time in adult populations.

P3.03.6
USING JUDGMENT POST-STRATIFICATION TO ADJUST FOR THE BIASEDNESS OF POPULATION-LEVEL ACCELEROMETER-MEASURED PHYSICAL ACTIVITY

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Purpose: In studies using accelerometer-measured data to estimate population level physical activity, the population estimate is often biased as the subjects that provide valid accelerometer data often have different physical activity patterns with those who do not (or not willing to) provide valid data, thus they are over-represented in the samples. Often, less costly and less accurate physical activity data, for example self-reports or logbook, are concurrently available. We propose utilizing these less accurate data to reduce the biasedness of population estimate of accelerometer-measured physical activity (AMPA) using judgment post-stratification (JPS).

Methods: JPS is operated as follows. Denote the n samples with AMPA and self-report physical activity (SRPA) as Ai
and Si, i=(1,...,n). For a particular JPS of set size m, m-1 additional samples that only provided SRPA, denoted as Si,j, j=(1,...,m-1), are matched to sample i. The ranking of Si in the stratum (Si, Si,1,...,Si,m-1), denoted as Ri, will be obtained. The mean accelerometer-measured physical activity for each stratum Ri, i=(1,...,m), denoted as Ci, will be obtained, and the population-level physical activity level equals ΣCi/m. As an illustration, a simulation study was performed using the National Health and Nutrition Examination Survey 2003-2006 samples aged 20-59, in which 6549 subjects provided SRPA data and 5282 of them provided AMPA. Using these 5282 subjects as the population with a mean daily moderate-to-vigorous PA of 44.2 minutes, we tested the population-level estimate using naïve mean estimation and JPS with sample size equals 100 or 200 and set size equals 3 or 5. To mimic a non-representative sampling, we assumed that active subjects (defined as accelerometer-measured physical activity per day >21.7 minutes, n=2641) were less likely to be sampled than active subjects, and ratios of 0.8, 0.9, and 1 were tested. Results/findings: For different sample sizes and set sizes, naïve means were biased for simulations with ratio 0.8 (AMPA=40.4-40.7) and 0.9 (AMPA=42.3-42.5), while JPS yielded unbiased estimates (AMPA=44.0-44.8). Conclusions: The biasedness of naïve mean estimation of population-based AMPA can be adjusted for using JPS with SRPA data.

P3.03.7
TRIANGULATING PHYSICAL ACTIVITY IN A COMMUNITY-BASED TRIAL UTILIZING ACCELEROMETERS, FITBITS, AND SELF-REPORT
Seguin Ra1, Graham ML1, Donoso R1, Sriram U1, Lo B1. 1Division of Nutritional Sciences, Cornell University, Ithaca, NY. Objective In the context of a community-based randomized trial, we examine whether accelerometer and Fitbit Charge HR measures of physical activity are associated with self-reported physical activity measures. Methods A 24-week community randomized trial that enrolled 194 overweight sedentary women 40 years and older was implemented in 16 medically underserved rural towns in Montana and New York. Half of the communities, and a total of 101 women, participated in the Strong Hearts Healthy Communities (SHHC) intervention, which included progressive strength training, aerobic exercise, health and nutrition education, and a civic engagement component. They were given a Fitbit Charge HR and, if participants opted in, their Fitbit data were collected via the Fitabase platform. The other eight communities, and 93 women, received Strong Hearts, Healthy Women (SHHW), an education-only minimal intervention; they were not given Fitbits. Physical activity (PA) was measured among SHHC and SHHW participants using accelerometers (Actigraph wGT3X-BT), the International Physical Activity Questionnaire (IPAQ) short form, and an adapted version of the Sedentary Behavior Questionnaire (SBQ). Associations between different measures at baseline and outcome were assessed via correlation analyses using SPSS version 22. Spearman’s and Pearson’s correlation coefficients are shown. Results Among 74% of SHHC participants that signed up for Fitbase, average daily steps as measured by Fitbit and Actigraph during 7 days of wear were highly and significantly correlated (r = 0.6, p = 0.05) for minutes spent doing moderate to vigorous, light, moderate, and vigorous PA. However, self-reported PA levels as measured by the IPAQ were not significantly correlated with Actigraph or Fitbit PA levels (r = 0.04-0.29). Measures of sedentary time were not significantly correlated (r = 0.071-0.176) among Fitbit, Actigraph, and the SBQ. Conclusions Our results confirm previous findings that fitness trackers are accurate and reliable for measuring steps when compared to accelerometers and further show that there is good agreement between Actigraph and Fitbit Charge HR when measuring PA intensity, with the exception of sedentary behavior. Comparatively, and of concern, self-report measures were not associated with either objective measure of PA.

P3.03.8
FAMILY CARER EXPERIENCES IN SUPPORTING NUTRITION AND PHYSICAL ACTIVITY BEHAVIOUR CHANGE FOR PEOPLE WITH A MENTAL ILLNESS
Bailey J1,2, Hansen V3, Wye P1,2, Wiggers J1,2,4, Bartlem K1,2,4, Bowman J1,2. 1University of Newcastle, Callaghan, NSW; 2Hunter Medical Research Institute, New Lambton Heights, NSW; 3University of Sydney, Sydney, NSW; 4Hunter New England Population Health, Wallsend, NSW. Objective: People with a mental illness experience greater chronic disease morbidity and mortality, and reduced life expectancy, compared to those without such an illness. A higher prevalence of chronic disease risk behaviours (inadequate nutrition and inadequate physical activity) is also experienced by this population. Family carers have the potential to support behaviour change among those they care for with a mental illness, however limited research has investigated this potential to date. This study aimed to explore: family carers’ experiences in addressing the nutrition and physical activity behaviours of their family members. Methods: A qualitative study of
four focus groups (n=31), using a semi-structured interview schedule, was conducted with carers of people with a mental illness in New South Wales, Australia. An inductive thematic analysis was employed to explore the experience of carers in addressing the nutrition and physical activity behaviours of their family members. Results: Carers perceived that both regular physical activity and adequate nutrition were important components in achieving and maintaining not only physical but also mental well-being. Nutrition and physical activity were seen to have a close interaction with mental illness. Despite implementing various strategies to encourage reduction of risk behaviours, carers acknowledged multiple barriers. The majority of carers cited the cost and a lack of motivation to be the primary barriers to their family members engaging in adequate nutrition and physical activity. In addition, carers experienced insufficient support from general and mental health services to assist them to support behaviour change in their family member. Conclusions: Family carers do attempt to address the nutrition and physical activity behaviours of their family members utilising a range of strategies. A number of barriers were also identified by carers, including insufficient support from health services and mental health services in particular. A need exists for such services to provide support to people with a mental illness for risk behaviour change, and also to ensure effective communication with and involvement of carers in care planning and delivery to better enable carers to support their family members’ behaviour change.

P3.03.9
EXAMINATION OF EXERCISE PROVIDERS’ KNOWLEDGE AND BELIEFS TO OFFER INTEGRATED COUNSELING TO ADULTS WITH CHRONIC NON-CANCER PAIN
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Objective: Chronic non-cancer pain affects 20% of adults. Although exercise results in improved outcomes, including better pain management and function, most adults with chronic pain are not adherent. Integrated counseling (IC) is one approach to increase adherence that involves supervised exercise, pain education, and teaching self-regulatory skills. However, several factors remain unknown: (a) whether adults with pain want IC, (b) who should deliver IC, and (c) if exercise providers (EPs: instructors and personal trainers) have the knowledge and beliefs to deliver IC. The purposes of this two-phase study were to: (1) identify IC interests and the preferred delivery agent for IC among adults with pain; and (2) investigate EPs’ levels of pain knowledge, fear-avoidance beliefs that exercise is harmful to people with pain, and self-efficacy to deliver IC. Method: Phase 1: three focus groups were held with adults with pain (n = 43; Mage = 65.38 ± 11.36 years). Inductive thematic analysis was conducted following each group using iterative verification with subsequent groups. Phase 2: based on focus groups’ findings, 97 EPs (Mage = 48.14 ± 12.08 years) completed a survey that assessed pain knowledge, fear-avoidance beliefs, self-efficacy, and demographics. Descriptive statistics and Pearson bivariate correlations were conducted. Results: In Phase 1, adults with pain identified a desire for IC and that EPs are a preferred IC delivery agent. In Phase 2, descriptive analysis revealed that EPs reported low pain knowledge (M = 50.94 ± 17.92%) and moderate self-efficacy to deliver IC (M = 5.31 ± 2.54). Yet, they also reported low fear-avoidance (M = 9.72 ± 4.92). Bivariate correlations illustrated that EPs’ pain knowledge and self-efficacy had a modest but significant relationship (r=.26, p=.01). Conclusions: Adults with pain prefer IC delivered by EPs who may benefit from training on pain to enhance their knowledge and increase their efficacy to deliver IC to adults with pain. Future research should first examine whether pain knowledge, self-efficacy, and fear-avoidance beliefs predict EPs’ intentions to deliver IC. Additionally, understanding causality would be necessary to knowing which factor(s) to target in an intervention.

P3.03.10
NUTRITION AND PHYSICAL ACTIVITY AMONG PEOPLE WITH A MENTAL ILLNESS: PREVALENCE OF RISK, INTEREST IN CHANGE, AND ACCEPTABILITY OF RISK REDUCTION CARE
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Purpose: People who have a mental illness experience an increased burden of chronic disease morbidity and mortality, contributed substantially to by an increased engagement in health risk behaviours, including physical inactivity and poor diet. Mental health clinicians report a perception of client disinterest in addressing these health behaviours as a barrier to providing risk reduction care. In relation inadequate diet and physical inactivity, this paper examines the health behaviour characteristics, interest in change, and acceptability of receiving risk reduction care from mental health service providers among mental health consumers. Methods: Two surveys were undertaken within one local health district Australia: one amongst 558 clients of community mental health services,
and one amongst 2,075 inpatients from psychiatric units. Results: Risk prevalence was high for both behaviours (47-95%). A substantial proportion of those at risk were interested in increasing their physical activity and improving their diet (48%-71%), and between 80% and 94% reported that it would be acceptable to receive risk reduction care during contact with their mental health service. Some differences were found between psychiatric diagnoses. Conclusions: Clients of community mental health and inpatient psychiatric services report a high level of interest in increasing their physical activity and improving their diet, and in receiving risk reduction care from their mental health service. These findings reinforce the need and the opportunity for mental health services to address physical inactivity and poor diet with their clients.

P3.03.11
MEASURING COOKING AND FOOD SKILLS: THE DEVELOPMENT AND VALIDATION PROCESS
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Purpose: There is a growing interest in assessing people’s capability to make a meal, necessitating a measuring tool that is low in cost, easy to use and relatable, that address both cooking and food skills. This study aimed to develop and validate a user-friendly cooking and food skills measurement tool. Methods: Using a rapid review of the literature and qualitative interviews with four experts working in the area of cooking skills and health, new scales for both cooking skills (14 items) and food skills (19 items) were developed. The scales were piloted with 54 participants followed by a nationally representative sample of 1049 people survey. In the survey participants were asked to select from the list provided all the cooking skills and food skills they possessed. Subsequently, participants rated their level of confidence in the selected skills, using a scale of 1 (very poor) to 7 (very good). The internal consistency of the scales were assessed using Cronbach’s alpha. The measures were completed by further samples (low skilled participants, high skilled participants) to assess in detail the construct validity (both convergent and discriminant) and the test-retest reliability. Results/Findings: Both the cooking skills (level and confidence) and food skills (level and confidence) have acceptable internal consistency across all samples (Cronbach’s alpha > 0.70). A strong positive correlation was found between cooking skills confidence and food skills confidence (r=0.76, PConclusions: The two new measures for cooking skills and food skills have high validity and reliability and can be used to assess skill level and confidence at a population level relatively easily. This tool could be used as a low cost measuring device for monitoring current and changing skill levels. Further testing is required for scale relatability outside an Irish and UK sample.

P3.03.12
FUEL FOR FUN PARENT ASSESSMENTS OF FRUIT AND VEGETABLE AVAILABILITY AND MODELING EATING BEHAVIORS SUPPORTIVE OF FRUITS AND VEGETABLES SHOW PREDICTIVE VALIDITY WITH TARGETED HEALTHY EATING INDEX COMPONENTS
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Purpose: Examine ability of Fuel for Fun modeling and self-efficacy/outcome expectancy (SE/OE) assessments related to fruit and vegetable (FV) behaviors and availability in the home to predict Healthy Eating Index (HEI) scores. Methods: Parents of children participating in Fuel for Fun, a school-based culinary and physical activity intervention, completed online, tested surveys about modeling FV eating behaviors (11 items, possible score 0–33), FV SE/OE (12 items, possible score 12–60) and FV availability in the home (20 items, possible score 0–20). Upon baseline survey completion (n=356) a subset (n=83) completed an internet-based diet assessment (DA) using the ASA24 platform to obtain HEI scores. Linear regression with a priori selected covariates (gender, race, education) examined predictive validity of FV availability, modeling, SE/OE surveys for targeted HEI components. Results/Findings: DA participants (mean age 38.0 ± 6.5 y) were mostly white (90%), female (87%), and highly educated. BMI was overweight/obese for 42%. Their demographic characteristics and baseline scores were not significantly different from parents only completing surveys. Genders did not differ for any HEI or parent survey score. At baseline, total HEI ranged from 22.0 – 77.4, mean 55.4 ± 1.4. HEI component mean scores were: total fruit 3.0 ± 0.2; whole fruit 3.4 ± 0.2; total vegetables 3.6 ± 0.1. Modeling mean was 15.0 ± 3.9; SE/OE mean was 52.6 ± 10.0 and FV availability mean was 12.3 ± 2.7. Parent modeling predicted total fruit HEI (P= 0.046) and total vegetable HEI component scores (P= 0.024) in the anticipated direction. SE/OE did not predict any HEI scores. FV availability was positively associated with HEI component scores of whole fruit (P=0.033) and total vegetables (P=0.009). Vegetable availability positively predicted total fruit HEI component score (P=0.01) and fruit availability positively...
predicted whole fruit HEI component score (P=0.019), but not after adjusting for gender, race, and education. Conclusions Modeling of eating behaviors and FV availability predicted nearly all FV HEI component scores independent of race, gender, and education, suggesting that Fuel for Fun parent outcome measures capture behaviors associated with FV intake.

P3.03.13
SEDENTARY TIME AND PHYSICAL ACTIVITY SURVEILLANCE THROUGH ACCELEROMETER POOLING IN FOUR EUROPEAN COUNTRIES
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Objective To pool, harmonise and re-analyse national accelerometer data from adults in four European countries in order to describe population levels of sedentary time and physical inactivity. Methods Five cross-sectional studies were included from England, Portugal, Norway and Sweden. ActiGraph accelerometer count data were centrally processed using the same algorithms. Multivariable logistic regression analyses were conducted to study the associations of sedentary time and physical inactivity with gender, age, weight status and educational level, in both the pooled sample and the separate study samples. Results Data from 9509 participants were used. On average, participants were sedentary for 530 minutes/day, and accumulated 36 minutes/day of moderate-to-vigorous intensity physical activity. Twenty-three percent accumulated more than 10 hours of sedentary time/day, and seventy-two percent did not meet the physical activity recommendations. Nine percent of all participants were classified as high sedentary and low active. Participants from Norway showed the highest levels of sedentary time, while participants from England were the least physically active. Age and weight status were positively associated with sedentary time and not meeting the physical activity recommendations. Men and higher educated people were more likely to be highly sedentary, while women and lower educated people were more likely to be inactive. Conclusions We found high levels of sedentary time and physical inactivity in four European countries. Older people and obese people were most likely to display these behaviours and thus deserve special attention in interventions and policy planning. In order to monitor these behaviours, accelerometer based cross-Europe surveillance is recommended.

P3.03.14
USING SINGLE-CASE DESIGNS TO ASSESS PHYSICAL ACTIVITY INTERVENTIONS: OBSERVATIONS AND LESSONS LEARNED FROM A MULTIPLE-BASELINE DESIGN STUDY
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PURPOSE: The gold standard for assessing intervention effectiveness remains the randomised controlled trial (RCT), whereby large between-group data sets are compared in order to establish significance or effect sizes. However, single-case designs (SCDs; designs employing small sample sizes) have been purported to be a viable alternative to RCTs (Kazdin, 2010). By observing target variables such as physical activity (PA) levels in participants over time, individual data trends can be tracked and understood with greater clarity, rather than becoming lost within larger group aggregates (Barker & Jones, 2009). However, using SCDs to assess the effectiveness of interventions that aiming to induce behavioural change such as increases in PA can be fraught with complex issues, as too can the analysis of the resulting data. The purpose of this presentation is to illustrate both the merits and the drawbacks of SCDs, using a genuine data set from a recent intervention study. METHODS: Drawing on a recent study that utilised a multiple (staggered) baseline SCD to assess the effectiveness of an intervention aiming to increase PA, various analyses and interpretations of the results will be used to highlight both the difficulties inherent in SCD research and the potential richness of data that can be obtained. RESULTS: There are fundamental issues in using SCDs for assessing behavioural change interventions, such as difficulties in obtaining the stable baseline data that is required to demonstrate intervention effects, and debates concerning the most suitable methods of comparing pre- and
post-intervention data. However, there are certain aspects of the data obtained that would be lost amongst the larger data sets of RCT studies, such as the idiosyncratic behavioural change trajectories and life events that add potentially add a richness to the data. CONCLUSION: SCDs represent a highly informative methodology for assessing behavioural change interventions, and there are certainly ways in which the effectiveness of SCD research can be maximised, therefore offering researchers a very viable alternative to large group designs when it comes to intervention development and assessment.

P3.03.15
RURAL LATINO PARENT AND CHILD PHYSICAL ACTIVITY PATTERNS: ENVIRONMENT MATTERS
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Purpose: To describe physical activity patterns of rural Latino children and their parents and gain insights into environmental influences on their activity. Methods: We used a convergent parallel mixed method design. Children and parents wore an actigraph wGT3X-BT accelerometer to measure physical activity. Data were downloaded into the ActiLife program. Physical activity levels were categorized into sedentary, light, moderate, and vigorous using Freedson cut points. Parent and child activity levels were compared using paired t-tests. Average child activity was compared by sex, age group, acculturation, and seasonality (summer vs fall) using t tests. Parents completed a demographic survey and participated in a semi-structured interview, in Spanish or English, regarding perceptions of the environment. Interviews were audio recorded, transcribed verbatim, and translated into English. We completed qualitative content analysis using NVivo software. Transcripts were coded, categories were developed from the codes and themes emerged from the categories. Results/Findings: Between August and December 2014, 27 children and 25 parents wore an accelerometer for 5-7 days and 31 parents completed a semi-structured interview. Parents and children spent similar number of hours (7.4 and 7.7, p=0.25) being sedentary. Children spent more minutes in moderate (168 vs. 24, p Conclusions: Children spent little time in vigorous activity. Enforcing rules to limit screen time and creating time for family members to be active together could enhance physical activity in rural Latino children and adults.

P3.03.16
THE IMPACT OF ETHNICITY ON STEP VOLUME AND INTENSITY AND ASSOCIATION WITH CARDIO-METABOLIC RISK FACTORS IN AN URBAN ASIAN POPULATION
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Objective: Objectively measured ambulatory behaviour by accelerometers is a way to assess daily physical activity accurately. Emerging evidence on western free-living populations indicates low step volume and intensity, but little is known about Asian populations. To understand stepping behaviours in a multi-ethnic Asian population this study investigated median step counts and cadence patterns, as well as their association with cardio-metabolic risk factors. Methods: Participants of Chinese, Malay, and Indian ethnicity from the Singapore Health Study consented to have their activity monitored with an accelerometer (Actigraph GT3X+). Participants were instructed to wear the device for seven consecutive days. Socio-demographic information was collected during a standardised interview and health screenings were conducted. The median daily step count and peak 1-minute and 30-minute cadences (not necessarily consecutive minutes) were derived as well as the amount of time accumulated in the following cadence bands: 0 (non-movement), 1-19, 20-39, 40-59, 60-79, 80-99 and ≥100 steps/min. Associations between cadence and cardio-metabolic risk factors including body mass index, waist circumference, fasting glucose and lipids were also investigated. Analyses were adjusted for age, gender, ethnicity, marital status, employment status and education level. Results: A total of 705 participants had valid accelerometer data and were included in the analyses. Participants were mostly married (60%), Chinese (69%), and female (58%) with a mean age of 47.2 years. The median daily step count was low regardless of ethnicity (overall 6751.71) and overall 53% of waking time was spent in cadence band 0-steps/min compared with 2% of wear time in cadence band ≥100 steps/min. Peak cadences were significantly lower in Indians and Malaysians compared with Chinese (ps≤0.001). Median step count and peak cadence were consistently significantly associated with body mass index (ps≤0.001), waist circumference (ps≤0.001), fasting glucose (ps≤0.05) and HDL cholesterol (ps≤0.05). Conclusions: The low step volume and cadence differences observed in this study suggest there is a need for targeted health promotion by ethnic group. This study also provides further insight into the associations of stepping volume and intensity with cardio-metabolic risk factors.
P3.03.17

SELF-REPORTED VERSUS OBJECTIVELY MEASURED PHYSICAL ACTIVITY IN A MULTI-ETHNIC ASIAN POPULATION

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Objective The Global Physical Activity Questionnaire (GPAQ) is one of the most widely used questionnaires for population surveillance of activity levels. Although validation studies exist, they are often of smaller sample size, are not population-based, and do not provide absolute activity levels. Hence, there remains a need for population-based studies comparing GPAQ and accelerometry. We compared GPAQ and accelerometer determined physical activity (PA) and investigated factors associated with differences between both measures in a large national sample in Singapore. Methods Participants were recruited from the nationally representative Singapore Health Study in 2014 and 2015. They were invited to wear an ActiGraph GT3X+. GPAQ and socio-demographic information was collected during a standardised interview. Time spent in 10-minute bouts of moderate (MPA), vigorous (VPA), and moderate-to-vigorous PA (MVPA) was determined according to standard procedures. The difference between both measures was quantified and determinants of the difference were modelled using linear regression models, considering gender, ethnicity, age, education, working status, GPAQ activity level (low, moderate, and high) and body mass index. Results 705 participants agreed to wear the accelerometer and met the wear-time criteria (mean age: 46.5±14.6 years, female: 58%). The majority was Chinese (66%), followed by Malay (14%), Indian (12%), and Others (8%). According to GPAQ and accelerometer, participants engaged in a median of 240 (Interquartile range (IQR): 0 - 600) and 66 (0 - 133) minutes of moderate, 0 (0-60) and 0 (0-0.1) minutes of vigorous, and 330 (0-750) and 70 (0-141) minutes of moderate-to-vigorous PA per week. The median difference between GPAQ and accelerometer determined minutes per week was 151 (-367 - 510) for moderate, 0 (-106 - 60) for vigorous and 212 (-366-690) for moderate-to-vigorous PA. Spearman correlation between both measurements was 0.06 (MPA), 0.16 (VPA), and 0.12 (MVPA). Multivariable analysis revealed being female, lower educational level, and currently working were significantly associated with greater differences between GPAQ and accelerometer. Conclusions Comparing self-reported and objective PA measurements in a population-based study in Asia highlights considerable over reporting with GPAQ and poor correlation between the two measurements. Variation in over reporting can potentially be explained by socio-demographic factors.

P3.03.18

MONITORING POPULATION LEVELS OF PHYSICAL ACTIVITY AND SEDENTARY TIME IN NORWAY — STATUS AND SECULAR TRENDS

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Purpose: The WHO Member States have agreed on a voluntary global target to reduce physical inactivity by 10% by 2025. In order to monitor trends in physical activity (PA), valid and reliable assessment methods employed in nationally representative samples are required. However, such initiatives are scarce. Four nationally representative surveys of PA and sedentary behavior using accelerometers were conducted between 2005 and 2015 in Norway. We here present population levels of PA in Norway and report secular trends in PA across all ages. Methods: Children and adolescents (9 and 15-year-olds) were surveyed in 2005 and 2011 (also included 6-year-olds), and adults and older people (20-85-year-olds) were surveyed in 2008/09 and again in 2014/15, including in total more than 12,000 individuals. PA were assessed by ActiGraph accelerometers. Trends were examined using general linear models and logistic regression. Results: Six-year-olds are 21% and 70% more active than 9- and 15-year-olds, respectively (pAdults were significantly more active in 2014/15 compared to 2008/09. There was no difference in sedentary time, but participants in 2014/15 spent on average 4 min more per day in MVPA compared with 2008/09. Conclusions: The results from the Norwegian monitoring surveys indicate a substantial age-related decline in average PA from childhood into adulthood. Furthermore, adolescents appear to spend more time sedentary than any other age group. An adverse secular trend in PA from 2005 to 2011 among young people and a positive trend in PA between 2009 and 2015 in adults and older people were observed.

P3.03.19

WAIST AND WRIST ACCELEROMETER STEP OUTPUTS IN TREADMILL AND SIMULATED ACTIVITIES OF DAILY LIVING

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ANALYSIS

LIFESTYLE INDICES IN ASSOCIATION WITH CARDIOVASCULAR DISEASE RISK: A SYSTEMATIC REVIEW AND META-

P3.03.21

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Objective: To compare cadence obtained from waist and wrist accelerometers (relative to visually counted step criterion) in treadmill and simulated activities of daily living. Methods: 40 men and 40 women (age=30.5±5.9 years, BMI=24.8±3.4 kg/m2) concurrently wore Actigraph GT9XLink accelerometers at their waist and non-dominant wrist for five-minute video-recorded treadmill bouts at speeds increasing incrementally by 0.5mph from 0.5 to 6 mph and during seated rest (SR), computer work (CW), watching a movie (WM), folding laundry while standing, vacuuming, stair climbing, and self-paced over-ground walking (repetitive corridor loop). Confidence intervals (95%) for the mean difference (test method – criterion) were used within an equivalence testing framework to evaluate accuracy relative to the pre-defined equivalence margins of ±3 (seated behaviors) and ±10 steps/min (standing/ambulatory activities), respectively. Results: Relative to the criterion, both waist and wrist attachments under-counted steps across treadmill speeds; however, computed confidence intervals for the waist attachment were contained within the pre-set equivalence margin at treadmill speeds between 2.5 and 4.0mph (-0.75 [-2.58, 1.08], -1.87 [-5.35, 1.60], -0.17 [-2.14, 1.80], and -0.71 [-3.50, 2.09], respectively). Similarly, both waist and wrist attachments under-counted steps in simulated ambulatory activities of daily living except for wrist attachment during laundry folding (over-counting). Most confidence intervals for both attachments were contained within the pre-set equivalence margin for seated behaviors (waist and wrist: SR=0.18 [-0.29, 0.39] and 0.71 [0.40, 1.01], WM=0.03 [0.06] and 0.71 [0.40, 1.01], respectively; waist only: CW=0.18 [-0.29, 0.39]). The waist (but not the wrist) attachment performed well during the standing behavior (folding laundry) and rhythmic over-ground walking. Otherwise, none of the confidence intervals fell within the pre-set margins for any of the simulated ambulatory activities of daily living.

Conclusions: Both attachment sites demonstrated conditions of good agreement with the criterion of measuring zero/low steps during seated or standing behaviors. The wrist-worn device performed well (and superior to wrist which performed poorly) at normal treadmill walking speeds and self-paced over-ground walking. Both attachment sites performed poorly during most other simulated ambulatory activities of daily living relative to the visually counted criterion. Supported by NIH/NIA Grant 5R01AG049024-03 — CADENCE-Adults study.

P3.03.20

RELATIONSHIP BETWEEN WALKING CADENCE AND PERCENTAGE OF HEART RATE RESERVE

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OBJECTIVE: Evidence supports that walking cadence (steps/min) is strongly associated with intensity measured as Metabolic Equivalents (METs). Less is known about the relationship between cadence and heart rate reserve (HRR), an often-used proxy-measure of intensity. The aims of this study were: 1) to investigate the relationship between cadence and %HRR; and 2) to identify cadence cut points associated with %HRR defined moderate and vigorous intensity. METHODS: 40 men and 40 women between 21-40 years, mean±SD age=30.5±5.9 years; BMI=24.8±3.4 kg/m2, completed a treadmill-walking test comprised of 5-min bouts at incrementally faster speeds from 0.8 to 9.7 km/h, with a 2-min rest between bouts. The test was terminated at the completion of the 5-min bout during which the participant began to run, achieved >75% of estimated heart rate (HR) maximum (HRmax = [(220 – age) x 0.75]), or reported a Borg rating of perceived exertion >13. Cadence was visually tallied and HR was measured using a chest-worn monitor during all bouts (average of final 2-min). %HRR thresholds for moderate (40%) and vigorous (60%) intensity, as defined by the American College of Sports Medicine (ACSM), were estimated using the following equation: %HRR = ([HRmax – HR rest] x %intensity) + HR rest. A bilinear regression model with random effects to account for repeated measures was applied to the data. Cadence cut points associated with %HRR-defined moderate (40% of HRR) and vigorous (60% of HRR) intensity were computed using the regression model. RESULTS: Approximately 60% of the variance in %HRR was explained by cadence (i.e., R2=0.61, p CONCLUSIONS: Cadence explained ~60% of the variance in %HRR, with ~125 steps/min and ~145 steps/min emerging from the data as reasonable heuristic values (i.e., evidence-based, practical, rounded cut points) for %HRR-defined moderate and vigorous intensity, respectively. These heuristic values are not intended to be precise, but rather to inform generalized cadence-based physical activity intensity recommendations and/or accelerometer data processing and analysis techniques.

P3.03.21

LIFESTYLE INDICES IN ASSOCIATION WITH CARDIOVASCULAR DISEASE RISK: A SYSTEMATIC REVIEW AND META-

ANALYSIS
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Purpose: Lifestyle factors including an unhealthy diet, physical inactivity, smoking and high alcohol consumption have been associated with increased risk of cardiovascular diseases (CVD). To account for interrelations between single lifestyle factors or behaviors and to better estimate the overall risk, it may be more advantageous to investigate lifestyle indices or scores. The aim was to summarize the current evidence on associations between lifestyle indices and cardiovascular diseases derived from epidemiological studies. Methods: A systematic literature search in PubMed and Web of Science was conducted. Prospective cohort studies that investigated a lifestyle index including at least three behaviors in association with CVD risk in adult populations without chronic diseases at baseline were included. Multivariable-adjusted Hazard Ratios were combined using DerSimonian-Laird random-effects model comparing the maximum with the minimum healthy lifestyle score. Statistical heterogeneity between studies was tested using the I² index. Results: We identified 19 studies which predominantly investigated lifestyle indices including dietary behavior (mainly assessed using a dietary index), physical activity, body mass index and smoking. Many studies included alcohol consumption whereas the lifestyle behaviors, sleep and sedentary behavior were each investigated in one single study. Adherence to a healthy lifestyle, including being physically active, eating ‘healthy’, maintaining a normal weight, consuming low or moderate amounts of alcohol and non-smoking, was associated with a reduced risk of 65% for overall CVD. As heterogeneity was relatively high (I²: 70.6%), types of CVD were investigated separately. Compliance with a higher lifestyle score was associated with a reduced risk of 73% for coronary heart diseases, 69% for heart failure, 63% for stroke and 86% for myocardial infarction compared to a lower lifestyle score. Conclusion: Adherence to a healthy lifestyle was associated with an overall CVD risk reduction of 67%, supporting the importance of public health programs promoting lifestyle changes for primary prevention of cardiovascular diseases. Most studies focused on diet, physical activity, body mass index and smoking. Further studies are required to investigate other behaviors that could potentially impact CVD including sedentary behavior and sleep.

P3.03.22
ASSESSING THE ACCURACY OF NUTRITIONAL INFORMATION PROVIDED ON GROCERY WEBSITES
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Purpose: The University of Toronto’s Food Label Information Program (FLIP) is a systematic and comprehensive database of packaged foods and beverages that is updated approximately every 3 years for monitoring and testing hypotheses related to the Canadian food supply. Previous data collections involved scanning the store shelves of 4 major grocery retailers and either purchasing products (in 2010), or digitally collecting the information via a mobile application (in 2013). For future collections, we would like to extract nutritional information from websites. Therefore, the objective of this study was to assess the accuracy of nutritional information on manufacturer and store websites in comparison to the nutritional information on packages in-store, to ultimately determine whether websites can be used as an effective tool for updating FLIP. Methods: Nutritional information (serving size, calories, fat, saturated fat, carbohydrates, sugar, fibre, protein and sodium) from three of the largest national breakfast cereal brands in Canada (Kellogg’s, General Mills, Post) was collected in-store from Canada’s largest grocery chain (Loblaws) and from three different types of websites: 1) manufacturer, 2) grocery retailer with its own food nutrition rating program (Loblaws Guiding Stars), and 3) grocery retailer with no rating program (Grocery Gateway, Longo’s). Nutritional information from each location (in-store or website) was compared using Friedman, pairwise post-hoc, and Wilcoxon Signed Rank tests. Results: The total number of breakfast cereals collected in store was 79. Of these, 55 were found on Grocery Gateway, 33 on manufacturer websites, and 43 on the Loblaws website (Loblaws data were incomplete as their website was undergoing maintenance at the time of collection). Friedman's test showed a significant difference in sodium content between at least two of the locations (p=0.035). Wilcoxon showed the difference in sodium was significant between Gateway and in-store (p=0.007). Conclusions: There was no significant difference in the nutrient values between websites and in-store with the exception of sodium content obtained from Grocery Gateway. Therefore, it will be important to collect data from multiple websites and compare results in order to increase confidence in the accuracy of website data and identify areas of concern when updating the FLIP database.

P3.03.23
HEALTHY AND UNHEALTHY DIETARY PATTERNS AMONG MEXICAN DESCENT MEN LIVING ON THE US / MEXICO BORDER BY AGE, BMI, LANGUAGE PREFERENCE, GENERATIONAL STATUS, ALCOHOL USE, AND EMPLOYMENT
ASSOCIATION BETWEEN NON-NUTRITIVE SWEETENER INTAKE AND SELF-REPORTED PHYSICAL ACTIVITY


Purpose: Non-nutritive sweeteners (NNS) have been studied for their association with weight status and their potential to lead to compensatory eating habits. Anecdotal evidence suggests that those who are engaged in higher levels of physical activity consume more NNS than those with a sedentary lifestyle. This is thought to occur as NNS consumers may be more committed to lifestyle changes or weight loss; however, the association between NNS consumption and physical activity is yet to be explored. Thus, the purpose of this investigation is to determine if associations exist between self-reported NNS intake and physical activity.

Methods: Adult participants completed three 24-hour dietary recalls and the Godin Physical Activity Assessment questionnaire. Dietary recalls were analyzed for average reported daily NNS consumption, including saccharin, aspartame, acesulfame potassium, and sucralose. The Godin measures time spent engaged in strenuous, moderate, mild, and strength training each week. Participants were categorized in either sedentary/low or moderate/high physical activity groups based on standardized scoring. Demographics were analyzed using descriptive statistics and differences between low and high physical activity groups were analyzed via chi-square and ANOVA tests. Associations between NNS intake and physical activity were assessed using correlations and ANOVA.

Findings: Among 97 adults (mean age = 35±15 years), total NNS reported (mg) and total number of minutes of vigorous to moderate physical activity were significantly negatively correlated (r=−0.20; p=0.05). Significant differences were found in mean NNS consumption between those in the low vs high physical activity group (136±184 vs 43±91 mg/day, respectively; p=0.05). BMI of participants reporting low physical activity was higher than participants reporting high physical activity [28.0±7.8 vs 25.7±5.7; p=0.08], which was not statistically significant but may be clinically significant. Conclusions: Contrary to popular belief, this cross-sectional analysis indicates that those participating in regular moderate/vigorous physical activity are actually less likely to consume NNS. Although BMI was higher for sedentary participants, it was not significant; however, this suggests that other variables likely influence physical activity as well as NNS. Future investigations should look beyond the association found here to assess changes in dietary consumption with physical activity levels.

P3.03.25
UPDATE OF THE BEVQ-15, A BEVERAGE INTAKE QUESTIONNAIRE: AN ASSESSMENT OF PRELIMINARY VALIDITY
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Purpose: Given the current obesity epidemic, consumption of energy-containing beverages, specifically sugar-sweetened beverages (SSB), is a growing area of interest within the nutrition community. An updated version of the BEVQ-15, an easily-administered beverage intake assessment tool, is needed to address trend changes in beverage consumption. The purpose of this preliminary cross-sectional investigation was to determine the validity of an updated version of the BEVQ-15, which estimates average daily intake of beverages consumed across 15 beverage categories, as well as total SSB and total beverages. Methods: Several improvements were made to the original BEVQ-15. First, as the previous version had a maximum limit of 60 fl oz/day for any individual beverage, the ceiling limit was removed to make it more applicable to other populations such as athletes. Second, a nut milk category to accommodate additional dairy-free milk options was added; and finally, several creamer and sweetener preferences within the coffee/tea categories were added to help differentiate between calorically or artificially sweetened products. Participants completed four 24-hour dietary intake recalls and the updated BEVQ-15. Validity for daily beverage fl oz consumption was assessed by comparing reported beverage intake from the updated BEVQ-15 with beverage intake reported by the dietary recalls. This investigation presents intake from the BEVQ-15 vs intake from dietary recalls for water, total milk (including dairy-free milk), total alcohol (wine, beer, liquor), SSB (soda, energy drinks, sweetened fruit drinks, sweetened tea/coffee), and total beverage intake (all 15 beverage categories). Analyses included descriptive statistics, correlations, and paired samples t-tests. Findings: Among 18 participants (mean age=33.5±17.1 yrs), no significant differences in consumption between the BEVQ-15 and recalls were reported for water, total milk, total alcohol, SSB, or total beverages (mean fl oz differences=32.2±97.3, 3.3±10.3, 0.2±3.7, 3.1±7.6, 25.6±92.2, respectively). Furthermore, these categories were all significantly correlated (R ranged 0.66-0.83; p≤0.01). Conclusions: Given the demand for the BEVQ-15 since its development in 2010, an updated version reflecting current dietary intake patterns was needed. This updated version of the BEVQ-15 provides an improved dietary assessment method to rapidly assess beverage consumption, which could help to improve knowledge related to beverage intake patterns.

P3.03.26
THE ASSOCIATION BETWEEN AEROBIC PHYSICAL ACTIVITY AND DEPRESSION ACROSS BODY MASS INDEX LEVELS
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Purpose: Previous studies suggest people who are overweight/obese are at greater risk for depression. However, little is known about aerobic physical activity’s potential to attenuate the increased risk of overweight/obesity on depression. Therefore, the study purpose was to investigate the odds of depression and related symptoms across different combinations of physical activity and body mass index (BMI) groups. Methods: This was a cross-sectional study using self-reported Health Assessment data from employees at a large university system (n=11,777). Employees reported whether they have depression, and have been feeling down, depressed, or hopeless in the last two weeks. Reported height and weight were used to determine BMI category (healthy, HW; overweight, OW; obese, OB). Reported physical activity level was used to classify respondents as inactive, insufficiently active, or active. Nine exclusive groups were created from BMI and physical activity levels (HW/active; HW/insufficiently active, etc.). Multivariable logistic regression models tested differences in odds for depression and feeling down between groups. Models were adjusted for gender, age, and risk factors (e.g. poor nutrition, stress, etc.). Results/findings: Employees who were inactive had higher odds for depression, regardless of BMI category, relative to those who were HW/active (ORHW/active=2.1, p=0.002; OROW/active=2.8, pOB/active=3.1, pHW/active=1.5, p=0.04; OROW/insufficiently active=1.8, pOB/insufficiently active=1.8, p Conclusions: Results suggest physical activity is beneficial for preventing depression and related symptoms across BMI levels. Furthermore, physical activity among those who are overweight/obese may reduce risk for depression and related symptoms to levels below/comparable to people who are healthy weight inactive. The benefits of physical activity for people who are overweight/obese extend beyond weight reduction/control and can help prevent depression and associated symptoms.

P3.03.27
THE PHYSICAL ACTIVITY INDEX (PAI): A STRUCTURAL EQUATION MODELING APPROACH USING NHANES
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Obispo.

Purpose: Physical activity (PA) behavior (e.g., moderate-vigorous aerobic activity [MVPA], sedentary behavior [TV-time]) and related performance capacity (e.g., strength, fitness) are often conceptualized in a disaggregated manner. Yet, integrating behavioral and performance indicators as a latent construct may better predict health outcomes. No extant measure captures this latent construct. Our goals were to determine if the latent construct (PAI) exists, and to identify the optimal weighted combination of PA-related behavioral and performance indicators predictive of health outcomes. Methods: Participants were a nationally representative sample of US adults from 2011-2014 NHANES (N = 9624). PAI indicators included TV-time, MET level associated with self-reported MVPA, estimated cardiorespiratory fitness (CRF), and grip-strength (Grip). Heath outcomes included binary measures of self-reported good-health status, multi-morbidity, functional limitations, and metabolic syndrome. Structural equation modeling was used via the Multiple Indicators Multiple Causes (MIMIC) model to define a latent variable (PAI) and determine its mediating effect on the set of health outcomes. The indicators and health outcomes were entered into the model using MPlus (version 7.4). Results: The MIMIC model confirmed the latent factor PAI (R2.383, P Conclusion: These data provide initial support for the latent construct (PAI) and its potential utility to integrate physical activity-related performance and behavioral indicators to improve health prediction and promotion. We discuss how the PAI may be calculated and discuss potential use in research, especially using prospective designs, to provide personalized exercise prescription based on both behavior and current physical performance capacity.

P3.03.28
SCREENS, FOOD, AND FATNESS: A COMPLEX TRIOLOGY
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Purpose: There is some evidence for a relationship between TV viewing and adiposity in children and adolescents. However, it is unclear to what extent this is mediated by dietary behaviours. The aim of this presentation is to critically discuss the evidence for the relationships between screen-based behaviours, dietary behaviours and adiposity. Methods: Summary of systematic review level evidence. Results: The relationship between screen behaviours, dietary behaviours and adiposity is complex. Reviews suggest that higher levels of TV viewing tend to be associated with a less healthful diet and a further review of lab studies found that screen time in the absence of food advertising was consistently associated with increased dietary intake compared with non-screen behaviours. However, there is also review level evidence that sedentary behaviour appears to be associated with adiposity in adolescents, irrespective of dietary intake. Diversity in how dietary behaviour and/or sedentary behaviour are defined and assessed is likely clouding understanding. In addition, most of the evidence on these relationships is based on cross-sectional designs. Conclusion: There is a lack of clarity in the evidence base. Further work and stronger designs are needed. Possible explanations for the screen time – food intake relationship will be discussed.

P3.03.29
REVIEW LEVEL EVIDENCE FOR DIFFERENTIAL ASSOCIATIONS BETWEEN SEDENTARY BEHAVIOUR AND ADIPOSITY IN YOUTH: CAUSAL OR NOT?
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Purpose. Early research on sedentary behaviour had a strong focus on young people (mainly children), TV viewing, and weight status outcomes. 32 years ago, a seminal paper by Dietz and Gortmaker asked whether we are ‘fattening our kids at the TV set’. Over many years, there has been conflicting evidence on the nature and strength of association between sedentary behaviours (often screen based) and adiposity. Methods. A review of 28 systematic reviews and meta-analyses was undertaken (n=10 intervention designs; n=9 observational designs; n=9 mixed designs). All provided review-level data on the association between sedentary behavior and markers of adiposity in young people up to the age of 18 years. In addition, an analysis of causality was undertaken using the Bradford Hill criteria of strength of association, consistency, temporality, and dose-response. Results. Observational studies show associations between sedentary behaviours and adiposity. The strongest and most consistent associations are for TV viewing, with other sedentary behaviours showing less consistent evidence. Objective measures of sedentary behavior often show weak or no associations with adiposity. Intervention data are mixed with some evidence for reductions in adiposity from sedentary behavior interventions, but such changes are often modest. Possible confounders are sometimes not assessed. Analysis of causality suggests mixed findings for strength of association and dose-response. Conclusions. Sedentary behavior is associated with adiposity, but the
nature of this association is somewhat dependent on the type of sedentary behaviour, method of assessment, and weight status outcome. Evidence for a causal association is currently unclear.

P3.03.30
PHIT2LEARN – PHYSICAL ACTIVITY INTERVENTIONS TO ENHANCE LEARNING IN VOCATIONAL EDUCATION AND TRAINING: A DESIGN PRESENTATION

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Purpose: Physical activity (PA) and sedentary behavior (SB) seem to have respectively beneficial and detrimental effects on school performance, but evidence for a causal relationship in vocational education and training (VET) students is lacking. This is surprising, as VET students (±16-20 years) stand to benefit because the prefrontal cortex is developing during this age and is therefore sensitive to PA/SB interventions. Furthermore, students in VET have low activity levels in general, meaning enhanced PA/SB behavior could lead to improvement on cognition and learning. The goal of this project is investigating causal effects of PA/SB interventions on a variety of learning performance measures in VET students. Depending on the kind of intervention and the potential mechanisms underlying acute, short-term, or long-term effects, outcome measures vary from specific effects on cognition, to more general effects on school performance, and vital citizenship/employeeship. Methods: In four closely interlinked studies we investigate the causal effects of ‘sedentary behavior repression interventions’ on cognition, school performance, and 21st century skills in VET students. Study 1 (observational) elucidates habitual, objectively measured PA patterns of VET students and their potential association with cognitive performance, school performance, and proxies of vital citizenship and employeesship. Studies 2 and 3 (fundamental) investigate acute interventions in randomized controlled experiments in school settings, controlling for study discipline (physically active versus sedentary disciplines) to determine possible causal effects of PA/SB interventions on cognitive performance and proxies of vital citizenship and employeesship and their underlying mechanisms. Study 4 (ecological experiment) is a long-term intervention developed for the VET setting based on results from the first three studies and literature. Cognition is tested by the Stroop Test, Symbol Digit Modalities Test, and N-back task. School performance is operationalized as scores on Dutch and mathematics; absenteeism/dropout; and the Motivated Strategies for Learning Questionnaire. Vital employeesship/citizenship is measured as collaboration and creativity (GAU, divergent thinking). Where applicable habitual daily activity is measured by accelerometry. Results/Conclusions: Besides scientific output, we deliver tailor-made PA/SB advice and programs for VET students and teachers, taking into account their interests, needs, and possibilities. Furthermore, PHIT2LEARN produces educative materials for students, parents, and teachers.

P3.03.31
ADMINISTERING THE AUTOMATED SELF-ADMINISTERED 24-HOUR DIETARY ASSESSMENT TOOL (ASA24) TO COLLECT 24-HOUR DIETARY INTAKE DATA FROM A SAMPLE OF GRADES 6 AND 7 STUDENTS IN ONTARIO, CANADA.

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Objective: The aim of this study was to assess the feasibility of administering ASA24 to collect 24-hour dietary intake data from a sample of Grades 6 and 7 students in Ontario, Canada. Methods: The study involved the completion of up to two 24-hour recalls using ASA24, in the classroom and at home in 2016. A total of 295 students were recruited from Grades 6 and 7 classrooms in eight schools across Ontario. During class time, students completed ASA24 and a demographic survey. One week after school-based data collection, students who provided an email address were sent invitations to complete ASA24 at home, and later a survey assessing their experience using ASA24. Chi-square tests were used to assess differences in ASA24 completion rates in relation to demographic characteristics. Results: Approximately half of the students completed the school-based ASA24. In the school setting, significantly more Grade 7 students, compared to Grade 6 students, completed ASA24 (60% vs. 45%) and had significantly lower completion times (36±11 min vs. 67±56 min). Other factors considered—including gender, perceived weight status, perceived eating habits, and family affluence—were not related to ASA24 completion in school. Only 10% of students completed the home-based ASA24. Significantly more students with self-perceived "excellent" eating habits completed the home-based ASA24 relative to students with poor, fair, good, and very good eating habits. No other factors considered were associated with completion. It is important to note that many students did not provide a personal email address that they regularly checked and so completion of the home-based ASA24 was limited. Finally, when queried on their experience completing ASA24, the majority of students reported that ASA24...
was "easy", "very easy", or "neutral". Conclusions: ASA24 is a feasible tool for the collection of dietary intake records among Grade 7 students when completion is facilitated in school; ASA24 completion was a challenge for Grade 6 students, who may benefit from additional supports such as a training session. Few children in the study had and used personal email addresses; alternative methods are needed to prompt students in this age range to complete home-based ASA24.

P3.03.32
THE PHYSICAL EDUCATION PREDISPOSITION SCALE: PRELIMINARY TESTS OF RELIABILITY AND VALIDITY IN AUSTRALIAN STUDENTS

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Objective: There is a need to examine students' predispositions towards Physical Education in order to develop pedagogical strategies and to enable students to enhance their own health and well-being. The main aim of this study was to psychometrically test the Physical Education Predisposition Scale (Hilland, Stratton, Vinson, & Fairclough, 2009) with a cohort of Australian students. This was to test its cultural transferability and generalizability, and to assess secondary school students' Perceived Physical Education Ability and Physical Education Worth. Secondary aims were to explore how the two variables were related, and to investigate age and gender differences. Methods: Altogether, 266 Year 7, 8, 9 and 10 students (aged 12-16 years), from four Government schools within the North Eastern region of Melbourne, completed the Physical Education Predisposition Scale. Results: Principal components analysis revealed the presence of a simple two-factor structure explaining 66.9% of the variance. Factor 1 (labelled Perceived Physical Education Worth) consisted of items representing the cost benefit assessment of participating, reflecting enjoyment and attitude (α = 0.91). Items within factor 2 (labelled Perceived Physical Education Ability) represented perceptions of competence and self-efficacy (α = 0.92). Significant positive correlations were observed between the two factors (r = 0.50 to 0.82, p Conclusion: The present study established the factorial validity, internal consistency, and test retest stability of the Physical Education Predisposition Scale with an Australian sample. Overall, the results were consistent with the two-factor structure identified in the original Physical Education Predisposition Scale (Hilland et al., 2009), with an amended 14-item version for Australian adolescents (7 Perceived Physical Education Worth & 7 Perceived Physical Education Ability). Our results support the use of the Physical Education Predisposition Scale as a concise and straightforward measurement tool by teachers and researchers in the Physical Education setting.

P3.03.33
EXAMINING THE ROLE OF MULTIPLE HEALTHY WEIGHT BEHAVIOURS ON OVERWEIGHT AND OBESITY AMONG ADOLESCENTS

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Objective: This study aims to contribute to the limited number of studies that have explored the impact of not meeting the recommendations for physical activity, screen time, fruit and vegetable consumption and sleep on overweight and obesity among adolescents. Methods: A cross-sectional study of data from the 2015 Ontario Student Drug Use and Health Survey (OSDUHS) was conducted. OSDUHS is a provincially representative survey of students in publically funded schools in Ontario, Canada. This study included self-reported data from students aged 11-17 years (n=9866). The main outcome variable was overweight or obesity, classified using WHO BMI cut-points. Four independent variables for healthy weight behaviours were examined: (1) moderate-to-vigorous physical activity (MVPA) (Results: Only 2% of students in Ontario met the recommendations for all four healthy weight behaviours and 33% of students did not meet any of the four recommendations. In both the binomial and multinomial models, not meeting the recommendations for MVPA was the only significant healthy weight behaviour associated with both overweight and obesity (AOR:1.29, 95% CI: 1.03-1.62), and solely obesity (AOR: 1.45, 95% CI: 1.05-1.99). Males, students with lower SSS ratings, and students with parents with an education of 'High School' or less were also at significantly greater odds of being obese. Conclusions: Findings from this study show that not meeting the recommended levels of MVPA is a critical behavioural predictor of obesity status in 11-17 year old adolescents, after controlling for differences in screen time, fruit and vegetable consumption, sleep, and demographics. These findings could have important implications toward policies and programs targeted at reducing obesity and increasing physical activity rates among students.
P3.03.34
ASSOCIATIONS BETWEEN PHYSICAL ACTIVITY AND COGNITIVE OUTCOMES IN EARLY CHILDHOOD
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Objective: A growing body of evidence suggests that physical activity participation in middle childhood and adolescence is important for cognitive development. However, there remains little evidence from early childhood, a time when children’s cognitive development is rapid and significant. This study is among the first to investigate the association between physical activity participation and young children’s cognitive development.
Methods: 18-30 month old children were recruited through the MARCS Institute BabyLab, an existing database of families living in the Greater Western Sydney community. Children’s general cognitive skills were assessed using the Bayley Scales of Infant Development (n=70) and children’s executive function was assessed using the Baby Stroop and Shape Stroop tests (n=44). All cognitive measures were undertaken by a trained research assistant. Children’s physical activity was objectively assessed in free-living conditions using ActiGraph GT3X+ accelerometers for ≥3 weekdays and 1 weekend day (≥7.4 hours/day). The percentage of time spent in light- to vigorous-intensity physical activity (%LMVPA) on weekdays and weekend days were determined using an accelerometer cut-point of 100 counts/minute. Data were examined as continuous variables and collapsed into tertiles (high/mid/low LMVPA).
Results: A total of 84.9% of participants were meeting or exceeding Australian PA guidelines of at least 150 minutes of PA over 5 days per week (self-reported using the Active Australia Survey). A total of 85.5% of participants agreed or strongly agreed that PA counselling was important in all aspects of medical practice, and 57.8% of participants agreed or strongly agreed that they felt confident in providing PA counselling. A total of 73.7% of participants agreed or strongly agreed that good PA habits of the medical practitioner can encourage patients to be physically active. Chi-square analyses did not reveal any significant differences in participants’ perceptions of PA or preparedness for counselling between those meeting PA guidelines and those who were not.
Conclusions: This study provides evidence that physical activity participation during early childhood may be favourably associated with some cognitive outcome measures. Perhaps equally important, higher physical activity participation was not negatively associated with children’s cognitive skills, suggesting that the promotion of physical activity for health in early childhood is not detrimental to other aspects of development. Future research should draw on longitudinal data, consider the context of physical activity participation and examine mechanisms for the observed associations.

P3.03.35
LET’S GET PHYSICAL: EXPLORING THE PERCEPTIONS OF PHYSICAL ACTIVITY PARTICIPATION AND COUNSELLING AMONG AUSTRALIAN MEDICAL STUDENTS
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Objective: Physicians have been identified as important promoters of physical activity (PA) — a modifiable risk factor for a range of chronic diseases. Evidence suggests, however, that physicians may not always be equipped to provide PA counselling due to a lack of time, lack of confidence or lack of PA knowledge. The purpose of this study was to examine the perceptions of, and preparedness for, PA counselling in a sample of first year Australian medical students.
Methods: Seventy-eight first year medical students (59% female, mean age 19.68±2.42yrs) from a large multi-campus Australian university completed a brief survey exploring perceptions of PA, current PA participation, and perceived preparedness for PA counselling. Frequencies were used to describe responses to Likert-scale questions, and chi-square analyses were used to explore differences in responses between those who were achieving the recommended amount of PA and those who were not. Results: A total of 84.9% of participants reported meeting Australian PA guidelines of at least 150 minutes of PA over 5 days per week (self-reported using the Active Australia Survey). A total of 85.5% of participants agreed or strongly agreed that PA counselling was important in all aspects of medical practice, and 57.8% of participants agreed or strongly agreed that they felt confident in providing PA counselling. A total of 73.7% of participants agreed or strongly agreed that good PA habits of the medical practitioner can encourage patients to be physically active. Chi-square analyses did not reveal any significant differences in participants’ perceptions of PA or preparedness for counselling between those meeting PA guidelines and those who were not.
Conclusions: The majority of participants were meeting or exceeding recommended levels of PA and recognised their PA participation could influence their future patients’ PA levels. Participants perceived PA counselling to be important, however, less than 60% of participants felt confident providing PA counselling. Given the level and frequency of contact with the general population, and the opportunity to promote positive health behaviours during consultations, equipping future physicians with the skills and confidence to provide PA counselling is imperative to reducing the burden of disease related to inactivity.
P3.03.36
VALIDITY OF NONINVASIVE COMPOSITE SCORES TO ASSESS CARDIOVASCULAR RISK IN TEN-YEAR-OLD CHILDREN
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Agreement between and classification accuracy of six different noninvasive composite scores and a cardiovascular disease (CVD) risk factor score were investigated in 911 (466 boys and 445 girls) ten-year-old Norwegian children. A CVD risk factor score (triglyceride, total cholesterol/HDL ratio, homeostasis model assessment of insulin resistance, systolic blood pressure (SBP), waist-to-height ratio (WHtR) and cardiorespiratory fitness) and six noninvasive risk scores (fitness + three different measurements of fatness (body mass index (BMI), WHtR, skinfolds), with and without inclusion of SBP) were calculated (mean z-score by gender). Agreement was assessed using Bland–Altman plots. The ability of noninvasive scores to correctly classify children with clustered CVD risk was examined by Receiver Operating Characteristic (ROC) analysis and Cohen’s kappa coefficient (k). For both sexes the noninvasive scores without SBP showed excellent AUC values (AUC = 0.93–0.94, 95% CI = 0.88–0.98), moderate kappa values (k = 0.49–0.64), and had limits of agreement of 0.0 ± 0.78–0.89 (arbitrary unit). Inclusion of SBP increased AUC values (AUC = 0.96–0.97, 95% CI = 0.94–0.99), kappa values (k = 0.58–0.69), and reduced limits of agreement (0.0 ± 0.68–0.76). Noninvasive scores that include fitness and fatness provide acceptable agreement and classification accuracy, allowing for widespread early identification of children that might be at risk for developing CVD later in life. SBP should be included in the noninvasive score to improve classification accuracy if possible. Keywords: cardiorespiratory fitness, anthropometric measures, cardiovascular disease, systolic blood pressure, noninvasive score

P3.03.37
A SYSTEMATIC REVIEW OF THE PORTION SIZE RECALL ERRORS ASSOCIATED WITH DIFFERENT MEASUREMENT AIDS IN CHILDREN.
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Objective: Dietary intake assessment is particularly challenging in children. Literacy and numeracy skills memory can all impact on a child’s ability to accurately report their food intake, in particular for estimations of the portion sizes for foods consumed. To reduce the estimation errors in food portion size reporting, a number of different portion size estimation aids have been developed and tested. This systematic review investigated the error associated with the use of different aids for portion size estimation in dietary recall studies involving children. Methods: Eight electronic databases were searched using relevant keywords to identify studies in children that investigated the effectiveness of portion size estimation aids in dietary recalls. Both randomized and non-randomized studies were included; qualitative research and research involving parents making estimates were excluded. From 10512 identified records, screened by two independent reviewers, 274 full texts were retrieved. Eleven studies met the inclusion criteria. Results: Fourteen different aids were tested. Ten aids were 2-dimensional (2D) four were 3-dimensional (3D). The 2D aids included various portion size images of foods, serving vessels with volume measures shown or generic (non-food) drawings. Three of the 3D aids involved a computer-based program. The 3D were food models. The time of the recall ranged from immediately following the meal to up to 4 days later. The different types of aids had ranging results, with reported mean percentages of errors between 7% and 32.8% for the 2D aids; 4% to 10.4% for the computer-based errors; and 21% and 54% for the 3D aids. Studies comparing physical 2D aids (images) to computer-based aids (n=3) found better results for the computer-based programs. Three studies compared 2D and 3D aids; one study found a lower error when the 2D aids were used; another study found best results using the 3D models; and one found no difference. Two studies reported no significant differences in the child’s ability to estimate food portion size depending time between food presentation/consumption and estimation. Conclusions: The variation between aids is large and more evidence is needed to determine their effectiveness. Portion size education using aids and new tools should be thoroughly studied.

P3.03.38
PHYSICAL ACTIVITY LEVELS AND ACADEMIC ACHIEVEMENT IN BRAZILIAN STUDENTS
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Objective: The benefits of physical activity go beyond those related to physical health. Nowadays it is well known that there may be an influence on the academic achievement (AA) of children and adolescents. Thus, the purpose of
this study is to verify if the physical activity level (PAL) interferes upon the AA of high school students. Methods: Three hundred and forty-eight adolescents from a Brazilian federal public school participated in the study. The IPAQ (International Physical Activity Questionnaire)- short version was used to collect information on PAL. The cut point for the "active" classification was 300 min/week of PA. Information about the participation in sports' schools was obtained through a question inserted within the IPAQ. To determine AA, the average grades from the 3 great areas of knowledge were considered (area 1 = languages, codes and its technologies; area 2 = nature sciences, math and its technologies; area 3 = human sciences and its technologies). Descriptive analysis of the data was used to characterize the studied population, Spearman correlation, to analyze the relation between PAL and AA, and Mann Whitney test for the analysis of differences between the physically active and the sedentary. Results/findings: No significant correlation was observed between PAL and AA (r = -0.058; p = 0.28). On the other hand, significantly higher "minimal grades" were found among the active students as well as significantly higher average grades in areas of knowledge 1 (7.2±0.8) and 2 (6.6±1.3) were observed among the students that participated in sports' schools (p = 0.017; p = 0.014). Conclusions: The PAL did not interfere in the AA of the studied adolescents and the participants of sports' schools had better AA demonstrating that sports practice may provide beneficial effects on AA. Knowing that regular exercise does not cause any loss in AA and that it brings several health benefits to the adolescents, the support from teachers and education managers in effective actions towards physical activity practice, are very important to contribute for the reduction of sedentary behaviors among adolescents students.

P3.03.39
SLEEP DURATION AND HEALTH PARAMETERS IN 18 YEAR OLD ADOLESCENTS. SHORT SLEEP DURATION IS ASSOCIATED WITH ADIPOSIY IN GIRLS.
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Objective: Short sleep duration in youth has been associated with increased obesity and cardiovascular disease risk. Many studies of sleep association with adiposity and metabolic factors in adolescence cover a wide age range, however few adjust for dietary habits and physical fitness. Our aim was to investigate the association of sleep duration in 18-year-old healthy adolescents with body composition in relation to dietary pattern and cardiorespiratory fitness (CRF). Secondly, to analyse the association of sleep duration with metabolic z-score, insulin resistance and C-reactive protein (CRP). Methods: A cross sectional study of 18-year-old adolescents (n=265) from two upper secondary schools in Iceland. Main anthropometric variables were height and weight for BMI, waist circumference (WC) and skinfold measurement on 7 sites for body fat percentage (%BF). Sleep duration and dietary habits were self-reported; they were transformed into sleep score, healthy eating score (HES) and unhealthy eating score (UES). Physical fitness (VO2max) was assessed by stationary bicycle. A subsample of 152 participants gave blood samples for metabolic z-score, HOMA-ir and CRP. Results: One third of the participants slept ≤6hr on weekdays. In girls the average sleep score was a significant predictor of both WC (β = -0.243, p=0.007) and BMI (β = -0.179, p=0.031), after adjustment for VO2max and UES. In boys average sleep duration was not associated with WC or BMI, whereas cardiorespiratory fitness was the main predictor (β = -0.563, pWe found no association in either sex between average sleep duration and HOMA-ir, CRP or metabolic z-score. Conclusions: Associations of sleep duration and adiposity were only found in girls and remained so after adjusting for physical fitness and unhealthy eating score. We found no indication of sleep duration to be associated with metabolic parameters in either sex. In this study the association of sleep duration with adiposity parameters is sex dependent.

P3.03.40
DEVELOPMENT OF A SHORT SCALE TO ASSESS PARENT USE OF FOOD TO MANAGE AND REGULATE CHILDREN'S EMOTIONS AND BEHAVIOR
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Background: Most of the discussion on parent feeding practices has focused solely on the use of controlling, intrusive or coercive practices to manage children's intake (e.g., restriction, pressure) which has counterproductive effects on appetite regulation. Less research has been conducted on using food to regulate children's emotions, particularly among toddlers, a period of development when the child is dependent upon others to soothe the distress. The aim of this study was to develop and validate the Food to Control Toddler Behavior questionnaire. Methods: A
mixed method approach was used to develop the 10 item Food to Control Toddler Behavior questionnaire: (1) cognitive interviews informed the modification, deletion and/or replacement of items; (2) confirmatory factor analyses was conducted to test our theoretical, higher-factor parenting model; and (3) content validity and criterion validity were assessed. Mothers of toddlers aged 12 to 36 months participating in the Women, Infants, and Children program completed the surveys (n=140). Results: Confirmatory factor analysis (CFA) yielded unacceptable fit for a 2 factor model (i.e, Food to Soothe and Food as Reward): χ² = 88.21, p I offer food to get my child to do what I want him/her to do” loaded on food to soothe rather than food as reward and “I withhold sweets/desserts from my child in response to bad behavior” did not load. Subscales were not associated with measured toddler weight for height percentile or maternal self-reported BMI. As predicted, subscales were positively correlated with Demandingness and negatively associated with Responsiveness on the Caregiver’s Feeding Styles Questionnaire. Conclusion: This Food to Control Toddler questionnaire provides a short, and valid tool to assess use of food as reward and food to soothe, quiet, manage, and regulate children’s emotions and behavior in response to a variety of contexts. In the future, this tool can be used to understand the implications these feeding practices have on children’s eating behavior and later weight status.

P3.03.41
ZERO CADENCE AS A PROXY INDICATOR OF SEDENTARY BEHAVIORS IN CHILDREN AND ADOLESCENTS
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Sedentary behaviors are highly prevalent, even in children and adolescents. Zero cadence (steps/min) determined using wearable devices may be a suitable proxy measure of seated sedentary behaviors in children and adolescents since theoretically no steps should be produced or detected in this position. PURPOSE: To determine the capability of accelerometer-determined zero cadence to predict common seated sedentary behaviors in children and adolescents. METHODS: 61 boys and 60 girls between 6 and 20 years of age (mean=13.0±4.2 years) performed lab-based simulated daily living activities (i.e., seated rest, watching a movie, coloring, aerobic stepping, basketbali, and jumping jacks) while concurrently wearing multiple (n=7) research-grade accelerometers (e.g., ActiGraph, ActivPAL, ActiCal, StepWatch) and pedometers (e.g., NL1000 and SW200) on manufacturer-indicated locations (i.e., hip, wrist, thigh or ankle). Receiver Operating Characteristic (ROC) analyses were conducted to examine the accuracy of zero cadence for classifying seated sedentary behaviors (specifically seated rest, watching a movie and coloring) among the other activities. Sensitivity, specificity, accuracy and area under the ROC curve (AUC) values were compared for each device. RESULTS: Across all devices, zero cadence discriminated seated sedentary behaviors with high combined sensitivity and specificity (e.g., ranges between 62-99%). AUC values for all devices were above 0.9 (p CONCLUSIONS: Research-grade accelerometers and pedometers provided valid capacity for using zero cadence to discriminate seated sedentary behaviors from other common activities of daily living. Based on this preliminary analysis it appears that accumulated time spent at zero cadence obtained by activity monitors may prove useful as an indicator of time spent in sedentary behaviors. Additional research is needed to evaluate the ability to differentiate between seated sedentary behaviors and other upright non-ambulatory activities.

P3.04 SIG: Policies and environments

P3.04.1
DO QUEBECKERS’ DEFINITIONS OF “HEALTHY EATING” AND “EATING PLEASURE” CORRESPOND TO RECOMMENDATIONS OF CANADA’S FOOD GUIDE?
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Objective: In response to low adherence to nutritional recommendations among adults, new approaches focussing on eating pleasure are increasingly studied to assess their impact on diet quality. However, whether individuals’ perceptions and beliefs about “healthy eating” and “eating pleasure” are congruent with current nutritional recommendations remains mostly unknown. To address this gap, we explored how adults define the concepts of
"healthy eating" and "eating pleasure", and to which extent these definitions are explicitly referred to within the dietary model recommended by Canada’s Food Guide (CFG). Methods: A moderator and an assistant moderator, both trained in qualitative research, conducted 12 focus groups among men and women (n=92) at Laval University, Quebec City, Canada. Participants were presented a picture board displaying 35 food items and food-related settings and were asked to explain which pictures represented best what "eating pleasure" meant to them. They were also asked to complete the sentence "For me, 'eating healthily' means..." Focus groups were video-taped and transcribed verbatim. A thematic content analysis was conducted using NVivo10. Codification of emerging themes was performed independently by two members of the research team and revised until consensus was reached. Themes were then compared with CFG’s recommendations and considered salient if mentioned in at least 50% of the focus groups (6/12). Results: We identified nine different salient perceptions and beliefs defining "healthy eating" for participants, among which only two were specifically discussed by CFG: food variety and vegetable consumption. Examples of themes that were salient but not currently mentioned by CFG were balance, quality and avoidance of processed foods. Participants also voiced twelve salient perceptions and beliefs defining "eating pleasure", of which two were referred to within CFG: food variety and sharing a meal (especially with people they appreciate or their family). All focus groups defined "eating pleasure" as related to home cooking and good-tasting food, while those elements are not found in CFG. Conclusions: Overall, participants’ discourse corresponded poorly with CFG’s recommendations. Results from this study could inform public health decision-makers on how to address nutritional messages in ways that effectively resonate with the population’s perceptions and beliefs.

P3.04.2
VALIDATION OF SELF-REPORT TOOLS TO ASSESS FOOD SOURCES AMONG YOUNG CANADIANS
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Objective: Although dietary patterns, including consumption of food prepared outside the home, are important to chronic disease prevention, national data among young people in Canada is limited. Population-based surveys typically employ abbreviated food frequency questionnaires, which do not assess the context of meals. Food records may also be used to obtain detailed information on food intake and context, but are time consuming and can alter behaviour. The aim of the current study was to assess the validity of an online food source frequency questionnaire (FSFQ) which gathered information about food preparation locations, by comparing it to a 7-day food record. A secondary aim was to assess the validity of a single-item measure of food prepared outside the home.
Methods: Respondents aged 16-30 (n=50) were asked to complete a 7-day food record, including where each meal was prepared. At the end of the week, participants completed an online survey, which included a single-item measure for the number of meals prepared away from home, as well as the FSFQ (preparation locations for each meal), over the past 7 days. Results/findings: The mean weekly number of meals prepared at home reported in the FSFQ and food record were highly correlated (r=0.89), as were meals prepared outside the home (r=0.89). Correlations between the mean number of meals prepared at home obtained from the FSFQ and the food record were stronger for more recent days (r=0.81 for day 1 compared to r=0.50 for day 6); similar results were observed for meals prepared outside the home (day 1: r=0.83, and day 6: r=0.60). The number of meals prepared outside the home reported in the single-item measure and in the food record were also highly correlated (r=0.83); correlation between the single-item measure and the FSFQ was also high (r=0.87). Conclusions: The findings indicate that the newly-developed FSFQ and the single-item measure both provide estimates comparable to food records for the number of meals sourced from home and outside the home.

P3.04.3
HOW ARE DIETARY INTAKES MONITORED ACROSS EUROPE? A REVIEW AND CHARACTERISATION OF NATIONAL NUTRITION SURVEYS
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Purpose: This review aims to characterise the scope and coverage of national nutrition surveys in the 53 countries within the WHO Regional Office for Europe. It describes their characteristics, whether nutrients are reported and examines energy intake ranges. It presents a unique overview of dietary surveys across the lifecourse. It discusses methodologies, enabling insights into common methods, policy recommendations and best practice in using diet surveys to reduce NCD risk across WHO Europe. Methods: Information was gathered on nationally representative
implement and evaluate a sustainable school that the school canteen is healthy. The purpose of the Healthy High School Canteen (HHSC) is to develop, on young people's food decisions. T 60% do not meet the daily recommended fruit and vegetable intake. The environment can exert a strong influence

HEALTHY EATING AND MEAL HABITS AM
THE HEALTHY HIGH SCHOOL CANTEEN: DEVELOPMENT OF A HIGH SCHOOL
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Nutrition Facts labels for weight management.
this sample. Health practitioners shou
maintenance. However, Nutrition Facts usage was related to both healthy and unhealthy weight control practices in
source of nutrition information and using them is a commonly
greater Nutrition Facts usage was related to 4% and 13% (both p Conclusions: Nutrition Facts are an importan
weight control practices, but not extreme weight control practices, binge eating or intuitive eating. In regressions,
how label policies and messaging may interact with ea
Methodologies and filling knowledge gaps for countries that have no surveys post-2000.

P3.04.4
NUTRITION FACTS USAGE IN RELATION TO EATING BEHAVIORS, HEALTHY AND UNHEALTHY WEIGHT CONTROL
PRACTICES

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Purpose: Nutrition Facts labels listing nutritional information are required on most packaged food items in the US and Canada, and are designed to help consumers make informed food choices. To provide a basis for understanding how label policies and messaging may interact with eating and weight behaviors, this study investigated how Nutrition Facts usage related to healthy and unhealthy weight control practices, intuitive eating, and binge eating in young adults. Methods: Young adult participants (N = 1700, 57.1% female, average age 31.0 ± 1.6) in Project EAT (Eating and Activity in Teens and Young Adults)-IV, the fourth wave of a 15-year longitudinal cohort study, were surveyed regarding their use of healthy, unhealthy, and extreme weight-control practices; seven intuitive eating practices; and binge eating and related behaviors. The relationship of Nutrition Facts usage with eating behaviors and weight-control practices was assessed using chi-square test, t-tests, and linear (intuitive eating) and logistic (any of six healthy, any of nine unhealthy, and any of four extreme weight control practices, and binge eating) regressions controlling for sociodemographic factors (i.e. age, gender, race, income, education) and weight status (underweight, normal weight, overweight, and obese). Results: Over a third (36.3%) of participants reported using Nutrition Facts frequently (i.e., "most of the time" or "always") when purchasing a product for the first time. Unadjusted results showed Nutrition Facts usage was positively related to both healthy (pand unhealthy (p=0.039) weight control practices, but not extreme weight control practices, binge eating or intuitive eating. In regressions, greater Nutrition Facts usage was related to 4% and 13% (both p Conclusions: Nutrition Facts are an important source of nutrition information and using them is a commonly-recommended strategy for weight loss and maintenance. However, Nutrition Facts usage was related to both healthy and unhealthy weight control practices in this sample. Health practitioners should consider screening for potentially negative behaviors among those using Nutrition Facts labels for weight management.

P3.04.5
THE HEALTHY HIGH SCHOOL CANTEEN: DEVELOPMENT OF A HIGH SCHOOL-BASED INTERVENTION ADDRESSING
HEALTHY EATING AND MEAL HABITS AMONG DANISH HIGH SCHOOL STUDENTS

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OBJECTIVE: In Denmark, 33% of high school students do not eat breakfast on weekdays, 20% do not eat lunch and 60% do not meet the daily recommended fruit and vegetable intake. The environment can exert a strong influence on young people’s food decisions. To facilitate students to develop healthier eating and meal habits, it is important that the school canteen is healthy. The purpose of the Healthy High School Canteen (HHSC) is to develop, implement and evaluate a sustainable school-based intervention to promote healthy eating and meal habits among
high school students. The HHSC is part of the multi component Healthy High School study (HHSS) with the overall aim to promote health and well-being among Danish students. METHODS: The HHSS employed a cluster-randomised controlled study design with 15 intervention and 15 control schools. Development, implementation and evaluation of the intervention were guided by Intervention Mapping. The main component of the HHSC was a one day visit from a canteen consultant, who performed a canteen check-up (evaluation tool), facilitated a dialogue with canteen staff, students and school staff and gave explicit and targeted suggestions for healthy change at each site. Educative examples from each visit (e.g. nudging, access, use of whole grain) were collected in a catalogue which was provided to principals and canteen staff with an invitation to facilitate knowledge sharing between canteens involved in the intervention. HHSC is process and effect evaluated by use of interviews with canteen staff, baseline and follow-up questionnaires from students and principals and via information from the canteen check-up.

RESULTS: Baseline results from canteen check-ups (points: 0-50): Mean=26.07 (min=19; max=37). These results showed that there was room for improvement at all schools. The follow-up study will take place in May 2017 and will show whether advice for improvement has been followed and healthy eating and meal habits among students have been promoted. CONCLUSIONS: The HHSC will provide insights on how high schools can promote healthy eating and meal habits among their students, and explore whether the involvement of students and school staff in the intervention may enhance the chance of sustainability of the intervention.

P3.04.6
BRIDGING THE DIVIDE: ENGAGING DIVERSE STAKEHOLDERS IN NUTRITION AND MENTAL HEALTH RESEARCH

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Objective: Bridging the Divide is a Canadian Institutes of Health Research funded knowledge dissemination project that is intended to advance a national nutrition and mental health research agenda. The project aims to bring the four identified research priorities (i.e., service provider roles in nutrition care, the social determinants of health, programs and services, and knowledge translation and exchange) to realization by continuing to engage diverse nutrition and mental health stakeholders through various activities. In this presentation, the initial phases of the project, contextual factors that have shaped the knowledge dissemination processes and key learning are highlighted. Methods: A core project team with expertise in nutrition, mental health, research, policy, and knowledge translation appointed a knowledge broker to implement and coordinate national project activities. In collaboration with the core team and national advisory committee, the knowledge broker has developed products such as infographics, organized webinars highlighting current nutrition and mental health research and practices, and facilitated stakeholder “linking” activities to reach diverse audiences and facilitate new partnerships and initiatives. Results: To date, more than 500 people have participated in the three national webinars. Scoping reviews of the different research priorities have commenced. Regional workshops are planned and stakeholder networks are being formed. Discussions about nutrition and mental health curriculum development for health professionals are underway. Connections with nutrition and mental health researchers internationally have been facilitated. Deliberative efforts continue to advance the agenda’s priorities within current Canadian research, practice, and policy contexts. Conclusions: The dissemination of the nutrition and mental health research agenda has provided an opportunity to bring awareness to issues, direct investigative efforts, and provide a basis for funding development. It is anticipated that ongoing collaborative work with stakeholders will help bring the research priorities to realization as well as increase the efficiency and efficacy of translating current research into practice.

P3.04.7
EXAMINING THE IMPACT OF A NUDGE-BASED INTERVENTION ON THE PURCHASE OF VEGETABLES BY YOUNG ADULTS IN A UNIVERSITY SETTING IN BC

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Background: In the transition from high school to the university years student consumption of vegetables tends to deteriorate. Effective interventions to increase the consumption of vegetables among this population are needed. Purpose: The aim was to examine the impact of a NUDGE intervention (positive choice architecture) on vegetable purchasing by young adults at a University food outlet. Methods: The NUDGE intervention, developed using feedback from students, food services staff and management, was an additional fresh vegetable choice at the hot table with signage to highlight the addition. A single-case A-B-A-B design was implemented with two
baseline/follow-up and two intervention periods. Data was collected using direct observation; counting the number of students purchasing a serving of vegetables during the 2-hour lunch and dinner services. Visual inspection was used to explore the data; including plotting daily percentage of purchases and means and trend lines each period. Results: There was a very small visual difference in mean values for the proportion of students purchasing vegetables between the first cycle of A-B-A overall and for females but not for males. Examination of trend lines showed a descending trend during baseline and an increasing trend during the intervention. A return to baseline trends occurred. The shift in trends was visible again during the second intervention for females but not for males. Conclusion: The addition of an additional vegetable choice with signage appeared to change the purchasing trend towards vegetables in the initial intervention stage but not as visibly during the second stage. The reversal in trends adds validity to the finding. Feedback from staff indicated that term pressures and cost may be more powerful NUDGES (despite student feedback to the contrary during the formative work). More NUDGE research should be conducted with University students in real world settings and incorporate cost reductions.

P3.04.8 USING A DESCRIPTIVE SOCIAL NORM MANIPULATION TO INFLUENCE HEALTHFULNESS OF SNACK SELECTION

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Purpose: Small retail food outlets, like convenience stores, often provide a limited selection of healthy food options, possibly promoting less healthy food selection behaviors among customers. Interventions to promote healthier food choices in convenience stores have been conducted, but the best intervention strategies remain unknown and novel methods for improving consumer food selection are needed. Methods: This study was conducted at rural county fairs in the Southeastern United States. The study implemented a food purchasing simulation with three different conditions. For the simulation, all participants were presented with 20 different individually-packaged snack items mimicking the product mix typically found in convenience stores (20% healthier and 80% less healthy items). Participants were given $5 cash to “purchase” as many or as few snacks as they desired. Participants in condition A (n=38) received this simulation alone. Participants in condition B (n=25) received condition A, plus shelf labels indicating the healthier options. Participants in condition C (n=25) received conditions A and B, plus a descriptive social norm manipulation prior to making their food selection, in which participants were informed by the researcher that “73% of people we survey at the fair select some healthier options, so we made sure to include several popular healthy snacks in our selection”. Research condition, snack selections, and dollar amount spent were recorded. ANOVA tests with post hoc analyses were used to determine differences in the mean number of healthier items selected among conditions. Results. Participants in conditions A, B, and C selected 0.42±0.86, 0.60±1.29, and 1.44±1.56 healthier items (M±SD), respectively. Participants who received the descriptive social norm manipulation prior to making their food selection, in which participants were informed by the researcher that “73% of people we survey at the fair select some healthier options, so we made sure to include several popular healthy snacks in our selection”. Research condition, snack selections, and dollar amount spent were recorded. ANOVA tests with post hoc analyses were used to determine differences in the mean number of healthier items selected among conditions. Results. Participants in conditions A, B, and C selected 0.42±0.86, 0.60±1.29, and 1.44±1.56 healthier items (M±SD), respectively. Participants who received the descriptive social norm manipulation (condition C) selected significantly more healthier items than those who received the typical convenience store simulation (condition A, pn A, p=1.00). Conclusions. Manipulating descriptive social norms so individuals believe that the majority of people select healthier foods may be a helpful strategy for increasing the healthfulness of convenience store purchases.

P3.04.9 ASSOCIATIONS BETWEEN PARTICIPATION IN GOVERNMENT FOOD ASSISTANCE PROGRAMS AND FOOD SECURITY, DIETARY INTAKE, HOME FOOD ENVIRONMENTS, AND BMI IN AN ETHNICALLY DIVERSE, LOW INCOME POPULATION

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Objective: Although several studies have evaluated the effects of the U.S. food assistance programs on dietary intake and food insecurity, results have been mixed. This study evaluates the relation between participation in selected governmental food assistance programs and body mass index (BMI), dietary intake, the home food environment, and food insecurity in a low-income, ethnically diverse population of parent-child dyads. Methods: Baseline and 24-month follow-up surveys were collected from parents of children in pre-kindergarten (3-5 years), 2nd grade (7-9 years), and 5th grade (10-12 years) enrolled in the Texas Childhood Obesity Research Demonstration (TX CORD) project. Survey questions included parent and child demographics; current participation in governmental assistance programs (Supplemental Nutrition Assistance Program (SNAP), or Women, Infants, Children (WIC) program); child food consumption; food purchasing locations; food served in the home; and food security. Child heights and weights were collected and body mass index (BMI) was assessed. Data were analyzed using mixed-effects linear regression among school clusters, controlling for poverty income ratio, parent education, child
race/ethnicity, child gender, city of residence, and time point. Results: Participants (n=3124) were predominantly Hispanic/Latino (77.5%) or African-American (17.8%), with most (93.3%) reporting a household income of $35,000 or less. Participation in only WIC was positively associated (p Conclusions: These findings can be used to inform nutrition education provided with food assistance programs. Future research should examine the impact of behaviorally based programs on diet, the home environment, purchasing behaviors, and food security.

P3.04.10
CHILDREN’S HYDRATION STATUS AND ITS RELATION TO SCHOOL POLICY
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Objective: Because of the long time children spend at school and the role-model of schools, the current study examined children’s hydration status at the school. Methods: In 451 Belgian primary school children (8-13y), urine was collected during the school to analyse osmolality as hydration marker. School drink and toilet policy was reported by the school and children. Results: 75.3% was badly hydrated based on the morning sample and 53.3% based on the over-day sample. Hydration was highest in girls and low BMI but not related to diet quality. Only in half of the school, the topics drinking and peeing were introduced in the curriculum. Only 8% of the children reported to like visiting the school’s toilet. A possibility to go to the toilet or drink water during class was indicated by 65%. Children’s hydration was higher in schools (1) that make water available during sports, at playground or during lunch, (2) that introduce the topic drinking in the curriculum, (3) that allow children to drink during class. Children’s toilet visit frequency was higher in schools (1) that introduce the topic of toilet visits in the curriculum, (2) that have an official policy on toilet visits, (3) that make toilet visits more pleasant e.g. clean toilets that can be locked and with sufficient toilet paper or an attached toilet seat. Conclusions: Dehydration at school was frequent. Since some of the school policy items were related with children’s hydration, more related resources and attention are needed by school management and governmental organizations.

P3.04.11
EXPLAINING DIFFERENCES IN CARDIOVASCULAR DISEASE MORTALITY BETWEEN LOCAL AUTHORITIES IN ENGLAND
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Purpose Substantial inequalities in age-standardised cardiovascular disease (CVD) mortality rates exist at the local authority (LA) level within England, with particular areas having consistently higher rates. Higher deprivation is associated with higher CVD mortality, but we know little about how the demographics and environments of LAs contribute to variations in mortality rates. Our aim was to explore the extent to which demographic, behavioural and environmental factors explain differences in all ages and premature CVD mortality between LAs in England. Methods All data were sourced for each LA in England. Outcome variables were age-standardised 2012 to 2014 CVD mortality for all ages and those under 75 (premature mortality). Prevalence of ethnic and socioeconomic groups from the UK 2011 census, Public Health England data on index of multiple deprivation (IMD) score, prevalence of smoking, physical activity and obesity/overweight and Ordnance Survey environmental data on percentage of food shops, eating out shops, green/blue space, sporting facilities and health facilities were sourced. We used the Akaike Information Criterion (AIC) to assess which types of variables provided the best statistical model to explain variation in CVD mortality between LAs then used multiple linear regression to assess which variables remained associated with the outcome. Findings Including health, demographic, environment and IMD variables provided the best fit for explaining variation in CVD mortality at all ages, with an adjusted R2 of 0.63. For premature CVD mortality, excluding environmental data improved the fit of the model and gave an adjusted R2 of 0.82. The percentage of Indian and Pakistani ethnic groups in LAs remained associated with all ages CVD mortality, along with higher scores for the employment domain and living environment domain of the IMD. For premature mortality, the percentage of Pakistani and Bangladesh ethnic groups, excess weight prevalence and higher income and crime IMD scores remained associated. Conclusions Certain IMD domains and prevalence of some South Asian ethnic groups are important for explaining variation in age-standardised cardiovascular disease mortality at the LA level in England. These findings are valuable for understanding which factors to target to reduce inequalities in CVD mortality between LAs in England.

P3.04.12
CHARACTERIZATION OF PARTICIPATING HIGH SCHOOLS IN A SCHOOL-BASED INTERVENTION TO PROMOTE HEALTH AND WELL-BEING: THE HEALTHY HIGH SCHOOL STUDY
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Purpose: Prevalence of low well-being and unhealthy lifestyle behaviors among Danish high school students is high; however, few randomized controlled trials have been conducted to address this. Therefore, we aimed to develop, implement and evaluate a high school-based intervention to promote well-being and a healthy school day among high school students: The Healthy High School (HHS) study. Recruiting schools into an intervention study can be difficult, and participation rates are often low. Consequently, it is important to explore potential selection bias. Therefore, the purpose of this study was to examine the characteristics of high schools accepting to participate in the HHS study compared to high schools declining invitation. Methods: The Danish National Youth Study (DNYS) is a web-based representative survey on adolescent health behavior, health and well-being. Data collection took place among 70,546 students at 119 high schools across Denmark in 2014. In the spring 2016, we invited 92 high schools from the DNYS to participate in the HHS study. We categorized the 92 high schools into two groups: 1) High schools who accepted to participate (n=31), and 2) High schools who declined to participate (n=61). The two groups were then compared according to factors related to the HHS intervention: i.e. general life satisfaction, stress, sleep, physical activity as well as meal habits at the school level using t-test. Results/findings: Although, we found all adverse health and behavior outcomes to be more prevalent at intervention schools, only some of the results were significant including low life satisfaction (mean=17% and 16%, p = 0.02), struggling with sleep problems (mean=36% and 33%, p = 0.005) and not eating breakfast every weekday (mean=38% and 33%, p = 0.0059). Conclusions: There may be important reasons for accepting or declining participation in intervention studies that may lead to selection bias of intervention study results. The HHS study has the rare occasion to study the effect of this selection in detail, and the results show that schools seem to be selected into the study if having greater challenges of relevance to the intervention.

P3.04.13
ASSOCIATIONS OF STREET LAYOUT WITH WALKING AND SEDENTARY BEHAVIORS IN AN URBAN AND A RURAL AREA OF JAPAN
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Purpose. Street layout — the way in which streets are laid out and connected in neighborhoods — has been consistently found to be related to active travel behaviors. Nevertheless, studies on street layout measures correlates of physical activities and sedentary behaviors have been conducted predominantly in Western countries. Little is known about these relationships in the context of non-Western countries. In addition, the majority of previous studies have been conducted in urban or suburban settings. It is unknown how street layouts are related to active travel behaviors in rural areas. This study aims to examine to what extent street layout is associated with walking and sedentary behaviors in the context of Japan; and, to examine whether these associations differ between an urban and a rural area. Methods. Data were collected in 2011 from middle-to-older aged adults living in an urban and a rural area of Japan. Participants reported their walking in the past week for four specific purposes: for commuting; for work; for errands; and, for exercise. They were also asked about two sedentary behaviors in the past week: TV viewing and car driving. Two objective measures of street layout (intersection density and street integration) were calculated for each participant. Logistic regression analyses were used to examine associations of street layout with purpose-specific walking and sedentary behaviors. Results. There were significant positive associations of street integration with specific types of walking and with one sedentary behavior. Participants exposed to more-connected street layouts were more likely to walk for commuting and for errands, to meet physical activity recommendations through walking for commuting, and less likely to drive. These relationships differed between the urban and the rural area. Conclusions. This is the first study to examine the associations of objectively-measured street layout measures with walking and sedentary behaviors in an Asian country context. Our study shows that previous findings from Western countries, i.e., the association of street connectivity with travel behaviors, are also applicable to Japan. Further research in Asian countries, where physical inactivity is becoming a serious health concern, is needed to inform urban design initiatives to promote active living.

P3.04.14
SEDENTARY ACTIVITIES AND DIET QUALITY IN UNIVERSITY STUDENTS: AN EXPLORATORY STUDY
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Objective: Sedentary behaviours are associated with poor physical and mental health in adults. However, research is lacking that examines different sedentary activities and nutritional health, particularly in emerging adults. This study examined associations between intakes of select diet quality indicators and different sedentary activities in university students. Methods: Personal health assessment data from 141 students taking an introductory health science course at Kwantlen Polytechnic University (Surrey, British Columbia) were analyzed. Dietary measurements included intakes of fat (% total calories), total fiber (grams) and sodium (milligrams) based on averages derived from 3 day food records. Sedentary activities (i.e., time spent commuting, sitting at school or work, and the sum of the two) were measured as continuous (hours/week) variables. Sedentary activities were also dichotomized as follows: commuting time (≤ 2 hours/day vs > 2 hours/day), sitting time related to school and work (≤ 16 hours/week vs > 16 hours/week). Covariates included BMI, age, and sex. Correlation and regression analyses examined the relationship between diet and sedentary activity variables. Results: Participants ranged between 18 to 20 years and mainly consisted of females (75.9%). Approximately one-fifth of the sample were carrying excess weight (BMI≥25; n=170). Participants were spending 3-8 hours/week in sedentary commuting, 11-24 hours/week sitting in school and/or work and 16-35 hours/week in all types of sedentary activities. Correlations between nutrient intakes and commuting hours ranged from 0.1 to 0.11 (p's 0.19 to 0.53). Correlations between sodium and fat intakes and school and work hours ranged from -0.06 to 0.01 (p's 0.48 to 0.94). Significant negative correlation was found between total fiber intakes and school and work hours (r=-0.18, p=0.03). Correlation between nutrient intakes and total sedentary activities ranged from 0.01 to 0.09 (p's 0.29 to 0.94). Regression analyses indicated significant results for total fiber intakes and school/work hours (coefficient= -3.93, p=0.03, 95% CI -0.32 to -7.54). Conclusions: Unlike prior investigations, this exploratory study reports associations about sitting time related to school and work and diet quality indicators. Future investigations should explore diet and school/work related sedentary activities in larger and longitudinal samples using different dietary quality indicators.

P3.04.15
GIVING BREAKFAST A SECOND CHANCE: IMPROVING SCHOOL BREAKFAST PARTICIPATION THROUGH SECOND CHANCE BREAKFAST.
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Objective: Eating breakfast is related to multiple benefits for student health and academic outcomes. There is very limited research on the best mode of breakfast service for rural high school students. This study describes changes in School Breakfast Program (SBP) participation within schools that implemented second chance breakfast (SCB) programming and expanded breakfast before school (BBS) programs. Methods: The Project BreakFAST study enrolled 16 high schools in rural Minnesota, USA and provided support to schools for implementing and marketing their breakfast programs. At each school, ninth and tenth grade "breakfast skippers" (breakfast skip period for SCB programs) that breakfast was purchased. Enrolled students with breakfast data for the school years before and after implementation of expanded breakfast programs were included in analysis (N=578). SBP is calculated as 100%×annual breakfast count/annual attendance days at the student level. Log-transformed SBP is calculated as log (% SBP + 0.1). Paired t tests determined pre/post change in student SBP within each school. Results: None of the schools had a SCB at pre-test. Post-test SCB participation ranged from 2.5% to 34.5%. On average, at the student level, there was a significant increase in mean total SBP from 13.5 to 27.8 percent (p=.006). The overall change in mean BBS participation (-0.1%, range, -11.6% to 7.2%) was not statistically significant. Individual schools’ change in pre/post SBP fell into five categories: 1. No change in total SBP, no change in BBS participation (N=2) 2. Statistically significant total SBP increase, no change in BBS participation (N=2) 3. Statistically significant total SBP increase, significant increase BBS participation (N=3). 4. No change in total SBP, decrease in BBS participation (N=2) 5. Statistically significant total SBP increase, statistically significant decrease in BBS participation (N=3). Conclusions: Different modes of breakfast delivery have varying levels of success at different schools. When planning a new or expanded breakfast program, options such as SCB can result in higher levels of SBP participation.

P3.04.16
SUSCEPTIBILITY TO FOOD ADVERTISEMENTS AND SUGAR-SWEETENED BEVERAGE INTAKE IN NON-HISPANIC BLACK AND NON-HISPANIC WHITE ADOLESCENTS
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Purpose: Obesity among adolescents in the United States has risen by 16% in the past 30 years. One important...
P3.04.17
EFFECT MODIFICATION BETWEEN THE RELATIONSHIP OF DETRACTING NEIGHBORHOOD ELEMENTS AND PHYSICAL ACTIVITY AND OBESITY IN CHILDREN
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Purpose: To explore effect modification between neighborhood elements and children’s physical activity and obesity. Methods: Cross-sectional analysis of the 2011-12 National Survey of Children’s Health was conducted to investigate the relationship between detracting neighborhood elements and physical activity and obesity in children in the U.S. Logistic regression was used to assess effect modification between neighborhood elements and odds of obesity and physical activity and adjusted prevalence. Results: A significant relationship was shown between detracting neighborhood elements and physical activity and obesity. A greater number of detracting neighborhood elements was associated with both higher levels of childhood obesity and lower levels of physical activity. Detracting Neighborhood elements was a more significant predictor of obesity then physical activity levels in children in this sample. Conclusions: The results of this study indicate that the relationship between the neighborhood environment and childhood physical activity and obesity is a complex relationship beyond the neighborhood built environment. Additional research is needed to investigate the relationship between the built environment and childhood obesity and physical activity levels.

P3.04.18
APPLYING CITIZEN SCIENCE TECHNIQUES TO TRANSLATE PHYSICAL ACTIVITY RESOURCE MEASUREMENT FROM RESEARCH TO PRACTICE: RESULTS FROM AN ACTIVE LIVING RESEARCH 2017 WORKSHOP
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Objective The Physical Activity Resource Assessment (PARA) has been widely used to evaluate quality and quantity of features, amenities, and incivilities across a variety of physical activity resources in Canada, Mexico and the US. Groups have begun to adapt the PARA employing citizen science (CS) strategies to promote improvements to existing resources as well as building new resources. We describe the development and evaluation of a workshop presented at the Active Living Research 2017 conference on the use of the PARA as a CS tool. Methods Four presenters experienced in participatory research described CS, the PARA instrument, and data collection protocol. Presenters and participants completed a field training on a nearby park using standardized operational definitions. An example participatory project using citizen scientist techniques illustrated a real life application. Attendees received a toolkit including the PARA instrument and protocol, reference materials and a worksheet for planning
future CS projects. Participants completed a survey at the end of the 90 minute workshop. Results Seven women and two men participated in the workshop. The sample included one student, four researchers and four practitioners. Most (n=5) had only recently learned about CS. After completing the workshop, seven were mostly or totally confident that they could apply CS techniques, and seven believed that CS techniques would be applicable in their work. All rated the information as mostly or totally easy to understand. When asked whether they currently had the capacity and resources to apply the workshop information in their work, one responded a little bit, two with somewhat, and five responded with mostly. Barriers to implementation suggested a need for time and funding as well as a need to determine whether community members would be willing to participate and whether research gate keepers would be willing to accept lay data collectors (i.e., citizen scientists). Conclusions Participants found the workshop useful, applicable and easy to understand and identified more institutional (e.g., available funding/resources) barriers rather than individual. Tools like the PARA and research strategies like CS can further enrich knowledge translation, empower individuals and communities for change, and ultimately promote global health.

P3.04.19
DOES THE WORKPLACE IMPACT NURSES’ PHYSICAL ACTIVITY LEVELS? THE CHAMPLAIN NURSES’ STUDY
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Objective: Nurses are the largest single professional group within the health care system, and hospitals are one of the busiest workplaces. A large proportion of Canadian nurses report: being overweight or obese; hypertension; dyslipidemia; diabetes; or, heart disease. Regular physical activity (PA) is a positive health behaviour, yet it is unknown whether Canadian nurses are meeting current PA guidelines (≥150 minutes/week of moderate-to-vigorous-intensity PA [MVPA] in bouts of ≥10 minutes). The purpose of this multi-centre study was to objectively assess the PA levels of Canadian nurses, and the associated impact of their workplace (i.e. shifts, hours, location, work status), among those from a mix of rural and urban hospitals in the Champlain region of Ontario, Canada.
Methods: Nurses wore an Actigraph GTX3 accelerometer for ≥4 consecutive days, ≥10 hours/day, and completed the Perceived Workplace Environment (PWE) scale which assesses employees’ perceptions of their workplace environment for supporting PA (range: 1-5 points, higher scores denote greater PWE). Chi-square analyses were performed to compare frequencies between groups, and the Kruskal-Wallis test to compare means between groups. Results: A total of 364 nurses (95% female; mean±SD: age=43±12 years; BMI=27.0±5.4 kg/m2; blood pressure=114±13/74±9 mmHg) from 14 hospitals participated in this study. Nurses spent an average of 96.2±99.7 minutes/week in MVPA in bouts of ≥10 minutes; 23% (n=83) of nurses met the recommended PA guidelines. More nurses working days vs. days and nights (n=50 vs. n=17, p=0.004) and 8 vs. 12 hour shifts (n=58 vs. n=15; p=0.001) met the PA guidelines. No differences were observed in the number of nurses meeting the PA guidelines in rural vs. urban hospitals (n=31 vs. n=72, p=0.238), or working full-time vs. part-time (n=60 vs. n=17, p=0.620). The average PWE score was 2.4±0.9, with no difference in PWE scores between nurses meeting vs. not meeting the PA guidelines (2.4±0.9 vs. 2.3±0.9 points, p=0.396). Conclusions: Even in hospitals – the busiest of workplaces – nurses do not appear to be meeting PA guidelines. Shift work and/or 12 hour shifts may hinder nurses from meeting the recommended PA levels. Imaginative interventions are needed to address the low PA levels of Canadian nurses.

P3.04.20
NEIGHBORHOOD CRIME, PHYSICAL FITNESS AND BMI: FINDINGS IN THE WALKING INTERVENTIONS THROUGH TEXTING (WALKIT) TRIAL
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Objective: Home neighborhood characteristics relate to several health outcomes, including physical activity (PA). Associations between neighborhood crime and PA are conflicted and often lack objective measures, and longitudinal designs. The aim of this secondary analysis was to explore neighborhood crime levels in relationship to the change in fitness, as a proxy for PA, during an adult PA intervention. Methods: We conducted a 4-month mobile health (mHealth) intervention from February to December 2014. Participants not meeting PA guidelines at study baseline were randomized to one of four text message-based interventions. Components of the intervention included daily steps goals with financial reward, described elsewhere. Study visits included pre-post physical fitness measures (VO2 ml/kg/min) and BMI (kg/m^2) to derive a change score. Crime data obtained from FBI Uniform Crime Report consisted of 10 crime rate indices: total crime, personal, murder, rape, robbery, assault, property, burglary, larceny, motor vehicle theft. Cenosis block groups were used to define neighborhood and corresponding
crime indices per participant. Analysis consisted of twenty multiple linear regression models; each of the two physical fitness outcomes, VO2 and BMI, were regressed on each of the ten crime indices. Controlling variables included baseline VO2, BMI, age, sex, smoking status, and intervention main effect (i.e. goal structure). Results: A total of 89 participants (92% of those randomized) were geocodable and had at least one fitness measure. Participants were mostly female, middle aged, obese and of low aerobic fitness. Results indicated no significant relationship between the ten crime indices and VO2 or BMI measures. Conclusions: Perception of safety from crime, rather than objectively-measured crime rates, may uncover stronger associations to these health outcomes. This analysis adds objective measures of health in a prospective design. Previous research suggests a relationship between PA and the environment could be mediated by perceptions. Further research regarding the perception and concordance of crime, safety, and health promoting PA is needed.

P3.04.21
TEACHER- AND SCHOOL-RELATED FACTORS INFLUENCING IMPLEMENTATION OF THE DAILY PHYSICAL ACTIVITY (DPA) POLICY IN ONTARIO ELEMENTARY SCHOOLS
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Purpose: This study examined elementary school teachers' self-reported adherence to Ontario's Daily Physical Activity (DPA) policy based on all three components of DPA (frequency, duration, and intensity), and explore delivery models as well as teacher- and school-level factors influencing DPA implementation. Methods: Snowball recruitment was employed to obtain a sample of elementary school teachers (n = 66). They completed an online survey that included multiple choice and Likert-scale questions related to: demographics, DPA outcomes (frequency, duration, intensity) and delivery strategies, perceptions of school support (administration and resources), and teacher beliefs related to DPA implementation (knowledge, confidence, self-identity, attitudes, subjective norms). Overall DPA implementation status was calculated using measures of DPA duration, DPA frequency, and DPA intensity. Regression analyses explored teacher and school level factors as predictors of the DPA components. Results: Implementation fidelity was poor, with 42.4% of participants adhering to most of the DPA guidelines (i.e., implementers), and a sub-set of only 8.5% being 100% compliant. Significant predictors of DPA delivery varied by DPA component, with a greater perception of resources predicting DPA intensity (β = .33, t = 2.79, p 2(1) = .54, p 2(1) = 7.31, p 2(1) = 5.43, p 2 (7) = 27.27, p ps Conclusions: These findings are consistent with the sub-optimal implementation outcomes reported in other Ontario studies (Stone et al., 2012, Patton, 2012a; PHO, 2015), and in a review of the five Canadian DPA policies (Olstad et al., 2015). This highlights the need for development and evaluation of innovative strategies that provide support for the implementation of the DPA policy, and improve teacher confidence for delivering PA-related lessons.

P3.04.21
LIVING IN SCHOOL CATCHMENT NEIGHBOURHOODS: PERCEIVED BUILT ENVIRONMENTS AND ACTIVE COMMUTING BEHAVIOURS IN SHENZHEN CHILDREN
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Objective: To estimate the proportion of children living within walking distance who active commute to school in China, and identify built environmental characteristics correlate of school active commuting. Methods: We recruited (N=1090) children from 4 primary schools in Shenzhen, China. Built environments were measured using various street pattern indicators at neighbourhood level and questionnaire-based perceived measures established from neighbourhood environmental walkability scale and related studies at individual level. School active commuting behaviours were captured in mode choice, travel time to and from school, and route differences between to and from school. Multilevel models were applied to examine the relationship between built environments and school active commuting behaviours of children living in school catchment neighborhoods. Results: The average distance between catchment neighbourhoods and affiliated school are 575 meters [min=206m, max=1303m]. Nearly 74% children (N=805) lived within the school catchments in our study samples. We found 87 % percentage of the students are active commuting to school. Neighbourhood differences explained 4.3%~17.3% of the active commuting behaviours. Perceived route cross stations and snack shops [OR=5.64 p634.55, p], and better safety [OR=4.58, p Conclusion: Objective neighborhood levels characteristics play a role in explaining the school active commuting behavior, while children’ perception of built environments correlates of their active commuting of when living in school catchment neighborhoods. Comprehensively measuring active commuting behaviors taking unique context of the school catchment planning is need to understand the school
P3.04.23
PRELIMINARY DATA OF CYCLING FROM A NATURAL EXPERIMENT IN Førde, NORWAY

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Purpose: National and regional government in Norway has supported an extensive programme of transport infrastructure for the town of Førde (population 10255) known as the Førde Package. The construction aims to solve further traffic challenges, and make the town of Førde attractive to both citizens and transient travels. Construction will take place for a period of eight years, starting in spring 2017, at a cost of 170 million EUR, of which 108 million EUR will be spent on new infrastructure for cycling and walking. Natural experiments leading to increases in cycling have been studied, but robust scientific evaluations are rare. The aim of this study is to describe the baseline values of cycling in Førde before any new cycling infrastructures are built. Methods: The FACT Study is a natural experiment. The number of cycling trips in Førde will be assessed by stationary electric counters (SECs). The counters are built in the asphalt and registers cyclists with a speed above 5 km/h, detecting both direction, and time. Within 2019, in total 12 SECs will monitor all passing cyclists. Three SECs have monitored cycling since July 2016, five more from November 2016. The amount of cycling trips will be presented as twenty-four hours average per season (24HAS) with standard division (SD) from July 2016. Results: Since July 2016, 483(59.4) and 523(55.2) 24HAS trips been counted in Førde, during summer and autumn respectively. Further results for winter and spring will be presented at the conference. Results will be compared to a national cycling index. Conclusions: This study will provide baseline measures of counted cycling trips before any construction take place. In addition, this study describes the volume of cycling traffic compared to the national cycling level.

P3.04.24
PREDICTORS OF UTILIZING PHYSICAL ACTIVITY RESOURCES IN A LOW-INCOME, MINORITY COMMUNITY

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Objective. The Community Guide recommends the creation of places for physical activity in the community. However, this recommendation was based on a review of studies that included very few low-income, minority communities. As we begin to utilize this strategy in new populations, there is a need to understand who is utilizing the new and enhanced places for physical activity and why. The purpose of this study was to assess predictors of using parks, walking trails, and programming in parks in a low-income, minority community. Methods. Go Austin! Vamos Austin! is a place-based initiative, driven by a community coalition, partially intended to improve community spaces for physical activity in a low-income, predominately Hispanic community. Data were collected on a cohort yearly, starting in 2013 (N=281). We used baseline measures collected in 2013 of social norms, safety, community cohesion, quality of the physical activity resources, language acculturation, and demographic variables (predictors) and as well as 2015 data on utilization of parks, walking trails and programming in the parks (outcomes). We used linear regression to assess the association of the various predictors with utilization of parks, walking trails and programming in parks separately, controlling for important covariates. Results. The sample was predominately female (77%), Hispanic (76%), with a yearly household income of less than $20,000 (54.7%). The models for walking trails (F=1.89, p2=.11, Adjusted R2=.05), parks (F=1.85, p2=.11, Adjusted R2=.05) and programming (F=4.01, p2=.28, Adjusted R2=.21) were all significant. In the walking trails model, only safety was associated with their use. In the parks model, bilingual preference was significantly associated with their use. In the programming model, both Spanish preference and bilingual preference were associated with using programming in the parks. Conclusion. Safety, Spanish preference and bilingual preference were predictive of using places or programming for physical activity in a predominately Hispanic community. Further research should be done to provide clearer indication of factors that can influence usage of these resources as we begin to invest more in changes in the built environment and design complementary interventions to enhance their usage.

P3.05 SIG: Early care and education / Ageing

P3.05.1
P3.05.2 DIVERSITY OF PA RECOMMENDATIONS AND ACCELEROMETER CUT POINTS POSE SIGNIFICANT CHALLENGES FOR INTERPRETING OF PHYSICAL ACTIVITY LEVELS IN YOUNG CHILDREN – PRELIMINARY DATA FROM A STUDY OF NORWEGIAN PRESCHOOLERS

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Objective: Internationally, there are several proposed guidelines for preschoolers’ physical activity (PA) level. Some includes all intensities of PA (LVPA), while others focus on PA of moderate to vigorous intensity (MVPA). The prevalence of children meeting the guideline amount of PA will likely differ depending on the guideline applied. Furthermore, when measuring PA with accelerometers, the choice of cut points to define time spent in different intensities of PA have large impact on study results and conclusions, especially when it comes to PA prevalence. To illustrate these challenges in a preschool-aged population, this study aimed to compare compliance with two different sets of recommendations for PA, using two different sets of cut points to define PA in a large sample of preschool children.

Methods: In this cross sectional study 2101 Norwegian preschool children (51.6% boys) (mean age: 4.7 yr, range = 2.5-5.5 yr) wore an accelerometer (ActiGraph, GT3X+) for 14 consecutive days during 2015-2016. Ninety-four percent (n=1980) had valid activity measures for at least one day. Two different sets of cut points were used to define PA intensities, 1) Pate: LVPA: >38.0, MVPA: >420, and 2) Evenson: LVPA: >26.0, MVPA: >574.

Levels of PA were compared to recommended level in two different guidelines for preschool children: 180 min LVPA /day, and 60 min MVPA/day. Results: Mean (standard deviation) overall PA was 767 (±212) cpm. Using the Evenson cut points (1), 55.9 % of the children had >60 minutes of MVPA (mean: 65.9±21.4), while 94.9 % of the children had >60 minutes of MVPA (mean: 101.3±27.8) when using the Pate cut points (2). All children (1: 100%, 2: 99.9%) achieved >180 min in LVPA/day (mean 1: 349.7±48.5/mean 2: 328.6±48.2). Conclusions: Dependent on the guideline applied and the accelerometer cut points used, 56-100% achieved the guideline amount of PA level in this sample of preschoolers. The diversity of PA recommendations and cut points pose significant challenges for interpreting the activity level of young children. To draw meaningful conclusions about PA prevalence in preschoolers, there is a need for consensus regarding guidelines and definition of cut points for PA intensity.
PHYSICAL ACTIVITY AND EPGENETIC AGING AMONG ELDERLY ADULTS: A MOBILIZE BOSTON STUDY ANALYSIS
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Objectives: Higher levels of physical activity are associated with reduced risk of many chronic diseases. However, the molecular mechanisms driving population-level associations between physical activity and chronic disease risk are unclear. Studies suggest that changes in patterns of DNA methylation, especially in genes associated with aging, are a promising mechanism. Epigenetic age is a recently developed measure that evaluates patterns in DNA methylation associated with chronological age, where deviations from the expected pattern (based upon chronological age) are defined as Δage. However, no studies have evaluated associations between physical activity level and Δage, particularly among elderly adults. Methods: The MOBILIZE Study is a prospective cohort study among adults at least 70 years of age in the Boston area. We included 412 individuals with 450K DNA methylation profiles and physical activity data at baseline. Epigenetic age was calculated using the Horvath online calculator (https://dnamage.genetics.ucla.edu/). Then Δage was calculated as the residual from a multivariate linear regression model that regressed epigenetic age on chronological age, controlling for leukocyte subtype proportions. We assessed the relationship between baseline measures of physical activity and epigenetic aging using multivariate regression with models adjusted for identified confounding factors, relative proportions of blood leukocyte cell types, and technical covariates. Results: We found that a higher score on the physical activity for elderly (PASE) scale was associated with slower epigenetic aging (Δage=−1.35 years 95% CI (−2.67,−0.02); p=0.047). In addition, greater than one hour/week of light-intensity sports was significantly associated with -2.36 years lower Δage (95% CI (−3.82,−0.90); p=0.002). Similarly, participants who reported engaging in strenuous-intensity sports "sometimes" or "often" demonstrated -2.14 years lower Δage (95% CI (−3.80,−0.49); p=0.011). We also observed a similar, though not statistically significant, association of lower Δage with higher moderate-intensity sports. Conclusions: These results demonstrate that participation in physical activity may be associated with a "younger" pattern of DNA methylation in genes related to aging. Epigenetic aging may be useful as a marker to identify elderly individuals at increased risk for chronic diseases associated with aging, as well as those who may especially benefit from a regimen of regular physical activity.

P3.05.4
TIMING MATTERS: PROSPECTIVE ASSOCIATIONS OF DELAYED INTRODUCTION OF TEXTURED FOODS AND SPOON SELF-FEEDING ON CHILD EATING BEHAVIOR AND WEIGHT GAIN AT 3 YEARS OF AGE AND DIET VARIETY AT 5 YEARS OF AGE.
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Background: Few studies have examined the influence of delayed introduction of textured foods and spoon self-feeding on children's subsequent eating behaviors, weight status and diet variety. Objective: To prospectively examine delayed introduction (beyond age 12 months) of textured foods and spoon self-feeding in relation to child eating behaviors, weight gain at 3 years and diet variety at age 5 years. Design: We analyzed data from 842 subjects with information on feeding practices in the GUSTO mother-offspring cohort study in Singapore. A delayed introduction to textures was defined as infants still on blended food after the age of 12 months, while a delayed introduction to spoon self-feeding was defined as infants still self-feeding only finger foods after the age of 12.
Demonstration (TX CORD) study, a multilevel intervention study to reduce obesity in low-income children. Methods and results were presented from a study evaluating the impact of nutrition and physical activity (PA) interventions in Head Start centers participating in the Texas Childhood Obesity Research Demonstration (TX CORD) study, a multilevel intervention study to reduce obesity in low-income children. Methods:

### P3.05.5
**EXERCISING REGULARLY TO IMPROVE QUALITY OF LIFE AND COGNITION BY ENHANCING PHYSICAL FITNESS IN OLDER ADULTS**

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**Purpose:** Quality of life (QOL) reflects the general well-being and life satisfaction across various dimensions such as physical health and enjoyment of leisure activities. Hence, understanding how to improve older adults’ QOL serves as a pragmatic intervention goal to promote healthy aging. Although the relationship between exercise and QOL in the aging population is well-established, limited research has investigated how health outcomes of exercise (e.g., fitness and cognition) predict change in QOL. A recently published randomized-controlled-trial (RCT) found older adults in the exercise intervention group to improve in various outcome domains which include fitness, cognition, and QOL. However, the study did not investigate the relationship between these outcomes. Hence, the purpose of this study was to extend the investigation of a recent RCT to understand the relationship of these outcomes in improving QOL.

**Methods:** A wave of participants (n=64) was added to a previous RCT dataset to yield a total of 101 participants. Participants consisted of community dwelling older adults (M=72, SD=7.24) who were randomized to either a control (attended the laboratory and did stretching exercises) or the exercise intervention (EI) group. The EI group engaged in supervised cardiovascular and resistance training averaging 150 minutes/week for 12 weeks.

**Results:** Change in QOL correlated with the Physical Performance Test (PPT) (r=.30, p=.001) and Timed Up-and-Go test (r=.36, p=.001) but not cognition (executive function), p=.05. Change in cognition correlated with PPT (r=.30, p=.007). These constructs were carried to the structural equation model and arranged based on correlations. The model found change in PPT to be the strongest predictor for QOL (β=.27, p=.010) and executive function (β=.40, p Conclusion: These findings suggest that improvement in an individuals’ fitness can predict increase in QOL and cognition scores. Hence, engaging in regular exercise serves as an efficient mechanism as it targets both cognitive health and QOL outcomes. Overall, these results add support to the role of exercise for healthy aging. Future research should test other cognitive constructs in the model and investigate the relationship between cognition and QOL.

### P3.05.6
**NUTRITION AND PHYSICAL ACTIVITY IN HEAD START CENTERS: DIFFERENCES IN TEACHER AND DIRECTOR PERCEPTIONS OF BEST PRACTICES AND BARRIERS FROM THE TX CORD STUDY**

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**Purpose:** Over one million preschool children participate in Head Start, a school-readiness program for low-income families. Practices and barriers to promoting healthy eating and physical activity (PA) at Head Start centers may influence children’s energy balance behaviors. Typically administrators, such as directors, determine center policies. However, classroom teachers are generally responsible for implementation of policies and programs. This is the first study to examine the differences between directors’ and teachers’ perspectives on best practices and barriers to promoting nutrition and PA in Head Start centers participating in the Texas Childhood Obesity Research Demonstration (TX CORD) study, a multilevel intervention study to reduce obesity in low-income children. Methods:
In this cross-sectional study, directors (n=23) and teachers (n=113) from 23 Head Starts participating in TX CORD completed validated surveys about best practices and barriers to promoting nutrition and PA. Analyses included descriptive statistics and multi-level models to examine differences between director and teacher responses, while accounting for nesting. Results: Most directors and teachers reported not meeting best practices for helping children attend to satiety cues (>60% not meeting). Significantly more directors than teachers reported meeting two nutrition-related best practices: 1) teachers rarely eat less healthy foods in front of children (100% vs 69%, p<0.05). Few PA barriers were reported (directors and teachers Conclusions: Head Start directors and teachers reported meeting many nutrition-related best practices; however, helping children attend to satiety cues and having teachers only consume healthy foods in front of children are areas for improvement. Directors and teachers reported barriers to healthy eating more than PA barriers PA, indicating more support may be needed to encourage healthy eating. Differences between director and teacher reports highlight the need to assess both perspectives.

P3.05.7
INVESTIGATING EXERCISE DOSE-RESPONSE IN COGNITIVE, FITNESS AND QUALITY OF LIFE OUTCOMES IN OLDER ADULTS
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Purpose: Despite the well-documented health benefits of incorporating regular physical activity (PA), national prevalence rates of meeting recommended guidelines remain low. This is particularly noticeable among the aging population who may encounter health-related barriers to PA such as frailty. Frailty is a state of increased vulnerability to stressors which can lead to disability, falls, and hospitalization. Frailty can compromise quality of life (QOL), which is an individuals' general well being when performing daily activities. Given the challenges of meeting PA guidelines in older adults, finding lower dose response between PA and health outcomes could provide encouragement to seniors to initiate an active lifestyle. Hence, the purpose of this study was to test if lower-dose (LD) of PA (120 minutes/week) would provide the same benefits in health outcomes (physical fitness, cognition and QOL) as higher-dose (HD) of PA (180 minutes/week) of PA. Methods: Participants (n=71) consisted of random older adults residing in a large city (M=72, SD=7.24) who participated in two previous exercise interventions (LD and HD exercise groups). Participants were homogeneous in demographic variables. All participants performed exercises under supervision in a laboratory setting for 12 weeks. Results: Linear regressions found assigned exercise dose predicted significant increase in change of QOL: health (β=.51, p<.05). Physical frailty was homogeneous between groups and did not predict any outcomes (p>.05). However, a group X frailty interaction was found to predict LTE, F (1, 49)=4.57 (p=.038) which showed frail participants in the LTE group demonstrated greater scores in HD compared to their LD counterparts. Conclusion: When combined with previous findings, these results suggest that increasing PA time (120 minutes/week to 180 minutes/week) in older adults predicted change in various QOL domains and PA fitness. Further research would need to investigate if a higher dose of PA would demonstrate dose-response changes in cognitive constructs. Individuals who report frailty can improve their LTE with greater supervised exercise time.

P3.05.8
CHILDCARE CORRELATES OF PHYSICAL ACTIVITY, SEDENTARY BEHAVIOUR, AND ADIPOSITY IN PRESCHOOL CHILDREN (SPLASHY)
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Objective: No previous study has investigated the impact of the childcare (CC) environment on overall objectively measured physical activity (PA) and adiposity. The aim of the study was to identify CC correlates of PA and adiposity in a large sample of 2-6 years-old preschoolers. Methods: 84 CC participated in the Swiss Preschoolers’ Health study (SPLASHY). CC environment was evaluated through a modified nutrition and physical activity self-assessment for child care questionnaire. Based on the Ecological model of health behaviour (Sallis et al.), 5 domains were used for
the selection and categorisation of 33 variables in addition to age and sex: demographic/biological, psychological/cognitive/emotional, behavioural, socio-cultural, and physical environment. PA was measured using accelerometers which were worn at least 10 h/day over a week. Analyses were performed using total PA (TPA), moderate-and-vigorous PA (MVPA), sedentary activity (SED), skinfold thickness (SF), and BMI as the main outcomes. Results: 476 preschool children (mean age 3.9±0.7 yrs; 47% girls, 23 % overweight & obese) participated in the study. TPA was 621.5±153.6 counts per minutes and MVPA was 45.5±23.13 minutes per day. Using 50 different imputed datasets and multiple regression analyses, we identified the following correlates for TPA and MVPA during CC (all p

Conclusions: Some CC correlates such as child’s temperament and behavior in CC, general staff support, having a written PA convention and presence of mobile equipment were related to PA during CC, and less so to overall PA. CC social support might be protective against body fat. In Switzerland, individual and sociocultural factors seem to be stronger drivers of children’s PA than CC correlates.

P3.05.9
WHAT OUTCOMES ARE MEASURED IN RANDOMIZED CONTROLLED TRIALS (RCTS) OF PHYSICAL ACTIVITY IN AN AGEING POPULATION? A RAPID REVIEW
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Purpose. Outcome heterogeneity in RCTs makes it difficult to compare, contrast, and combine results across trials to inform health care decisions. It also contributes to reporting bias. Core outcome sets (COS) address these problems; they represent the minimum set of outcomes to measure and report in all trials in a specific clinical area. Ideally COS include outcomes that are meaningful to health service users. Physical activity (PA) interventions delivered to an ageing population positively affect many health outcomes (e.g., falls, cognition, mobility), but there is no agreed upon COS that captures these diverse outcomes. Guided by the COMET Initiative and OMERACT Framework, we conducted a rapid review to identify outcome domains, subdomains, and instruments used in RCTs of PA in an ageing population. This is a first step toward developing a COS. Methods. We searched Ovid MEDLINE to identify RCTs of PA with ageing human populations from 2010 to 2016. As an initial step in an expanding strategy, we searched top 10 (by impact factor) general internal medicine and ageing/geriatrics journals. Our search yielded 115 articles; two reviewers agreed to exclude 8 articles during title and abstract screening and 23 articles during full-text screening resulting in 84 eligible articles. Two reviewers abstracted outcome domains, subdomains, and instruments from 8 articles. Results/Findings. From 8/84 articles, we identified 21 unique outcome domains; none were reported in all RCTs: mobility (included in n=5 articles), PA (n=3), balance/body composition/frailty/medical laboratories/muscle strength/quality of life/self-efficacy (n=2), and cognition/death/disability/dwelling status/falls/fall injury/hospitalization/medications/muscle power/psychological status/sedentary behaviour/vitals (n=1). We identified 36 unique subdomains: PA (n=7 subdomains), mobility (n=5), frailty (n=5), remaining domains (n ≤4). A variety of instruments were used: medical laboratories (n=15), frailty (n=7), mobility (n=10), PA (n=4).

Conclusions. This rapid review found extensive variability in the outcome domains, subdomains and instruments used in RCTs of PA in an ageing population, reflecting the broad range of health conditions for which PA is used in prevention and management. This research is a step towards developing a COS for RCTs of PA in an ageing population, which could ultimately improve reporting consistency and evidence quality.

P3.05.10
SHAPE UP UNDER 5: STUDY PROTOCOL FOR USING A SYSTEMS SCIENCE APPROACH TO INFORM THE DEVELOPMENT OF A WHOLE-OF-COMMUNITY OBESITY PREVENTION STUDY TARGETING 0-5 YEAR OLDS AND THEIR CAREGIVERS.
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Purpose: Unhealthy growth patterns early in life influence current and future disease risk. Recent evidence suggests that Whole-of-Community (WOC) interventions are a way to address the obesity epidemic but are lacking for young children from birth to age 5. WOC interventions require community coordination and are often led by a multi-sectoral stakeholder group (“steering committee (SC)”). To date, little research has been conducted on the
formulation of these committees and how these groups influence obesity-prevention intervention development. Methods: Shape Up Under 5: SU US (2015–2017; Somerville, MA, USA) is a quasi-experimental intervention that utilizes systems science methods and community-based participatory research principles. The intervention includes formation of a multi-sectoral SC and facilitated meetings. SC formation was purposeful and informed by a community needs assessment, key informant interviews, and an agent-based model (ABM). The ABM was designed using data from two prior SC-led WOC interventions, which gave insight into the individual-level attributes of SC members (knowledge, engagement, and social network (KEN)) and target sectors for inclusion in the SC. Intervention staff facilitated monthly meetings, using group model building methods guided by experts in the field of system dynamics. This participatory method of group facilitation is used to understand complicated multifactorial problems with input of evidence-based best practices from obesity content experts. Process and outcome measurements capture upstream (individual committee member and community-level change in KEN), and midstream outcomes (changes to organizational and community practice, policy or environment). Results: SU US successfully recruited n = 16 committee members representing 8 sectors (family resources, parent/family nutrition services, early education/care, public schools, healthcare, community-based organizations, and city government), and has held 15 meetings. The midstream outcome is the establishment of a communications campaign, Eat-Play-Sleep, to promote healthy growth in children birth through age five. Eat; Play, Sleep consists of multi-lingual posters, brochures with age-appropriate health messages, and presentation slide decks for SC members to disseminate the work into the broader community. Analyses focused on upstream outcomes are ongoing. Conclusion: Systems science methods show promise in creating and interacting with multi-sector community stakeholders, a vital component to the development of future WOC trials.

P3.05.11
ACCEPTABILITY OF A TECHNOLOGY-ENHANCED SITTING REDUCTION INTERVENTION FOR OLDER ADULTS
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Objective: Older adults have high sitting time and are at risk for adverse effects such as poor physical function and chronic conditions. We explored the acceptability, facilitators and barriers, and perceived impacts of a theory-based (habit formation, social cognitive theory) program to reduce sitting time (I-STAND) to inform future intervention efforts targeting this high-risk population. Methods: Participants were randomized to receive I-STAND (n=29) or a healthy living comparison group (n=31). The intervention lasted 12 weeks and included: 2 in-person health coaching sessions; 4 follow-up coaching phone calls; a Jawbone Up band to prompt frequent standing; printed materials; and feedback charts from wearing an activPAL accelerometer for one week at baseline and weeks 1, 5, and 12. Following intervention completion, I-STAND participants (n=21) were interviewed using a semi-structured guide and transcripts were coded using qualitative thematic analysis. Results: Interviewed I-STAND participants (mean age = 68, range = 61-80; 62% female, 100% white, 80% college degree or higher, 29% diabetes, 71% hypertension, mean BMI = 34, range 29-51, mean baseline sitting = 10.4 hours/day) had similar demographics to the complete sample. Themes regarding overall intervention acceptability included finding it: easy to incorporate standing more into daily life, effective, relevant, and satisfying. Helpful facilitators for standing more often included use of the Jawbone Up band and other reminders (e.g. timers, being more aware of physical sensations) to take breaks from sitting, pairing standing with habits (e.g. drinking coffee, talking on the phone), feedback on activPAL-tracked sitting time to increase awareness, social support, and accountability provided by health coaching sessions that were tailored to individual needs. Barriers to standing more included boredom with standing, desk jobs and computer time, health issues, and ingrained habits. Perceived health impact themes included more motivation and physical ability to accomplish daily tasks, which enhanced mood; increased physical activity; improved stiffness, flexibility, pain, and stamina; and enhanced self-efficacy to sustain changes. Conclusions: A technology-enhanced intervention to reduce sitting time was highly acceptable among older adults with high sedentary time. While the technology was well accepted, participants also viewed one-on-one health coaching and feedback on sitting time as critical components.

P3.05.12
ACCELEROMETER-BASED PATTERNS AND SELF-REPORTED DOMAINS OF SEDENTARY BEHAVIOR AMONG JAPANESE OLDER ADULTS
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Background: Obtaining prevalence estimates and identifying who are the most sedentary among older adults by their patterns and contexts of sedentary behavior can inform the development of targeted and tailored interventions. We examined the prevalence and sociodemographic variations among Japanese older adults of accelerometer-measured patterns and self-reported sedentary behaviors by domain. Methods: The study sample was 297 adults aged 65-85 years (62.6% men; mean age 74.5 years) who completed a postal survey and wore accelerometers for seven days. Mean daily values of 5 patterns (total time and percentage of day in sedentary behavior, the number of sedentary bout, breaks, and prolonged bouts) and 6 domains (car use, public transport use, work, TV viewing, PC use, other leisure purposes) were compared across sociodemographic attributes and BMI status using multivariate linear regression analyses. Results: Participants spent an average of 522.1 (SD=113.7) minutes, or 58.1% (SD=11.8%) of their accelerometer wear time in sedentary behavior a day, with 7.7 (SD=2.9) breaks per sedentary hour and 4.4 (SD=1.9) prolonged bouts (42.1% of total time). Being men, in an older age group, and BMI>25 were statistically significant correlates of 4 of the 5 patterns (except the number of breaks for age group). The proportions of sedentary time by domain were: car use (9.2%), public transport use (3.4%), work (4.4%), TV viewing (46.9%), PC use (8.5%), and other leisure purposes (27.6%). Time in cars was significantly higher in older age groups. Those with a BMI>25 had a higher sedentary time in TV viewing and other leisure purposes. Sedentary time for PC use was significantly higher in men and those with a university degree or higher. Conclusions: For Japanese older adults, reducing prolonged SB by taking breaks, especially during TV viewing and among men, those who are older and overweight/obese, may be considered.

### P3.05.13

**HEALTHY URBAN LIVING AND AGEING IN PLACE (HULAP): ASSESSMENT OF OLDER PEOPLE’S PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR IN THE SOCIAL AND BUILT ENVIRONMENT**

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Purpose Healthy urban ageing (HUA) is a global issue with the need for cities to align with the 'New Urban Agenda' to ensure 'age- and gender-responsive planning and investment for sustainable, safe and accessible urban mobility' and 'resource-efficient transport systems, linking people, places, goods, services and economic opportunities'. In addition, as non-communicable diseases are a public health priority there is a need to address physical activity (PA) by scaling-up programmes and policies. Furthermore, as a concern for HUA is rapid social and built environment (BE) changes exposing vulnerable populations (low socioeconomic status, older adults and women) to low PA levels due to BE effects, social isolation and poor access to services. This study aims to assess the relationship between PA and sedentary behaviour (SB) in older adults in Brazil and the United Kingdom (UK) with the BE and to provide guidance to inform HUA. Methods Older adults (≥60years) are being recruited in the UK (n=300) and Brazil (n=488). Recruitment is stratified by a quadrant of walkability and socio-economic status (SES): 1) low-SES/low-walkability; 2) low-SES/high-walkability; 3) high-SES/high-walkability; 4) high-SES/low-walkability. Participants will wear a GT3X accelerometer and a Qstarz BT-Q1000XT GPS for 7-days and complete a survey including: demographic and psychosocial variables, International Physical Activity Questionnaire, Sedentary Behaviour, NEWS-A, general health, physical functioning, psychosocial variables and social environment constructs. Results This study will allow for an investigation using accelerometer and GPS data of older adults PA and SB and their relationship with the environment. Preliminary results will be presented from Brazil and the UK following descriptive analysis of the Accelerometry and survey data. Results will include overall objectively-measured PA and SB, and stratification by quadrants. There is a potential for using GIS data for these results, and including descriptive GPS routes data. Conclusions Lessons learned will form an understanding of the influence of the environment on PA, SB and consequently HUA. It will also enable the association between the built, social and policy environments and PA in older adults to be investigated; providing a foundation to inform policies and practice in other countries that will face similar ageing issues in the future.

### P3.05.14

**THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY, SEDENTARY BEHAVIOUR AND OBESITY IN OLDER ADULTS IN CENTRAL EUROPE**

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Purpose: The aim of this study was to examine the association of objectively monitored physical activity and sedentary behaviour with markers of obesity in older adults from Central Europe. Methods: This cross-sectional study was conducted between 2008 and 2012. The sample comprised 408 older adults [mean age 64.2±6.2 years, body mass index 27.1±4.4, percentage body fat (%BF) 35.0±7.9] who attended the University of the Third Age in Olomouc and Brno (Czech Republic), Presov (Slovak Republic) and Katowice (Poland). Somatic indicators were measured using a multifrequency bioelectrical impedance analysis (InBody 720). All participants wore an accelerometer (ActiGraph GT1M) for seven consecutive days during spring and autumn seasons (at least 10 hours per day). Three tertiles were established based on meeting moderate-to-vigorous physical activity (MVPA) guidelines (the highest >300min/week; the medium 150 to 300min/week; the lowest). The associations with obesity were investigated using logistic regression with %BF value as a dependent variable. Findings: Daily sitting time was not associated with increased risk of obesity in those classified as the most active. In medium tertile, there was an increase of %BF 6.5% in those who spent less than 7.5h/day sitting and 6.2% in those sitting for more than 7.5h/day, compared with the most active. In the lowest tertile (MVPA below 150min/week), there was more than two-fold increase of %BF: 12.7% and 17.7% in the less and more sedentary groups, respectively. Compared with the reference group (i.e. more than 300min MVPA/week and less than 7.5h/day of sitting), those who spent more than 7.5h/day sitting and engaged in MVPA for less than 150min/week (the lowest tertile) had 5.7 higher odds to be obese. Conclusions: Failure to meet physical activity guidelines (at least 150min MVPA/week) was associated with an increased risk of being obese regardless of daily sitting time. However, in the most sedentary participants is the risk of obesity even higher. High levels of MVPA seem to eliminate the risk of increasing body fat. These findings underline the benefits of physical activity for older adults.

P3.05.15
BUILT ENVIRONMENT, PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR IN OLDER ADULTS: A SYSTEMATIC REVIEW
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Purpose: Over the course of recent decades’ human populations have been rapidly ageing with projections showing the world’s ‘oldest old’ population will increase threefold over the next thirty years. This demographic shift is due to better quality of life and advances in health care services however this shift has the potential to pose a range detrimental challenges for health care services. Such challenges will result in financial implications through the well-established links between ageing population’s morbidity and mortality. Consequently, ‘Healthy Urban Ageing’ has taken its place at the forefront of researchers, policy makers and practitioner’s agendas to ensure older people stay healthier for longer. Many research groups are now focusing on the built environment (BE) and the role the BE has on older adults physical activity (PA) and sedentary behaviour (SB). However, despite the growth of this field no conclusions have yet been drawn. Considering the current gaps in this field it is vital that a comprehensive systematic research is performed to determine the impact of BE attributes not only on PA but also SB of older adults (>60 years). Methods: Databases (Bireme, SciElo, Web of Science, Scopus, Psychinfo, Embase, Science Direct and SportDiscus) were searched for English, Spanish and Portuguese articles (1990-2016) using MeSH in all three languages relating BE, PA and SB in older adults. Results: Sixty papers were included with the majority: published 2009-2016 (86.7%; n=52); based in North America (43.3%; n=26); of cross-sectional design (96.7%; n=58); with both genders participating (93.3%; n=56). Preliminary results showed 7 overarching variables were tested for association with PA (access to recreation facilities, composite variables (walkingability), land-use mix, population density, sidewalk coverage, street pattern and other). Positive associations with PA in descending numerical order of association were: land-use mix (n=18), street pattern (n=18), composite variables (n=12), access to recreation facilities (n=12), population density (n=4), other (n=2) and sidewalk coverage (n=2). Conclusions: Preliminary results show that the BE is extremely complex with a multitude of influencing factors on PA and SB in older adults. Full analysis will be presented having unpicked BE attributes that influence PA and SB in older adults both positively and negatively.

P3.05.16
SEDENTARY BEHAVIOR AND PHYSICAL PERFORMANCE AMONG PARTICIPANTS IN A MULTICOMPONENT EXERCISE PROGRAM FOR OLDER ADULTS
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Sedentary behavior (SB) has been associated with poor cardiometabolic health in older adults, independent of physical activity. Few studies have examined relationships between objective measures of SB and physical
performance in this population. Objective: This study examined associations between sedentary time, the number and length of sedentary bouts and breaks, and performance on the Senior Fitness Test (SFT) in physically active older adults. Methods: Study participants were recruited via convenience sampling from a multicomponent exercise program for older adults. Sedentary behavior and physical activity were assessed via accelerometry over 7 consecutive days. Physical performance, including muscular strength and endurance, flexibility, dynamic agility, and cardiovascular endurance was assessed using the Senior Fitness Test (SFT). Separate linear regression models were used to examine associations between sedentary time, the daily average number and length of sedentary bouts and breaks in SB, and performance on the SFT. In all models, wear time and moderate-vigorous physical activity were accounted for. Sedentary bouts were defined as 100 cpm, both for 10 consecutive minutes. Results: Twenty-five participants (19 female; 6 male; age = 73.5±6.9 years) were included in this study, with valid accelerometer data available for 21/25 participants. Significant associations were found between daily sedentary time (β = 0.006, R2 = .516, R2 change = .312; p2 = .358, R2 change = .178; p2 = .331, R2 change = .155; pConclusion: These preliminary results show that greater sedentary time, more frequent bouts of SB, and shorter sedentary breaks are associated with slower performance on the 8UG, reflecting poorer dynamic balance and agility. These findings highlight the need for interventions to reduce SB in all older adults in order to attenuate declines in physical performance that could potentially lead to the loss of independence.

P3.05.17
THE INFLUENCE OF AEROBIC FITNESS AND ACADEMIC RANKING ON THE ASSOCIATION BETWEEN IMPROVEMENTS IN STUDENTS’ AEROBIC FITNESS AND ACADEMIC ACHIEVEMENT
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Objective: To examine the influence of aerobic fitness and academic ranking on the association between improvements in students' aerobic fitness and their academic achievement. Methods: Data were collected during the 2013-14 academic year from 1,152 second- through fifth-grade students enrolled in ten elementary schools located in a micropolitan community in the Midwestern United States. Aerobic fitness was assessed using the progressive aerobic cardiovascular endurance run (PACER), and academic achievement was measured using the percentile rankings of students' standardized math and reading test scores. School-fixed effects models were used to estimate the impact of improved aerobic fitness from the fall to the spring semester on students' spring percentile rankings in math and reading. The estimation controlled for the students' fall academic performance (i.e., fall percentile rankings in math and reading), sex, race, grade level, overweight or obesity status, and free/reduced lunch status (SES). Results: Results suggested that those students whose PACER improved from the fall to spring semester moved up the national spring math percentile rankings by 2.71 percentiles (p=0.001). Analyses by subgroup showed that this beneficial impact of improved aerobic fitness on math achievement is particularly strong among two subgroups of students: (1) less fit students – those whose fall semester PACER was below the 50th PACER-for-sex-and-age percentile had a math percentile increase of 13 points of which 4.77 (p=0.000) was attributed to an increase in aerobic fitness; and (2) lower performing math students – those whose fall math score placed them below the 50th percentile in the national math rankings had a math percentile increase of 18 points of which 3.33 (p=0.045) was attributed to an increase in aerobic fitness. No statistically significant relationship was found between improved aerobic fitness and reading achievement. Conclusions: Improving aerobic fitness could potentially have the greatest academic benefit for those elementary students who need it the most – the less fit and the lower academic performers.

P3.05.18
ENVIRONMENTAL FEATURES OF SHOPPING MALLS AND OTHER PUBLIC SPACES USED BY OLDER ADULTS FOR WALKING
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Objective: Shopping malls are recommended to older adults as places ideally suited for walking, but there is limited research on the environmental features that contribute to their walkability, or characteristics of the walkers themselves. Methods: Our evaluation was guided by the RE-AIM (reach, effectiveness, adoption, implementation and maintenance) framework and ecological theory. A sample of 2-3 indoor shopping malls and 1-2 non-mall sites
were purposefully selected in each of five U.S. states (Alaska, Illinois, Missouri, Washington, West Virginia). Other criteria included designated walking times outside of regular business hours, having a primary business purpose other than physical activity, and the potential to reach geographically and racially diverse seniors. Fitness facilities and tracks were excluded. Modified versions of two instruments were used to evaluate the sites: (1) the CDC-Healthy Aging Research Network Environmental Audit, to document each site’s external environment (e.g. public transit, parking, aesthetics), internal environment (e.g. amenities, disorder), and walking environment (e.g. hours, routes, programming); and (2) the System for Observing Play and Recreation in Communities tool, to quantify the number and characteristics (e.g., demographics, activity levels) of walkers during a specified observation period. We used descriptive and inferential statistics to summarize site features and walker characteristics, and to compare malls versus non-malls, as appropriate. Results: Ten malls and six non-malls were evaluated, along with 443 mall walkers and 87 in non-mall sites. All venues had public transit stops and accessible parking. All malls and most (67%) non-malls had wayfinding aids, and most (81%) had an established circuitous walking route, benches along the walking route (94%), and well-maintained public restrooms (94%). All sites had level surfaces. Sites varied in hours of access, programming, traffic control near entrances, and lighting. Walkers at malls were observed to be older (p=.003) than walkers at non-mall sites. Conclusions: Despite diversity in location, size, and purpose, the mall and non-mall sites audited shared numerous environmental features known to promote walking in older adults and few barriers to walking. Future research should study the impact of community interventions to encourage use of malls and other public spaces for walking.

P3.05.19
DANCING AND WALKING AS A MEANS TO IMPROVE ACTIVITY LEVELS? RESULTS FROM A FEASIBILITY RANDOMIZED CONTROL TRIAL IN WOMEN AGED 55-70
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Purpose: Physical activity (PA) engagement is low and women over the age of 60 are the least physically active segment in Canada and thus an important target for behaviour change interventions. One framework for PA behaviour change is Self-Determination Theory (SDT), which posits that three psychological needs are necessary for motivation. Two important knowledge gaps include: limited SDT-based intervention studies with older adults and few studies that have explored how different types of PA might meet psychological needs. Therefore the purpose of this study was to explore the feasibility of six-week SDT-based dance and walking programs for older women.
Methods: This was an open, randomized controlled trial with three groups: dance, walking, and wait-list control. This study included the sequential collection of quantitative then qualitative data (sequential explanatory design). Participants were community-dwelling women aged 55-70 years who were not meeting PA guidelines. Data were collected at baseline and two endpoints: post-intervention at six weeks and follow-up at 12 weeks. The primary outcomes were feasibility measures: recruitment, intervention adherence, retention, and satisfaction. Survey data included self-reported PA (GLTQ) and measures of behavioural regulations and psychological needs (SDT constructs) using validated tools (BREQ-2 and PNSE). Qualitative data were collected in the form of open- and close-ended program evaluation questions and during focus groups, both occurring at post-intervention (six weeks). Results: The feasibility measures suggest that it is feasible to recruit and retain participants and that they were generally satisfied with the programs. Thirty-five of 37 randomized participants completed the study (mean age ± SD = 62.8 ± 4.8), representing a 39% recruitment and 95% retention rate. Both programs were highly attended. Exploratory effect sizes for the quantitative measures were promising (e.g., PA: η2 = .091) for conducting a larger-scale trial. Emergent themes highlighted the importance of leadership in the group-based PA programs. Conclusion: This study had high protocol adherence, typical effect sizes, program evaluation satisfaction, and community translation: the walking program became self-sustaining after the study and a recreation centre adopted the dance program. Overall these factors provide a foundation for expanding this feasibility trial to a full-scale study.

P3.06 Physical and mental health / Assessment and methodologies: All ages

P3.06.1
PEER SUPPORT FOR WOMEN WITH CORONARY HEART DISEASE: PRELIMINARY RESULTS FROM THE WOMEN@HEART PROGRAM
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Purpose: Coronary heart disease (CHD) is the leading threat for premature morbidity and mortality in Canadian
women. Regardless of age, more women than men will die (26% vs. 19%) within a year of their first myocardial infarction. Conventional cardiac rehabilitation programs may not meet the needs of women, as women's primary need may be social support. Increased social support has been shown to result in improved adherence to treatment, health promoting behaviours and vascular health. Methods: We have developed a peer support program (Women@Heart) to increase social support and psychological well-being in women with CHD. It is led by trained volunteers who have made a successful recovery from CHD-related illness. The Women@Heart program is a curriculum-based program designed to improve emotional, informational and appraisal support for women with CHD. The effects of program participation on several measures of psychosocial well-being were measured including adaptive and maladaptive coping (brief COPE inventory (BCI)); anxiety and depression (Hospital Anxiety and Depression Scale (HADS)); and perceived stress (Perceived Stress Scale (PSS)). Secondary outcomes included health behaviours (smoking, fruit and vegetable consumption, and physical activity), and anthropometrics (waist circumference (WC) and body mass index (BMI)). Results: Twelve peer leaders (mean age = 61.3 ± 10.7 years) have been trained and have lead groups. The program has been offered at nine sites in the Ottawa area and 204 women (mean age = 65.8 ± 1032 years; 55.9% married; 65.2% retired) have been enrolled in Women@Heart. One hundred and fifteen women have completed the program to date. We observed improvements in adaptive coping (P=0.003), anxiety (P=0.043), depression (P=0.011), fruit and vegetable consumption (P=0.017 and P=0.069, respectively), physical activity (minutes per week of vigorous activity (P=0.05)), and WC (P=0.006) during program participation. Conclusions: These results suggest that the Women@Heart program is feasible and participation is associated with beneficial effects on psychosocial well-being, health behaviours and anthropometrics. Pilot data is continuing to be collected. More rigorous testing is required in the form of a large randomized control trial.

P3.06.2
PHYSICAL ACTIVITY, HEALTH BEHAVIOURS AND ACADEMIC ENGAGEMENT AMONG ADOLESCENTS STARTING HIGH SCHOOL.
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Abstract Purpose: Leisure-time physical activity (PA) is known to decline in late adolescence, especially as academic commitment increases. This may have a negative impact on health and health behaviours. The aim of this study was to investigate association of PA with academic engagement, describe the characteristics of health and health behaviours of three groups of different activity level among adolescents starting high school. Methods: A cross sectional study of 16-year-old adolescents (n=290; 52% girls) from two high schools in Iceland. The participants were classified in three groups based on their participation in physical activity (PA); sport-group, intermediate physical activity and sedentary-group. Cardiorespiratory fitness (CRF; VO2max) was assessed by graded bicycle test and body composition by height and weight for BMI, waist circumference (WC), and 7 skinfolds for body fat percentage (%BF). Physical activity, academic engagement and health behaviours such as dietary habits and screen time were self-reported. Dietary habits were transformed into healthy- (HES) and unhealthy eating score (UES).
Results: Boys were more active than girls; the division into activity groups being 52/14/34% for the boys and 33/22/46% for the girls respectively for sport/intermediate/sedentary-groups (p=0.001). Among girls the intermediate-group spent most time on homework, while girls in the sport-group had the highest average grades and a correlation was found between academic achievement and CRF in girls (r=0.262, p=0.001). None of these findings applied for the boys. Regardless of sex, the sports-group was more positive towards school than intermediate and sedentary-groups (81/62/66%, p=0.015). CRF increased with PA, but no difference was seen in BMI between groups, while %BF was lowest in the sport-group of both sexes. Health behaviours were also more optimal in the sport-group compared with other groups. Among boys only, HES was highest in the sport-group compared with the other two groups (p=0.002) while in girls the sedentary group had the lowest HES (p=0.045). No differences were seen for UES. Excessive screen time (>24hours/day) was less common in the sport group compared to other groups of both sexes (p=0.004). Conclusions: PA does not seem to interfere with academic engagement, but strengthens positivity towards school, physical attributes and health behaviours.

P3.06.3
PROMOTING PHYSICAL ACTIVITY AMONG OLDER WOMEN LIVING IN SOCIO-ECONOMICALLY DISADVANTAGED AREAS: DEVELOPMENT OF A COMMUNITY-BASED INTERVENTION
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Purpose: Community-based interventions have the potential to deliver healthy lifestyle support. However, their effectiveness is unclear and improved methods of intervention access are needed. The project aimed to develop an intervention to provide positive behavioural support in a community-based setting, targeting a population subgroup lacking engagement in healthy behaviours. Objectives were: 1) conduct a systematic review to assess the current evidence base, 2) use the findings to develop a logic model for the intervention. Methods: We searched five databases (MEDLINE, EMBASE, CINAHL, PsycINFO, Cochrane library) to identify health behaviour interventions for adults with cardiovascular disease in community-based settings. Primary outcomes focused on physical activity (PA), diet, smoking, and/or alcohol consumption. Two reviewers independently assessed articles for eligibility and risk of bias. Results were used in the development of a logic model informed by Social Practice Theory (SPT), from which an intervention to increase PA in older women (≤50 years) living in socio-economically disadvantaged areas was developed. Results/findings: Of 5,905 articles identified, 41 articles (38 studies) were included. Meta-analyses identified increased steps/week (Mean Difference (MD): 7,480; 95% CI 1,940, 13,020) and minutes of PA/week (MD: 59.96; 95% CI 15.67, 104.25) associated with interventions. Interventions were mostly multifactorial, PA-based, educational and psychological. Studies lacked objective PA measures, included few women and reported little data regarding socio-economic status. Effective intervention components appeared to include PA, education and a theoretical framework. Utilising SPT as a framework and these components in the design, the outcome of the logic model for the intervention was a 12-week programme, providing education about PA, social support and information about local opportunities for PA and walking routes, targeting an increase in PA among women attending pre-existing groups in community centres, in socio-economically disadvantaged areas. Conclusions: Our review identified strong evidence that community-based lifestyle interventions have positive effects on PA, suggesting that community-based opportunities should be promoted. Our findings have informed the development of an innovative approach, based in community centres using SPT, to increase PA for older women in areas of socio-economic disadvantage. An evaluation of the intervention is currently underway, using a randomised trial with a stepped wedge design.

P3.06.4
ASSESSING THE MODAL IMPACTS OF PUBLIC BIKESHARE SYSTEMS: A COMPARISON OF SURVEY TOOLS

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Purpose: Public bikeshare systems have the potential to increase physical activity levels by shifting trips from motorized transportation towards active travel. Quantifying mode shifts is one way to assess the impacts of bikeshare on physical activity. Many studies use a general transportation question: "As a result of bikeshare, do you use your car more often, about the same, or less often?". However, the magnitude and extent of mode shifts cannot be quantified by this question, as it includes no measure of the number of trips. In our study of Vancouver’s public bikeshare system, we evaluated mode shifts, comparing results from a general transportation question with a series of trip-specific questions. Methods: We surveyed annual and monthly members of the system in November 2016 (n=1759, mean age=40.2 years). We compared estimates of mode shifts using both a general question (a 5-point Likert scale response from "much less often" to "much more often") and trip-specific questions (asking respondents about their last three bikeshare trips, including what mode they would have used if the system did not exist). We compared the proportion of respondents reporting shifts away from each mode (walking, transit, car, and personal bicycles) in the general question with mode shifts calculated from trip-specific questions. Results: Overall 4751 trips were reported: 817 new trips that would not have been made if bikeshare was not available, and 3716 trips where mode shift data was available. Based on the general question 42.6% (95% CI: 40.3, 44.9) of respondents reported walking less, compared with on trip-specific data where 46.3% (44.7, 47.9) of bikeshare trips replaced walking. For transit, this was 42.8% (40.4, 45.1) compared with 29.5% (28.0, 30.9), for car travel, 22.3% (20.4, 24.3) compared with 7.2% (6.4, 9.0), and for personal bicycle, 29.3% (27.2, 31.5) compared with 6.5% (5.7, 7.3). The two questions provided similar information around walking, but different patterns for shifts from transit, car travel, and personal bikes. Conclusions: General questions may overestimate mode shifts from motorized travel and personal bicycle use. To better quantify the modal impacts of public bikeshare systems, bikeshare user surveys should include trip-specific questions.
P3.06.5
LEVELS AND PATTERNS OF OBJECTIVELY MEASURED PHYSICAL ACTIVITY VOLUME AND INTENSITY DISTRIBUTION IN CZECH ADOLESCENTS.
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Objective: To provide a detailed description of adolescents’ sedentary time and physical activity pattern across a week. Methods: Four hundred seventeen adolescents, age 12–18 yrs, were recruited from Olomouc and Hradec Kralove region in the Czech Republic. Physical activity (PA) was monitored for seven consecutive days using a hip-worn accelerometer, ActiGraph model GT3X. Each minute epoch was classified as sedentary, light and moderate-to-vigorous intensity physical activity (MVPA) using Evenson cut-points. Gender and age group differences were studied by applying independent t-tests to all measures. Results: The average (mean±SD) wear time was 13.3±1.2 hrs/day, of which 60% (8.0 hrs) was spent sedentary, 34% (4.5 hrs) light-, 4% (0.5 hrs) moderate- and, 2% (0.3 hrs) in vigorous-intensity activity. Average time spent in MVPA was 51.5±21.6 min/day. During weekdays, boys were more physical active and less sedentary than girls, but there was no gender differences at weekends. There was a large variation by day of the week in both sedentary time and MVPA. Friday was the most physically active day for both gender (boys=64 min of MVPA/day; girls=58 min of MVPA/day) while Sunday was the least active day (boys=31 min of MVPA/day; girls=36 min of MVPA/day). Higher proportions of boys (34% vs. 25%) met the physical activity recommendation of at least 60 min of MVPA/day. Conclusions: Czech adolescents spent 60% of their waking wear time sedentary and majority of their PA was light intensity. Sedentary time and physical activity vary by gender and "day of the week" factors. According to physical activity recommendation, the majority of adolescents are insufficiently active. This study was supported by the research projects of the Czech Science Foundation, "Multifactorial research on built environment, active lifestyle and physical fitness in Czech adolescents" (No. 14-26896S).

P3.06.6
24-HOUR MOVEMENT BEHAVIOURS IN CANADIAN YOUTH WITH DISABILITIES: PRELIMINARY ANALYSES
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Purpose: Canada’s 24-hour movement guidelines recommend youth achieve high levels of physical activity (60 minutes of moderate-to-vigorous intensity plus several hours of structured or unstructured light physical activities), low levels of sedentary behaviour (≤ 2 hours of recreational screen time), and sufficient sleep (8-10 hours) each day for optimal health. The appropriateness of such guidelines for youth living with disabilities remains unknown. The objective of this study was to examine the 24-hour movement behaviours of Canadian youth (ages 12-21 years) with physical or sensory disabilities. Methods: Youth were recruited across Canada to complete two telephone interviews over a 4-week period. The validated 24-hour Multimedia Activity Recall for Children and Adolescents (MARCa) was administered by a trained research assistant to assess overall means of self-report physical activity (PA) and sedentary behaviour, and sleep. Results: Preliminary results are available for 50 participants (Mean age of 17.06 years ± 2.70). Most identified as being female (61%), White (75%), living with a visual impairment (26%) or cerebral palsy (24%), and using a wheelchair (44%) for mobility. Participants spent 89.2 ± 86.6 minutes per day in PA, with 72% of that time spent in active travel, 27% in sports, and 1% in active play. Participants spent 248.7 ± 153.7 minutes in recreational screen time, with television, computer use, texting, and passive video games representing 40%, 31%, 24%, and 5%, respectively, of total screen time. Participants spent 9.03 hours in sleep. Over the 24-hour period, PA, sedentary behaviour and sleep represented 6%, 17%, and 38%. Conclusion: This is the first study to examine 24-hour movement behaviour within an adolescent disability population. Findings will help to further our understanding of the movement behaviours of Canadian youth with disabilities and to assist in future intervention research.

P3.06.7
HEALTH-RELATED PHYSICAL FITNESS AND PHYSICAL ACTIVITY PATTERNS IN THE WORKPLACE
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PURPOSE: The aim of this study was to examine the relationships between physical activity patterns and determinants of health-related physical fitness (including aerobic and musculoskeletal fitness and body composition) within a traditionally sedentary workplace. METHODS: A total of 98 office workers (89% women) aged 27-63 yr (mean ± SD = 46 ± 9 yr) were examined for physical activity patterns (via the Godin-Shephard leisure time questionnaire) and health-related physical fitness (including estimated maximal aerobic power (VO2max) via the 6-minute walk test, musculoskeletal fitness (grip strength), and body composition (body mass index (BMI) and percentage body fat (bioelectrical impedance)). RESULTS: The participants demonstrated health-related physical fitness values that were at the lower end of the health-continuum for apparently healthy individuals (VO2max = 33 ± 9 mL·kg⁻¹·min⁻¹, combined grip strength = 50 ± 15 kg, BMI 29 ± 8 kg·m⁻² and body fat percentage = 36 ± 10%). The majority of participants were inactive (67%) with 37% reporting engaging once or twice a week, and 30% reporting that they rarely or never engage in physical activity. A total of 33% of the participants reported engaging in physical activity 3 or more times a week. The correlations between physical activity level and the health-related physical fitness determinants were as follows: negative with body fat percentage (-0.313, p = 0.02), positive with VO2max (0.279, p = 0.005), and not statistically significant with grip strength (0.012, p = 0.909). CONCLUSION: Approximately one-third of participants engaged in physical activity levels that meet international physical activity recommendations. Overall low levels of physical activity were associated with worsened health-related physical fitness. These results emphasize the need of initiatives to promote healthy lifestyle behaviours within the workplace.

P3.06.8
COMBINATIONS OF EPOCH DURATIONS AND CUT-POINTS TO ESTIMATE SEDENTARY TIME AND PHYSICAL ACTIVITY AMONG ADOLESCENTS
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Purpose: The ability to accurately measure sedentary time (SED) and different physical activity (PA) intensities have greatly improved during the recent decades. However, researchers and practitioners may employ different epoch durations and cut-points for data analysis which consequently may result in various outcomes depending on the decisions made. The purpose of this study was to investigate how combinations of different epoch durations and cut-points affect the estimations of SED and different PA intensities among adolescents. Methods: Participants were recruited from three schools in a multicultural area of Gothenburg, Sweden. They wore ActiGraph™ accelerometers (models GT3X and GT3X+) during seven consecutive days. Accelerometer data from 101 (girls n=63) adolescents (12.8±0.5 y) with a mean wear-time was 6.0 (±1.3) days with 14.0 (±1.8) hours per day were integrated into 1, 5, 10, 15, 30, and 60 seconds epoch durations. SED, light PA (LPA), moderate (MPA), vigorous PA (VPA), and moderate-to-vigorous (MVPA) were estimated with 5 previously calibrated and validated cut-points. A total of 30 combinations were calculated and rANOVA was applied to investigate within-subject differences regarding SED and different PA intensities for each cut-point. Post-hoc analyzes were completed to pairwise compare differences between epoch durations using 1 sec as reference. Extreme differences between cut-point per epoch duration (lowest vs. highest estimates) were also analyzed with rANOVA. Results: Large differences of SED and times of different PA intensities for virtually all cut-points were observed between 1 sec and longer epoch durations. Generally, SED, MPA, VPA, and MVPA progressively decreased whereas LPA increased with longer epoch durations. The extreme differences between cut-points increased with longer epoch durations for SED and for all PA intensities except for VPA per epoch duration. Conclusion: Cautiousness is warranted when cross-comparing studies for which different epoch durations have been applied, as well as different cut-points. The results have implications for researchers and practitioners when deciding on what epoch durations and cut-points apply in accelerometer-based studies. The study confirms previous recommendations of using short epoch durations to assess adolescents’ spontaneous intermittent activity behavior.

P3.06.9
ASSOCIATIONS BETWEEN SCREEN TIME, PHYSICAL ACTIVITY AND MENTAL HEALTH IN ICELANDIC ADOLESCENTS.
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Objective: Few studies have explored the relationship between screen time (ST), physical activity (PA) and mental health in youth, especially the potential interrelated effects. We examined associations of these variables among Icelandic adolescents. Methods: Questionnaire was administered to 301 tenth grade students in six elementary schools in Reykjavik to determine weekly frequency of vigorous PA (VPA), daily hours of ST and symptoms of depression, anxiety and somatic complaints. Participants were given accelerometer to wear (wrist-placed) for one week to assess free-living PA. Multivariate logistic regression (α = 0.05) was used to explore independent and interactive associations of ST and PA with mental health, adjusting for sex, body composition (by dual energy X-ray scan) and maternal education. Results: 248 participants (102 males) had valid data for main variables. Mean daily ST was 6.0 ± 2.9 hr (boys: 6.4 ± 3.1 hr, girls: 5.6 ± 2.8 hr, p = 0.04). Majority of participants reported VPA ≥ 4 times/week (63.7%). Mean daily free-living PA was 2043 ± 475 counts/minute. Symptoms of depression were reported by 10.5%, symptoms of anxiety by 14.5% and somatic complaints by 14.5% of participants (girls reported all three outcomes significantly more often than boys). Ranking below the median ST (5.4 hr) was associated with reporting fewer symptoms of depression (adjusted relative risk (RRadj) = 0.40 (confidence interval (CI): 0.18, 0.91)) and anxiety (RRadj = 0.45 (CI: 0.24, 0.84)). VPA ≥ 4 times/week was also associated with reporting fewer symptoms of depression (RRadj = 0.32 (CI: 0.14, 0.74)) and anxiety (RRadj = 0.33 (CI: 0.17, 0.62)). No significant association was observed between objectively measured PA and mental health. Interactive logistic regression showed that the group reporting lower than median ST and ≥ 4 times/week VPA reported less often symptoms of depression (RRadj = 0.12 (CI: 0.03, 0.54)) and anxiety (RRadj = 0.18 (CI: 0.07, 0.46)) than the group with higher ST/less frequent VPA.

Conclusions: Less ST and more frequent VPA seem to be associated with better mental health among Icelandic adolescents, both independently and interactively. Our results highlight the importance of guiding youth towards more active and less sedentary lifestyle.

P3.06.10
SECULAR TRENDS IN PHYSICAL ACTIVITY IN ADULTS AND ELDERLY FROM 1979 TO 2016: THE TROMSØ STUDY
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Purpose: Our purpose was to describe secular trends in leisure time physical activity (LTPA) and work-related physical activity (WPA) between 1979 and 2016 in a large population-based study with six repeated surveys.

Methods: Data were collected from 40 690 individuals (49.7% men) aged ≥20 years who participated in at least one of six Tromsø Study cross-sectional surveys between 1979 and 2016. A general question about LTPA was used in all surveys except 1994-95, classified into inactive, light, and moderate-vigorous LTPA. Questions about exercise frequency and intensity in leisure time were introduced in 2007-08 and repeated in 2015-16 (n=11 150). WPA (classified into mostly sedentary, walking, lifting, heavy manual labour) was assessed by a similar question with in all six surveys. We report age-standardized prevalences of LTPA using 74 901 observations and WPA using 86 780 observations. Additionally, we report changes in self-reported exercise intensity and frequency between 2007-08 and 2015-16.

Results: The age-standardized proportion of participants being inactive in leisure time remained stable around 20% from 1979 to 2008, with a subsequent decrease from 20.1% in 2007-08 to 14.5% in 2015-16 (P prevalence of moderate-vigorous physical activity in leisure time showed a U-shape over time, with a significant increase from 15.6% in 2001 to 22.8% in 2007-08 and reached the highest level in 2015-16 with 28.3% (P prevalence of sedentary work behaviour increased gradually from 35.7% in 1979-80 to 56.8% in 2015-16 (P linear trend

Conclusions: In this cohort of Norwegian adults, a progressive increase in the prevalence of sedentary work behaviour was observed over 35 years. This unfavourable trend was partly counteracted by a substantial increase in the proportion engaging in moderate-vigorous exercise in leisure time, particularly over the last 15 years. Knowledge about population trends and patterns of physical activity provides an important basis for public health strategies.

P3.06.11
EXAMINING PHYSICAL ACTIVITY AND SEDENTARY BEHAVIOUR IN PEOPLE LIVING WITH TYPE 2 DIABETES OVER A 6-
MONTH PERIOD

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Objective: Although physical activity has been shown to have positive health benefits for people living with type 2 diabetes (T2D), few studies have utilized an objective measure (e.g., an accelerometer) to examine potential changes in activity levels over time by intensity [i.e., light physical activity (LPA) and moderate to vigorous physical activity (MVPA)]. Further, in recent years, sedentary behaviour (SB) has been examined extensively in non-diseased populations, yet little is known regarding SB levels in this population. The purpose of this study was to examine potential changes in MVPA, LPA, and SB over a 6-month period in people living with T2D.

Methods: Participants were recruited from diabetes' clinics and/or education classes in Nova Scotia, Canada. They were asked to complete a baseline survey and wear an accelerometer/GPS unit for 9 days. Participants were included if they had at least 4 valid days (i.e., ≥ 10 hours of wear time per day). The same procedure was completed at 6 months. The total minutes of MVPA, LPA, and SB were calculated and divided by the number of valid days to create minutes/day activity variables. For this presentation, only the accelerometer data is presented. Results: A total of 168 participants completed baseline measures and 148 (88%) completed the 6-month follow-up. The majority of participants were...

P3.06.12

COMPARISON OF ACTIVE STYLE PRO HJA-350IT AND ACTIGRAPH™ GT3X+ IN ASSESSING SPECIFIC ACTIVITY TYPES UNDER LABORATORY CONDITIONS

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Objective: Active style Pro HJA-350IT (ASP) is a relatively new triaxial accelerometer which has high validity for estimating low-intensity physical activity and sedentary behavior (SB). Since each accelerometer has a specific algorithm for estimating physical activity (PA) and sedentary behavior, it is difficult to compare the results of ASP with different accelerometers. It is of interest to know whether the ActiGraph GT3X+ (GT3X+) would give similar information about the amount and intensity of PA and SB. The purpose of the present study was to compare the outputs of ASP and GT3X+ in assessing metabolic equivalents (METs) for specific activities under laboratory conditions.

Methods: Ten healthy young adults (3 males and 7 females, 23.0 ± 4.0 years old) wore 2 hip accelerometers, ASP and GT3X+ simultaneously and performed 20 activities (8 sedentary, 6 household and 6 ambulatory activities) for 5 minutes each in a controlled laboratory setting. GT3X+ used Freedson algorithm (1998) to obtain the estimate METs. The difference and agreement between measurements were examined using paired t-tests and Bland-Altman plots. Results: There were significant differences in METs value on 3 of 8 sedentary activities between ASP and GT3X+ (supine, chatting, PC work): p GT3X+ (mean difference = 0.1 to 2.5 METs, p all household activities as 7.1 METs (mean = 1.0 to 1.1METs). For ambulatory activities, the GT3X+ significantly underestimated METs for all activities against ASP (mean difference = 0.8 to 2.6 METs, all: p Conclusions: The present study demonstrates that there are measurement differences between ASP and GT3X+ on most activities. Especially, these differences were larger in household activities. However, GT3X+ showed that the estimated intensity of household and sedentary activities was similar. ASP is more sensitive to assess household activity than GT3X+ possibly because the ability of ASP to measure low-intensity physical activity is high.

P3.06.13

OUTDOOR ACTIVITIES: PROMOTION OF HEALTHY LIFESTYLE AND WELL-BEING OF ADOLESCENTS

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Objective: Active and health-enhancing leisure of adolescents, particularly in the nature environment, can significantly contribute to the adoption of healthy lifestyle. The area of physical activity preferences should be continuously solved issue, exploring the differences between preferred outdoor activities and real possibilities for realization of these activities. The purpose of this study was to explore the current status and trends in preferences of outdoor activities, and if the conformity between preferred and realized outdoor activities increase the odds to meet physical activity recommendations and improve well-being. This approach aiming on well-being and physical activity recommendation was not implemented yet. Methods: The research was conducted in 248 high schools (157
Czech, 91 polish) by using online research system Indares (www.indares.com). Overall sample for physical activity preference survey was consisted of 10 086 students, of which 2 446 completed also well-being survey and 1 278 completed objective physical activity measurement by pedometers. Statistical analysis was done by program SPSS 22 by usage of descriptive statistics, crossing tables, Kruskal-Wallis ANOVA, logistic regression analysis and coefficient effect size η2 (Sheskin 2007) a ω2 (Cohen 1988). Results: The most preferred activity among boys is cycling, followed by swimming and downhill skiing, meanwhile girls prefer swimming, skating and cycling. The conformity between preferred outdoor activities and realized outdoor activities increase the odds to meet physical activity recommendations and improve well-being among adolescents, both girls and boys. Conclusions: Monitoring of preferences of outdoor physical activities and respecting of these results in creating the conditions for their realization is important aspect of successful behavioral influence towards physical and mental health of adolescent.

P3.06.14
MEASUREMENT OF SEDENTARY BEHAVIOUR IN POPULATION HEALTH SURVEYS: A REVIEW AND RECOMMENDATIONS
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Purpose: The purpose of this review was to determine the most valid and reliable questions for targeting key modes of sedentary behaviour (SB) in health surveillance surveys. This was done by reviewing the SB modules currently used in population health surveys, as well as examining SB questionnaires that have performed well in psychometric testing. Methods: Health surveillance surveys were identified via scoping review and contact with experts in the field. Previous systematic reviews provided psychometric information on pediatric questionnaires. A comprehensive search of four bibliographic databases was used to identify studies reporting psychometric information for questionnaires in adult populations. Only surveys/studies published/used in English or French were included. Results: The review identified a total of 16 pediatric and 18 adult national/international surveys assessing SB, few of which have undergone psychometric testing. Fourteen pediatric and 31 adult questionnaires with psychometric information were included. While reliability was generally good to excellent for questions targeting key modes of SB, validity was poor to moderate, and reported much less frequently. The most valid and reliable questions targeting specific modes of SB were combined to create a single questionnaire targeting key modes of SB. Conclusion: Our results suggest that future survey modules include questions with high levels of reliability and validity, can assess various modes of SB, and can be modified to suit the needs of individual surveys. Future research should investigate the psychometric properties of the proposed module, as well as other questionnaires currently used in national and international population health surveys.

P3.06.15
ASSOCIATION OF SEDENTARY TIME, SEDENTARY BOUT DURATION AND SLEEP WITH BODY WEIGHT STATUS IN ADOLESCENTS
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Purpose: To investigate the association of sedentary time (ST), sedentary bout duration and sleep duration with overweight risk in adolescents. Method: Preliminary data from 54 adolescents aged 12-18 years (27 girls/27 boys) was analyzed. Participants were instructed to wear an activPAL™ inclinometer for 8 consecutive days. Only data that provided ≥ 4 days with 40 min) and sleep duration on both weekdays and weekend days was examined by processing the activPAL™ data using a customized MATLAB® (version 7.9, The Mathworks Inc, MA, USA) programme as previously described. Overweight was defined based on an international standard of body mass index (BMI). Generalized linear model analysis was performed to examine the association of ST, sedentary bout duration and sleep duration with BMI, while controlling for age, gender, pubertal stage and stepping. Results: Compared to weekend days, ST was greater and sleep duration was lower during weekdays (sedentary time: 8.95 ± 0.98 vs. 7.40 ± 1.91 h/d; sleep: 7.64 ± 0.82 vs. 9.49 ± 1.63 h/d, P 8 h on weekend days). On both weekdays and weekend days, 46% of ST during waking hours was accumulated in shorter bouts (40 min). Generalized linear model showed that after controlling for covariates, sedentary bouts of > 40 min on weekends were related to a higher risk of being overweight (B = 0.025, 95 % CI = 0.004 to 0.047). Those who had weekend sleep compensation had a higher risk of being overweight compared to those who had sufficient sleep on both weekdays and weekend days (B = 3.414, 95 % CI = 0.177 to 6.651). Conclusion: Prolonged sedentary bout duration and weekend sleep compensation were associated with the risk of being overweight in adolescents.
**P3.06.16**

**CHRONIC DISEASE RISK PERCEPTIONS: DOES WEIGHT STATUS AND PHYSICAL ACTIVITY LEVELS IMPACT PEOPLE’S PERCEPTIONS?**

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**Purpose:** Excess weight and low levels of physical activity are associated with an increased risk of developing several common chronic diseases (i.e., heart disease, stroke, cancer, diabetes). Few researchers have examined if individuals who are overweight/obese and/or inactive or insufficiently active realize that this increases their risk. Based on theoretical and empirical grounds, individuals’ high-risk perceptions can lead to them to make healthy lifestyle changes. We therefore examined adults' perceived lifetime risk of developing cancer, diabetes, heart disease, and stroke, and the relationships between risk perceptions and current weight status (using body mass index (BMI) as a proxy) and physical activity participation. Methods: 537 adults in the general population completed an online survey. Results: Perceived lifetime risk for each chronic disease was, on average, "below average chance" to "50% chance" (stroke: M=2.56±0.97, diabetes: M=2.57±1.13, heart disease: M=2.71±1.07, cancer: M=2.86±0.99; range=1-5). After controlling for age, comorbidities, and income, BMI (M=27.17±7.21) was positively related with perceived risk of heart disease (β=.17, pβ=.11, pβ=.27, pβ=.026 p=.58). After controlling for age, comorbidities, and income, physical activity participation was negatively associated with perceived risk of diabetes (β=.10, pβ=.046, p=.29), heart disease (β=.018, p=.58), or stroke (β=.012, p=.78). Conclusion: Despite the strong link between obesity and cancer development, there was not an increased perceived risk of developing cancer as participants' BMI increased. Similarly, despite the protective health effects of physical activity, individuals' physical activity levels did not seem to contribute to their belief that they may be more at risk of developing common chronic diseases if they are less active. Public health messaging accentuating the important role of obesity and insufficient physical activity as risk factors for chronic disease is needed to increase awareness among the population at risk, and subsequently encourage them to reduce their vulnerability by managing their weight and participating in physical activity.

**P3.06.17**

**USING THE INTERACTIVE SYSTEMS FRAMEWORK TO EVALUATE A NOVEL CHILDREN’S WRAPAROUND WELLNESS PROGRAM BETWEEN A UNIVERSITY AND ELEMENTARY SCHOOL**

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**Purpose:** To investigate the use of the Interactive Systems Framework for a novel model of wellness programming between a university and elementary school. Methods: The Interactive Systems Framework was utilized to provide an evaluation framework to guide a unique relationship between a university and an elementary school. In this study, the steps of the framework were applied to the nutrition needs assessment and programming needs of the lowest income elementary school in a major city in the U.S. External partners were recruited to provide resources for food insecurity and nutrition programming. Results: The Interactive Systems Framework proved to be an appropriate and effective model for a unique life course maternal and child health program. In particular it provided a model to work with external partners beyond research funding. Each step of the framework was applied to the 3 to PhD program and lead to an ability to measure the evidence-based programs in childhood food insecurity and nutrition behavior. Conclusions: The Interactive Systems Framework proved to be a more inclusive and effective model for a unique life course maternal and child health program. Further research is needed to explore the use of this model in similar applications.

**P3.06.18**

**EVALUATING THE FEASIBILITY OF ADMINISTERING A COMBINATION OF ONLINE DIETARY ASSESSMENT TOOLS IN A COHORT OF ADULTS IN ALBERTA, CANADA**

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**Objective:** Evidence suggests that combining tools, such as 24-hour recalls and food frequency questionnaires, may allow more accurate assessment of diet in epidemiologic studies. Web-based technology should make this approach...
more feasible than in the past, but it is important to explore response rates and acceptability of such an approach in real-world settings. We sought to determine the feasibility of using a combination of online tools (Automated Self-Administered 24-hour (ASA24) Dietary Assessment Tool and Diet History Questionnaire-II (DHQ-II)) in a sub-set of participants in Alberta's Tomorrow Project (ATP); a prospective cohort of 55,000 adults ≥35y in Alberta, Canada.

Methods: Invitations to the feasibility study were mailed to 550 ATP participants. Those who consented (n=331) were asked to complete a health questionnaire, four ASA24 recalls (approximately three weeks apart over a four month period, with staggered start dates between June and December 2016), followed by the DHQ-II, and an evaluation survey. Results: The majority of participants [mean (SD) age =57.1 (10.1)] were women (70.7%), urban residents (84.8%) and non-smokers (95.7%). Of the 229 participants who completed at least one ASA24, roughly equal proportions completed one (24.8%), two (24.5%), three (24.5%) and four recalls (26.2%). One third (n=102) of consenting participants did not respond to any ASA24 recall requests, with "lack of time" given as the primary reason. Only 41% of consenting participants (n=136) completed the DHQ-II; of these, 40% (n=55) completed all four recalls. Median (25th-75th percentile) completion times were 46 (26-64) minutes for the first ASA24 recall and 50 (40-90) minutes for the DHQ-II. Conclusions: Over half of participants completed at least two or more ASA24 recalls, and those who completed a greater number of recalls also completed the DHQ-II, demonstrating that the approach is feasible in the ATP cohort. However, response rates may be sensitive to the timing and frequency of recall administration. Future investigations will (i) evaluate the dietary data collected from each tool; (ii) explore methods of combining the data to optimize assessment of diet in the cohort, while accounting for the fact that not all participants will complete the entire dietary assessment protocol.

P3.06.19
DIET@NET: FOOD QUESTIONNAIRE CREATOR FOR DIETARY ASSESSMENT IN HEALTH RESEARCH
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Objective: Gaining access to validated dietary assessment tools can prove to be challenging. Due to the limited number of tools that are easily accessible, new tools are created. If these are not created using a structured approach, poor tools are developed, which in turn produces unreliable results. Therefore, the DIET@NET partnership aims to develop an online platform which will provide access to validated dietary assessment tools and provide a structured system that allows researchers to easily create new questionnaires. Methods: The development of the online platform was guided by the DIET@NET Steering Group who have experience in developing new food questionnaires. Commonly used questionnaires were reviewed to determine the different food question styles that have been used to collect dietary data. This information determined the layout and functionality provided. The food composition databases used to underpin the system included McCance & Widdowson 7 and the UK's National Diet and Nutrient Survey. Results: The online platform created is called the 'Food Questionnaire Creator (FQC)', and is hosted on the Nutritools.org website. The FQC hosts a number of existing validated food questionnaires which have been transformed and updated from paper-based to web-based. The FQC will also enable researchers to create online questionnaires that can be completed by participants and have associated nutrients immediately available for analysis. Food questions can be mapped to the latest food composition database. The FQC will provide researchers with recommended food questions to include in their questionnaire based on their contribution to a particular nutrient of interest according to the national dietary survey. All newly developed questionnaires can be made public. Although, currently the FQC only provides UK dietary assessment tools and databases, it has been developed to allow for international databases and tools to be added. Conclusions: The FQC provides researchers with the ability to use previously validated paper-based dietary assessment tools online. The FQC also provides guidance and access to food databases which are needed to create reliable food questionnaires. The creation of the FQC will hopefully encourage researchers to make their tools more accessible, leading to more consistent research which will therefore improve health research.

P3.06.20
REPORTING OF THE VALIDITY AND RELIABILITY OF SELF-REPORT DIETARY ASSESSMENT TOOLS IN PUBLISHED RESEARCH
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Objective: The extent to which self-report dietary assessment tools accurately and reliably capture intake is fundamental to the interpretation of data on eating patterns, diet-health relationships, and the impact of
interventions on diet. The recently published STROBE-Nut (Strengthening the Reporting of Observational Studies in Epidemiology—Nutritional Epidemiology) guidelines highlight the importance of reporting on psychometric properties in peer-reviewed research. However, the manner in which published nutrition research currently addresses these properties is unknown. This review is being conducted to characterize the reporting of psychometric properties in a sample of recently published peer-reviewed research as a means of informing future reporting. Methods: All articles published in 2016 in the American Journal of Clinical Nutrition, the British Journal of Nutrition, the Journal of the Academy of Nutrition and Dietetics, the Journal of Nutrition, and Public Health Nutrition were identified (n=1782) and screened for the inclusion of quantitative assessment of dietary intake using a self-report tool (n=393). A random sample of 20% (n=78) was selected for data abstraction. Results: Preliminary findings indicate that over half (53%) of articles do not explicitly mention psychometric properties of the dietary assessment tool(s) used. The remainder (47%) include some mention of the validity and/or reliability of the dietary measures used, although almost half of these cite other sources without any elaboration on the nature of the findings of prior evaluations of the tools. Conclusions: Overall, reporting of psychometric properties of dietary assessment tools is inadequate and generally limited to statements that a given tool is valid or reliable, or has been validated or found to be reliable, based on prior testing. Such statements do not recognize that validity and reliability are not absolute and depend on the research application, population, and other contextual factors. Along with other details regarding dietary assessment (including the specifics of the tool and corresponding databases used), the systematic reporting of adequate information on validity and reliability is needed to advance the nutrition evidence base.

P3.06.21
ASSOCIATIONS AMONG PHYSICAL ACTIVITY, PERCEIVED STRESS, AND SOCIAL SUPPORT AMONG COLLEGE STUDENTS
Mama S1, Bopp M1, Bopp C5, Papalia Z1. 1The Pennsylvania State University, University Park, Pennsylvania. Objective: Physical activity (PA) often declines during the transition from adolescence to young adulthood and college. During this time, stress also increases, putting college students at increased risk of poor mental health. Social support may help increase PA and lead to decreases in perceived stress. The purpose of this study was examine the cross-sectional associations among social support, PA and stress among college students. Methods: College students (N=537) self-reported social support for PA, moderate and vigorous PA, and perceived stress. Logistic regression models examined the associations between social support, PA and stress and were adjusted for age, gender, and body mass index (BMI). Results: Students (M age=21.3 years, SD=1.7) were mostly non-Hispanic white (75.0%), men (56.7%), and normal weight (M BMI=24.5 kg/m2, SD=4.1). Most students (72.0%) reported meeting vigorous-intensity PA recommendations of 75 minutes/week (M=170.3 min/week, SD=154.5), but only 40.7% met moderate-intensity PA recommendations of 150 minutes/week (M=154.9 min/week, SD=137.9). Students who met vigorous-intensity PA recommendations (adjusted odds ratio [OR]: 0.479, 95% confidence interval [CI]: 0.252, 0.910) and reported high levels of social support (adjusted OR: 0.399, 95% CI: 0.207, 0.767) were less likely to report high levels of stress. Students who reported high levels of social support were also more likely to meet vigorous PA recommendations (adjusted OR: 2.403, 95% CI: 1.581, 3.651), but there was no evidence of mediation. Conclusions: Intervention efforts to reduce stress among college students should include PA promotion and building social support. Additional work is needed to increase moderate PA in college students to aid in the maintenance of PA during the transition from college to adulthood and reduce chronic disease risks.

P3.06.22
ACTIVE AND HAPPY: ASSOCIATIONS BETWEEN PHYSICAL ACTIVITY AND MENTAL WELL-BEING AMONG ADULTS
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Purpose: While there is evidence to support the role of physical activity and/or exercise in the prevention and treatment of depression, less is known about associations with positive aspects of mental wellbeing. The purpose of this study was to investigate the association between physical activity and self-perceived “happiness” among adults, and whether this association might vary according to other factors. Methods: Cross-sectional data were from the 2013-14 Canadian Community Health Survey, whereby a representative sample of adults (n=5230, ages 25+) in the province of Saskatchewan, Canada self-reported their current overall happiness and physical activity levels. Bivariate analyses were followed by logistic regression to estimate the odds of being “very happy” according to physical activity level, controlling for age, sex, marital status, education, household income, race/ethnicity, smoking status, BMI, and overall self-rated health and self-rated mental health. Results: Approximately 33% of the sample
reported that all things considered they were currently "very happy", while 62% reported being "pretty happy" and 5% reported being "not too happy". Among active adults 40% reported being Very happy, in contrast to only 28% of inactive adults (p Overall, being active or moderately active was associated with 60% and 40% greater odds respectively of reporting being Very Happy compared to being inactive. However, when stratified by key variables, this association between physical activity and happiness was not present among those of low income, fair/poor self-rated health or fair/poor self-rated mental health, and was stronger among individuals with an overweight or obese BMI. Conclusion: More active adults are more likely to report a higher level of happiness compared to inactive adults; however, other characteristics such as income, overall health and mental health, and weight status may influence the role played by physical activity in an individual's perceived happiness.

P3.06.23
THE EXPLORATION OF THE RELATIONSHIP BETWEEN PHYSICAL ACTIVITY AND THE METABOLIC SYNDROME:
APPLYING A RECURSIVE BIVARIATE PROBIT MODEL TO ADDRESS SELF-SELECTION BIAS
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Objectives: Insufficient physical activity (PA) is an important determinant of metabolic syndrome (MS), which is one of the major health concerns worldwide. However, little is known about the causal relationship between PA participation and the risk of MS due to self-selection bias, which exists when individuals participate in PA of their own choice rather than randomly assigned. The objective of the present study was to explore the causal relationship of vigorous, moderate, and light intensity PA participation and MS. Methods: Data from the sixth Korean National Health and Nutrition Examination Survey (2014 – 2015) were used to estimate the effects of PA participation on the risk of having MS among Koreans (age ≥ 18, N = 11,113). MS was defined by using the revised NCEP III definition. We applied a Recursive Bivariate Probit Model, a widely used method in other fields (e.g., economics) for addressing self-selection problems. Socioeconomic status and other health-related behaviors (i.e., smoking, drinking, and dietary behavior) were also included to control for other determinants of health. Results: 34.1% of the total sample was found to present MS. The proportion of those in the sample who participated in vigorous, moderate, and light intensity PA was 21.6%, 42.7%, and 63%, respectively. While 24.7% of those who participated in vigorous PA were expected to present with MS, 29.7% of those who did not participate in vigorous PA were expected to present with MS. Participating in vigorous PA reduced the relative probability of MS by 16.8%. Participating in vigorous or moderate PA reduced the probability of MS (27.1% vs. 30.2%) by 10.1%. Participating in vigorous or moderate or light intensity PA had the smallest effect on reducing the probability of MS (28.4% vs. 30.1%) by 8.2%. Conclusions: The findings present the positive effects of participation in PA on the risk of having MS by addressing a self-selection bias. The findings also highlight the importance of engaging in higher intensity PA to lower the risk of developing MS. Future research is suggested to include a panel design to improve the identification of the effect of PA on health outcomes.

P3.06.24
AN EVALUATION OF GOOGLE STREET VIEW AS AN ENVIRONMENTAL DATA SOURCE FOR CONDUCTING PARK AUDITS
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Introduction: Physical inactivity is responsible for an estimated $6.8 billion of direct and indirect health care costs in Canada. The built environment, including access and quality of public open space, influences physical activity. Google Street View (GSV) is a convenient and freely available data source that has the potential to be used for auditing the built environment. Few studies, however, have taken advantage of GSV to audit public open space and park-specific features that may influence physical activity. This study evaluates the feasibility, reliability, and validity of conducting virtual park audits using environmental park attribute data sourced from GSV. Methods: Parks (n=34) were purposively sampled from 11 Calgary neighbourhoods with differing socioeconomic status (low, low-medium, high- medium, and high) and urban form (grid-pattern, warped-grid, and curvilinear). The Public Open Space Tool (POST; adapted to the Canadian context) was used to measure the presence and quality of built characteristics located within parks. Two raters systematically audited the same parks using POST via GSV and Google Maps aerial images at two time points (ten days between each audit round). Percent of overall agreement (POA), Cohen's kappa and the intraclass correlation coefficient (ICC) were used to estimate intra and inter-rater reliability and concurrent validity. Results: Estimates of intra-rater reliability for all categorical and continuous POST items using GSV audits were poor to excellent (POA=70.6-100%, kappa=0.27-0.97, ICC=0.63-1.00). Estimates of inter-rater reliability for POST items also ranged from poor to excellent (POA=52.9-100%, kappa=0.10-1.00, ICC=0.30-1.00). Estimates of concurrent validity of GSV compared with aerial image audits were also poor to excellent (POA=63-100%,

Conflict of Interest: No conflicts of interest were declared by the authors.
P3.06.25
A SYSTEMATIC REVIEW OF PHYSICAL ACTIVITY-BASED INTERVENTIONS IN SHIFT WORKERS
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Objective As the 24-hour service industry continues to develop, it is essential to research effective strategies to promote health and prevent disease for the shift working population. With the knowledge that shift workers are at high risk of developing non-communicable diseases (NCDs), and that physical activity can have a significant impact on NCD risk factors, investigating physical activity as a prevention strategy is an innovative approach to promote health in this population. As little research has been done in this area of study, the purpose of this review was to appraise the available literature on physical activity-based interventions in shift workers. Methods A systematic review of the literature was performed in December 2017, following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. Four electronic databases were searched: PubMed, EMBASE, Scopus, CINAHL. Eligibility criteria included: peer reviewed journal articles in English; with shift workers as the target population; and physical activity as the primary intervention component. Only randomized control trials (RCT) and RCT protocols were eligible. Articles were screened for inclusion by two independent reviewers and quality was assessed using a modified version of the Delphi list developed by Verhagen et al. (1998). Results Of the 3,185 search results, seven studies were eligible for inclusion. Four were rated as high quality and five adequately measured shift work. Six prescribed aerobic activity, with walking as the primary intervention mode. Outcome measures included body composition, physical fitness, sleep quality and biological risk factors, and most studies found significant improvements in at least one of these measures. Conclusions The seven studies used different modes of moderate to vigorous intensity aerobic activity and reported small but significant improvements in one or more NCD risk factors. As no studies measured changes in physical activity, or compliance with intervention protocols, more work is required on the development and evaluation of physical activity interventions for shift workers.

P3.06.26
EFFECTS OF SUBSTITUTE TIME SPENT INDOORS WITH TIME SPENT OUTDOORS ON OBESITY AND CARDIO-METABOLIC HEALTH MARKERS IN CHILDREN
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Objective Physical activity can influence health through pathways that are unrelated to the frequency, intensity, time, and type of the activity. One such pathway is being exposed to the outdoors. The purpose of this study of 10-13 year olds was to estimate whether replacing time spent indoors with an equivalent amount of time spent outdoors was associated with changes in cardio-metabolic risk factors. Methods 458 children aged 10-13 years were studied. Participants wore a Garmin Forerunner 220 GPS watch for 7 consecutive days. The GPS watch continuously recorded their latitude and longitude coordinates and GIS software was used to determine whether each of these coordinates occurred in an indoor or outdoor location, and if outdoors, while travelling in a vehicle. The final exposure variables were the average minutes/day spent indoors during waking hours and the average minutes/day spent outdoors during waking hours while not in a motorized vehicle. BMI, waist circumference, % body fat (bioimpedance scale), resting heart rate, and blood pressure (automated machine) were measured and internal standardized z-scores were calculated for each of these risk factors. Isotemporal substitution regression models were used to estimate whether replacing indoor time with outdoor time was associated with the cardio-metabolic risk factors. Results The average (SD) indoor and outdoor times were 501 (102) and 221 (83) minutes/day, respectively. Results from the isotemporal substitution models suggested that substituting 30 minutes/day of indoor time with an equivalent amount of outdoor time was associated with a 0.05 reduction in BMI, waist circumference, and % fat z-scores (p<0.05). Conclusions The estimates from this study suggest that displacing indoor time with outdoor time would be associated with modest changes in obesity measures amongst 10-13 year olds.

P3.06.27
MOTIVATION, SOCIAL IDENTITY, AND MENTAL HEALTH AMONG MALE YOUTH SPORT PARTICIPANTS
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University of Wollongong, Wollongong, New South Wales; ³University of Newcastle, Newcastle, New South Wales. Purpose: Sport participation confers psychological and social benefits for youth (Eime et al., 2013). More self-determined forms of motivation provide additional benefits for well-being (Blanchard et al., 2009). However, this may be tempered by the extent to which one identifies with their sport team (i.e., social identity). As an example, social identity has been shown to be preventative and curative for mental health problems among adult samples (e.g., decreased depression; Haslam et al., 2016). The purpose of this study was to explore the mediating role of social identity on the motivation-mental health relationship in youth sport. Methods: One hundred-forty-three male adolescent athletes (Mage=15.11, SD=1.92) completed measures of social identity (Cameron, 2004), motivation (relative autonomy index; Connel & Ryan, 1985) and mental health (well-being: Keyes, 2002, psychological difficulties; Goodman, 1997). Results: Two mediation models were tested where self-determined motivation predicted mental health (i.e., well-being, psychological difficulties) through social identity. Results revealed a significant indirect effect of motivation on well-being through social identity, B = .23, SE = .09, p B = -.07, SE = .04, p Conclusions: Adaptive forms of motivation for reducing mental health problems and increasing well-being among those who have strong social identity in their sports team.

P3.06.28
ENERGY COSTS OF PHYSICAL ACTIVITIES IN PRESCHOOLERS
Brandes M¹, Wirsik N², Steenbock B³. ¹Leibniz Institute for Prevention Research and Epidemiology – BIPS, Bremen. Purpose To determine the energy expenditure (EE) in terms of oxygen uptake, caloric cost and activity-specific metabolic equivalents (AME) of activities commonly performed by preschoolers aged 3-6 years, and to compare AME to METs given in the Compendium of EE for youth. Methods 44 children (aged 4.8 ± 0.8 years, 115 ± 8cm, 20.2 ± 4.2kg) completed a parcours including 12 tasks of resting (lying), sedentary (e.g. drawing), light (e.g. playing with toy blocks), moderate (e.g. climbing at a playground) and vigorous (e.g. running) activities. 5 and 7 activities were performed indoors and outdoors, respectively. Oxygen consumption (VO2; ml*kg-1*min-1) and carbon dioxide production was measured continuously and converted to relative activity-specific energy expenditure (AEE; J/min/kg). Each activity was performed for at least 3 minutes, and data from 1.45-2.45min was considered for analysis. AME was computed as AEE/resting EE. T-Tests were performed to compare AME to METs. Results AME discriminated well the spectrum from sedentary (e.g. drawing, 1.9 (95% CI: 1.7, 2.1)) to vigorous activities (e.g. jogging, 7.7 (6.7, 8.7)). We found significant differences in all indoor activities (drawing, toy blocks, hide and seek, playing with cars or dolls; all p Conclusions Our findings demonstrate that applying the METs given in the Compendium of EE in youth to preschoolers will lead to a substantial underestimation of EE, at least for most of the activities included in this study. Differences may be caused by a higher EE in preschoolers aged 3 to 6 years compared to the target population of the Compendium (6 to 17.9 years). Therefore, we recommend establishing a Compendium of EE for children under 6 years of age, if direct measurements of EE are not feasible.

P3.06.29
JOGGING ONES MEMORY: THE ROLE OF AFFECTIVE MEMORIES AND AFFECTIVE FORECASTS ON FUTURE EXERCISE BEHAVIOUR
Calder A¹, Hargreaves E¹. ¹University of Otago, Dunedin. Objective: Affective responses experienced during exercise have predicted future exercise behaviour (Williams et al., 2012) but the mechanisms around how this occurs have not been investigated. The affect heuristic (Slovic et al., 2007) proposes that the affect experienced from previous exercise sessions influences how a person predicts (forecasts) they will feel next time they exercise. These affective forecasts will then influence future physical activity decisions. This study aimed to investigate these relationships by manipulating affective responses to exercise (using different exercise intensities) and therefore the consequent affective memories and forecasts and examine the effect on physical activity behaviour. Methods: Twenty-nine inactive females (39y +/- 11) were randomly allocated to exercise for 30 min at an intensity above Ventilatory Threshold (VT) or at their VT. Before exercise they were asked to forecast how they thought they were going to feel overall on a scale ranging from very pleasant (+10) through neutral (0) to very unpleasant (-10), affective memory was measured post-exercise on the same scale and affective responses were measured every 5 min before, during and after exercise using the Feeling Scale (Hardy & Rejeski, 1989). Affective memory and forecast were measured again one week and one month post-exercise. At the same time, participants reported their physical activity using the seven-day Physical Activity Recall Questionnaire (Sallis et al., 1985). Preliminary Results: Linear regression demonstrated that affective responses during an exercise experience significantly predicted affective memories (b=.33, p>0.003). Affective memories positively predicted the
affective forecasts for future exercise (b=.61, p>0.001). Affective forecasts did not predict physical activity behaviour. Conclusions: Results support the proposed relationships between affective responses, memories and forecasts and highlight the importance of ensuring exercise results in a positive affective response. Explanations for the unexpected lack of association between affective forecast and physical activity behaviour will be provided.

P3.06.30
ACTIVITY BEHAVIOURS IN LEAN AND MORBIDLY OBESE PREGNANT WOMEN.
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Purpose: Previous physical activity interventions in obese pregnancy have had little impact in preventing adverse pregnancy outcomes. Targeting sedentary behaviours may be a realistic alternative but little is known about this, particularly in morbidly obese pregnant women. We aimed to determine total energy expenditure, and energy expended in sedentary activities in morbidly obese and lean pregnant women. Methods: We administered the Pregnancy Physical Activity Questionnaire PPAQ (non-objective) and the Actical accelerometer (objective) to morbidly obese (BMI≥40Kg/M²) and lean (BMI≤25Kg/M²) pregnant women recruited in early (<24 weeks), and late (≥24 weeks) gestation. Data are mean (sd). Results: Using the PPAQ, morbidly obese pregnant women reported expending significantly less energy per kilogram per day than lean pregnant women in both early (n=139 vs 109; 0.34 (0.18) vs 0.54 (0.21) METs/Kg, p<0.001) and late (n=105 vs 64; 0.30 (0.13) vs 0.45 (0.16) METs/Kg, p<0.001) pregnancy. Morbidly obese pregnant women expended significantly less energy on relative energy expended in sedentary activities in both early (0.09 (0.04) vs 0.17 (0.08) METs/Kg, p<0.001) and late (0.09 (0.05) vs 0.14 (0.06) METs/Kg, p<0.001) pregnancy. The lower total energy expenditure per kilogram in obese pregnant women was corroborated objectively by Actical accelerometer in late pregnancy (n=14 per group, obese 10.37 (2.82) Kcal/Kg; lean 12.47 (2.47) Kcal/Kg, p<0.05). No differences between groups were observed at any stage of pregnancy in time spent in sedentary activities. Conclusions: Both non-objective and objective measures confirm morbidly obese pregnant women expend significantly less relative energy, than lean pregnant women. Contrary to expectations, morbidly obese pregnant women expended significantly less energy per kilogram on sedentary behaviours than lean women and there were no differences in time spent sedentary between the groups. These findings suggest that neither the PPAQ nor accelerometer gives a robust assessment of sedentary behaviours in morbidly obese pregnancy, or that sedentary behaviours are not a useful intervention target in morbidly obese pregnancy.

P3.06.31
HOW DO SUSTAINABLE SOCIAL ENTERPRISES CAPTURE THE FULL VALUE OF THEIR ACTIVITIES? THE SOCIAL RETURN ON INVESTMENT TOOL
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Objective: Social sector organisations have been encouraged to use the Social Return on Investment (SROI) tool to measure their social, economic, and environmental outcomes. This tool is not widely used in public health. To assess its practicability within the public health sector, we used the SROI tool to evaluate a New Zealand social enterprise specialising in perishable food redistribution. Methods: Four of six stages of the Social Return on Investment methodology were applied: 1) establish scope and identify key stakeholders, 2) map outcomes, 3) evidence outcomes and assign value, 4) establish impact, 5) calculate SROI, and 6) report, use and embed findings. Thirteen semi-structured interviews were conducted with social enterprise staff and key stakeholder groups (food donors, recipient agencies, waste management agency, financial donors). Volunteers were also surveyed. Deductive methods were used to code data to identify key inputs, outputs and outcomes. Results: Inputs included operating expenses, donated volunteer hours and the rescued edible food. The key output was redistributed food. The outcomes of this organisation’s work differed for the various stakeholders. Food donors' outcomes included 'more involved relationships with community' and 'improved perceptions of corporate social responsibility'. Recipient agencies' outcomes were 'increased reach' and 'greater volume of food'. Volunteers reported 'learning new skills' and a 'sense of accomplishment'. There were also a number of important nutritional and environmental outcomes for the wider community. Economic and environmental outcomes have been monetised (food value, waste costs, reduction in carbon emissions), but work is continuing to monetise other outcomes, such as increased reach and increased community involvement. No negative outcomes were identified. Conclusion:The SROI tool was useful for
identifying a broad range of social, economic, environmental and nutritional outcomes; however, it was challenging to monetise all outcomes to calculate this organisation's Social Return on Investment ratio (i.e. this organisation creates 'X dollars' of social value for every dollar invested). Using SROI-type tools that combine evaluation and accounting methods have the potential to generate meaningful results for investors. Sustainable funding underpins the sustainability of social enterprises.
Workshops descriptions

WORKSHOP: Half day #1 - Making e-/mHealth Work in the Real World: Lessons from Industry and Academia
Presenters: Melanie Hingle, University of Arizona, Department of Nutritional Sciences, Tucson, AZ, USA
Heather Patrick, Envolve PeopleCare, Bethesda, MD, United States
Paul Sacher, Slimming World, United Kingdom
Kate Wolin, ScaleDown, Chicago, IL, United States
Donna Spruijt-Metz, University of Southern California, Los Angeles, CA, United States

Short Synopsis: Development and deployment of electronic and mobile health (e/mHealth) technologies by industry and academia have operated largely in parallel. Little systematic research has evaluated the effectiveness of commercial products, or determined when, how and for whom technologies work best. At the same time, many commercially designed and supported products have high adoption and user rates compared to products designed by researchers. The purpose of this workshop is to advance understanding of the science and practice of e/mHealth from the perspectives of industry and academic experts who are engaged in novel methods of development, implementation, and evaluation beyond the confines of the traditional RCT.

This half day workshop has 4 parts:

state of the evidence;
case studies from industry;
special topics and small group discussions to align and advance the field;
panel discussion regarding the future of e/mHealth science and practice, and the role of industry-academic partnerships.”

WORKSHOP: Half day #2 - Grasping Physical Activity: Using 3D printers to visualize physical activity
Presenters: Kelly Mackintosh, Melitta McNarry, Parisa Eslambolchilar, Sam Crossley, Swansea University

Short Synopsis: A frequently cited barrier to physical activity is that guidelines are difficult to measure, interpret and apply in terms of everyday activities. Recent research has investigated the integration of 3D printing to create a tangible output, which provides children with a novel and exciting way to conceptualize their physical activity levels.

This interactive session will present the real-time monitoring and visualization of physical activity as well as collect live data that is simultaneously displayed on the screen and subsequently printed in the form of a 3D shape. The greater the range of movements, the more interesting the shape! This will then be used to discuss key public health messages regarding physical activity and the process that went into developing the coding for the models and the choice of model shapes. Those interested in Engineering, Physiology, Physical Activity, Health, Psychology and Computer Science will be intrigued by this holistic approach.”

WORKSHOP: Half day #4 - Faking it: using a fake food buffet to examine food choice
Presenters: Tamara Bucher, ETH Zurich and The University of Newcastle (AU)
Dr Megan Rollo, the University of Newcastle, NSW Australia
Prof Moira Dean, Dr Tony Benson, Queen’s University Belfast, UK
Short Synopsis: In this workshop you will learn how you can use realistic food replicas (Fake Foods) to run cost and time efficient experiments to answer interesting research questions related to product, meal and portion size selection. Experimental research involving real food is often limited by practical problems like high costs, limited infrastructure, and food preparation effort. Hence, traditional food choice experiments were often limited to a small food variety. The fake food buffet (FFB) is a simple experimental infrastructure, which can overcome these practical limitations. The FFB can be used to investigate health claims, nutrient information, nudging, educational interventions and social influences.

Target audience: Researchers interested in establishing a FFB infrastructure or already working with FFB and those interested in collaborating with a FFB infrastructure to answer a research question. Participants will
• Interactively learn how to use fake foods
• Get access to relevant resources
• Gain insight into ongoing research and technological advances
• Connect with researchers working with FFBs

WORKSHOP: Half day #5 - Utilising Social Networks for Behaviour Change in Complex Interventions

Presenters Dr Ruth Hunter, Dr Jennifer Badham, UKCRC Centre of Excellence for Public Health, Queen’s University Belfast
Dr Kayla de la Haye, Institute for Health Promotion & Disease Preventative Research, University of Southern California

Short Synopsis: Evidence demonstrates that our embeddedness in social networks (i.e. our friends, family, neighbours, colleagues) affects our health and subsequently our ability to change our health behaviours. An emerging area in public health research involves designing, implementing and evaluating interventions that take account of these social networks. This multidisciplinary, interactive workshop focuses specifically on social network interventions – interventions that purposely utilizesocial networks to generate and/or accelerate individual behaviour change or system level change aimed at influencing health improvement action and, subsequently, the behaviour of those individuals within it. Social network interventions can be utilized in various aspects, including the targeting, delivery and diffusion of interventions. This workshop is particularly topical given the current debate regarding the need to move beyond the individual level for health behaviour change. This workshop would be of interest to researchers at all levels involved in complex intervention. No prior knowledge or expertise regarding social networks is required.

WORKSHOP: Half day #7 - Nudging and choice architecture: promises and pitfalls

Presenters: Prof. Emely de Vet, Wageningen University and Research
Prof. Denise de Ridder, Utrecht University

Short Synopsis: Nudges and choice architecture are becoming increasingly popular tools in interventions, also in behavioral nutrition and physical activity. Nudges make use of the idea that people make decisions on their automatic pilot based on biases, heuristics or (perceptual) errors. By exploiting this knowledge about human decision-making to steer decisions in more desired directions, nudges may lead to behavior change without having to rely on willpower or effort or without restricting choice. Although the nudge concept is gaining popularity, many misperceptions about nudging exist. Also, research on nudging is just starting to emerge, and many questions are still unanswered.

The workshop aims
• to present state-of-the-art research on nudging as a novel intervention tool,
• to familiarize with theories in behavioral sciences that provide good starting points for designing nudges,
• to experience how nudges can be designed, and
• to reflect on the promises and pitfalls of nudge research.
WORKSHOP: Half day #6 - Assessing dietary intake in intervention studies: Pitfalls, strategies and future research needs
Presenters: Sharon Kirkpatrick, School of Public Health and Health Systems, University of Waterloo, Waterloo, Canada
Clare Collins, Priority Research Centre for Physical Activity and Nutrition, University of Newcastle, Newcastle, Australia
Ruth Keogh, London School of Hygiene and Tropical Medicine, London, UK
Susan Krebs-Smith, National Cancer Institute, National Institutes of Health, Bethesda, USA
Marian Neuhouser, Fred Hutchinson Cancer Research Center, Seattle, USA
Angela Wallace, Family Relations and Applied Nutrition, University of Guelph, Guelph, Canada

Short Synopsis: The evaluation of interventions aimed at modifying diet rests on the ability to accurately assess intake. However, self-report dietary assessment tools are prone to intervention-related biases (e.g., those exposed to nutrition education may report diet differently than those in comparison groups). This differential bias can lead to spurious results and reduced power to detect intervention effects. The aim of this workshop is to interactively explore considerations and pitfalls in assessing diet in intervention studies. We will examine challenges in assessing dietary intakes broadly and with specific reference to dietary outcomes in intervention trials. We will explore the potential for incorporating biomarkers into dietary intervention trials, practical considerations for diet assessment in community-based trials, and available resources to guide diet assessment. Attendees will have the opportunity to pose questions related to their own trials as well as to engage in discussions of approaches for advancing this area of research. The workshop will conclude with time devoted to consultations among participants and presenters."

WORKSHOP: Full day #2 - Stepping into compositional analysis of activity data; a practical step by step guide to analysing your activity or nutritional data using compositional analysis techniques.
Presenters: Dr Sebastien Chastin, Dr Philippa Dall, Glasgow Caledonian University

Short Synopsis: Provide participants with skills and tools to understand and apply simple compositional analysis techniques for activity and nutritional data.

Compositional analysis is a branch of statistics that was introduced to the analysis of physical activity data in 2015 by Chastin et al in PLoS ONE to study the combined effects of the behaviours individuals engage in throughout the day such as sleep, sitting, light and moderate to vigorous activity on health. This novel approach introduces a different paradigm to analyse the pattern of time use and study the interactions between different behaviour but also obtain more rigorous and robust statistical results and new insights. A simple introduction is given in the PLoS Blog (http://blogs.plos.org/obesitypanacea/2015/12/15/recipe-for-a-healthy-day-how-compositional-data-analysis-can-help-us-optimise-our-daily-routine-to-be-healthy/)

It has been deemed a revolution (Katzmarzyk MSSE 2017) but we need to increase capacity in using these techniques amongst health scientist and in particular young researchers. The techniques can be also directly applied to nutritional data. Both activity data and nutritional data are by nature compositional data. For example, the day is made of periods of time spent during different activity or behaviour such as sleep, sitting, engaging in light or moderate to vigorous activity. The total amount of time spent in these behaviour always sums to 24 hours or the whole day and if more time is spent in one behaviour then necessarily this time must be taken away from another. Similarly a dish is composed different nutrient such as carbohydrate, fat etc., and in a dish if one increases the proportion of one of these nutrients then consequently the proportion of the others must also change. This means that the constituents of a day or a dish are co-dependent on each other and this creates difficulties in using standard techniques but using compositional analysis we can develop more detailed and robust analysis that takes into account this co-dependence."
WORKSHOP: Full day #1 - ISBNPA Early Career Researcher workshop
Presenters: Various (To be defined)
Facilitators: Wendy Van Lippevelde, Sofie Compernolle, Ghent University
Helen Brown, University of Cambridge

The Early Career Researchers workshop will give you an opportunity to learn from experienced researchers on a range of topics such as: career guidance, developing collaborations, grant-writing tips, mentoring, time management and building your CV. The workshops will offer several opportunities for networking with other participants and senior researchers, including round-table discussions. Sessions will include both lecture-style, information sharing and small group discussions. Numbers will be limited so register early!

WORKSHOP: Full day #3 - Assessing nutrition and physical activity environments in Early Care and Education (ECE) settings: A workshop on using the Environment and Policy Assessment and Observation (EPAO) Tools
"Presenters: Dianne S. Ward, Stephanie Mazzucca, Amber Vaughn, University of North Carolina at Chapel Hill
Alison Tovar, University of Rhode Island

Short Synopsis: Early care and education (ECE) settings have been highlighted as a central force in shaping young children's health, and measuring these environments is critical for health promotion efforts. The Environment and Policy Assessment and Observation (EPAO) provides an assessment of practices, environmental provisions, and policies of ECE settings influencing children's nutrition and physical activity behaviors. The EPAO is a valuable tool for researchers and public health practitioners working in ECE settings, but widespread adoption has been limited due to burdens associated with obtaining adequate training, implementing the observation process, and creating a scoring rubric. To facilitate the EPAO's use, we have developed easy-to-use and readily available resources including copies of all data collection instruments, data shells with suggested variables names and variable labels, SAS code for scoring, training manual, and data interpretation guide. During this full-day workshop we will 1) introduce measurement of ECE environments, 2) review the EPAO instrument, 3) detail the protocols for implementation, training, and scoring, and 4) discuss customization of the EPAO specific to workshop participants' research needs."

WORKSHOP: Half day #8 - Designing and evaluating physical activity interventions for people with mental health issues
Presenters: Prof Adrian Taylor, Plymouth University Peninsula Schools of Medicine & Dentistry
Guy Faulkner, University of British Colombia, Canada
Amanda Rebar, Central Queensland University, Australia

Short Synopsis: Designing and evaluating physical activity interventions for people with mental health issues. Those with poor mental health and low well-being are much more likely to have lower levels of physical activity. Yet we know relatively little about the environmental, social, economic and psychological determinants that influence physical activity for these populations, and the acceptability and feasibility of interventions to support behaviour change.

The overall objective of this workshop will be to highlight the unique opportunities to conduct mixed methods research with participants with a wide range of mental health issues (e.g., anxiety, depression, severe mental illness, and addictions) and to provide a framework for developing interventions for such populations. Participants will be able to offer their own experiences of such research (including other patient groups), to develop a consensus on where gaps in our understanding exist, and have guidance to develop their own systematic approach to developing and evaluating relevant complex interventions."

WORKSHOP: Half day #9 - Contextually Rich Physical Behaviour Data: The Key to Behaviour Change?
Presenters: Dr Kate Lyden, Douglas Maxwell, PAL Technologies Ltd
Short Synopsis: Identifying and acknowledging contextual factors that influence human behavior can help promote the successful adoption and maintenance of positive lifestyle habits. The goals of this workshop are to demonstrate how we can 1) derive contextually rich data on human behavior from body worn accelerometers and 2) use data visualization tools to integrate multiple streams of behavioral information. Participants will receive hands on experience using example data sets from healthy and clinical populations relevant to both physical activity and nutrition research. For example, we will demonstrate how to 1) identify common modes of travel (e.g., walking, cycling, car, train), 2) integrate this information with quantitative measures (e.g., number of steps, time spent sitting) and 3) use these contextually rich data to develop targeted messaging about healthier travel choices to school and work. Other examples will include how data derived from an accelerometer can be integrated with nutrition and 24 hour continuous glucose monitor data to better understand how lifestyle choices impact glucose and insulin metabolism in those at risk for diabetes.

WORKSHOP: Half day #11 - Fundamental and Functional Movement Literacy – the provision of meaningful childhood physical activity experiences. "Presenters: Dr. Wesley O'Brien, Prof. Michael Duncan, Ms. Orlagh Farmer, University College Cork, Ireland.

Short Synopsis: This workshop will critically discuss and actively engage participants within the thematic area of childhood ‘movement’. Participants will practice a variety of movement activities, as guided by creative, novel and evidence-based strategies from a European perspective. The workshop is designed to improve the critical eye of the participants towards the assessment of ‘fundamental’ and ‘functional’ movement literacy. During the course of the workshop, participants will share their global experiences of ‘movement-oriented’ interventions, and collectively discuss the measurable outcomes in determining programme efficacy. A key component of this workshop will be the engagement of participants through active learning methodologies (digital exercises, problem solving, cooperative learning), designed to stimulate participants’ thinking towards the optimization of childhood movement. This workshop will be particularly suited to those interested in the fields of childhood physical activity promotion, motor development, skill development, human movement, physical education and intervention implementation."

WORKSHOP: Half day #10 - Prescribing walking for health benefit
Presenters: Dr Elaine Murtagh, Mary Immaculate College, University of Limerick, Ireland
Prof Marie Murphy, Ulster University, Northern Ireland
Prof Catrine Tudor-Locke, University of Massachusetts Amherst, US
Dr Paul Kelly, University of Edinburgh, UK

Short Synopsis: Prescribing walking for health benefit. Walking is eminently suited to physical activity prescription as it can be incorporated into activities of daily living, requires no special skills or facilities, and is achievable by virtually all age groups with little injury risk. It is therefore an ideal exercise mode for interventions which target inactive or low active individuals. This workshop will demonstrate the viability of walking as an exercise mode in public health interventions and help participants to prescribe and measure walking at an appropriate intensity.

Participants will be able to:
Use a range of tools (e.g. HR monitors, pedometers, and smart phone Apps) to elicit a moderate exercise intensity in subjects
Describe the range of walking speeds, cadences and intensities elicited when adults are asked to self-select their own walking pace and walk “briskly”
Experience several prescription tools in an outdoor setting.
Speakers include: Prof Marie Murphy, Dr Elaine Murtagh, Prof Catrine Tudor-Locke"

WORKSHOP: Half day #12 - Health Promotion with Indigenous Communities
Presenters: Lucie Lévesque, Queen’s University, Kingston, Canada
Treena Delormier Department of Public Health Sciences, University of Hawai’i Manoa
Alex M. McComber, Kahnawake Schools Diabetes Prevention Project, Kahnawake Mohawk Territory
Short Synopsis: This 4-hour workshop will combine didactic and interactive approaches, using a variety of multimedia strategies, brainstorming activities, story-telling, and small group work to master knowledge and skills focused on engaging relevant stakeholders in Indigenous-academic partnered research, enhancing cultural safety for research, using theory, research evidence, strategic planning, and influencing policy all through a decolonizing lens. Following Indigenous protocols, an Elder from the local territory will be invited to provide an opening to the workshop session. Activities will draw on community engaged research approaches, Indigenous methodologies, and case study examples. Workshop participants will be guided in sample community mobilization interactive activities designed with Indigenous communities in mind. A group de-briefing and interactive discussion will follow and the Elder will offer a closing ceremony."

WORKSHOP: Half day #13 - How to disseminate nutrition and physical activity research effectively to policy makers?  **Presenters: Beth Racine, University of North Carolina at Charlotte Elizabeth Ablah, University of Kansas School of Medicine Wichita Mai Wei, Ohio State University April Oh, National Institutes of Health Joreintje Mackenbach, VU University Medical Center

Short Synopsis: This workshop will be led by ISBNPA members with experience working with local policy makers. A Victoria policy maker will participate in the session. Finally, workshop participants will spend time developing an action plan to communicate and engage with local policy makers.

Many in the ISBNPA community conduct work that is of interest to policy makers. However, researchers are trained primarily to produce research products for a research audience. Many have not been trained on the best ways to disseminate our research to the policy makers. It is critically important that ISBNPA researchers inform policy makers since policy makers have enormous power to influence nutrition and physical activity behavior and environment.

Workshop Aims:

1. To learn the best practices for engaging with policy makers
2. To discuss the types of informational materials that appeal to politicians and help best convey your research
3. To plan a strategy for engaging with politicians to disseminate your work"

WORKSHOP: Half day #3 - Mobile methods for dietary assessment: Image-assisted and image-based dietary assessment methods
Presenters: Associate Professor Deborah Kerr, School of Public Health, Curtin University Prof. Carol J. Boushey, University of Hawaii Prof. Edward J. Delp, Fengqing Maggie Zhu, School of Electrical and Computer Engineering Purdue University

Short Synopsis: Aims of the workshop are to provide researchers an overview of:
• image-assisted and image-based dietary assessment methods.
• image review methods from trained analyst to automation.
• challenges and solutions for implementing mobile methods
• implementing future applications for their research
Dietary assessment is challenging but whether technology methods are fully validated or not, these will be the preferred methods of the future in spite of the profession's inertia to embrace them. The workshop will provide a 'hands-on' approach to learning about mobile methods for assessing diet from the multidisciplinary team of nutritionists and engineers who invented the Technology Assisted Dietary Assessment (TADA) system that uses image analysis and visualization on mobile telephones,
to aid researchers collect dietary intake with limited burden. The presenters will share the key learnings in the implementation of mobile methods in various studies in more than 1,000 community dwelling populations including young children, adults and overweight adults.

PLEASE BRING YOUR OWN MOBILE DEVICE TO THE WORKSHOP”
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