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2014 Global Summit on the Physical Activity of Children: Abstracts

Status of Daily Physical Activity (DPA) in Ontario Elementary Schools: Reports From School Administrators

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Objective: Regular moderate to vigorous physical activity participation by children and youth has been shown to be beneficial for physical and mental health and academic performance. In 2005, the Ontario Ministry of Education released the Daily Physical Activity (DPA) policy requiring school boards to ensure that all Ontario elementary school students engage in at least 20 minutes of daily sustained moderate to vigorous physical activity during instructional time. However, it is currently believed that DPA may be unevenly implemented in Ontario elementary schools. Our main objective is to understand the extent to which DPA is being implemented in Ontario elementary schools. **Methods:** A school administrator in each of a representative and randomly selected sample of 556 elementary schools across Ontario will be invited in January 2014 to participate in an online survey assessing DPA implementation and potential associated school-level factors. Univariate and bivariate analysis will be used to address our main objective. **Results:** The extent to which DPA is being implemented, as reported by school administrators, will be examined. Factors associated with implementation will also be presented. Data collection involving school administrators is scheduled to be completed by the end of February 2014. **Conclusion:** Results will provide an indication of the status of DPA implementation in Ontario elementary schools and potentially help to inform strategies for improving the policy and/or the implementation of the policy. Additionally, results may inform future studies intended to assess the status of DPA in Ontario schools and/or in other jurisdictions.

Physical Activity Among Children Using Before- and After-School Child Care: Advocating for Change

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Objectives: Objective 1—To recognize and understand the behaviours and social interactions of children related to physical activity at a before- and after-school child care program for children in grades K-6. Objective 2—How these behaviours and interactions influenced and could be influenced by child care practice was also studied. **Methods:** As part of a larger multi-method qualitative study of a childcare facility, physical activity among Canadian school age children was examined. Observations of 62 six- to twelve-year-old children were made over a four-month period. These observations were in conjunction with selected interviews with children, parents, and staff, and with child learning activities conducted by the researcher. **Results:** Guided by ecological systems theory, the data were examined using content analysis and general inductive analysis. Findings showed that children were knowledgeable about ideas and behaviours that influenced health, which was due in part to formal and informal teaching about health at the Centre. The children also exhibited, or were learning to exhibit, healthy behaviours, which were congruent with the child care program's philosophy, goals, and children's rights and responsibilities. Some children's behaviours also reflected the influences of sociocultural forces, as related to physical activity, such as the importance of competition and boys as gatekeepers of girl's physical activity. **Conclusion:** This research showed that early learning and child care practice can be a significant influence on children's physical activity ideas and behaviour. Implications for the establishment and delivery of child care programs, as well as the training and regulation of professional child care staff, are discussed.

Effect of the Start For Life Treatment on Physical Activity in Primarily African American Preschool Children of Ages 3–5 Years

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Objective: To examine the effect of a physical activity (PA) protocol (Start For Life; SFL), based on self-efficacy and social cognitive theory, intended to increase moderate-to-vigorous (MVPA) and vigorous (VPA) physical activity and to reduce time in sedentary activities in YMCA Metropolitan Atlanta preschools. **Methods:** A longitudinal study was conducted on children of ages 3-5 years attending randomly selected YMCA preschools. Children participated in the SFL treatment during the mandatory 30 minutes reserved for structured PA. The control group participated in their usual care (UC) program. Exercises incorporated primarily gross motor skills (e.g., running, jumping, leaping, hopping) with age-appropriate behavioral skills interspersed. Accelerometers were used to record activities from 9:15am to 2:00pm (4.75 hours). **Results:** Data obtained from accelerometry was used to contrast PA outputs

during the preschool day in the SFL group ($n = 202$) with a UC control group ($n = 106$) using a series of mixed-model repeated measures ANOVAs. After controlling for age and sex of participants ($M_{\text{age}} = 4.7$ years), changes over weight weeks in MVPA and VPA were significant, and significantly more favorable in the SFL group; $F(1, 344) = 4.98, p = .026$ and $F(1, 344) = 3.60, p = .058$, respectively. SFL was associated with a weekly increase in MVPA of approximately 40 minutes. **Conclusion:** The SFL treatment demonstrated significant increases in MVPA and VPA in participants during the preschool day. Its 30-minute per-day curriculum was based on a strong theoretical foundation, previous research, and practical considerations. Thus, treatment was functional under typical preschool conditions. **Funding:** Kaiser Permanente Georgia

From School Travel Planning to Community Mapping: A Collaborative Approach to Developing a Comprehensive Community Based Walking and Cycling Map

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Objective: To share the success story of the Bike Walk Roll Fort Richmond Project in a suburban neighbourhood of Winnipeg, Manitoba resulting in the development of a neighbourhood-based Active Transportation Map as a result of extensive community consultation with a wide-range of stakeholders. See <http://fortrichmond.ca/map/> to view a copy of the map and more information on the project. **Methods:** This project began with the development of School Travel Plans at three elementary schools in the Fort Richmond. The following year, extensive community consultations were held with a wide range of stakeholders to raise awareness and enthusiasm, and to educate about active transportation in the community. The end result was a printed map highlighting unique features of the neighbourhood as seen through the eyes of the stakeholders. Printed maps were given to students at all neighbourhood schools, and distributed through community shops, businesses and the University of Manitoba. **Results:** In the fall of 2013 the City of Winnipeg doubled their active transportation budget to fund infrastructure enhancements in this neighbourhood as a result of this project and the map development. **Conclusion:** Beginning with School Travel Planning and expanding to community mapping and engagement is a successful way to build enthusiasm and get buy-in for active transportation enhancements at a community level. As continued data collection occurs after the infrastructure enhancements have been implemented we expect to see an increase in active transportation at a community level.

Physical Activity Interventions to Promote Positive Youth Development Among Indigenous Youth: A RE-AIM Review

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Objective: Physical activity (PA) plays a role in achieving positive developmental outcomes related to wellbeing in Indigenous youth (Lavallée & Lévesque, 2013). Determining what information is available to inform research-to-practice translation of PA interventions that enhance positive youth development (PYD) in Indigenous youth is imperative. The RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) framework is a set of criteria used to assess the reporting of intervention elements related to internal and external validity. The purpose of this study was to determine the extent to which PA interventions for Indigenous youth report on external validity factors that inform research-to-practice translation. **Methods:** From July 2012 to January 2013, a search was conducted for peer-reviewed articles reporting on PA interventions that promote PYD among Indigenous youth. The original search yielded 7,594 articles, of which 372 were retained for further review. Of these, 9 met eligibility criteria for the RE-AIM review. A validated 21-item RE-AIM abstraction tool was used to determine the quality of reporting across studies (0-7=low, 8-14=moderate, and 15-21=high). **Results:** From the 21 RE-AIM indicators, those reported across studies ranged from 5 – 14, with the majority of studies falling into the moderate quality category (67%). Across RE-AIM dimensions, studies reported on effectiveness (75%), adoption (48%), and maintenance (44%) more often than reach (31%) and implementation (30%). None of the studies conducted a cost analysis related to initiating or maintaining the intervention. **Conclusion:** The information provided in the reviewed articles is insufficient for translating promising PA interventions to enhance PYD in Indigenous youth. **Funding:** CIHR Institute of Aboriginal Peoples' Health (IAPH) and Health Canada—First Nations and Inuit Health Branch (FNIHB).

Nutrition Ignition! A Comprehensive School-Based Physical Activity and Nutrition Education Program for School-Aged Children and Their Families

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Objectives: Nutrition Ignition! (NI!) aims to enhance awareness and knowledge of physical activity (PA) and healthy eating by addressing multiple spheres of influence known to contribute to sustained behaviour change. **Methods:** NI! was piloted (one year) in one elementary school with a second school acting as a comparator. The program involved a whole-school approach with classroom lessons, opportunities for play, family events, educational newsletters for parents, snack attacks, and field trips. Parent involvement was encouraged in all activities, as was the involvement of existing school infrastructures (e.g., parent and student councils). A process evaluation was conducted using qualitative methods with school staff and students to assess the feasibility and acceptability of NI!. In addition, PA knowledge scores were assessed pre- and

post-intervention in all children (Grade 1-8) as a preliminary measure of NI!'s impact. **Results:** NI! was well received by the school community. Strengths of NI! included the interactive format and relevance of lessons to current curriculum, opportunities for play, and the delivery of NI! by university students. Limitations included some organizational issues and survey completion. PA knowledge scores were not different between schools for Grades 1 to 3, however a trend ($p=0.06$) was observed for Grades 4 and 5. Knowledge regarding the amount of PA recommended for children increased ($p<0.05$) between schools for Grades 6 to 8. **Conclusion:** Due to the fact that NI! was deemed feasible and acceptable to implement and demonstrated a modest impact on PA knowledge despite limited power, further expansion into additional schools is warranted. **Funding:** Goodlife Kids Foundation through the Children's Health Foundation.

Pupils' Experiences of Health-Related Exercise in Physical Education

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Objective: To explore pupils' experiences of health-related exercise (HRE) in secondary school physical education (PE). **Methods:** Forty-seven pupils (35 male, 12 female; 11-16 years) from four secondary schools participated in a qualitative multi-site design that utilised semi-structured interviews. Interview transcripts were transcribed, coded and analysed. **Results:** Circuit training was the most popular HRE activity reported by pupils (25.7%). Running and multistage fitness test were the next most frequently occurring activities in HRE lessons (21.4% and 17.1%, respectively). When the data was categorised according to the 'range and content' outlined in the National Curriculum for Physical Education in England (NCPE; DCSF/QCA, 2007), fitness and health activities were the most popular (74.3%). Within fitness and health activities, most pupils reported participating in fitness training (69.2%) in PE lessons rather than engaging in fitness testing (30.8%). Pupils mainly experienced HRE activities when they were delivered as a 'block' or unit of work over a number of weeks (the discrete approach) rather than through the activity areas (the permeated approach) or through a combination of the permeated and discrete approaches (the combined approach). **Conclusion:** The results provided an important insight into pupils' HRE experiences. Knowledge of pupils' experiences in HRE provides a basis for future planning and development of meaningful and effective programmes. The development of such programmes across schools in the UK cannot be underestimated given the declining physical activity levels in young people. Practitioners and curriculum planners should consider 'pupil voice' when implementing future HRE programmes.

Elements of Neighbourhood Social Capital Favour Children's Physical Activity Levels

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Objective: Neighbourhood social environments play a role in children's physical activity levels. The objective of this study was to examine the influence of neighbourhood social capital (NSC) on children's time spent in moderate-to-vigorous-intensity physical activity (MVPA). **Methods:** In a cross-sectional study, parents of 9-11 year old children ($n=523$, 58.3% female) from 26 schools in Ottawa, Canada completed a Neighbourhood and Home Environment Questionnaire. Indicators of NSC included perceived neighbourhood cohesion, and how well parents know their neighbours. Children's MVPA was measured using 7-day accelerometry. **Results:** Children of parents who shared values, attitudes and beliefs with their neighbours had higher levels of MVPA ($p<0.05$). Also, children of parents who talk or visit with their neighbours "several times a week" (7-item scale from "Never" to "Almost every day") had higher levels of MVPA ($p<0.05$). These children had higher odds of meeting physical activity guidelines of 60 minutes of MVPA daily [OR (95%CI): 2.00 (1.04-3.86); $p<0.05$]. These results were independent of demographic covariates. **Conclusion:** Although elements of NSC were generally rated highly in our population, children achieved higher levels of MVPA when their parents reported shared values, attitudes and beliefs with their neighbours and/or frequently talked or visited with neighbours. These findings suggest that regular interaction with neighbours may contribute to a social milieu conducive to greater habitual physical activity among children. Engaging people within communities and creating environments that facilitate NSC and interaction should be part of key public health strategies.

Correlates of Awareness of a Multimedia Social Marketing Campaign to Promote Physical Activity Among Tweens: The WIXX Campaign

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Objective: Awareness is an important proxy indicator of mass media campaign effectiveness. The objective was to examine factors associated with awareness of the WIXX multimedia campaign among tweens. **Methods:** A cross-sectional survey was conducted among 1001 tweens (9 to 13 years old children) in May-June 2013. The WIXX campaign was implemented in September 2012. Tweens' awareness of the campaign and physical activity (PA) were self-reported. Three categories of awareness were constructed: unprompted awareness (UAW), prompted awareness (PAW) and no awareness (NAW). Multinomial logistic regression analysis was conducted to examine the influence of tweens and/or their parents' socio-demographic characteristics, cognitions, current PA, and sedentary behaviours on awareness. **Results:** The likelihood of

having UAw rather than NAw of the WIXX campaign was higher among girls (OR=2.0; 95%CI: 1.2-3.3) when compared to boys and was higher among tweens perceiving that their parents highly value PA (OR=2.2; 95%CI: 1.1-4.5). The likelihood of having PAw rather than NAw was higher among children in elementary school when compared to those in high school (OR=1.8; 95%CI: 1.3-2.7). A trend was observed for income; tweens living in families with moderate and high income were more likely to reported PAw (\$20000-60000: OR=2.8; 95%CI: 1.1-7.3; and \geq \$60000: OR=2.5; 95%CI: 1.0-6.5) when compared to those living in more deprived families (ref : $<$ \$20000). **Conclusion:** Higher awareness among girls is in line with the branding strategy adopted. Attention will be required to improve awareness among older tweens, those living in more deprived families and in families where PA is less valued. **Funding:** This study was supported by Québec en forme; ABG is supported by a Fellowship by the Canadian Institutes of Health Research (CIHR); LG holds a CIHR/CRPO Chair in Applied Public Health on Neighborhoods, Lifestyle, and Healthy Body Weight.

Socio-Ecological Correlates of Sedentary Behaviors Among Parent-Tween Dyads: A Multilevel Perspective

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Background: Research shows significant amounts of sedentary behaviors (SB) among children. To increase the effectiveness of interventions, we examined socio-ecological correlates of SB among parent-child dyads. **Methods:** As part of a larger evaluation of a multimedia social marketing campaign aimed at increasing physical activity (PA) among tweens (9-13 years), a cross-sectional survey was conducted among 1000 parent-tween dyads from Québec, Canada. Sedentary behaviors (parents: sitting time, tweens: screen time), socioeconomic characteristics, frequency of participation in PA, parental control for screen time and cognitions towards children's PA were self-reported. A walkability index was used to characterise the built environment by integrating GIS-derived measures (800m street network buffers). Multilevel models were developed separately for girls and boys and controlled for school grades. **Results:** Significant between-dyad variability in SB was observed for girls (n=346, ICC=.12, p<.001) and for boys (n=407, ICC=.17, p<.001). Among parent-son dyads, higher body mass index (p=.05) and positive parental outcomes expectancies (p=.02) were associated with greater and less SB, respectively. Among parent-daughter dyads, higher PA (p=.002) and parental control (p=.02) was associated with less SB (p=.02), while SB were greater in single-parent families (p=.03). Socioeconomic indicators and the walkability index were not related to SB among dyads. **Discussion:** A substantial proportion of variance is shared within families for sedentary activities. However, correlates of this behavior differ in families with male tweens when compared to families with female tweens. Different strategies may be required for reducing SB among

boys and girls. **Funding:** This study was supported by Québec en forme; ABG is supported by a Fellowship by the Canadian Institutes of Health Research (CIHR); LG holds a CIHR/CRPO (Centre de recherche en prévention de l'obésité) Chair in Applied Public Health on Neighborhoods, Lifestyle, and Healthy Body Weight.

Comparing Children's Performance on the Test of Gross Motor Development-2 and -3

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Objective: Motor skill proficiency is a direct predictor of children's current and future physical activity participation. The Test of Gross Motor Development - 2 (TGMD-2) has been widely used to assess motor skill proficiency of children. This study compared children's performance on the TGMD-2 with the newly released TGMD-3. The TGMD-3 includes three new skills: the skip, forehand strike, and the underhand throw; and the roll and leap were omitted from the TGMD-3. **Methods:** 103 grade 3 students (girls=52) were videotaped performing the TGMD-2 and TGMD-3 skills during physical education lessons. Descriptive statistics were computed for raw TGMD-2 and TGMD-3 locomotor skills (max. score: 48 for each tool) and TGMD-2 and TGMD-3 object control skills (max. score: 48 and 56, respectively). Intraclass correlation coefficients (ICC) and paired t-tests were also computed comparing each subscale. **Results:** Mean scores for the TGMD-2 and -3 locomotor subscales (30.6 \pm 4.7 and 29.5 \pm 6.5, respectively) were not significantly different (p=.098). Object control skill scores were significantly higher (p<.001) for the TGMD-3 (31.3 \pm 6.4 vs. 33.0 \pm 8.2). The ICCs were significant for both locomotor skills =.92 and object control skills =.86. **Conclusions:** The locomotor subscales of the TGMD-2 and -3 were highly related and similar scores can be expected with each tool. The object control subscales were also strongly related, but higher scores on the TGMD-3 are likely. Despite the addition of an extra skill (8 additional components) to the TGMD-3, scores increased only by 1.7 components on average. The children in this study generally found the forehand [tennis] strike challenging.

An Evaluation of a Pediatric Obesity Program in Northern Ontario

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Objective: To examine the effect of a pediatric obesity program on both physiological and psychological outcome variables. **Methods:** A pre-post assessment was undertaken on 19 participants (7 females, 12 males) aged between 8-18 years old of the Bringing Active Living and Nutrition into your Childhood Everyday (B.A.L.A.N.C.E.) program, which is a hospital-based pediatric obesity program in Northern Ontario. Participants engaged in weekly physical activity sessions and lifestyle counselling including group sessions with a social worker. The program also provided monthly health and

nutrition education over a 6-month period. As part of the program, physiological (e.g. anthropometrics, blood work screening, blood pressure) and psychological measures (e.g. Beck Youth Inventories) were recorded. Physical activity was performed for 60 minutes twice per week. Group counselling was offered for 120 minutes on a bi-weekly basis. **Results:** Physiological and psychological changes were observed as a result of the 6-month program. Preliminary findings indicate that the B.A.L.A.N.C.E. program had positive effects on participants' psychological health in each of the 5 categories of the BYI-II inventories (i.e., anger, depression, anxiety, self-esteem, and disruptive behaviour). Results also pointed to physical improvements on anthropometrics, blood screening markers and blood pressure. The program was also found to positively influence families in their efforts in making healthier lifestyle choices. **Conclusion:** Our findings support the implementation of similar programs for children with high BMI scores and associated risk factors.

Physical Activity Before Class Enhances Attention During the School Day

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Objective: The "Je bouge" (Let's Move) project is based upon the implementation, by classroom teachers in collaboration with the physical education and health teacher, of a daily 20 minutes physical activity program before class in an elementary school. This communication aims to present the effect of this program on moderate to vigorous physical activity (MVPA) and on the attention capacity of children. **Methods:** A cross-sectional study was conducted over 20 days on 40 children aged 6-8 y (19 boy and 21 girls). Measures were taken ten days with the daily physical activity program and ten days without. Physical activity was measured objectively using hip worn accelerometers. Attention was measured four times each day with a simple pencil and paper symbol cross-out test (detection of target items in a matrix containing targets and distractors). Data were analysed using paired t-test and repeated measurements two-way ANOVA. **Results:** The results show that the program has led to an average daily increase of 7% of MVPA. Overall attention scores were higher with the physical activity program. Moreover, there was a significant interaction between the program and the daily fluctuation of the attention capacity. Without the program before school, students' attention decreased during the day while with the program the level of attention remained the same. **Conclusion:** This physical activity program in the school activity timetable is a good opportunity to contribute both to the daily MVPA recommendation and the development of factors predisposing students to academic learning. Funding: Le ministère de l'Éducation, du Loisir et du Sport.

School Physical Education and Sport: Impact of Youths' Physical Education Class on Their Understanding of Physical Activity

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Background: In Ontario, the elementary level physical education (PE) curriculum emphasizes the development of physical literacy (OHPEC, 2011). Past research identified a link between positive perceptions of PE class and increased youth physical activity (Trudeau et al., 1998; Dale & Corbin, 2000). However, less is known about the process behind youth developing a positive perception of physical activity. **Objective:** To explore how youths' experiences in their school physical education and sport contexts shape their understanding of physical activity. **Methods:** This study utilized a case study design that included 26 grade 7 and 8 male and female students at one school. Data was collected through focus group interviews that followed a semi-structured guide. All focus group data were analyzed through a grounded theory approach (Corbin & Strauss, 1990). **Results:** Findings revealed participants engaged only in physical education classes (N = 6 females) perceived physical activity as a required organized sport activity that was not enjoyable. In contrast, youth engaged in competitive school sport teams (N=20 males and females) experienced physical activity behaviours as fun, enjoyable and social activities. Interestingly, boys reported primarily social reasons for engagement in physical activity and girls reported mostly personal reasons. All youth demonstrated limited knowledge of alternative physical activity behaviours (e.g., unstructured activities, non-traditional sports). **Conclusions:** This study highlights the importance of school PE programs in establishing early physical activity behaviours and positive perceptions of physical activity in youth. Given these findings, current curriculum should consider providing additional resources for teachers to reduce the focus on sport and athlete development.

More Than a Pretty Place: Examining the Influence of Environmental Education on Children's Outdoor Play in Nature

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Objective: Environmental education is a promising approach to connecting children with nature to improve their social, emotional, physical and intellectual health. The objective of this work is to measure the influence of an environmental education program on children's attitudes toward and engagement in outdoor play. **Methods:** Using a quasi-experimental pre-post design, the project team engaged 6 schools near the Urban Ecology Center's new location in Milwaukee, Wisconsin, USA. Participating schools were offered a discount on Urban Ecology Center Neighborhood Environmental Education Program (NEEP) program fees. Classrooms were assigned as intervention or control through discussions with each school. Intervention classrooms participated in NEEP over the 2012-2013 academic year and pre and post surveys were implemented in classrooms. Data were analyzed using multilevel linear regression to examine the intervention's effect on attitudes toward outdoor play (fears, benefits) and engagement in outdoor play. **Results:** Fears of nature were reduced in the intervention group, but not the control group. No effect of the intervention was detected on attitudes toward the benefits of nature or self-reported engagement in outdoor play. **Conclusion:** Our findings indicate an important role for environmental education in addressing fears that may dissuade children from engaging in outdoor play in natural areas. Additional research is needed to examine the long term effect of environmental

education programming on levels of outdoor play. Our findings have implications for programs that intend to connect children with nature and increase their levels of outdoor play, particularly in urban and Hispanic/Latino communities in the USA. **Funding:** This project was funded by the Healthier Wisconsin Partnership Program.

Tackling Childhood Overweight: Parental Perceptions of Stakeholder Roles in a Community-Based Intervention

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Objective: In Canada, nearly one-third of 5 to 17 year olds are overweight or obese. Collaborative efforts among communities, schools, parents and health professionals are needed to implement childhood obesity prevention programs. The role of each stakeholder must be identified as well. The purpose of this case study was to obtain parents' views of their role toward their overweight children as well as their perceptions about stakeholders' roles, and how they can get involved in a multidisciplinary community-based intervention aiming to tackle childhood overweight. **Methods:** Data was collected from semi-structured interviews with 10 parents following their participation in a community-based program designed to help families with overweight children adopt a healthier lifestyle. **Results:** Every parent prefers a multidisciplinary health team to monitor their children. They expect that a physician or a paediatrician could diagnose overweight, explain results to parents and refer families to resources. The team could also include professionals from health and education such as dietitians, nurses, teachers, psychologists, kinesiologists and social workers. The parents consider they should be part of the team as well. Their role would consist of instructing their children about healthy behaviours, reinforcing those behaviours, role modeling a healthy lifestyle and seeking for professional help when needed. **Conclusion:** Interventions toward overweight children should involve parents and include health professionals from different disciplines. Practitioners should surround themselves with other professionals to monitor overweight children. Further research is necessary to investigate barriers and facilitators to collaboration among health professionals in childhood overweight prevention and treatment.

Factors to Consider When Aiming to Improve Participation in Physical Activity in Children With Spina Bifida: A Qualitative Study

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Objectives: Many children with spina bifida (SB) show decreased levels of physical activity (PA) despite the obvious health benefits. Earlier studies have shown benefits of training, but maintaining adequate PA seems difficult. Therefore, as the first step in the

development of an intervention aimed at improving PA in youth with SB, the objective of this study is to identify factors related to participation in PA. **Methods:** Eleven semi-structured interviews with parents (n=13) from young children with SB (age 4-7 years), nine focus groups with youth (n=33) with SB (age 8-18 years) and eight focus groups with their parents (n= 31) were conducted, recorded and transcribed verbatim. Two independent researchers analyzed the data. Central themes for factors for PA were constructed, using the model for Physical Activity for Persons with a Disability (PAD) as a background scheme. **Results:** Data showed that youth with SB encountered many factors associated with participation in PA on all levels of the PAD model. Bowel and bladder care, the competence in skills, sufficient fitness and self-efficacy were important personal factors. Environmental factors were contact with and support from people, availability of assistive devices for mobility and care and accessibility of playgrounds and sports facilities. **Conclusion:** While negative factors do need to be addressed when setting up intervention programs to improve PA, it is equally important using positive factors. In children with SB these include high self-esteem, resources about sports possibilities, use of sports counselors, support from local clubs and information for coaches and teachers. **Funding:** This research is funded by SIA-RAAK, which had no role in the design, data collection, analysis and interpretation, reporting of this work, or the decision to submit the work for publication. All persons listed as authors have contributed to preparing the manuscript and the guidelines of the European Medical Writers' Association for authorship have been met, and no person other than the authors listed has contributed to its preparation. The authors declare no conflicts of interests.

Higher Peer Support and Lower Sedentary Behavior are Associated With Higher Physical Activity Self-Efficacy in Children 8 to 12 Years of Age

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Objective: Physical literacy (PL) is increasingly recognized as being important in understanding declines in physical activity (PA) in children. The objective of this study was to evaluate the relationship between PA self-efficacy with other components of PL. **Methods:** Children (n=574, grades 4-6) completed the adequacy and predilection sub-scales of the Children's Self-Perceptions of Adequacy in and Predilection for Physical Activity (CSAPPA) scale, as well as measures of PA, sedentary behaviour, physical fitness, perceived PA benefits/barrier ratio, motor skill performance, and perceived parent/peer support for PA. Multi-variable linear regression models were created for CSAPPA adequacy and predilection. Effect sizes were evaluated using η^2 . **Results:** Multi-variable linear regression models explained 41% of the variance in both CSAPPA scales. Higher adequacy/predilection scores were associated with stronger peer support ($\beta=.52$, $p<.001$; $\beta=.76$, $p<.001$), lower sedentary behaviour ($\beta=.12$, $p<.01$; $\beta=.32$, $p<.001$), higher fitness (PACER) ($\beta=.08$, $p<.01$; $\beta=.007$, $p=.02$), lower obstacle course time (motor skill) ($\beta=.27$, $p=.01$; $\beta=.41$, $p<.001$), and more PA benefits/barriers

($\beta=.09$, $p<.001$; $\beta=.13$, $p<.001$). The strongest factors associated with both adequacy (small η^2) and predilection (medium η^2) were peer support and sedentary behavior. **Conclusion:** Peer support, sedentary behavior, and other components of PL, are associated with a child's PA self-efficacy. **Funding:** ParticipACTION, the Ontario Ministry of Culture, Tourism and Recreation, as well as a grant from The Canadian Institutes of Health Research awarded to Dr. Meghann Lloyd and Dr. Mark Tremblay (IHD 94356).

Independent and Combined Associations of Total Sedentary Time and Television Time With Food Intake Patterns of 9-11 Year-Old Canadian Children

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Objective: The relationships between sedentary time, television time and dietary patterns are not fully understood. The aim of this paper is to determine which of self-reported television viewing or objectively measured sedentary time is a better predictor of frequency of consumption of healthy and unhealthy foods in 9-11-year-old Canadian children. **Methods:** A cross-sectional study of 523 children (57.1% female; mean age = 10 years) from Ottawa, Canada was conducted. Accelerometers were used to determine sedentary time. Questionnaires were used to determine the number of hours of television watching and the frequency of consumption of foods per week. **Results:** Television viewing was negatively associated with consumption of fruits, vegetables and green vegetables, and positively associated with consumption of sweets, soft drinks, diet soft drinks, pastries, potato chips, fries, fruit juices, ice cream, fried foods, and fast food. Except for diet soft drinks and fruit juices, these associations were independent of covariates, including sedentary time. Total sedentary time was negatively associated with frequency of consumption of sports drinks, independent of covariates, including television viewing. In combined sedentary time/television viewing analyses, children watching >2 hours of television per day consumed several unhealthy food items more frequently than children watching ≤ 2 hours of television, regardless of sedentary time. **Conclusion:** This paper provides evidence to suggest that television viewing time is more strongly associated with unhealthy dietary patterns than total sedentary time. Future research should focus on reducing television viewing time as a means of improving dietary patterns and potentially reducing childhood obesity.

What Makes the Flag fly? Understanding the Process of Physical Activity Promotion Through the 'Active School Flag' Initiative in Irish Elementary Schools

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Objective: In Ireland, the government-backed Active School Flag (ASF) initiative encourages quality physical activity (PA) in school settings. Building on earlier research which showed that schools' involvement in the ASF programme, underpinned by a process of self-evaluation, had shaped the approaches taken to physical education (PE), PA and sport provision (Ni Chroinin et al. 2012), the objective of this study was to gain a deeper insight into precisely how the ASF worked as a mechanism to enhance PA provision in Irish elementary schools. **Methods:** Children and teachers in three case study schools participated in semi-structured interviews at three points during the ASF process. The transcripts were analysed thematically. These data were supplemented by content analysis of ASF application documentation from 150 other schools. **Results:** The findings of this study suggest that, prompted by the ASF process, schools broadened the range of physical activity choices open to the children at break times and during PE. Including the voices of children in the decision-making process, along with the provision of novel ideas (e.g. morning yoga), encouraged more children to participate more often. Teachers and children reported that the adoption of collaborative strategies helped to make PE and school sport activities more enjoyable. **Conclusion:** Involvement in the ASF process prompts school communities to implement a variety of inclusive and innovative strategies. Empowering children through the ASF process contributes to the development of a strong PA culture. Capturing and highlighting this good practice is an important step in promoting PA in Irish elementary schools.

Feasibility, Validity, and Reliability of an Obstacle Course to Measure Motor Skill in Children 6 to 14 Years of Age

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Objective: Current motor skill assessments test a child's capability to perform individual movement skills, which limits their feasibility for population screening or the assessment of groups of children. An obstacle course was designed to assess 7 fundamental movement skills in a dynamic format replicating active play. **Methods:** 1165 children (52.6% female) aged 6 to 14 years performed the obstacle course. Validity was assessed relative to the Movement ABC (MABC-2) and inter- and intra-rater and test-retest reliability were examined. **Results:** Mean obstacle course completion time was 17.80 ± 3.68 seconds (range 11.24 to 41.38) and mean skill score was 16.29 ± 2.27 (range 4 to 20). Older age ($p<.001$, $\eta^2 = 0.27$) and male gender ($p<.001$, $\eta^2 = 0.03$) were associated with higher total score. Completion time ($p=0.009$, $\eta^2 = 0.14$) and skipping ($p=0.03$, $\eta^2 = 0.10$) were associated with MABC-2 aim/catch sub-score. Jumping ($p=0.001$, $\eta^2 = 0.30$) throwing ($p=0.01$, $\eta^2 = 0.14$) and kicking ($p=0.02$, $\eta^2 = 0.13$) were significantly associated with MABC-2 balance sub-score. Completion time had excellent inter- (ICC=0.99), intra- (ICC=0.99 to 1.00), short interval (2-4 days) (ICC=0.86) and

long interval (>7 days) test-retest reliability (ICC=0.82). Skill score had substantial inter- (ICC=0.65 to 0.67), intra- (ICC=0.72 to 0.86) and long interval test-retest reliability (ICC=0.74). Skill score test-retest reliability over a short interval was moderate (ICC = 0.48). **Conclusion:** This new obstacle course is valid and reliable assessment of motor skill and enables the evaluation of 7 fundamental movement skills in a dynamic format that simulates active play.

Physical Activity Promotion in a Community Based Program to Reduce Overweight Prevalence in Belgian Children

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Objective: To describe and evaluate specific actions to promote overall physical activity (PA) in a community based program (CBP) named « VIASANO », aimed at preventing overweight and obesity in Belgian children. **Methods:** VIASANO is a CBP using EPODE methodology in Belgium. It consists of the concerted action of the local political authority and a local project manager, involving all stakeholders, including private partners and a scientific committee. Over a 3-year period (2007-2010), the VIASANO CBP combining actions on food consumption and PA practice was implemented in two Belgian pilot towns. The effects were evaluated by comparing the BMI curves of two cohorts of children aged 3-4 and 5-6 (n=1300 in 2007 and 1484 in 2010) from these cities with those of the whole Belgian French speaking population of same age taken as the comparison population. **Results:** During this 3-year period, a total of 31 actions specifically targeted at PA were launched, compared with 86 actions on food + PA and 107 actions on food alone. Various types of PA were targeted at several levels : whole families, schools, youth clubs, local sport facilities etc. Meanwhile, the prevalence of overweight (including obesity) decreased in the pilot towns (-2.2%) but remained stable in the comparison population (+0.2%). The adjusted difference between the two study populations was nearly statistically significant (p = 0.058). **Conclusion:** Specific actions to promote physical activity are an important component of such a CBP aimed at preventing overweight in school-aged children. **Funding:** VIASANO activities are partly sponsored by private partners (Unilever, Ferrero, Orangina Schweppes and Carrefour Belgium). These partners exert no influence on the content of the program or of this study.

Influence of Interdependence on Social Identity in Youth Team Sports

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Objective: The degree to which team members rely on one another – both to perform successfully as well as to achieve collective outcomes – can have a powerful effect on individual perceptions (van der Veegt, Emans & van de Vliert, 1998). The purpose of this study was to examine the influence of interdependence on social identity in team sport athletes. **Methods:** Adolescent athletes (N = 422; M_{age} 15.74, SD = 1.27) from 35 high school sport teams completed modified measures of task and outcome interdependence (van der Veegt et al., 1998) and social identity (Cameron, 2004). The social identity measure assessed three dimensions including in-group ties (perceptions of similarity, bonding, belongingness), cognitive centrality (importance of being a team member), and in-group affect (feelings associated with group membership; Cameron, 2004). A multilevel analysis was performed separately for each social identity dimension. **Results:** At the individual level, higher perceptions of outcome interdependence predicted greater social identity in the form of stronger in-group ties, cognitive centrality, and in-group affect. Higher perceptions of task interdependence predicted greater cognitive centrality only. At the team level, means for outcome interdependence also positively predicted greater social identity. Specifically, higher outcome interdependence predicted stronger perceptions of all three dimensions of social identity. Interdependence accounted for variance at both the individual and team levels, which ranged from 12% (cognitive centrality) to 24% (in-group affect). **Conclusion:** The results highlight the influential role of collective outcomes (outcome interdependence) on young athletes' perceptions of social identity in sport teams. **Funding:** SSHRC and Sport Canada.

Positive Youth Development in Aboriginal Sport and Physical Activity: A Systematic Review

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Objective: Sport and physical activity (PA) can positively impact the body, mind, heart, and spirit of youth (Lavallée & Lévesque, 2013; Cargo et al, 2007). Despite enthusiasm for these benefits, there is a paucity of published information reviewing the impact of sport, PA and recreation on Aboriginal youth development. The purpose of this systematic review was to provide an overview of research examining Aboriginal youth development in the sport and PA setting. **Methods:** A systematic review of indexed literature was conducted in July 2012 – January 2013 using 10 key databases. Additional literature was identified through searching non-indexed indigenous journals. Articles meeting the following criteria were retained: (a) directly and substantially applicable to Indigenous peoples; (b) explores, either through empirical research or conceptualization, the notion of 'positive youth development' and 'physical activity', 'sport', or

'recreation'. **Results:** 27 articles met the inclusion criteria. Thematic analysis revealed sport and PA are avenues for creating environments for Aboriginal youth to thrive, and provide opportunities to incorporate indigenous values and traditional ways, strengthen resiliency, improve all aspects of health, and promote culture and education. **Conclusion:** The paper represents the first systematic review to our knowledge of research examining Aboriginal youth development in sport and physical activity and highlights how the activity context can shape Aboriginal youth development. **Funding:** CIHR Institute of Aboriginal Peoples' Health (IAPH) and Health Canada – First Nations and Inuit Health Branch (FNIHB).

Perceived and Actual Sedentary Behaviour Amongst Nova Scotia Children and Youth

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Objective: In light of the complex nature of sedentary behaviour, with some behaviours considered important and beneficial in the development process (i.e., reading, socializing) and others that government guidelines recommend limiting (i.e., television watching, playing video games), the sole use of either objective or self-report measures may not be effective in understanding behaviours at an individual or population basis. This project compared perceived time spent in sedentary behaviour with an objective measurement of sedentary time in Nova Scotia children and youth on weekday and weekend days. **Methods:** As part of the Keeping Pace surveillance of physical activity and dietary intake of Nova Scotian children in grades 3, 7 and 11 (n=1855) a self-report survey was completed. Participants indicated how much time they usually spent on a weekday and weekend day in specific leisure sedentary behaviours (e.g., watching television, reading, playing video games). Following completion of the survey, objectively measured sedentary behaviour was collected by 7 days of continuous accelerometry. **Results:** Self-reported sedentary behaviour was significantly higher than measured sedentary behaviour in all three grades, and in both sexes ($p < 0.05$) with self-reported average sedentary behaviour ranging from 6.25-11.22 hours/day and objectively measured sedentary behaviour ranging from 5.00-7.50 hours/day. Boys and girls in grades 3, 7, and 11 reported spending more time in behaviours with recommended limits than in more beneficial sedentary behaviours. **Conclusion:** A disconnect exists in perceived versus actual sedentary behaviour amongst children and youth in grades 3, 7 and 11, which was not reflective of an expected social bias. **Funding:** This research was supported by the Nova Scotia Department of Health and Wellness.

Insulin Resistance Is Associated With a Reduced Allocation of Time to Regular Physical Activity in Chilean Adolescents

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Objective: We examined whether a poor allocation of time to regular physical activity (PA) by 590 Chilean adolescents (16.8±0.2 years old) was associated with higher risk of insulin resistance (IR). **Methods:** We measured regular PA, accounting for weekly hours of physical education and sports extracurricular activities. After a 12-hour overnight fast, blood samples for glucose, insulin, serum total cholesterol, triglycerides (TG), and high-density lipoprotein (HDL-chol) levels were performed. Systolic and diastolic blood arterial pressures (BAP) were measured. Fat and muscle mass (%) were assessed with dual-energy X-ray absorptiometry (DXA). HOMA-IR was calculated; values ≥75th percentile or 3.3 according to national standards were considered IR. Logistic models assessed the relation between the allocation of time to regular PA and the odds of IR, after adjusting for confounders or mediating factors, including sex, reported family history of type-2 diabetes, sarcopenia, high BAP (≥90th percentile), hypertriglyceridemia (TG ≥ 110 mg/dl), and hypolypemia (HDL (≤40 mg/dl)). **Results:** Fifty-nine percent of adolescents were poorly engaged in regular PA (<2/week), whereas 19% and 21% were moderate or highly engaged. After full adjustment, the odds of IR in adolescents reporting the lowest allocation of time to regular PA increased by more than three (OR: 3.1; 95%vCI: 1.1-9.0) compared to physically active adolescents. **Conclusions:** Adolescents with the lowest allocation of time to regular PA showed a higher risk of insulin resistance. Future interventions targeting to increase physical activity might have fruitful results to lower this risk factor, which may lead to hyperinsulinaemia and type-2 diabetes. **Funding:** National Heart, Lung and Blood Institute, National Institutes of Health, USA, (grant n° R01HL088530).

Regular Physical Activity Is Associated With Better Academic Attainment in Math and Language: Making Physical Activity More Appealing

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Objective: We examined the association between the allocation of time to regular physical activity (PA) and the academic performance in Mathematics and Language of adolescents from Santiago after controlling for potential confounders. **Methods:** In a random sample of 620 nine graders (15.6±0.7 years), we measured regular PA, accounting for weekly hours of physical education and sports extracurricular activities, and academic performance, using national standardized tests scores. Bivariate and multivariate regression analyses modelled the relation between academic and health related behaviours. Sufficiency and proficiency in Mathematics and Language, according to the standard of the Chilean Ministry of Education, were used as outcome variables. **Results:** Sixty-six percent of students devoted less than two h/week to regular PA, whereas 16% devoted 2-4 h/week. Devoting more than 4 h/week to regular PA significantly increased the odds of sufficiency and proficiency in both domains. After full adjustment, the odds of sufficiency and proficiency in Mathematics increased by 1.9 (95% CI: 1.1-3.5) and 2.7 (95% CI: 1.7-4.3), respectively. Similarly, the odds of sufficiency and proficiency in Language increased by 3.3 (95% CI: 1.7-9.7) and 2.6 (95% CI: 1.6-4.1), respectively. **Con-**

clusion: Adolescents with the highest allocation of time to regular PA performed better in Mathematics and Language. Our results support the notion that devoting more hours to PA is not harmful in terms of academic outcomes. The academic benefits associated with PA can help to promote sustained behavioral changes regarding lifestyles. They can be easily perceived as gains and may be stronger incentives than health benefits alone. **Funding:** National Commission for Scientific and Technological Research, Chile, under grant FONDECYT n° 1100431.

Scheduled Physical Activity Is Associated With Better Academic Performance in Chilean School-Age Children

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Objective: This research was carried out to examine the association between systematic physical activity (PA) and academic performance in Chilean school kids after controlling for potential confounders. There is a lack of evidence for mid-income countries. **Methods:** In a random sample of 1,271 fifth- and ninth-graders from urban Santiago, we measured PA habits using a validated questionnaire, anthropometric characteristics, and socioeconomic status. Academic performance was measured by the standardized System for the Assessment of the Educational Quality (SIMCE), accounting for Language, Mathematics and Science. Bivariate and multivariate analyses assessed the relationship between the allocation of time to weekly PA, confounding factors (sex, SES, type of school), and individual academic performance. **Results:** About 80% of students reported <2 h/week of scheduled PA, while 10.6% and 10.2% reported 2-4 h/week and >4 h/week, respectively. Devoting >4 h/week to scheduled PA significantly increased ($p < 0.01$) the odds of having SIMCE composite z-scores $\geq 50^{\text{th}}$ percentile (OR: 2.3 95% CI: 1.4-3.6) and $\geq 75^{\text{th}}$ percentile (OR: 2.1 95% CI: 1.3-3.3). Devoting 2-4 hrs/week only increased the odds of falling into the group with SIMCE composite z-scores $\geq 50^{\text{th}}$ percentile (OR: 1.8 95% CI: 1.2-2.8). **Conclusions:** Our results confirm the existence of a positive link between regular exercise and academic performance as well as the low engagement in regular exercise at the school level. In our sample: (1) better academic performance was associated with a higher allocation of time to scheduled PA in school-age children; (2) the highest academic performance was linked to the highest engagement in regular PA. **Funding:** National Commission for Scientific and Technological Research, Chile, under grant FONDECYT n° 1100431.

Physical Activity Participation of Children in Different Kindergarten Arrangements

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Objective: To compare weekday daytime physical activity (PA) between children attending daily and non-daily kindergarten

settings. **Methods:** 158 boys and girls (age=5.15±0.50 years, BMI=15.62±1.38 kg/m²) wore Actigraph accelerometers for all waking hours for seven days. Accelerometer data were analyzed in 3-second epochs and only those participants who wore the accelerometer for >3 weekdays for >5 hours between 8am and 4pm were included in the analyses. Parents completed questionnaires regarding their child's current kindergarten arrangement. PA of varied intensities, including: light (LPA), moderate (MPA), vigorous (VPA), moderate-to-vigorous (MVPA) and total (TPA) were analyzed as average minutes per weekday. Participants were grouped based on parent-reported kindergarten setting: daily kindergarten (DK; full or half-day) and non-daily kindergarten (NDK; 2-3 days per week). T-tests were used to compare groups. **Results:** Minutes of LPA, MPA and TPA were significantly lower in participants enrolled in NDK (LPA: 100.7 ±16.7 min, MPA: 34.0±7.7 min, TPA: 160.8±28.3 min) versus DK (LPA: p=0.002, 109.0±14.9; MPA: p =0.004; 37.8±8.5; TPA: p =0.005; 174.0±27.5 min). While not significant, minutes of MVPA and VPA were also lower in participants enrolled in NDK (MVPA: 60.1±14.7, VPA: 26.1±7.9 min) versus DK (MVPA: p =0.053, 64.9±15.8, VPA: p =0.446, 27.2±8.2 min). **Conclusion:** These findings suggest that PA is influenced by kindergarten setting, and those children who attend settings with daily (half or full-day) programming have favorable PA participation compared to those without daily kindergarten. **Funding:** Supported by Canadian Institutes of Health Research (CIHR, MOP 102560).

Trends in the Physical Activity of Canadian Children and Adolescents: CANPLAY Surveillance Study, 2005-2012

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Objective: To examine secular trends in average, sufficient and low steps/day among Canadian children. **Methods:** Representative studies were conducted annually from 2005/06 to 2011/12. Households were selected randomly and children 5-19 y (n=37,949) were requested to log steps for 7 days. Mean steps/day and the proportions accumulating $\geq 12,000$ steps and <7,000 steps daily were calculated across reported days (>95% logged ≥ 5 days). Complex sample procedures were used to account for the sample design. **Results:** Means steps/day among children and adolescents in 2008/09, 2010/11 and 2011/12 did not differ from the 2005/06 baseline (11,350 steps/day; 95% CI: 11,196-11,513 steps/day). Mean steps/day were higher in years 2, 3 and 5 of the study, due to higher steps/day among boys in 2006/07, among boys, girls and 5-10 year-olds in 2007/08, and among 5-10 year-olds in 2009/10. Few children 5-19 y took $\geq 12,000$ daily (6%; 95% CI: 5-7%) or almost daily (14%; 95% CI: 13-16%) in 2005/06. More children and adolescents (8%, 95% CI: 7-9%) accumulated $\geq 12,000$ daily in 2007/08 (particularly boys), and more took $\geq 12,000$ almost daily in 2006/07 (mainly boys) and 2007/08 (evident among boys, girls and 5-10 year-olds). Very few children accumulated <7,000 steps daily (3%; 95% CI: 2-4%) or almost daily (5%; 95% CI: 4-6%) in 2005/06 and this did not change over time. **Conclusion:** Children 5-19 y were no more or less active in 2011/12 than in 2005/06. More sustained and synergistic action across multiple sectors and levels will be required to increase children's steps/day.

Effects of Resistance Training, Aerobic Exercise Training, or Both on Psychosocial Functioning in Obese Adolescents: the HEARTY Exercise Trial

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Objectives: Aerobic exercise provides psychological benefits, but very little is known about the psychological effects of resistance exercise in youth with obesity. Resistance training may provide greater benefit because it may be better tolerated, show more rapid strength gains and be more empowering to obese youth. We examined the effects of resistance exercise, aerobic exercise, and their combination on mood, physical-self-perceptions, and self-esteem in obese adolescents. **Methods:** Participants were inactive, overweight or obese adolescents (n=304) aged 14-18 yr who volunteered for the HEARTY (Healthy Eating Aerobic and Resistance Training in Youth) trial. After a 4-week diet and exercise run-in, participants were randomized into 4 groups for 22 weeks: diet + resistance exercise (**R**), diet + aerobic exercise (**A**), diet + aerobic + resistance exercise (**A+R**), or diet-only control (**C**). The Brunel Mood Scale (BMS) and the Harter Physical Self-Perception Profile for Adolescents (PSP-A) were used to assess psychosocial outcomes at baseline and 6 months. **Results:** Relative to **C** from baseline to 6 months there were significant increases in perceived strength for **A+R** (p=0.03); global self-worth for **R** (p=0.03); and perceived physical condition for **A+R** (p=0.05). Similarly, BMS vigour scores increased for **A** (p=0.01), **R** (p=0.03), and **A+R** (p=0.04). **Conclusions:** Resistance alone or in combination with aerobic is better than control whereas clinically relevant differences were not shown in aerobic exercise alone. Resistance training should be considered as a viable exercise modality to enhance psychological health in obese youth, a population at high risk for mental health problems.

Core Indicators and Measures of Youth Physical Activity and Sedentary Behaviour

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Objective: The Core Indicators and Measures (CIM) of Physical Activity and Sedentary Behaviours were developed for individuals and organizations in Canada who conduct, or make use of, surveillance data. It is intended that the voluntary adoption of the CIM

will reduce burden, minimize duplication and generate comparable indicators to inform policy and program decision-making. The CIM is for use with 10-19 year olds in school settings. **Methods:** The CIM development involved a survey of policy, practice, research and surveillance leaders in youth Physical Activity & Sedentary Behaviour in Canada. Respondents were then invited to a workshop that established consensus on which indicators were to be included and began to refine the measures. The selection of indicators was based on: feasibility, strength of evidence, relevance/utility, accepted practice and face validity. The CIM was released in November, 2012 following a pilot testing process to establish the validity and reliability of the measures and indicators. **Results:** "Individual-level" indicators of the CIM are: the proportion of youth that meet Canada's Physical Activity Guidelines, sedentary behavior, youth participation in extra-curricular, school-organized physical activity, youth participation in organized physical activity in community setting, youth participation in spontaneous physical activity and active transportation to and from school. "School-level" indicators include: the amount of physical and health education offered by schools, implementation of daily physical activity (DPA), school culture and practices related to physical activity, school partnerships and resources for physical activity. Full details are available: <https://uwaterloo.ca/propel/programs/youth-health/core-indicators-and-measures-youth-health/physical-activity>. **Funding:** The Core Indicators and Measures of Youth Physical Activity and Sedentary Behaviour were developed by Youth Excel CLASP and funded by Health Canada, through the Canadian Partnership Against Cancer.

Longitudinal Levels and Bouts of Objectively Measured Sedentary Behavior Among Young Australian Children in the HAPPY Study

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Objective: To examine differences in sedentary time and sedentary bouts during and outside of child care/school periods and changes in sedentary time and sedentary bouts over a one year period in a sample of young children from Melbourne, Australia. **Methods:** Results are based on 177 children aged 3-5 years at baseline from the Healthy Active Preschool and Primary Years (HAPPY) Study. Total days, during child care/school and outside of child care/school sedentary time and sedentary bouts (1-4, 5-9, 10-19, >15 minutes) were accelerometer-derived at baseline and 1-year follow-up when 101 (57%) of children had transitioned to school. Repeated-measures ANCOVAs that adjusted for wear time were conducted. **Results:** During the childcare/school period, children in the school transition sub-sample participated in 26 more min/day of sedentary time at follow-up and all participants spent less time (2-16 min/day or 2-3 % of wear time) in 5-9 minute sedentary bouts at baseline and follow-up compared to the outside of childcare/school weekday period. Significant increases in sedentary time were observed from baseline to 1-year follow-up in the full sample and the school transition sub-sample for total days (34-40 min/day or 2-3% wear time increase) and for the during child care/school period (40-54 min/day or 3% of wear time increase). Similar increases were observed

for time spent in 1-4 minute sedentary bouts. **Conclusions:** Child care to school transition was marked by increased sedentary time and short sedentary bouts. Changes to school practices, policies, and environments to reduce sedentary time should be explored in this age group. **Funding:** Deakin University

Physical Activity and Sedentary Behaviour of Toddlers and Preschoolers in Alberta Child Care Centres

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Objective: To describe levels of physical activity and levels and bouts of sedentary time during child care in a sample of toddlers and preschoolers (19-60 months) from Alberta, Canada, and to examine if levels and bouts differed between sex and age groups. **Methods:** Results are based on 118 children, aged 19-60 months from eight participating child care centres throughout Alberta. Data were collected at baseline of a study examining revised Alberta Child Care Accreditation Program Quality Standards. Levels of physical activity (light, moderate-to-vigorous intensity (MVPA)) and levels and bouts (1-4, 5-9, 10-14, and >15 minutes) of sedentary time during child care were accelerometer-derived using 15-second epochs during October/November, 2013. Median [Interquartile ranges] and ANCOVAs were calculated while taking into account the clustered nature of the data. **Results:** The median minutes/hour spent in sedentary, light, and MVPA were 31.7 [IQR: 27.8, 34.1], 22.5 [20.9, 24.4], and 5.4 [3.3, 7.9], respectively. Additionally, the minutes/hour spent in sedentary bouts lasting 1-4, 5-9, 10-15 and >15 minutes were 16.6 [14.5, 18.4], 4.5 [2.7, 6.2], 0.8 [0.4, 1.4], and 0 [0, 0.6], respectively. No significant differences in levels or bouts were observed between toddlers (19-36 months) and preschoolers (36-60 months) or between boys and girls. **Conclusion:** This is the first Canadian study to report on the levels of physical activity and levels and bouts of sedentary time among toddlers and preschoolers attending child care centres. Children spent over half their time sedentary, mainly in shorter bouts, and spent minimal time participating in MVPA. **Funding:** Alberta Centre for Child, Family and Community Research (ACCFRC).

Flames: Lighting the Way—a Physical Activity Programme for Children and Young People in the UK

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Program Objective: Following the announcement that London would host the 2012 Olympic and Paralympic Games, interest grew in its potential as a catalyst to inspire physical activity participa-

tion, particularly among children and young people. The Flames programme was developed, by the British Heart Foundation in 2009, to capitalise on this opportunity and contribute to a 'physical activity legacy'. It aims to increase children and young people's participation, understanding and awareness of physical activity in relation to their health. Flames operates on a cascade model utilising young leaders (those currently undertaking a course or qualification which includes a leadership aspect) to plan and deliver a programme of physical activity to primary school-aged children. Training, tools and resources are embedded into a young leader's learning to impart the knowledge, skills and confidence to deliver health-related activities. Young leaders ensure key physical activity messages, such as at least 60 minutes of physical activity every day, are integral to their delivery. **Findings/Outcomes:** To date, Flames has trained over 30,000 young leaders, adding value to their learning and providing vocationally relevant experience in delivering physical activity. Furthermore 200,000 children and young people have benefited from Flames through, increased opportunities to participate in physical activity. **Conclusion/Perspectives:** By focusing on physical activity and health, rather than sport per se, Flames provides an inclusive approach to participation. Following the 2012 Games, Flames has continued to be successfully delivered by dovetailing into other major UK sporting events and using their inspiration to continue the legacy for children's participation in physical activity. **Funding:** The British Heart Foundation

POEM (Pediatric Oncology Exercise Manual): A Tool to Fight Sedentary Behavior

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Objective: To promote physical activity (PA) for children with cancer through an evidence-based Pediatric Oncology Exercise Manual (POEM) for clinicians, fitness professionals, survivors and their families. Specific objectives in creating the POEM are to: a) enhance awareness for the importance of PA in childhood cancer, and b) equip professionals and families with information to safely develop PA programs. **Methods:** An internationally (Spain, Germany, The Netherlands, USA, and Canada) acclaimed panel of experts in pediatric oncology, exercise physiology, and psychosocial behavior have been convened to develop an evidenced based PA manual. Highlighted topic areas include general PA recommendations for leukemia, brain, and solid tumors as well as general PA contraindications in survivors experiencing serious late-effects. **Results:** Both a professional and lay version, each with practical recommendations, are currently being developed. In spring 2014, we will disseminate the POEM to clinicians, fitness professionals and families across Canada via educational sessions. Dissemination of the manual will be tracked. Usefulness of the manual will be evaluated via survey in order to improve future versions. **Conclusion:** The creation of the POEM will enhance awareness about the role of PA in pediatric oncology. Specifically, the manual will (a) contribute to diminishing fears surrounding PA participation and enhance positive PA beliefs for parents and health professionals;

(b) provide both groups with a better understanding of PA's benefits; and (c) may improve physician referral to a PA program. Increased PA levels result in enhanced quality of life for pediatric cancer survivors and diminished risk of developing comorbid conditions in survivorship. **Funding:** Dr. Carolina Chamorro-Vina is funded by the Alberta Children's Hospital, Department of Pediatrics, Hematology, Oncology and Blood and Marrow Transplant Program and the Psychosocial Oncology Research Training. This POEM project was supported by the Canadian Institutes of Health Research www.cihr-irsc.gc.ca (Note: Hyperlink Canadian Institutes of Health Research wording to www.cihr-irsc.gc.ca for electronic documents and website). Additional funding support came from a Dalhousie University Faculty of Health Professions Research Development Grant.

A Phone Call Is all it Takes: Improving Levels of Active Play With an Automated Telephone System

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Program Objective: To increase active play in children through an automated telephone intervention. **Findings:** Fifty-nine Grade 6 students ($M_{age} = 10.2$; 36 females) were randomized into an experimental group ($n=33$) and a control group ($n=26$). The interventions were delivered through a 5 minute automated telephone system. Participants in the experimental group listened to an audio script requiring them to imagine themselves being active during their free time and designed to tap into attributes of active play including perceptions of competence and engaging in the activity with others. A new audio script was delivered each week. Participants in the control group listened to audio book chapters from a short story. All participants were asked to call the toll free number from home three times per week for the duration of the study. Seventy-one percent of children in the experimental group complied with the study's guidelines of calling in three times per week, while 58% of those in the control group complied. Children's activity levels were measured before and after the intervention, using pedometers. The analysis revealed that pedometer step count remained stable for the experimental group but decreased from pre to post intervention for the control group. **Conclusions:** This study demonstrates the feasibility of implementing a telephone intervention with school aged children. The minimal cost of implementing such an intervention and the ability to reach far more students than a face to face intervention should make this strategy attractive to future researchers. **Funding:** We would like to acknowledge SSHRC for funding this project.

Analysis of Physical Activity Within 7 Days in Aboriginal and Non-aboriginal Taiwanese Children

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Objective: Limited studies had examined physical activity (PA) in aboriginal and non-aboriginal Taiwanese children. The purpose of this study was to compare the difference in PA within seven days between aboriginal and non-aboriginal children with and without regular sport training (RST). **Method:** 80 boys aged 11 to 12 years old were recruited from 7 primary schools in different regions of Taiwan. Participants, including 39 aboriginals (22 with RST and 17 without RST) and 41 non-aboriginals (21 with RST and 20 without RST) were recruited. Their light physical activity (LPA), moderate to vigorous physical activity (MVPA) and total PA within 7 days, weekdays and weekends were measured by the RT3 accelerometer. **Results:** The amounts of total PA within 7 days and MVPA in weekdays were significantly higher in aboriginals and non-aboriginals with RST than aboriginals and non-aboriginals without RST ($p < .001$). The aboriginals with RST had higher PA than non-aboriginals without RST in weekends ($p < .01$). The aboriginals and non-aboriginals without RST had much higher LPA than aboriginals and non-aboriginals with RST in 7-day and weekdays ($p < .001$). **Conclusion:** Compared to aboriginals and non-aboriginals without RST, this empirical study showed that aboriginals and non-aboriginals with RST spent more time participating PA in 7-day and weekdays and having more MVPA. While aboriginal and non-aboriginal children without RST had not enough amounts of MVPA in 7-day, weekdays and weekends, more PAs for those children are essentially encouraged. The Taiwanese government needs effective national policies to promote further exercise and sport participation for children without regular PA. **Funding:** National Science Council, Taiwan.

Healthy Start: The Effectiveness of a Physical Activity Intervention on Increasing Physical Activity Levels and Fundamental Motor Skills Among Early Years Children in Childcare

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Objectives: To determine if a multimodal physical activity intervention (Healthy Start) contributed to increases in physical activity levels and in fundamental motor skills among children aged 3 to 5 years in childcare centres. **Methods:** A community-based intervention using a wait list control design (48 weeks delayed-intervention) was used to evaluate the Healthy Start intervention. Six rural childcare centres in Saskatchewan (three intervention centres and three comparison centres) and a total of 69 children participated in the study. Children's physical activity levels were measured for 7 consecutive days at three time points (pre, mid and post intervention) using accelerometers. Children's fundamental motor skills were measured at two time points (pre and post intervention) using the Test of Gross Motor Development II (TGMD II). **Results:** Analysis of variance indicated that children in the intervention group were engaging in significantly more MVPA than the comparison group post intervention. T-tests were performed to compare baseline and post intervention TGMD II scores and results showed that over the course of the intervention children in the intervention group had greater improvements in fundamental motor skills than children in the comparison group; however these results were not significant.

Conclusion: Overall, the intervention was effective in increasing physical activity levels among children in the intervention group. Although the intervention group did not report significantly higher gross motor development scores than the comparison group, there was a pattern of improvement in fundamental motor skills among intervention group children post intervention.

The Agents of Nature App: Using Mobile Technology to Inspire Active Outdoor Play in Youth

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Technology has left youth disconnected from nature, and the best way to fix the problem is...technology? The Agents of Nature app is a place-based environmental education tool for iOS and Android devices, designed to increase children's exposure to and connection with nature, educate them about their local environment and promote physical activity. **Program Objective:** For youth to download the app, become a 'secret agent of nature' and then head outdoors to a local park site where they find hidden QR codes to unlock educational challenges. The place-based gaming experience gets players learning about wildlife species and habitats while developing valuable trail and orienteering skills. Each challenge requires at least one mile of walking or hiking. To successfully complete their mission and collect coins, players have to get moving. **Outcomes:** The app was piloted at ten parks and green spaces in the City of Calgary, Alberta in 2013. As a result, youth ages 7-14 spent 320 hours walking almost 750 miles in Calgary parks using the Agents of Nature app. It has since been adopted as one of the city's primary environmental education initiatives. **Perspectives:** Mobile technology can be used to promote active discovery of nature, with the effect of enriching a child's physical, cognitive and emotional development. **Funding:** Program support was provided by the City of Calgary Parks Alberta, the Calgary Foundation, the Government of Alberta, Imperial Oil and Encana.

Single-Sex After-School Physical Activity Programs for Overweight and At-Risk Children: the Wollongong Sport Pilot Randomised Controlled Trial

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Objective: To examine the effect of single-sex after-school physical activity (PA) programs on adiposity and physical activity (PA) in overweight and at-risk children aged 8-11y. **Methods:** A 7-month, 2-arm parallel-group pilot randomised controlled trial was conducted in a low-income area of Wollongong, Australia. 17 girls (9.6±0.9y) and 20 boys (9.9±0.8y) were randomly assigned to a PA intervention or a healthy lifestyle education (HLE) active comparison group. PA consisted of two 120min sessions.wk⁻¹ (30min homework plus 90min PA) at a local school. HLE consisted of one 120min weekly session (30min homework, 45min HLE plus 45min PA). Adiposity and accelerometer assessed moderate-to-vigorous physical activity (MVPA) were measured at baseline, 7m and 12m. **Results:** Large effects (Cohen's d) on adiposity outcomes were observed for PA

girls at 7m (BF%=0.83, BMIz=1.00, WCz=0.78). For boys at 7m, a large effect was observed for WCz (0.98); a medium effect was observed for BF% (0.49), and a small effect in favour of HLE was observed for BMIz (-0.19). Medium to small effects were observed on adiposity outcomes at 12m for PA girls (BF%=0.36, BMIz=0.29, WCz=0.17) and boys (BF%=0.58; BMIz=0.30, WCz=0.50). For MVPA at 7m and 12m, small and medium effects, respectively, were observed for girls (0.12; 0.60) and boys (-0.22; -0.60), although boys' results favoured HLE. **Conclusion:** The effects of single-sex after-school PA programs on adiposity and PA were more apparent for girls than boys. **Funding:** Children's Foundation of Australia.

Sedentary Behaviour and Sleep Duration as Risk Factors for Adolescent Obesity: Objectively Measured Prospective Associations From the ROOTS Study

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Objective: To investigate if objectively measured sedentary time is positively associated, and sleep duration negatively associated, with 2.5y changes in adiposity from mid-to-late adolescence. **Methods:** This study was conducted in 732 students who were recruited from 18 schools in Cambridgeshire, UK. Awake sedentary time (SED; min/d) at age 15y was objectively measured by the equivalent of ≥3 days of combined heart rate and movement sensing. Sleep duration (SLP; min/d) was measured by combined sensing in conjunction with self-reported bed times. Fat mass index (FMI; kg/m²) was estimated at ages 15 and 17.5y by anthropometry and bioelectrical impedance. Multilevel models considering adjustment for basic demographics, birth weight, depressive symptoms, moderate-to-vigorous physical activity, energy intake, and maternal factors (age at parturition and BMI) were used to investigate associations between SED and SLP with changes in adiposity. SED and SLP were mutually adjusted for one another. **Results:** SED was inversely associated with rate of FMI gain in girls (p<0.001) but the magnitude of association was small (per 60 min SED/d at age 15y the annual FMI gain was reduced by 0.8% or 0.041 kg/m²). No such association was found in boys. SLP was not associated with adiposity gain in either gender. **Conclusion:** Awake sedentary time was weakly inversely associated with FMI gain in girls, but residual confounding cannot be ruled out. It seems that awake sedentary time and sleep duration may not be key determinants of adiposity gain in mid-to-late adolescence, their inclusion in policy statements about obesity prevention may therefore be unwarranted.

Doctors Nova Scotia's Kids' Run Club—10 Years and Running

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Program Objective: Kids' Run Club (KRC) was introduced in 2004 by Doctors Nova Scotia (DNS) to address inactivity in children and youth. Participation has grown from 3,500 youth at 58 schools to more than 17,500 students at 259 schools. The goal of this free, school-based, non-competitive running program is to give participants an opportunity to be active and learn about healthy lifestyles. Program resources include handbooks for runners and coaches, the Healthy Living Challenge, finishers' prizes and visits by program representatives. The program can be adapted for all age-groups, abilities and fitness levels and includes a girls-only component. **Findings/Outcomes:** Participants report seeing improvements in their running; running at least twice per week; making efforts to improve their eating, screen-time and physical activity behaviors; intention to continue running after the program; and that family members began running with them. Girls-only participants report the single-gender environment provides a supportive experience which emphasizes fun rather than competition. Coaches consistently report that KRC is easy to implement. **Conclusion/Perspectives:** DNS has received two national health promotion awards for KRC. The program has been replicated in Alberta and is being considered in PEI and Manitoba. Much has been learned about creating a successful, sustainable, school-based physical activity program. Future goals are to continue increasing participation in KRC, including the girls-only component, and share lessons learned with other organizations within and beyond Nova Scotia. **Funding:** KRC is a health promotion program of DNS supported by the NS Department of Health and Wellness, Boyne Clarke and Clearwater Seafood.

Co-Creating a Research Agenda With Community Members to Inform Canadian Indigenous Youth Activity Programming Engagement Practices

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Objective: The purpose of the first phase of this community-based participatory research was to co-create a research agenda with community members to inform future research and knowledge-sharing regarding Canadian Indigenous youth activity programming engagement practices. **Methods:** In collaboration with our partner, a Cree elder, and following IRB approval, four community consultations focused on Indigenous youth physical activity and wellness programming in Edmonton, Alberta were planned. The consultations were held over a three-month period and were co-facilitated by the first author and elder. Cultural practices, such as pipe ceremonies and traditional games, and feasts and honorariums for participants were included in the consultations. Approximately 30 elders, youth, parents, school-workers (e.g., social workers), and Edmonton-based organization representatives identifying as Indigenous or non-Indigenous Peoples, participated in the consultations. Two follow-up meetings were conducted to confirm the resulting research questions that were generated from the consultations. **Results:** Based on the community consultations, and supported by the research literature, the following question was developed: How can programmers co-create Indigenous youth activity programming with Indigenous Peoples and engage them in this programming in an urban Canadian setting? A democratic process of sharing knowledge and acquiring feedback throughout data generation was co-developed. **Conclusion:** Our initial phase provides a practical example of co-creating a relevant research agenda with a community

and generating knowledge within a community context. Several considerations for co-creating research agendas with communities to address Indigenous youth physical activity and health, such as establishing a process of communicating and incorporating cultural relevance, will be discussed. **Funding:** Interdisciplinary Health Research Academy, Health Sciences Council, University of Alberta, Edmonton, Alberta, Canada.

Using the Physical Activity Specialist Model to Train Child Care Providers in Leading Developmentally Appropriate Physical Activity With the Toddlers and Preschoolers in Their Care

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Program Objective: Child care providers report a perceived lack of knowledge, skill, and confidence in leading young children in physical activity in the child care setting. Most providers have no educational background in the areas of physical activity, motor skills development and outdoor play. Given the role of physical activity in child obesity prevention, child care providers need training in promoting developmentally appropriate structured and unstructured physical activity in both indoor and outdoor settings. This poster describes the Physical Activity (PA) Specialist model that is being piloted in three low-income counties in New York State to meet these training needs. Both the successes and challenges of this model are discussed along with suggestions for refinement of the PA Specialist model. **Findings/Outcomes:** The PA Specialist model employs physical educators to provide this much-needed training in leading physical activities to child care providers. Physical educators possess in-depth knowledge of human movement and effective teaching strategies. These PA Specialists work with child care providers in promoting physical activity for young children in center- and family-based child care programs, preschools, and Head Start/Early Head Start programs. While PA Specialists may work directly with children, they typically function as consultants who provide workshops and on-site technical assistance to child care providers in their efforts to conduct structured and unstructured physical activities with the children in their care. **Perspectives:** Preliminary data suggest the PA Specialists model is an effective way to provide physical activity training to child care providers but challenges regarding funding and retention.

Influence of Neighbourhood Deprivation and Perceived Safety on Active Transport to School Among Preadolescents Aged 9 to 13 Years Living in Urban Quebec

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Objective: Factors that influence active transportation among children need to be better understood. The objective of this study is to examine the influence of neighbourhood deprivation and perceived safety on active transport to school among preadolescents aged 9 to 13 years living in urban Quebec. **Methods:** A sample of 801 dyades of preadolescents aged 9 to 13 years and one of their parents living in urban environments throughout Quebec were recruited by a polling firm for a telephone interview focusing on the health promotion intervention WIXX that was launched by Québec en forme in 2012. A logistic regression model was used to predict active transportation to school from neighbourhood material and social deprivation and from parental perceptions of safety controlling for the following variables: the sex and school grade of the child, the presence of a condition that prevents the child from being physically active, as well as the sex and education level of the parent. **Results:** Children living in neighbourhoods characterized by a higher material (OR=2.08; 95%CI 1.2, 3.62; p=0.01) and social (OR=1.99; 95%CI 1.19, 3.34; p=0.01) deprivation, whose parents perceived their neighbourhood as safer (OR=1.96; 95%CI 1.24, 3.10; p=0.01) were more likely to use an active transportation mode to school. **Conclusion:** Given that an increase in active transportation to school may influence children to acquire recommended levels of daily physical activity, initiatives to remodel neighbourhoods and to increase safety are likely to contribute to the adoption of active travel to school by preadolescents. **Funding:** Data collection for this study was supported by Québec en forme; Nicoleta Cutumisu is supported by a Fellowship from the CRCHUM and the IRSPUM; Ariane Bélanger-Gravel is supported by CIHR, Lise Gauvin holds a CIHR/CRPO (Centre de recherche en prévention de l'obésité) Chair in Applied Public Health on Neighborhoods, Lifestyle, and Healthy Body Weight.

Steps "Count": Modes of Transportation in Preschool Children

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Objective: To examine mode of transportation in preschool children and the association with physical activity (PA). **Methods:** 384 three-to-five year olds (194 girls; age: 4.5±0.9 years) participated. The parent/guardian completed questionnaires on the mode(s) of travel, relative use (%) and total time spent actively travelling to/from school or child-care arrangement per day. Children wore an accelerometer for a week, with criteria of >10 hours on >3 days to be included in the analyses. Based on parent/guardian responses, participants were grouped into three categories: inactive transportation (IT) 100% of the time, active transportation (AT) 100% of the time, and a combination of modes of travel (CT). One-way ANOVAs with Tukey's post-hoc were used to test for differences in step counts by mode of transportation. Pearson chi-square tests were used to test for differences between modes of transportation by age and sex. **Results:** 58% of parents reported that their child used IT, 13% AT, and 29% CT. Of the AT group, 41% reported walking 10-20min/day. There was no difference in the overall proportion of boys and girls who used AT ($\chi^2=.8$, p=.69), but increases with

age ($\chi^2=26.21$, p<.001). Preschoolers who used AT on average took more steps/day than IT and CT (AT:10190±1928 vs. IT:8683±1784 and CT:9204±1932, p<.001 and p=.007 respectively). **Conclusion:** The majority of 3-5 year olds use IT to get to/from school or child-care arrangements. However, AT is associated with higher overall PA levels among preschoolers. Targeting active transportation may be an effective way to increase PA in the early years. **Funding:** Supported by Canadian Institutes of Health Research (CIHR, MOP 102560).

ParticipACTION Teen Challenge—Building the Capacity of Community Organizations to Engage Teens in Physical Activity

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Objective: Only 4% of 12 to 17 year olds meet the Canadian Physical Activity Guidelines for Children and Youth. Sport participation among 15-18 year olds declined from 77% in 1992 to 59% in 2005. To address this, ParticipACTION developed the Teen Challenge, sponsored by Coca-Cola Canada to give teens and community organizations the tools and supports to break down barriers preventing teens from getting active. **Methods:** Through a network of 13 provincial /territorial coordinators, the Teen Challenge recruited and supported over 3750 community organizations across Canada since 2008. The organizations work with teens to identify their physical activity interests and apply for micro grants. Data is captured from organizations through registration, grant application, success stories and on-line surveys. A 2013 case study conducted semi-structured interviews with 9 organizations, 40 teen participants and 17 organizers. **Results:** The ParticipACTION Teen challenge approved over 2400 grants and engaged over 260,000 participants. Teens played a role in creating and implementing (86%) of the grants. The Case study found that the Teen Challenge appears to be an effective mechanism for enhancing community capacity to provide physical activity engagement opportunities for teens. The grants helped reduce financial barriers and empowered teens to contribute to identifying and hosting new and creative physical activity opportunities within their communities. **Conclusion:** By creating a national program that is delivered locally with the flexibility to address specific community needs and interests, ParticipACTION and Coca-Cola Canada are building the capacity of local organizations to engage their teens in relevant physical activity opportunities. **Funding:** The case study was sponsored by Coca-Cola Canada and was conducted by independent researchers.

The Relationship Between Physical Activity Participation in Emerging Adults and Secondary School Physical Education Involvement

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Objective: To examine the relationship between previous physical education (PE), both amount and type, and current physical activity (PA) of individuals after completion of secondary school. **Methods:** A convenience sample of 112 emerging adults (college and university students) who were previously enrolled in Ontario secondary schools were surveyed about their PE participation during secondary school as well as their current PA level. The survey included: demographics, the International Physical Activity Questionnaire (IPAQ), tobacco and alcohol use, and life changes experienced. Participants were asked to indicate which courses they enrolled in during secondary school so that type of course could be analyzed. **Results:** Differences in PA participation did exist between those who took specific types of PE courses (i.e. Personal Fitness and Activities) as well as the mandatory grade 9 or 10 course and those who only enrolled in the mandatory course. Participants enrolled in additional specific courses were significantly more active than those who were enrolled solely in the mandatory PE credit. There was no significant difference found when amount of PE courses was compared to current PA. **Conclusion:** The current study appears to support the assertion by Corbin (2002) that content (i.e. the inclusion of life skills) matters when exploring PE. It appears from these results that content as opposed to volume of PE is related to increased PA. More specifically, courses that teach skills directly related to how to manage oneself to be active may have more influence on the activity level of students after completion of secondary school.

Physical Activity Guideline Knowledge Among Louisiana Parents

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Objective: To describe the knowledge of children's physical activity guidelines among Louisiana parents. **Methods:** A cross-sectional survey was conducted among Louisiana residents who were a parent/caretaker of at least one child (<18 y). The survey was administered by telephone, and the data were weighted to provide a sample representative of Louisiana parents. The questionnaire collected information related to physical activity of both the parent and child, including parental knowledge of national recommendations and guidelines for children. **Results:** Data were collected from 756 Louisiana parents. Nineteen percent of parents reported knowledge of the 2008 Physical Activity Guidelines for Americans (the Guidelines) while 81% of parents had not heard of the Guidelines. The median (interquartile range) number of minutes per day of physical activity recommended for children were reported as 60 (45-60) and 60 (45-120) for parents who had and had not heard of the Guidelines, respectively. The median number of minutes of physical activity reported did not differ significantly between parents who were knowledgeable about the Guidelines and those who were not (P=0.53). **Conclusion:** The majority of Louisiana parents have not heard of the Guidelines, but on average, parents correctly reported the childhood physical activity recommendations as 60 minutes/day. Ultimately, parents appear to know how much physical activity children should participate in, regardless of knowledge of the Guidelines. The results suggest parents receive information on the recommended amounts of physical activity for children from sources other than the Guidelines themselves.

The International Study of Childhood Obesity, Lifestyle, and the Environment (ISCOLE): A Platform for Increasing Global Research Capacity in Physical Activity

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Program Objective: The primary aim of the International Study of Childhood Obesity, Lifestyle and the Environment (ISCOLE) is to determine the relationships between lifestyle behaviors and obesity in a multi-national study of children, and to investigate the influence of higher order characteristics on the observed relationships. ISCOLE represents a global effort to increase research capacity and infrastructure in childhood obesity. **Findings:** A cross-sectional study was conducted on 7,340 children aged 9-11 years from 12 countries representing all of the world's major regions. Each study site actively enrolled participants for approximately one year until meeting the enrollment milestone of at least 500 participants; all sites met this goal. ISCOLE employed 241 persons, including graduate students and postdoctoral fellows. Protocol standardization was promoted by the ISCOLE Coordinating Center (CC) through required on-site training sessions and principal investigator (PI) meetings while data quality was ensured through on-site monitoring visits, periodic virtual data monitoring, regular communication with site coordinators, and rigorous data cleaning prior to data dissemination. The CC experienced and adapted to several complications during enrollment, including staff turnover, language barriers, site-specific limitations, and electronic data capture system issues. **Conclusion:** ISCOLE was effective at gathering data and building research capacity at the study sites. Rigorous standardization and quality control practices were critical to the success of ISCOLE. Additionally, an experienced site coordinator was essential to successful data collection practices and meeting recruitment milestones. The experiences of ISCOLE staff help to inform future multi-site international studies by suggesting best practices and obstacles to anticipate.

Fundamental Movement Skill Performance in Overweight and Obese 4- to 6-Year-Old Pre-School Children: Issues for Effective Responsible Interventions

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Objective: To assess the association between the development of fundamental movement skill (FMS) performance in 4- to 6-year-old Flemish preschoolers and their BMI. **Methods:** A sample of 3140 4- to 6-year-old (1643 boys and 1497 girls, 5.1±0.6 years)

pre-school children participated. FMS performance was assessed with the Motoriktest für Vier- bis Sechsjährige Kinder (MOT4-6). **Results:** Normal-weight children show higher percentages in the category 'normal' compared to the overweight and obese group. In the obese group, 13.5% of children perform 'weak' on the MOT4-6 test, with a total of 51.8% scoring below 'normal'. In the normal-weight group, the percentage of children scoring below 'normal' is 34.9%. A same trend could be observed in the categories 'good' and 'very good'. Although fewer children than expected score in these categories, normal-weight children show higher percentage of scores than overweight and obese children. **Conclusion:** The present study suggests that overweight and obese 4- to 6-year-old children show lower proficiency levels in fundamental movement skills assessed with the MOT4-6 test in comparison with their normal-weight peers. Although, there was no significant difference between the overweight and obese group, obese children seem to underperform. Behaviour of this age group can be influenced and adaptations of dysfunctional behaviour at that age may have its consequences for later life. Since motor proficiency is associated positively with physical activity and physical inactivity is associated with obesity, effective responsible interventions at pre-school age should be developed, commissioned by the education authorities, to prevent motor incompetence, physical inactivity and rising BMI-levels.

Pacific Island Adolescents With a Physical Disability: Health and Well-Being Through Physical Activity

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Objective: The reasons for lack of engagement in physical activity in Pacific adolescent girls with a physical disability are complex, and this research aims to explore this phenomena. **Methods:** This research comprised of a series of studies to attempt to identify the general health and well-being of female Pacific adolescents with a physical disability, and their participation levels in physical activity. The first cross-sectional study, draws on quantitative data from a regional study, comparing 1,200 Pacific adolescents with and without a physical disability. The second study comprised of 15 qualitative interviews with the Pacific physically disabled adolescent girls and service providers, to explore perceptions about how having a physical disability may influence their participation in physical activity and their general feelings of well-being. **Results from the qualitative study:** Findings suggest these girls want to participate in physical activity; however there are multiple complex layers which are preventing them from partaking. While the providers of services have allowed an insight into these issues, there is a complexity around their physical disability, participation in physical activity, the adolescent developmental stage and their environment. The main themes which were identified from the qualitative study included, health benefits, the family, restrictions including financial and travel difficulties and policy implications. **Conclusion:** There is a lack of research for physically disabled female Pacific Islanders and the information generated through these studies, aims to address this problem. In order to make change, it is imperative this population be given priority.

Girls Soar Initiative: Building an Action Plan to Address the Physical Activity Gaps for Adolescent Girls in Halifax Regional Municipality: Exploring How to Create Motivation and Community Change Using Evidence, Collaboration, and Sharing

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Program Objective: The purpose of the Girls Soar Initiative is to engage practitioners who influence adolescent girls in creating and implementing an action plan to address barriers to girls and their physical activity participation in the Halifax Regional Municipality. **Finding/Outcomes:** In Nova Scotia, a considerable gap exists between boys (28%) and girls (13%) in Grade 7 in the percentage obtaining the recommended level of physical activity (Thompson & Wadsworth, 2012). Girls at this age engage and participate differently in physical activity than boys (CAAWS, 2012). Based on provincial and national evidence the Girls Soar Initiative was designed to develop a plan to address girls' physical activity. Physical activity practitioners were mobilized through several consultations to identify gaps, strengths, and opportunities to address issues specific to girls and physical activity. The Girls Soar Advisory Team created a three year plan focusing on; education for leaders to build knowledge and skills; creation of a Girls Soar network; and growing the number of quality programming to foster the development of confidence and capability for girls to enjoy a variety of physical activity opportunities. Girls Soar has developed the network framework for information sharing and support, created opportunities for leaders to engage in gender issues and physical activity, collected promising practices which enhance programming and unstructured activities for girls, and produced an evaluation framework. **Conclusion/Perspective:** The Girls Soar initiative is a promising practice which uses a comprehensive approach, gender lens, and community development principles to mobilize practitioners around a specific issue.

Reactivity to Accelerometer Measurement of Children and Adolescents

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Purpose: Awareness of being monitored can influence participants' habitual physical activity (PA) behavior. This reactivity effect may threaten the validity of PA assessment. Reports on reactivity when measuring PA of youth have been inconsistent. The aim of this study was to investigate whether PA outcomes measured by accelerometer devices differ from measurement day to measurement day, and whether the day of the week and the day on which measurement started influence these differences. **Methods:** Accelerometer data of children and adolescents (n=2081) pooled from eight studies in Switzerland with at least 10 hours of daily valid recording were investigated for effects of measurement day, day of the week, and start day using mixed linear regression. **Results:** The first measurement day was the most active day. Cpm were significantly higher than on the second to the sixth day, but not on the seventh day. Differences in the age-adjusted means between the first and consecutive days ranged from 23 to 45 cpm (3.6-7.1%). In pre-school children, the differences almost reached 10%. The start day significantly influenced PA outcome measures. **Conclusions:** Reactivity to accelerometer measurement of PA is likely to be present to an extent of about 5% on the first day and may introduce a relevant bias to accelerometer-based studies. In pre-school children, effects are larger than in elementary and secondary school children. As the day of the week and the start day significantly influence PA estimates, researchers should plan for a familiarization day in school-age children and randomly assign start days. **Funding:** This study was supported by funding from the Federal Sports Commission of Switzerland.

Pilot Study of a Pedometer Challenge Intervention to Promote Physical Activity Amongst School Teachers: TEACH-FIT

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Objective: The aim of this study was to pilot a pedometer challenge intervention amongst teachers from schools registered with the Woolworths Making the Difference Educational Programme – a public-private sector initiative to promote healthy lifestyles in primary schools. **Methods:** Ten teachers (26-54 years, four male, six female) were recruited from three schools to participate in a six-week pedometer challenge intervention. Clinical and anthropometric measures, and fitness were assessed pre- and post-intervention. Participants received an OMRON pedometer at the start of the intervention, along with weekly step targets; individual weekly step counts were submitted to the intervention team. Participants completed a post-intervention questionnaire. **Results:** Participants completed an average of 10220 steps per day over the six-week period. Significant improvements were detected in total cholesterol (p<0.05); chest (p<0.01), waist (p<0.0001) and hip (p<0.001) circumferences; waist-to-hip ratio (p<0.05); and cardiorespiratory fitness (p<0.05). Questionnaire responses indicated that the programme was well

received, and participants all believed it helped to encourage the promotion of physical activity in their school. Self-reported changes included improved energy levels and increased efforts to improve their diet. Motivational factors included support from colleagues, family and the intervention team. Participants were extremely positive about the pedometer device and most indicated their intention to continue wearing it. **Conclusion:** These findings indicated that a pedometer challenge can be a feasible intervention to promote physical activity amongst teachers, which can positively impact the school environment. Furthermore, considering teachers' receptiveness to pedometers, continued use of this device could enhance the sustainability of their behaviour change efforts.

Family Fun, Fitness, and Nutrition Night (FFFNN)

Len Dunkley

Program Objective: The Healthy Initiatives Project is offered Allandale Heights PS via the Family Fun, Fitness and Nutrition Night (FFFNN). Each year, schools are invited to prioritize one health topic, according to the Healthy Schools Framework (Ministry of Health Promotion / Ministry of Education, 2005): Healthy Eating, Active Living, Personal Safety and Injury Prevention, Bully Prevention, and Mental Wellness. The goal of the Family Fun, Fitness and Nutrition Night is to create a sustainable healthy school environment; one that benefits from supportive resources, shares successful models, and promotes high-yield strategies in both family activity and healthy eating. Students and their immediate families come together at school for an evening of activities (6:30-8pm). This event is supported by the Simcoe Muskoka District Health Unit and School Volunteers (Healthy Active Schools Initiative). **Findings/Outcomes:** To engage families in physical activity with other members of the school community together and to model healthy snacks and lunches prepared by students themselves for the next school day. **Conclusion—Action Plan:** To host three to four FFFNN during the school year to students in grades 2-6. Participants are engaged in cooperative games (warm-ups, stretching, cardiovascular, engaging activities) in the school's gymnasium. Simultaneously, students create and prepare their lunches for the next school day with assistance from our Eat Well to Excel Volunteers (parents).

Health Inequalities In Sedentary Behaviour Among Schoolchildren Across Europe: Baseline Results Of The EU "EPODE For The Promotion Of Health Equity" (EPHE) Project

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Objectives: The reduction of health inequalities is a top priority of the public health agendas in Europe. The EPHE project, co-funded by the European Commission, aims to analyse the added value of the community-based approach using the EPODE methodology for the reduction of socioeconomic inequalities in health. This project focuses on four energy balance-related behaviours (EBRB) including sedentary behavior with its determinants. This study aims to identify socioeconomic differences related to EBRB among

children in seven European countries (Belgium, Bulgaria, France, Greece, Portugal, Romania, The Netherlands). **Methods:** A total of 1098 children aged 6-8 years and their parents, from different SES backgrounds, were recruited through schools. To measure the EBRB of the children and their determinants, a questionnaire was completed by the parents. **Results:** High screen exposure and intake of sugar sweetened beverages were particularly problematic behaviours in children with relatively low SES. Parental practices and physical factors understood to determine these behaviours were significantly more favourable in families with high SES. **Conclusions:** Our findings confirm the existence of health inequalities related to the EPHE themes in the participant countries as well as their respective determinants. These results will guide the EPHE interventions, aimed at reducing health inequalities and will also serve as the baseline measurements to evaluate the effectiveness of these interventions. All of the 7 Community-Based Programmes will implement interventions to enhance physical activity and thus reduce screen time exposure.

Parental Health-Related Behaviours and Physical Fitness in Girls and Boys

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Objective: Physical activity (PA) and physical fitness (PF) are known to be closely connected. Various environmental and biological factors have been shown to influence children's PA with parents being among strong determinants of their children's PA behaviour. However, little is known about parental influence on PF in children. Therefore, the purpose of this study was to identify the influence of parental health-related behaviours and attitudes on PF in boys and girls. **Methods:** Baseline data of 1875 primary school children (7.1±0.6 years; 50% male) were included in the analyses. Lateral jumping performance was used as a proxy for whole body coordination and 6 min run for cardiovascular fitness. Parental health-related behaviours, attitudes and socio-demographic variables were assessed via parental questionnaire. Regression analyses, adjusting for age and BMI, were performed separately for boys and girls. **Results:** The final models of the regression analyses showed that children's age and BMI are significantly related to PF. Mother's ability to encourage their children to be active is significantly associated with boys' coordination and cardiovascular fitness, and girls' coordination. Mother's PA affects PF in boys, not in girls. Maternal smoking has a significantly negative effect on both boys' and girls' cardiovascular fitness. **Conclusion:** This study shows that parental health-related behaviours and ability to encourage their children to be active affects children's PF. Influencing factors, however, differ in girls and boys, and mothers seem especially influential.

Ethnicity and Sex as Determinants of Activity in School and Home Time

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Objectives: To examine the associations between sex, ethnicity, body mass index (BMI) z-score and physical activity in a large group of primary school-aged children participating in a two-year randomized controlled trial promoting active play. **Methods:** Sixteen low-mid socioeconomic status primary schools were randomized to control or intervention in two regions of New Zealand to determine if redevelopment of school play environments increases physical activity and decreases excessive weight gain and bullying. The following measures were obtained: height, weight and waist circumference and physical activity for 24-hours over 9 days using ActiGraph GT3X accelerometers. Specific time periods of interest (6am-9pm, recess, lunch and outside school times) were analyzed separately. **Results:** 840 children were measured at baseline (mean age 7.9 years (SD 1.1), 50.1% girls). 19.8% of the children were Māori, 13.7% Pacific, 8.8% Asian and the remainder (57.7%) New Zealand European and other. Marked ($P < 0.001$) ethnic differences in BMI z-score were apparent, ranging from 0.29 (SD 1.25) in Asian children to 1.37 (1.05) in Pacific. Mean (SD) counts per minute during the day (6am-9pm), recess, lunch and afternoon home times were 621 (158), 1162 (640), 1167 (420) and 672 (262) respectively. Boys were more active at all time periods ($P = 0.02$) except afternoon home time. Asian children were less active overall ($P < 0.001$) but not within the school environment. **Conclusions:** Despite marked differences in body size, few differences in activity exist within school time and Asian children appear to be less active outside school. **Funding:** Health Research Council of New Zealand, Department of Medicine Departmental Award (University of Otago), Lottery Health Research New Zealand PhD Scholarship and Claude McCarthy Fellowship (Universities New Zealand).

Sedentary Behaviour Patterns in 12-14 Year Old Adolescents

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Objective: Adolescence is identified as a period when physical activity decreases and sedentary behaviour increases. Prolonged periods spent sitting are a health risk. Little is known regards patterns of sedentary behaviour in adolescents, specifically whether there are key times during the day when young people are particularly susceptible to prolonged sitting. This study aimed to describe the number, duration and pattern of bouts of sitting time of Northern Irish secondary school children during a typical school day. **Methods:** 46 adolescents (31F) aged 12-14 years wore an ActivPAL™ accelerometer for 72h, including 2 consecutive "school days". A bout of sitting was defined as a period sitting for the duration of one, 15 second epoch. Data were divided into 4 periods; 1) pre-school (08:00h-09:10h); 2) school (09:10-15:30h), 3) post-school (15:30-16:30) and 4) after school (16:30-22:00). Mean duration of sitting time (mins) was described across time periods and number of bouts of sitting time <10mins; 10-29mins and 30-59mins. **Results:** Participants were sedentary on 56±14 occasions during the day. The majority of these bouts were <10mins, 12±3 bouts were 10-29mins

and 3±1 bouts were 30-59mins. The average duration of a sitting bout was 16.1±9.2mins (across the day) and for each period (1) 22.4±20.2 (2) 11.9±3.8 (3) 10.7±8.5 (4) 10.3 ±7.3mins. Bouts of sitting time during pre-school were significantly ($P<0.05$) longer than after school. **Conclusion:** This data suggest that adolescents may be susceptible to long periods of sedentary time before school, but that school time does not appear encourage particularly long periods of sitting time.

Administering the Canadian Assessment of Physical Literacy (CAPL) Tool to Measure Physical Activity Behaviours and Health Knowledge in 11 & 12 Year Old Children

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Introduction: The CAPL was created by the Children's Hospital of Eastern Ontario Research Institute to measure the four domains of physical literacy; Physical Activity, Physical Fitness, Motor Skills and Awareness, Knowledge & Understanding (Tremblay and Lloyd, 2010). **Objective:** This study administered the CAPL questionnaire to understand the behaviors, awareness, and knowledge about physical activity in middle school children. **Methods:** With the guidance and supervision of an undergraduate researcher, 222 sixth grade children from 79 Calgary communities completed the CAPL questionnaire over a four week period. Participants were informed that the survey contained no right or wrong answers. No time limit was given for participants to complete the survey. **Results/Discussion:** The data presented on this poster regarding physical activity behaviors and competencies demonstrates that most participants felt being physically active was very important. They perceived themselves to be at the same rate of physical activity and sports skills as other children their age. Participants also stated they needed to be a little more active than they currently are. With respect to the fitness knowledge of the 11-12 year old participants, fifty-five percent of children correctly identified the meaning of cardio respiratory fitness. Seventy-six percent know that the Canadian standard for moderate to vigorous physical activity for children and youth is 60 minutes per day. Eighty-six percent of participants know that children and youth should limit sedentary behaviors to less than two hours per day. **Funding:** The researchers acknowledge the financial support received from the Canadian Academy for Healthier Generations and Cardel Place in Calgary, Canada. We also acknowledge the ongoing support of the Foundations for the Future Charter School District.

Exhausted From Sitting: Incorporating Physical Activity to Vitalize Student Learning Behaviors

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Objective: To address the gap in the literature addressing teachers' observations of the effects and benefits of students' physical activities in the classroom, the following research question was explored in a masters level course, "What factors perpetuate teachers' use of classroom physical activity?" **Methods:** Two teachers known to use physical activity in their classrooms were interviewed,

and analysis was performed using constructivist grounded theory method. **Results:** Interview findings suggest of six key categories of common teacher personal beliefs and school environmental factors. Specifically, these were (1) a willingness and desire to further knowledge gains; (2) a belief in the ability to create positive change in the classroom; (3) the personal practice and observation that movement changes students' moods and behaviours; (4) a belief that movement is natural; (5) a strong belief in knowing ones' students; and (6) school environmental factors such as school and class size. Teachers report that following movement they look for a change in mood, increased engagement and participation, improved ability to focus, and increased alertness. Teachers acknowledge that with higher heart rates, students perform better and the effects are longer lasting. **Conclusion:** While two interviews cannot be generalized to a larger population, the research question will be further studied with the intent of engaging teachers who provide daily physical activity opportunities in further interviews. Teachers who find value in such opportunities may have views and strategies that could prove beneficial to their peers in similar environments.

Associations Between School-Travel Physical Activity and Neighbourhood Type in Metro Vancouver Adolescents

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Objective: To explore the interaction of neighbourhood type and travel mode on minutes of moderate-to-vigorous physical activity (MVPA) from school-travel. **Methods:** During Fall 2011 and 2012, we measured 231 adolescents (14.4±0.8 y) from urban and suburban neighbourhoods in Metro Vancouver. Adolescents self-reported travel mode to/from school, which was recoded as mainly active (walk/cycle; ≥8trips/week) or passive (transit/bus ≥8trips/week; car ≥5trips/week). MVPA was measured by accelerometry (≥1d 600 min·d⁻¹), and school-travel MVPA was calculated based on minutes accrued during the hour before and after school. We calculated residential Walk Scores® for all participants. Analysis of co-variance was used to assess the combined role of neighbourhood type and travel mode on school-travel MVPA. **Results:** 75 adolescents (58% girls) provided valid travel and accelerometer data. Walk Scores® were greater in the urban neighbourhood than the suburban neighbourhood (93.4±9.7 vs. 41.1±17.9); 57% (n=8) of urban adolescents reported using active modes, compared to 40% (n=24) of suburban adolescents. Urban adolescents accumulated more school-travel MVPA than suburban adolescents in both active (26.9±9.1 vs. 17.3±11.0 min) and passive (20.6±5.0 vs. 7.4±4.8 min) travel groups. We found significant main effects for urban neighbourhood type ($F=9.66$, $p<0.01$) and active travel ($F=10.95$, $p<0.01$); there was no interaction between neighbourhood type and mode. **Conclusion:** Predictably, active travelers engaged in greater MVPA during school-travel hours; however, living in an urban neighbourhood also appeared to also be associated with greater minutes of school-travel MVPA, irrespective of travel mode.

Further investigation into the influence of neighbourhood type on school-travel MVPA is warranted. **Funding:** Canadian Cancer Society (227967), Heart and Stroke Foundation (G-13-0002906), and Canadian Institutes of Health Research (POH-127210).

Predicting Active Travel to School: The role of Preference and Parental Encouragement

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Objective: To examine the role of parental encouragement and mode preference on active travel to school (walking, cycling) in adolescents. **Methods:** In Fall 2012, 49 students (13.8±0.6yrs) in Vancouver participated in a school-based study. Self-reported travel mode to/from school was recoded as mainly walking (≥8trips/week), transit (≥8trips/week), or car (≥5trips/week). One cyclist was grouped with walkers. Students self-reported their mode preference and parental encouragement for walking. Distance to school was calculated using Geographic Information Systems (ArcGIS 10.1). We used logistic regression analyses to predict walking to school (Stata v.10). **Results:** We included 46 students (61% male) in analyses. More than half of students walked (57%, n=26), 30% used transit (n=14), and 15% travelled by car (n=7). Compared with students who travelled by car or transit, walkers lived closer to school (1.0 km vs. 3.4 km; p<0.01). Among walkers, 92% preferred walking and 43% stated that their parents encouraged walking. Students who preferred walking were more likely to walk (p<0.01), independent of distance to school. Similarly, when students reported that their parents encouraged walking, they were more likely to walk (p<0.05), also independent of distance. Mode preference and parental encouragement were associated, indicating that students who perceived parental encouragement to walk also preferred walking. **Conclusion:** Notably, both parental encouragement and preferring walking appear to be important influences on adolescents' school travel mode, irrespective of distance to school. Parents have a role to play and should encourage adolescents' active travel to school where possible as a means to influence these positive behaviours. **Funding:** Heart and Stroke Foundation of Canada (G-13-0002906), and Canadian Institutes of Health Research (POH-127210).

Description of Physical Activity in Youth Participating in a Team Pentathlon

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Objective: Team Pentathlon (TP) is a school-based intervention program designed to increase physical activity (PA) among children. The aim of the study is to describe the physical activity level (frequency, duration, intensity and diversity) of Canadian youth engaged in TP.

Methods: The study considered 94, 5th and 6th grade students of both sexes who had completed TP. During eight weeks, students registered daily PA episodes completed outside physical education (PE) classes. Depending upon the type and intensity of the activity, a correction factor was applied to the duration of episode, 60 corrected minutes representing one Pentathlon Hour (PH). Students' PA participation considered number and duration of PA episodes, uncorrected weekly PA volume, average correction factor, activities reported and average number of weekly PHs. **Results:** Study shows that 91% of student be active (average higher than 2PHs/week) during TP. Results also suggest that sex differences reported in the literature were not present when students engaged in TP. However, boys and girls PA participation was different. Girls tend to practice longer, more frequently, but at a lower intensity than boys. Girls showed a preference for endurance activities, games and individual sports and artistic activities. Boys showed a preference for team sports and games and endurance activities. **Conclusion:** Students' PA is stimulated by a participation to TP. TP constitutes an efficient and practical tool for PE teachers to help their pupils meet active living requirements.

Sharing Dance in the Classroom

Joanna Gertler¹

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Program Objective: Canada's National Ballet School (NBS) wants to provide dance instruction to a broad audience, specifically, school-aged children. In creating instructional videos and making them available online for anyone to access, it is possible to engage more participants in learning how to dance. **Findings/Outcomes:** NBS applied for funding to create a website dedicated to sharing different dance routines. The sharingdance site (www.sharingdance.ca) was launched in 2011 and now contains seven routines, celebrating a variety of dance styles (e.g., Urban dance, Bollywood, Native and African-Caribbean). Each routine is choreographed by a Canadian dance artist, who in turn, selected a Canadian composer/musician. A Grade 8 teacher from the Toronto District School Board, has taught her students these routines and they have joined with NBS in performing them at various locations in Toronto. Ms Steer is not dance teacher but has been able to use the online materials to teach her students the routines. After the initial year's success her principal requested that the whole school learn routine. They have since participated in each dance performance alongside NBS community members. **Conclusion/Perspectives:** NBS is partnering with Physical Health and Education Canada (PHE) to develop appropriate dance curricula content on the site to be disseminated through their channels into schools across Canada. NBS has a two year grant to develop these resources in conjunction with PHE and the Toronto chapter of Big Brothers Big Sisters. This will form the initial iteration of a national resource for schools, communities and families in developing a love and passion for dance.

Predictors of Physical Activity During Physical Education Class in Mexican Elementary Students

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Objective: To explore the influence of environmental factors, specifically lesson context and teacher behaviour, on the physical activity (PA) levels of Mexican children during physical education (PE) class. **Methods:** Assessors rated the PA levels (lying, sitting, standing, walking, vigorous) of 236 grade 3-5 students, the lesson context (management, general knowledge, fitness knowledge, fitness, skill, play), and teacher behaviour (fitness promotion, demonstrating, instructing, observing, managing) using the System for Observing Fitness Instruction Time. **Results:** Multiple linear regressions with backward elimination were conducted separately for boys (n= 118) and girls (n=118). Boys (M=14.8 min, SD=6.7) spent more time than girls (M=12.6 min, SD=6.0) in moderate-to-vigorous physical activity (MVPA; $p<.01$). A model including lesson context and teacher behaviour variables explained 48% of the variance in MVPA for boys and 43% of the variance for girls. Play ($b= 1.13$, $p<.001$), skill ($b= .60$, $p<.001$), fitness ($b= .59$, $p<.001$), and fitness promotion ($b= -.37$, $p<.01$) significantly predicted MVPA in boys. Fitness ($b= .89$, $p<.001$), play ($b= .80$, $p<.01$), skill ($b= .66$, $p<.01$), and fitness knowledge ($b= .25$, $p<.01$) significantly predicted MVPA in girls. **Conclusion:** Lesson context had the greatest influence on PA levels in both boys and girls during PE class. Play, skill practice, and fitness seemed particularly important for both sexes, however, the strength of their influence on each sex differs. Writers of PE curricula must take into account the differences that exist between the sexes when creating class curricula and forming class structure. **Funding:** Canadian Institutes for Health Research (CIHR) Institute of Population and Public Health and the Public Health Agency of Canada.

Physical Fitness of Grade Nine Students in the Region of Peel

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Objective: There is compelling evidence that physical fitness is associated with important health outcomes in children and youth in a dose response manner. This study provides the first ever local estimates of cardiorespiratory and musculoskeletal fitness among grade nine students in Canada. **Methods:** This was a cross-sectional health survey using a representative sample of grade 7 to 12 students (n=8,522) in the Region of Peel, Ontario. The fitness component included 1,316 grade 9 students from 23 secondary schools. Eligible students were instructed to perform four fitness tests: Leger 20 meter shuttle run test (cardiorespiratory fitness), hand grip strength test (muscular strength), sit and reach test (flexibility) and partial curl-up test (muscular endurance). Descriptive statistics for the latter measures and for body mass index are provided by sex, and comparisons are made with the 2007-2009 Canadian Health Measures Survey. **Results:** The results showed 34.7% of males and 48.0% of females fail to meet current standards of acceptable cardiorespiratory fitness, and 75.8% of all grade nine students' musculoskeletal fitness levels fall within a range that is associated with 'some' to 'considerable' health risks. Males on average had higher cardiorespiratory fitness, but perform less favourably in musculoskeletal fitness than females. **Conclusion:** This study provides the first comprehensive assessment of the fitness of grade nine students in a Canadian municipality. The results are particularly important given that low levels of fitness during adolescence tend

to persist into adulthood, and may result in accelerated chronic disease development and increased health and economic burden.

Physical Activity Patterns of Urban Affluent Preschool Children

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Objectives: 1) To assess physical activity pattern including indoor, outdoor activities of preschool children. 2) To examine association between physical activity and BMI. **Methods:** For this cross-sectional study, 722 parents of children 2-5 yrs of age were approached. Among these 415 mothers participated. Height and weight were measured and BMI was calculated. A questionnaire was used to obtain information on physical activity. **Results:** Distribution of children according to BMI percentiles was: > 95thile - 2-2.11 yrs 22.8%, 3-3.11 yrs -14.5%, 4-5 yrs - 9.5%; between 85th-95thile -- 2-2.11 yrs 20.9%, 3-3.11 yrs 17.8%, 4-5 yrs - 21.0% . More than one-third children watched TV daily for > 2 hours on weekdays, with an almost 50 % increase on holidays. Almost half the children ate while watching TV and 57.4% among these had a BMI > 95th percentile. BMI > 85th percentile was associated with: watching TV/playing computer games for > 2 hrs/week, use of personal/public transport to school, use of elevator. Older children tended to be more sedentary than younger children. **Conclusion:** Children should be encouraged to play outdoors for longer time at school and home. Time spent on watching TV and playing computer games should be reduced. Parents should be physically active and should be role models for their children.

Research Priorities for Child and Adolescent Physical Activity and Sedentary Behaviours: An International Perspective Using a Twin-Panel Delphi Procedure

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Background: The quantity and quality of studies in child and adolescent physical activity and sedentary behaviour have rapidly increased, but research directions are often pursued in a reactive and uncoordinated manner. **Aim:** To arrive at an international consensus on research priorities in the area of child and adolescent physical activity and sedentary behaviour. **Methods:** Two independent panels, each consisting of 12 experts, undertook three rounds of a Delphi methodology. The Delphi methodology required experts to anonymously answer questions put forward by the researchers with feedback provided between each round. **Results:** The primary outcome of the study was a ranked set of 29 research priorities that aimed to be applicable for the next 10 years. The top three ranked priorities were: developing effective and sustainable interventions to increase children's physical activity long-term; policy and/or environmental change and their influence on children's physical activity and sedentary behaviour; and prospective, longitudinal studies of the independent effects of physical activity and sedentary behaviour on health. **Conclusions:** These research priorities can help to guide decisions on future research directions.

The Impact of the Move More Training Programme on the Creation of a Whole Setting Physical Activity Policy in Childcare Centres in England

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Objective: To date, little is known about the physical activity (PA) environment within childcare centres (CCs) in England. Previous research indicates that evidence of a PA policy, i.e. written policy relating to active and inactive time, TV use, etc., positively influences PA in preschoolers. This study aimed to assess changes in the PA environment of CCs who received training on PA as part of the Move

More programme. **Methods:** After undertaking a one day training event on PA in the early years, participants completed PA audits of their CCs. The audit assessed indicators such as: implementation of a whole setting PA policy, whole setting PA provision, PA within the curriculum. CCs then created an action plan, i.e. developmental tasks to complete over the next six months to improve the PA environment, based on the results of their baseline audit. The audits were completed again six months later to assess changes made to the CCs as a result. **Results:** A total of 34 CCs completed both the baseline and follow-up audits. At baseline, no CCs indicated they had a written PA policy, however 30 CCs identified on their action plans they intended to develop a PA policy. At follow-up, 24 CCs (71%) indicated they had a whole setting PA policy. **Conclusion:** Most CCs that undertook a PA audit as part of Move More created a PA policy for their setting. This creation of a PA policy may help support the inclusion of more PA opportunities within these CCs. **Funding:** Eat Better, Move More was an initiative aimed at tackling obesity in Shropshire, England and was sponsored by Shropshire Public Health.

Standing Up Against Sitting Down: A Story of Knowledge Exchange, Partnerships, and Policy Development in the Kingston Ontario Region

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Program Objective: Kingston Frontenac, Lennox & Addington (KFL&A) Public Health, researchers at Queen's University, and early learning programs in Kingston, Ontario partnered to leverage local research findings as a starting point to build momentum on physical activity promotion and sedentary behaviour reduction in childcare settings. **Findings/outcomes:** We collaborated on research with parents and daycares, assessing physical activity and sedentary behaviour. From there, a Heart and Stroke Spark Advocacy Development Grant enabled us to formalize our partnership with early learning representatives and collaboratively develop a physical activity and sedentary behaviour policy for early learning programs in the Kingston area. A policy document was disseminated via a training session and early learning programs have had the opportunity for support with policy implementation from Queens University PHE/KIN students. **Conclusion/Perspectives:** This promising practice provides a unique example of a knowledge exchange partnership and the benefits it has provided in creating an environment that supports physical activity in early learning programs. **Funding:** Heart and Stroke Foundation.

Changes in Objectively Measured School Physical Activity and Sedentary Time During the Pilot Phase of the National Finnish Schools on the Move Programme

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Objective: This study investigated how school physical activity and sedentary time changed in students from grades 1–9 during the pilot phase of the Finnish Schools on the Move programme lasting two academic years. **Methods:** The data was collected in 2010–2012, and the study population consisted of 116 girls and 88 boys (aged 7–15 years) from six schools (two programme and one reference schools in grades 1–6, and the same setting in grades 7–9). Moderate-to-vigorous-intensity physical activity (MVPA) and sedentary time (ST) were measured objectively four times over the 1.5-year follow-up period using an ActiGraph accelerometer for seven consecutive days. Changes in MVPA and ST during school hours in different schools were evaluated. **Results:** Mean MVPA time during school hours was higher and ST lower in primary schools (grades 1–6) compared to secondary schools (grades 7–9) (MVPA 5.3 vs. 2.7 min/h, $p < 0.001$; ST 35.8 vs. 45.5 min/h, $p < 0.001$). Favourable changes were observed in one programme primary school, in which MVPA time during school hours increased from 4.5–6.6 min/h ($p = 0.005$) and ST decreased from 37.2–33.6 min/h ($p = 0.001$). In other schools, only non-significant changes in MVPA occurred, and ST increased 2.0–4.1 min/h during the follow-up period ($p < 0.001$). **Conclusion:** Changes in school MVPA time seemed to be positive in primary school. However, school sedentary time increased in five of the six schools during the 1.5-year follow-up. Aside to increasing MVPA time in school interventions, it would also be important to decrease sedentary time during the school day.

“Once Engaged; They Excel!”—Promising Practices From the British Columbia After School Sport and Arts Initiative

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Program Objective: The After School Sport and Arts Initiative (ASSAI) is a partnership for the provision of fun, accessible, and high-quality after school sport and arts programming for students in grades K-8. ASSAI supports 14 school districts to develop and deliver programs for students who face barriers to participation (e.g., financial, transportation, cultural, or behavioural barriers). ASSAI’s sport programs teach fundamental movement skills with the objective that participants will gain confidence and competence to participate in sport and physical activity. At the same time, participants develop connections to their schools, peers, and program leaders. **Findings:** Based on our experience in a wide cross-section of British Columbia communities, ASSAI demonstrates promising practices for creating supportive after school physical activity environments, including a) Multi-year funding to allow communities to build programs over time; b) A full-time Community Engagement Liaison to provide ongoing support to program coordinators; c) Delivering programs through school districts to foster connections among students, families, and the school community; d) Addition of creative arts programming to attract a wider variety of students; and e) Including a “Person of Rapport” to develop trusting relationships with students. **Conclusion:** ASSAI focuses on students’ overall health and learning by providing opportunities for active and creative expression. ASSAI programs have engaged students who haven’t participated in sports and seen them grow to enjoy and look

forward to physical activity after school and beyond (e.g., in team sports, recess, and physical education). **Funding:** ASSAI is funded by the Province of British Columbia and delivered by DASH BC.

A Decade of Imagery Research With Young Athletes: Findings, Future Directions, and Practical Recommendations

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For over a decade our research team has been investigating the use of mental imagery by children and youth to improve sport performance and associated cognitions. We have published 9 journal articles and made 18 conference presentations, and as such feel it is time to provide a review of our findings. **Objectives:** The purpose of this presentation is to summarize our findings, as well as outline some directions for future research and provide practical recommendations for the use of imagery in youth sport. **Methods:** We have employed qualitative and quantitative approaches, including intervention studies. **Results:** We have demonstrated that young athletes employ imagery to help learn skills and strategies of play. They also use it to enhance their motivation and self-confidence. We have conducted a number of imagery interventions with both individual and team sport participants. These interventions have enhanced the learning of specific skills and increased younger athletes’ self- and collective-efficacy for performing skills. **Conclusions:** Imagery plays an important role in youth sport. Future research should examine whether imagery can have a positive influence on other cognitions essential in sport such as staying focused and being mentally tough. An issue in youth sport is maintaining the athlete’s motivation for sustained participation. Future research should consider the role imagery plays facilitating various forms of motivation and satisfying the basic psychological needs of athletes. Given our research, some of practical recommendations include having athletes employ imagery in a regular and structured manner, and having coaches responsible for conducting imagery interventions. **Funding:** Social Sciences and Humanities Research Council of Canada

Initial Success of the Sun Life Financial Youth Diabetes Education and Awareness Program

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Program Objectives: Prevalence of Type 2 diabetes mellitus (T2DM) is increasing among Canadian youth, and national surveillance has revealed ethnic minorities and Manitoban youth are disproportionately affected (Sellers et al., 2012). For youth, physical activity (PA), sedentary behaviors, and diet are important modifiable risk factors for T2DM requiring more attention (Huang et al., 2003). To help combat this trend members of the University of Winnipeg, Faculty of Kinesiology and several community partners developed the Sun Life Youth Diabetes Education and Awareness Program. With program goals of engaging youth and educating them about the relationship between PA, nutrition, and T2DM. **Program Design:** Over an eight week period, inner city youth attend 16 two

hour sessions with their peers. Sessions are divided between PA and in-class nutrition/education components. The PA component involves a variety of traditional sports and novel physical activities, and also includes fitness assessments. The nutrition/education component involves a snack program where participants are provided the opportunity to make their own healthy snacks and are educated about the benefits of nutrition, PA, and other concepts that relate to the prevention of T2DM. **Perspectives:** Initial response to this program has been extremely positive from participants, schools, and the local community. Local community organizations have stepped forward to support the program through donations of incentives for participants. Attendance rates have been in the 80th percentile, participants are gaining knowledge about the benefits of PA, and they are all being introduced to new forms of PA while increasing their amount of weekly PA. **Funding:** Sun Life Financial Canada.

Competence for the Future—Handbook for Promoting Mobility in Children Through Play in Their Natural Environment

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Objective: Competence for the Future is a handbook aimed at providing the reader with ideas for promoting mobility in children up to ten years old through play in their natural environment. The primary purpose of the handbook is to facilitate the development of mobility in children. It is intended for those who wish to take full advantage of the child's natural environment to encourage physical exercise. **Methods:** The ideas in the handbook build on results from the MOT 4–6 test of physical development (2003–2007). Testing took place in the fall at the beginning of the school year and again during spring time. Children who scored low on the first trial were provided with increased physical training just outdoor in natural environment. The value of increased mobility, and the value of play and outdoor activity are all accentuated as crucial factors in mobility development. **Results:** All results demonstrate that children who received additional training showed significant improvement on the MOT 4–6. The Directorate of Health has started to use the book to promote kindergarten with materials from the book who focus on health and motor development. **Conclusion:** These results suggest that the author's ideology regarding the means by which to promote mobility and encourage physical development with the children receiving additional training proved successful. It may also be concluded that the training environment as described in the program produces positive results.

Contribution of After-School MVPA to Overall MVPA in a Sample of Irish School-Children

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Objective: The after-school period has been highlighted as a context where increases in moderate-to-vigorous physical activity (MVPA) can be affected. The aim of this analysis was to investigate time spent in MVPA in the hour immediately after school in a sample of Irish primary school children (6–12 years old) and how this contributes to total daily MVPA. **Methods:** As part of the baseline assessment

of a whole-school physical activity promotion initiative, data were collected on 123 children (waking hours; 7 days) using Actigraph GT3X with the regular filter. Data were reintegrated to a 15 sec epoch and the Evenson cut-point applied to estimate mean daily MVPA. As all schools ended at 3pm, MVPA from 3–4pm was also isolated. General linear models explored sex differences in time spent in MVPA controlling for age, school and BMI. **Results:** Valid data were available for 54 boys and 58 girls (mean age 9.2, mean BMI 18.2). Boys and girls spent 5.0 min and 4.6 min in MVPA, respectively, between 3–4pm. Boys spent 27.5 min and girls spent 28.2 min sedentary between 3–4pm. MVPA in that one hour contributed 9.5% in boys and 10.3% in girls to total weekday MVPA. No sex, school, BMI or age effects were seen in either analysis ($p > 0.05$). **Conclusion:** Given that the children in this sample spent ~50% of the after-school hour in sedentary activities this period appears to be a prime target for intervention. The promotion of active commuting practices and/or physical active co-curricular activities are warranted.

Integrating Physical Activity With Learning Helps Students Remain Focused and Adopt Healthy Habits

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Objective: Students worldwide need physical activity throughout the day: before, during and after school. Incorporating physical activity into the learning process helps differentiate instruction and prepare students' brains for learning. Active learning interventions are focused on the need to keep students active while in the classroom, the gymnasium, the sports field, at home and in the community. Fizika's innovative, evidence-based approach prepares educators as change agents to apply educational neuroscience, as well as health and physical literacy in their school setting. Examples of active learning implementation in schools in Pennsylvania and England will be showcased during the workshop. **Methods:** The poster will provide examples of how physical activity is being used in schools in the US and the UK to engage students in learning. The poster will illustrate successful examples how kids are moving—while learning—at home and at school. Testimonials from schools in the UK and Pennsylvania that are implementing active learning through physical activity and physical literacy will be shown. The presenter will lead discussions to engage the visitors to the poster session in a dialogue on how to incorporate kids' natural and necessary desires to move and be active in a constructive way while in school. **Results:** Fizika Group partnered with Harrisburg University of Science and Technology to create a first of its kind on-line graduate level course based on Fizika's approach to active learning. For more information on the course, visit www.harrisburgu.edu/activelearning.

Space for Play? A Qualitative Study Exploring How the Physical and Social Environment Influence Scottish Children's Physical Activity and Active Play Behaviour

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Introduction: The health benefits for children of participating in frequent physical activity (PA) and active play have been well documented. Children's overall PA level and time spent outdoors engaging in active play have been declining across Europe over recent decades. Most research examining the reasons for this have been based on quantitative data, and the relatively small number of qualitative studies conducted to date have mainly focused on the accounts of parents and teachers rather than direct insights from children. The aim of this study is to explore children's view of how their physical and social environment influences physical activity and active play behavior. **Methods:** The participants will be selected from a subsample of the longitudinal 'Growing Up in Scotland' (GUS) study. The study will involve boys and girls between the ages of 10 and 12 years from different socioeconomic backgrounds and a mix of urban and rural surroundings. The study proposes to employ a range of innovative methods that will generate rich data such as drawing, photovoice, and go-along interviews. **Results:** Analysis of the results will involve the participants directly in choosing which drawings and photos they wish to discuss during in-depth interviews and focus groups. **Conclusions:** The primary purpose of my study will be to create a greater awareness of children's views of how the social and physical environment can encourage or discourage physical activity. Findings will aid the development of user tailored interventions to support higher levels of physical activity in children.

Winnipeg Community Sport Policy: Early Years, Physical Literacy, and the Canadian Sport for Life Model

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Program Objective: To support the use of the Winnipeg Community Sport Policy (WCSP) as a tool to bring together various sectors in creating physically literate children in Winnipeg, particularly in vulnerable communities. The early years is crucial for developing physically literate children by setting a strong foundation for good health, sport and physical activity participation as they move through the seven stages of the Canadian Sport for Life model. **Outcome:** Six Winnipeg organizations from sport, recreation, education, and health collaborated to develop the WCSP. The WCSP Access and Engagement sub-working group identified barriers to ensure all children have the opportunity to participate in sport and physical activity. Identified opportunities for collaboration between early childhood development professionals, education, health, research, sport, and physical activity have been explored to align and coordinate efforts, using a focused approach to address inequities in physical activity opportunities. **Conclusions:** The Winnipeg Community Sport Policy has acted as a catalyst using a collective impact approach to further the discussion on creating physically literate children. Going forward, this will move us closer towards closing the health equity gap in Winnipeg, ensuring all people reach their full health potential.

Objectively Measured Physical Activity of Infants, Toddlers, and Preschool-Aged Children Using Accelerometry

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Objective: To describe physical activity (PA) levels of infants, toddlers, and preschoolers using accelerometry and to determine if they meet the Canadian physical activity guidelines for this age group. **Methods:** Children aged four months to five years (n = 54) recruited through a primary care practice based research network in Canada wore Actical accelerometers for seven consecutive days. Data were collected in two-second epochs and participants with four or more valid days were included in the analysis. Moderate to vigorous PA (MVPA), light PA (LPA), and sedentary activity (SA) were calculated using published cut-points. The mean minutes per day (min/d) of MVPA, LPA, and SA were reported by age group (<18 months, and ≥18 months), and sex. **Results:** Children 18 months of age and older (n=31) accumulated a mean (95% CI) of 35 (26-45) min/d of MVPA, 208 (194-221) min/d of LPA, and 390 (370-410) min/d of SA. Children under 18 months (n=23) accumulated a mean (95% CI) of 4 (3-6) min/d of MVPA, 94 (71-116) min/d of LPA and 452 (426-477) min/d of SA. Ninety-two percent of children 18 months to 4 years of age (n=26) and 17 percent of children under 18 months met the Canadian PA guidelines for children aged 0-4 of 180 min of total daily PA. There were no differences by sex (p>0.5). **Conclusion:** Children over 18 months are meeting Canadian PA guidelines. While children under 18 months appeared relatively inactive, further research is necessary to validate accelerometer-based PA cut-points in this age group. **Funding:** Funding to support TARGeT Kids! is from multiple sources including the Canadian Institutes for Health Research (CIHR), namely the Institute of Human Development, Child and Youth Health (IHDCYH) and the Institute of Nutrition, Metabolism and Diabetes (INMD), as well as, the St. Michael's Hospital Foundation and the Sickkids Foundation. Funding agencies had no role in the design, collection, analyses or interpretation of the results of this study or in the preparation, review, or approval of the manuscript.

Physical Activity, Screen Time, and Self-Rated Health and Mental Health in Canadian Adolescents

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Objective: Self-rated health (SRH) is a common measure of health-related quality of life (HRQL) in adults, positively associated with physical activity (PA) levels. Less is known about SRH in youth, and links to sedentary behaviour are only recently explored. The aim was to examine associations of PA and screen time with SRH and self-rated mental health (SRMH) in Canadian adolescents. **Methods:** Cross-sectional data from the 2009-2010 Canadian Community Health Survey included 8141 participants aged 12-17 years, representing 1,885,905 Canadian adolescents. A sub-sample of 1575 participants had screen time data. Associations of self-reported PA and screen time to SRH and SRMH were assessed by Chi Square and multivariate logistic regression controlling for age, sex, weight status, smoking, and highest household education. **Results:** Overall, 71% and 78% of adolescents reported Excellent/Very Good SRH and SRMH, respectively. About 49% were classified as Active (≥ 3 kcal/kg/d), while over 66% exceeded screen time guidelines of 2 hrs/day. Excellent/Very Good SRH was reported by 77% of active vs. 65% of inactive adolescents, and 77% of those meeting vs. 69% of those exceeding screen time guidelines ($p < 0.001$). Inactive adolescents and those exceeding 2 hrs/day screen time had significantly higher odds of sub-optimal SRH (OR(95%CI) 1.73(1.72, 1.75) and 1.44(1.42, 1.47)) compared to their active and lower screen time peers. Associations with SRMH were weaker, but also significant. **Conclusion:** PA and screen time are positively and inversely, respectively, associated with health perceptions in Canadian adolescents. PA and sedentary behaviour interventions aimed at teens should take into account HRQL in addition to biomedical outcomes.

Child and Parent Perceptions of Physical Activity and Family Time

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Objectives: To explore child and parent perceptions of, and participation in physical activities (PA), to better understand family activity. **Methods:** A cross-sectional, mixed-methods study of children (8-14 yo) enrolled in YMCA summer day camp. Participants were recruited from three YMCAs: urban (n=90), suburban (n=26, children only), and rural (n=51). Children completed interviewer-administered surveys and parents completed self-report questionnaires, designed to assess PA patterns in families and quantity of time families spend in PA together. **Results:** Parents (n=62, urban and rural) reported being physically active with their children on 3.5 ± 1.6 days/week, mostly during weekends and evenings. According to parent reports, the most frequent parent-child activity was TV viewing (70%), the most frequent parent PAs were individual sports (88%, running, swimming), and the most frequent child PAs were walking or running (74%) or team sports (60%). Children frequently reported playing sports or tag with parents and/or siblings, and doing sedentary activities (boardgames, videogames, TV). Rural children reported significantly fewer hours/day playing videogames than urban and suburban children ($p < 0.01$). **Conclusions:** When asked about family time, parents reported sedentary activities more frequently than PAs. Children from rural sites reported lower videogame use, but did not report higher levels of PA. Parents reported

to enjoy individualized sports most frequently, and felt that their children also favored these activities. However, child reports of their favorite summer camp activities included more social and interactive activities. Family activities that incorporate more social and child-friendly activities could potentially increase the amount of time families spend in activity together.

The Results of Daily Physical Education on the BMI of African American Middle School Aged Youth: A Longitudinal Analysis

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Objective: The objective of the present study was to examine the impact of 45 minutes of daily physical education on the body composition of middle school aged youth. **Methods:** An analysis of variance (ANOVA) mixed effect linear model was used to evaluate the effectiveness of 45 minutes daily physical education on the body composition among youth in grades 6th-8th attending Legacy Charter School, a Title I school in the southeastern US. Gain scores (final post-test assessment in May 2013 - original pre-test assessment in September 2010) were calculated and analyzed for significance and for the interaction between school and time was estimated for each outcome. Each analysis was adjusted by age to help control for baseline differences. A Title I control school who did not provide daily physical education was identified and utilized as a comparison. **Results:** BMI number was plotted on the CDC BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. The growth charts show the weight status categories used with children and teens (underweight, healthy weight, overweight, and obese). For control middle school students the BMI was close to **2 times greater** (2.80 vs. 1.64; $p < .05$) compared to Legacy Charter middle school students from 2010-2013. Similarly, control middle school students observed a **5 percentile point increase** in body composition ($p < .05$). **Conclusions:** Providing 45 minutes of daily physical education lead to reductions in BMI and percentiles among Legacy Charter middle school youth. Funding: Funding was provided by Campbell Young Leaders Foundation.

Conducting Sharing Circles: Perspectives From Indigenous Student Trainees

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Background: Awareness surrounding the impact research has on Aboriginal trainees has been an understudied area. The knowledge gained for this presentation comes from research trainee's who have conducted sharing circles as part of a larger multi-year Canadian Institutes of Health Research project that is examining the impact of physical activity, sport and recreation on positive youth development in Aboriginal communities. **Objective:** There is a clear dearth of knowledge surrounding the use of Aboriginal research trainees in large research projects and the impact such research has on them.

This presentation attempts to close these gaps. The sub-purpose of this presentation is to explore the process by which three Aboriginal research trainees went about recruiting, preparing and facilitating sharing circles across Canada related to positive youth development and physical activity & recreation and the impact this research has had on them. **Methods:** Over the course of 12 months, 13 sharing circles were conducted in (eight) urban and (five) rural communities across the country, which included over 200 Aboriginal youth participants. **Results:** The researcher trainee's share their experiences throughout the research process, the impact it has had on them as individuals and students. They also discuss best practices for conducting and facilitating sharing circles and working with Aboriginal communities. **Conclusion:** The knowledge gained in this paper may be useful for other researchers and research teams in not only how to conduct sharing circles in Aboriginal communities, but also how to increase community capacity through the use of research trainees. **Funding:** CIHR Institute of Aboriginal Peoples' Health (IAPH) and Health Canada – First Nations and Inuit Health Branch (FNIHB).

Trajectories of Objectively Measured Sedentary Behaviour Among Secondary Students in Canada in the Context of a Province-Wide Physical Education Policy: A Longitudinal Analysis

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Objective: Higher levels of sedentary behaviour have been linked to childhood obesity. In 2008, Manitoba introduced a province-wide policy mandating physical education (PE) each year in grades 9 through 12 for the first time in Canada. The objective of this study was to examine the longitudinal changes in and the factors associated with the sedentary behaviour trajectories of adolescents in Manitoba during their tenure as secondary school students in the context of this PE policy. **Methods:** Using a time-series design, 723 students from 32 secondary schools in Manitoba were recruited prior to policy implementation (T_0) and were followed-up until grade 12 (T_1 to T_3). At each time point, students' mean daily minutes of sedentary behaviour were measured by accelerometers and student factors were self-reported. Growth curve models will be used to examine the trajectories of sedentary behaviour and to determine the influence of student factors, including demographics, physical activity levels, and the social environment. **Results:** At baseline, students' mean daily sedentary behaviour totaled 9.25 hours. Three years after the policy was implemented, the mean daily sedentary behaviour totaled 8.86 hours. The percent decrease from baseline was greater among girls than boys (7.0% versus 1.4%) and urban than rural students (7.7% versus 2.3%). Full results from the growth models overall and by important student factors will be presented. **Conclusions:** Given this is one of the few studies internationally to examine the trajectories of adolescent sedentary behaviour, results will provide important evidence to better understand changes in sedentary behaviours among this population.

Parental Influence on the Physical Activity Behavior of School-Age Children in a Socio-Economically Diverse Community

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Objective: To evaluate the interrelationships among parental influence (encouragement, involvement, facilitation, role modeling), perceived competence, attraction to physical activity, and the physical activity behavior of children ages 8-11 in a socio-economically diverse community. The theoretical framework for this study is based on a modification of Welk's Youth Physical Activity Promotion Model. **Methods:** A cross-sectional study was conducted of 136 children (3rd/4th graders) attending an elementary school in Virginia (US) with a majority-minority student population. Students were administered a survey during the school day to assess level of physical activity, attraction to physical activity, perceived athletic competence, and parental influence. Additional data regarding these variables, demographic characteristics, constraints to and benefits of youth physical activity participation (including perceptions of opportunities, safety, built environment, active transportation) were collected during a parent focus group. **Results:** A series of Pearson Product Moment Correlations indicated significant positive and direct relationships among parental influence and children's physical activity, attraction to physical activity and competence. Further, the relationship of parental influence and physical activity behavior was found to be indirectly mediated by perceived competence and attraction to physical activity. A multiple regression analysis indicated the high predictive ability of the model. **Conclusion:** Parental influence is key to a child's perceived athletic competence, attraction to physical activity, and level of physical activity participation. The modified-YPAP model appears to be a valid framework for the study of socio-economically and ethnically diverse populations. Further, participants appear to benefit from a collaborative approach to overcoming built environment and parental safety concerns.

Early Years Educators: An Integral Piece of a Healthy Start for Children

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Introduction: Many early years children spend a large portion of their day in care centers. Thus, early years educators can influence the physical activity behaviours of young children. Eleven educators were trained in Healthy Start an initiative designed to teach educators ways to offer increased opportunities for physical activity for the children in their care. **Objectives:** To understand the experiences of educators in rural and urban childcare centers implementing Healthy Start. **Methods:** Eleven educators in rural and urban childcare centers implemented Healthy Start and participated in two semi structured interviews. **Results:** Two themes emerged from conversations with educators. The first theme identified the supports and challenges educators faced in the implementation of Healthy Start. Supports included (i) training and booster sessions; (ii) ease of understanding; variety of activities and (iii) ideas for activity indoors in small spaces. Challenges included (i) lack of preparation in educators' post-secondary training in physical activity, (ii) limited support from parents; (iii) finding time in the day for activity; and (iv) educators' own activity levels. The second theme discussed the impact of Healthy Start. Educators reported (i) being surprised that they could teach children motor skills; (ii) observing children become more skilled, and more involved in play (iii) designing healthy start play stations. **Conclusion:** The educators in this study enjoyed learning how to increase physical activity opportunities and reported seeing

increases in motor skill development and participation in physical activity. Early years educators play an integral role in promoting physical activity for the children in their care and they benefit greatly from training both on the job and in their post-secondary programs.

Community Service Learning: Increasing Our Understanding of the Challenges to Physical Activity for Children in Inner City Communities

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Objective: The purpose of this project was to offer Kinesiology undergraduate students a community service learning (CSL) experience in an inner city school. Over 90% of the students were of Aboriginal ancestry. Community Service-learning is a form of experiential education in which students engage in activities that address human and community needs. (Jacoby, *Service-Learning in Higher Education*, 1996). **Methods:** Fifteen Kinesiology students were placed in an inner city school for 4 months. Their goal was to increase physical activity opportunities for children before and during school hours. Students kept journals of all activities and were asked to leave a legacy at the school to increase physical activity for children. **Results:** These students learned firsthand about the barriers to activity and health that result from poverty, violence and instability. They also learned a great deal about resiliency. The students worked with teachers and community workers to teach the physical education curriculum and provide opportunities for activity before school, at recess and lunch. Students also experienced many aspects of Aboriginal culture and ways of knowing, which greatly influenced their experience. **Conclusion:** Students reported this experience to be “life changing” as they put the theory they learned in classes into practice in a challenging environment. This CSL experience will help students develop and offer programs in a wide range of communities.

The Multimove for Kids Project: Evaluation of Parents' Knowledge, Attitude, and Behavior With Regard to Varied and Adequate Movement Opportunities

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Objective: Recent studies report a general decline in physical activity and motor skills of young children in Flanders (Cardon & De Bourdeaudhuij, 2007). These studies acknowledge the need for specific (scientifically based) stimulating programs among young children (3 to 8 years). The project ‘Multimove for kids’, funded by the Flemish government, attempts to fulfill this need by offering a more varied and adequate sports program (based on 12 Fundamental-Motor-Skills). Hereby, parental involvement is a crucial factor for the effectiveness of such interventions (Riethmuller et al., 2009). Therefore the project aims to make parents aware of

the need for varied and adequate physical activity to obtain FMS. **Methods:** An awareness campaign (including flyer, info brochure, twice-weekly newsletter, website) was set up during the pilot project (Sept' 2012-June 2013). The awareness campaign was examined for its effectiveness of the positive effect on parents' knowledge, attitude, and behavior with regard to varied and adequate movement opportunities by a written questionnaire (pre-post-design) based on existing and validated questionnaires with specific additional information. **Results:** In total 2069 children's FMS were tested (intervention and control) and their parents, in total 1041 (intervention and control), completed the pre-questionnaire. The data processing of the post-questionnaire is still in progress. At the conference the results of the parents' awareness with regard to the MULTIMOVE project will be presented. We expect a positive effect on the knowledge of the intervention group. **Conclusion:** In the long run, this project will offer young children in Flanders a wide range of movement opportunities and a decent guidance. **References:** Cardon G, De Bourdeaudhuij I. Comparison of pedometer and accelerometer measures of physical activity in preschool children. *Pediatric Exercise Science*. 2007;19(2):205–214. Riethmuller AM, Jones RA, Okely AD. Efficacy of interventions to improve motor development in young children: a systematic review. *Pediatrics*. 2009;124(4):E782–E792.

Development of an Original Physical Education Test-Battery for the Evaluation of the Fundamental Motor Skills of Primary School Students

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Objectives: Quality daily school physical education (QDSPE) should enable children to learn and master fundamental motor skills (FMS). There is a lack of measurement tools for assessing students' FMS. Existing tests are designed for clinical purposes, have age limitations, and do not emphasize the pedagogical purposes of physical education (PE) learning scenarios. To develop and validate an original battery of 24 FMS tests for use among K-8 students. This is a stepping-stone of a longitudinal study to find out the impact of a higher level of FMS acquired through QDSPE on student's positive self-esteem, both crucial to the adoption of a physically active lifestyle. **Methods:** We have identified the FMS to be assessed, developed evaluation parameters for each skill by focusing on the performances' process (quality) rather than the product, and determined the testing procedures. A pilot study of the feasibility, reliability and validity of this battery began in September 2012 among 700 students in six New Brunswick schools, Canada. **Results:** Following our first visits, we modified the instructions for some tests to improve clarity and adjusted the administration time and procedures for some grade levels. PE teachers used the assessment forms and gave us a first opinion on the test parameters. Indices of inter-judge, intra-judge and test-retest reliability and validity of the tests will be presented at the summit. **Conclusion:** Initial results suggest the development of this battery is promising. PE teachers could use these tests as a standardized tool to assess the achievement of the learning outcomes.

Plasma Volume Decreases Affect Supramaximal Exercise Performance in Obese Adolescent Boys

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Objective: Plasma volume changes were identified as a potential factor affecting the exercise performances (aerobic and anaerobic) in normal-weight population. In obese adolescent boys Jabbour et al. (2013) observed a larger decrease in plasma volume after a supramaximal exercise compared to normal-weight adolescent males. Then, we suggest that this larger plasma volume decreases induced by a supramaximal exercise may affect anaerobic performances in obese individuals. This work examines the association between plasma volume changes and performance execution during supramaximal exercise test in obese (OB, n=20), overweight (OW, n=20) and normal-weight (NW, n=20) adolescent boys. **Methods:** 60 adolescents performed, on an ergometer cycle, an exercise sprint test consisting of 6 repetitions of 6 seconds at their peak power (determined prior to testing using a charge velocity test). **Results:** The power developed during the first repetition did not differ statistically among groups. However, important decreases in performance, determined as the percentage of the power variation from the first to the sixth repetition (ΔP_m %), were observed in OB and OW groups compared to NW one ($p < 0.01$). This ΔP_m was negatively associated to plasma volume decreases in response to sprint exercise test ($r = -0.85$, $p < 0.05$). **Conclusion:** Our results suggest that the plasma volume decreases after the exercise sprint test may limit the performance during repeated sprint exercise in obese and overweight adolescent boys. This is an important performance limiting factor in this population.

Socio-Cultural Differences of Physical Activity and Sedentary Behaviour in Youth Are Independent of the Environment

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Background: Socio-cultural factors influence physical activity and sedentary behaviour in youth. Whether the environment explains some of these differences in youth behaviour is not clear yet. **Methods:** We pooled data of 6- to 16-year-old children from eight seven studies with an accelerometer-based assessment of physical activity and sedentary behaviour, information of the socio-cultural background and geographical information system-data from the German and French speaking area of Switzerland. A regression model adjusted for sex, age, accelerometer type, season wearing time and for the study was used to test associations between total PA (TPA), moderate-to-vigorous PA (MVPA) and SB (both $\text{min} \cdot \text{d}^{-1}$) (dependent factor) with socio-demographic characteristics and neighbourhood attributes. **Results:** Children from the German

compared to the French region were more physically active and less sedentary (by about 10-15%), and had a more favourable environment with less street density, more green and wood space, less population density and a higher socio-economic neighbourhood score (all differences $p < 0.001$). Despite these differences in environment between the French and German part, differences in physical activity and sedentary behaviour among the language regions could not be explained by the environment nor by other socio-demographic factors including obesity. **Conclusion:** The socio-cultural environment strongly determined physical activity and sedentary behaviour of youth even within a single country. These differences persisted after adjustment for the environment, social factors or obesity. **Funding:** This study was supported by funding from the Federal Sports Commission of Switzerland.

Identification of Facilitators and Barriers to Physical Activity Participation in Children and Adolescent Survivors of Cancer: A Pilot Study

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Objective: Participation in physical activity has many benefits for the health and wellbeing of pediatric cancer survivors. However, this group shows decreased activity despite the numerous advantages of being physically active. Therefore the aim of this study was to identify barriers and facilitators for participation in physical activity in pediatric cancer survivors and reveal solutions to physical inactivity. **Methods:** Qualitative research using semi-structured interviews with pediatric cancer survivors (N=5), their parents (N=5) and pediatric physiotherapists (N=3). The interviews were conducted until informational redundancy was achieved. **Results:** Participants reported personal and environmental factors that influence their physical activity and several main themes were identified. Barriers included individual specific, disease and treatment, life, sports and teams, parents and hospital and care related barriers. Facilitators consisted of individual specific facilitators, perceived benefits of physical activity, personal preference and facilitators related to life, parents, social environment, sports and teams, school and hospital and care. In addition, this study identified potential solutions to the physical inactivity of pediatric cancer survivors. Main themes were personal solutions and solutions through organizations and the hospital. **Conclusion:** Several main themes that determine physical activity of pediatric cancer survivors were found. Pediatric cancer survivors perceived various personal and environmental factors as barriers to or facilitators of physical activity. The facilitators and barriers identified provide important theoretical insights into how and why youth who survived cancer and their parents might change their physical activity behavior. Future research should utilize this information to develop intervention strategies with a high likelihood of success. **Funding:** This study was supported by KIKAFoundation, Kinderen Kankervrij, Amsterdam.

Barriers to an Active Lifestyle in Children With Type 1 Diabetes

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Objective: Main barriers to an active lifestyle in Type 1 diabetic (T1D) adults are, in order, fear of hypoglycemia, work schedule, loss of control over diabetes, and low fitness levels. This study aims to investigate barriers to the adoption of an active lifestyle in children with T1D. **Methods:** One hundred and two T1D children [<12 years old ($n=32$) and ≥ 12 years old ($n=70$)] were surveyed at the UHC Sainte-Justine (Montreal, Canada). They answered questions on the Barriers to Physical Activity in Type 1 Diabetes (BAPAD1) questionnaire and on the role of parents in their adoption of an active lifestyle. **Results:** For the younger group, the mean BAPAD1 total score was 2.2 ± 0.9 . The highest scores were for loss of control over diabetes (3.1 ± 1.9), fear of hypoglycemia (3.1 ± 1.9), work schedule (3.1 ± 1.9) outside temperature (2.8 ± 1.4) and low fitness level (2.4 ± 1.7). In the older group, the mean BAPAD1 total score was 2.4 ± 1.2 . Fear of hypoglycemia (3.1 ± 1.9), work schedule (3.1 ± 1.9), outside temperature (2.9 ± 1.7), loss of control over diabetes (2.8 ± 1.7) and low fitness level (2.5 ± 1.8) were the most relevant. The loss of control over diabetes score was higher in younger than in older children ($p < 0.001$). Lack of parental support was associated with higher overall barrier score (younger: $r=0.71$ and older: $r=0.65$; all $p < 0.001$). **Conclusions:** There are similarities but also differences in barriers to regular physical activity between younger and older children as well as with adults. In children, lack of parental support appears to be a key factor as a barrier for physical activity. **Funding:** This study was supported by Diabetes Quebec.

Mechanical Efficiency in Children With Different Body Weight Statuses—Longitudinal Assessment

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Background: Mechanical efficiency (ME), which reflects the body's ability to transfer energy to perform physical tasks, is similar in young children regardless of body weight status. However, it is not clear if ME is stable during growth and maturation. **Objective:** To determine if ME changes over 3 years in children and to identify factors associated with change. **Methods:** A total of 169 children participating in the QUALITY cohort performed an incremental maximal cycling test; those who ended the test at 125 watts during the first and second visits were selected. ME (expressed as a %) was calculated at stages 25, 50, 75, 100 and 125 watts as follows: work produced, in watts \cdot (total - resting energy consumption, in watts)⁻¹ $\cdot 100^{-1}$. **Results:** Mechanical efficiency did not differ across visits at 25, 50 and 75 watts. However, participants had lower ME at stages 100 and 125 watts (22.3 vs. 20.1%; 22.4 vs. 20.1%;

$p < 0.01$). Declines in ME were positively correlated with declines in moderate-to-vigorous physical activity levels across visits ($r=0.78$, $p < 0.05$). No associations were observed with Δ BMI percentile and counts per minute. **Conclusion:** In children, Reductions in ME are observed at high intensity exercise within three years during childhood and seem to be at least partly explained by high intensity physical activity practice. **Funding:** Canadian Institutes of Health Research, Heart and Stroke Foundation of Canada and Fonds de la Recherche en Santé du Québec.

Correlates of Physical Activity in First Nations Children Residing in First Nations on Reserve and Northern Communities Within Canada

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Objective: Physical activity is associated with numerous mental, emotional, spiritual, and physical benefits in First Nations children. The objective was to examine the associations between several intrapersonal, family, and community factors with physical activity within First Nations school-aged children residing in First Nations on reserve and Northern communities within Canada. **Methods:** Participants consisted of 3,184 children (6-11 years old) from the 2008/10 First Nations Regional Health Survey, a representative cross-sectional study of First Nations persons who reside in First Nations communities within Canada. The survey addresses a holistic range of health issues. A primary caregiver completed an interview to assess the child's moderate-to-vigorous physical activity (MVPA), participation in traditional physical activities, six intrapersonal factors, four family factors, and two community factors. **Results:** Based on the reports of the primary caregiver, 72% of children accumulated a daily average of ≥ 60 minutes of MVPA and 54% of children participated in at least one traditional First Nations physical activity in the past year. Older age, having more people in the household, and having more relatives help the child understand their culture were independently associated with an increased likelihood of accumulating ≥ 60 minutes of MVPA. School attendance, use of First Nations language, higher parental education, smaller community size, and having more community members help the child understand their culture were independently associated with an increased likelihood of participation in traditional First Nations physical activities. **Conclusion:** There are several correlates of physical activity from diverse ecological levels within First Nations children in Canada. **Funding:** First Nations Inuit Health Branch of Health Canada.

Does the Context of Physical Activity Influence Physical Activity Levels in Canadian Children Aged 6-11 Years?

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Objective: The prevalence of obesity among children aged 6-11 years has increased significantly over the last thirty years. There is strong evidence that regular physical activity (PA) can lower the risk of obesity and related morbidities. However, the context of PA may influence children's PA levels. Thus, the objective of this study was to determine whether children's PA measured objectively using activity monitors depends on contextual information regarding PA measured by the Canadian Health Measures Survey (CHMS). **Methods:** This study included a sample of 1,076 Canadian children aged 6-11 years (mean age=8.6 years; 51% male; mean BMI=18 kg/m²). The dependent variable was average daily moderate-to-vigorous PA in minutes (mean=29.5 minutes). The independent predictors were weekly frequency of PA during free time at school, weekly frequency of PA during organized class time at school, weekly frequency of PA in organized team sports outside of school, and weekly frequency of PA during free play outside of school. **Results:** A multiple regression test with sex, BMI, self-reported health and nutrition as covariates yielded a non-significant R of 0.23, F (13,334) = 1.43, p=.14. In the context of the model, frequency of PA during class time at school ($\beta = -0.12$, p<.05) significantly predicted average daily minutes of moderate-to-vigorous PA. **Conclusion:** In summary, more frequent class time PA at school was associated with less moderate-to-vigorous PA. To maximize PA and related health benefits, less organized PA during school time may need to be promoted in children aged 6-11 years. **Funding:** This research was supported in-part by the Heart and Stroke Foundation. This research was also supported by a Killam Predoctoral scholarship, as well as the Heart and Stroke Foundation and the CIHR Training Grant in Population Intervention for Chronic Disease Prevention: A Pan-Canadian Program (Grant #: 53893).

The Context of Physical Activity and Sedentary Behaviour in Relation to Psychological Distress in Canadian Children Aged 6-11 Years

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Objective: Research has indicated that higher levels of sedentary behavior (SB) and lower levels of physical activity (PA) can increase psychological distress in children. This relationship may depend on contextual information related to PA and SB. The purpose of this study was to examine the relationship between psychological distress, measured by the strengths and difficulties questionnaire (SDQ), and PA and SB measured objectively using activity monitors, as well as contextual information from the Canadian Health Measures Survey (CHMS). **Methods:** This study included a sample of 1,076 Canadian children aged 6-11 years (mean age=8.6 years; 51% male; mean BMI=18 kg/m²). The dependent variable was a derived total score on the SDQ. The independent predictors were average daily moderate-to-vigorous PA, average daily sedentary

time, frequency of PA during free time or class time at school, frequency of PA in team sports or free play outside of school, and frequency of indoor screen time. **Results:** A multiple regression test with sex, BMI, income and nutrition as covariates yielded a significant R of 0.28, F (14,333) = 2.08, p<.05. In the context of the model, frequency of PA in team sports outside of school ($\beta = -0.12$, p<.05), frequency of TV watching ($\beta = 0.52$, p<.05), and frequency of computer use ($\beta = -0.49$, p<.05) significantly predicted SDQ. **Conclusion:** Based on these results, children should be encouraged to participate in team sports outside of school for healthier psychosocial development. In the case of SB, computer use should be promoted over TV watching. **Funding:** This research was supported in-part by the Heart and Stroke Foundation. This research was also supported by a Killam Predoctoral scholarship, as well as the Heart and Stroke Foundation and the CIHR Training Grant in Population Intervention for Chronic Disease Prevention: A Pan-Canadian Program (Grant #: 53893).

Social Development of Primary Aged Children Through a Movement Education Program

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Objective: Unique to Canada, is a University based movement program offered to children (ages 1-12 years) which is diverse and inclusive in its design to foster healthy physical, cognitive, social, and emotional development. This program is unresearched in its contribution to children's social development. The purpose of this study is to investigate how children's involvement in a weekly movement education program influences their social development. **Methods:** The primary-aged children involved in this research were participants in this university based Saturday morning program in which creative dance, educational gymnastics, and developmental games were employed to enhance physical, cognitive, and social development. The 15 participants' ages 5 to 12 years were systematically observed for 8 weeks as they naturally engaged in the program's activities. Interviews were also conducted with both children and their caregivers throughout the duration of the program. **Results:** A thematic analysis using Kvale & Brinkmann's (2009) approach of meaning coding, meaning condensation, and meaning interpretation revealed that social development was related to a high ratio of staff and volunteers to participants, equipment, program philosophy, maximum participation and transferability. **Conclusion:** Overall, the results indicate that community-based programs need to be learning-centered, foster a cooperative environment and offer meaningful movement experiences to encourage social development. Results also indicate that looking at a program's pedagogy, content, and learning environment can offer multiple options for planning and programming.

Identification and Removal of Sleep From 24 Hour Objectively Measured Physical Activity Data: A Comparison of Scoring Rules Used in Paediatric Research

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Objective: To compare 8 scoring rules used to identify and remove sleep from activity data collected over 24 hours. **Methods:** Measures of physical activity and sleep over 7 days were obtained by accelerometry (Actigraph) in 291 children (4-8 years). Data were processed using 8 scoring methods. Three methods used individualized daily time filters to remove sleep identified from: parent sleep diary; software-provided Sadeh algorithm; and our reference method, a count-scaled algorithm. Four methods applied standard filters to remove sleep (9pm-6am, 7pm-7am, 12am-6am) and defined non-wear time as either 20 or 60 mins of consecutive zeros. The final method (which did not remove sleep) defined non wear as 60 mins of consecutive zeros. Mixed models with random effects and post hoc testing was conducted to compare mean values between each of the 8 scoring methods. **Results:** Considerable variability between methods was identified. Of particular interest, analyzing 24 hour data without removing sleep yielded significantly longer wear times (+540 min/day), more non-wear time (+155min/day), more sedentary (+537 min/day) and lower counts per minute (-245/day) compared to the count-scaled algorithm ($P<0.01$). Applying standard, rather than individualized filters to remove sleep also resulted in significantly different results regarding activity level ($P<0.01$), with sedentary activity as much as 90 mins more per day compared to individualized methods. MVPA was similar across methods, varying by less than 5 mins/day. **Conclusion:** Removing sleep periods, prior to interpreting physical activity data is an important consideration. Failure to do so can significantly affect interpretation of activity levels in children.

Physical Activity and Sedentary Behaviour in South African Preschools

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Objective: The aim of this study was to observe physical activity (PA) and sedentary behaviour in a range of preschool environments, and to determine the impact of income status on these outcomes. **Methods:** Eighty children (4-5 years old) from four low-income and four mid-high-income preschools in Cape Town were observed using the 'The Observational System for Recording Physical Activity in Children' (OSRAC-P). **Results:** Children spent a substantial amount of time at preschool in sedentary behaviour (73%) ('stationary' and 'limbs' in OSRAC-P), followed by light PA (LPA, 17%) ('slow-easy') and moderate-to-vigorous physical activity (MVPA; 'moderate' and 'fast') (9%). Most time was spent indoors, with low-income children spending significantly more time indoors ($p<0.001$), and more time in MVPA ($p<0.05$) than mid-high-income children. Children (low- and mid-high-income) were more likely to engage in LPA and MVPA if they were outside (RRR 2.48, 95% CI: 1.83-3.38, $p<0.001$ for LPA; RRR 6.95, 95% CI: 4.96-9.74, $p<0.001$ for MVPA), and if their activity was adult-initiated (RRR 1.74, 95% CI: 1.37-2.22, $p<0.001$ for LPA; RRR 1.66, 95% CI: 1.20-2.30, $p<0.01$ for MVPA). Obese children were significantly less likely to do LPA (RRR 0.47, 95% CI: 0.25-0.87, $p<0.05$), and underweight children were significantly less likely to do LPA (RRR 0.63, 95% CI: 0.46-0.86, $p<0.01$) and MVPA (RRR 0.26, 95% CI: 0.15-0.44, $p<0.001$). **Conclusion:** This study has provided valuable evidence on physical activity and sedentary behaviour patterns of South African preschool children from low- and mid-high-income settings. These findings will be useful for the development of future interventions.

Physically Active Commuting to School: The Effects of Age, Distance, and Season

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Objective: To examine the effects of age, distance and time of year on the prevalence of physically active commuting to school by Finnish students. **Methods:** A total of 5,107 students (grades four to nine) from 45 primary and secondary schools completed a web-based inquiry into their school commute as part of a larger survey related to the Finnish Schools on the Move programme. The responses were grouped into physically active (walking and cycling) and passive (all forms of motorised transportation) commuting to school. **Results:** Physically active school commuting was largely affected by season and distance to school, but less by age. In the spring and fall months, almost all children (95 percent) walked or cycled to school when the distance was less than three kilometres, but for distances of three-five kilometres, active commuting declined to 70 and 78 percent for primary and secondary school students, respectively. During wintertime, physically active commuting declined and 60 and 30 percent of students actively commuted within school distances of two-three and three-five km, respectively. **Conclusion:** Although physically active commuting to school seems to be quite common among Finnish students in grades four to nine, there appears to be some potential to increase daily physical activity by promoting active forms of commuting to school. The greatest potential for activation in the spring and fall is for students who live within three-five kilometres from their school. During the winter months, active commuting begins to decline even at shorter distances. **Funding:** Finnish Ministry of Education and Culture.

Physical Activity During Youth Hockey Practices: A Comparison of Two Practice Models Using Accelerometers

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Objective: Organized sports has been identified as a mechanism for children to obtain recommended amounts of physical activity (PA). However, research connecting youth sport participation and PA is both limited and equivocal. The purpose of this study was to objectively measure the PA of children participating in sports and to determine if an alternate sport practice model caused different amounts and intensity of physical activity. **Methods:** Accelerometers were used to collect PA data at 14 youth hockey practices (ages 9-10) from two leagues. One league used a new practice model designed to accommodate more participants and more time in MVPA. A comparative sample of similar aged teams that did not use any structured practice model was recruited. A total of 94 players—71 from the new practice model league and 23 from the traditional format league—participated. **Results:** Activity level cut-points for sedentary, light, moderate, and vigorous physical activity levels were developed from the study in which 8 participants participated in structured and pre-determined activity. Overall 33% of practice time was spent in sedentary/light activities, 43%

moderate, and 24% vigorous activity. No significant differences in minutes of moderate or vigorous intensity activity were seen. New practice model practice sessions had 60% more participants. **Conclusion:** Participants accrued substantial amounts PA during hockey practices. MVPA time is among the highest reported in studies of youth sport participants. While findings suggest overall MVPA may not increase with the modified practice structure, other factors such as more practice participants while maintaining relatively high doses of MVPA maybe important factors for youth sport organizations to consider.

How Overweight and Obese are High School Football Players in the United States?

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Objective: High prevalence of obesity among National Football League players has raised concerns about potential negative health implications of current and aspiring professional football players related to weight status. Of greater concern may be the suggested number of high school players in lineman positions classified as overweight or obese. The purpose of this study was to examine a national sample of high school football players to determine if patterns of overweight and obesity exist in lineman positions. **Methods:** Data were obtained from 5,842 high school football players for the 2012-2014 school years across 11 States. Self-reported measures included football position, school year, height and weight. We used CDC standard formulas to calculate body mass index (BMI), and CDC BMI-for-age growth charts to obtain percentile ranking and standard weight class category for each player. **Results:** Linemen had significantly higher BMIs ($M = 29.57$, $SE = 0.11$) than players in other positions ($M = 23.44$, $SE = 0.05$; $t(3,090) = 57.14$, $p < .0001$). 78.3% of linemen were overweight or obese. 46.9% of linemen were obese, compared to only 2.9% of non-line players. Linemen were 29.5 times more likely than players in other positions to be obese. **Discussion:** Findings were consistent with previous research and suggested overweight and obesity were prevalent among high school football lineman. Given that almost 40% of high school football players are linemen, and considering the popularity of football in the United States, policy and programmatic changes may be needed to ensure the sport provides health benefits to all players. Strategies may include weight restrictions for participation and changes in practice structure to include greater amounts of moderate-to-vigorous-physical-activity (MVPA).

Parental Perceptions Influencing Child Participation in the City of Kingston Neighborhood Park Program: A Qualitative Study for Increasing Program Participation

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Objective: To gain insight into parental perceptions influencing child participation in the City of Kingston Neighbourhood Park

Program, and to use this information to recommend modifications for increasing participation. **Methods:** This is a qualitative study guided by Community Based Participatory Research principles and the contextual framework of Social Marketing. Key informants were 18 parents of children 4 to 12 years old from 16 different Kingston neighbourhoods. Parents were recruited through purposive typical case sampling and participated in 7 interviews and 4 focus groups. Sessions were audio recorded and transcribed verbatim. Data analysis involved both deductive and inductive content analysis. **Results:** 14 main themes emerged comprising relevant subthemes. Ten out of the 14 themes were directly related to the formation of barriers and facilitators to participation: Safety, Relationships, Structure, Child's Opinion, Parents' Convenience, Lifeskills Development, Variety, Community, Not a Job, Local Level. **Conclusion:** Overall results revealed that 1) Each of the ten key themes does not form either a barrier or a facilitator to participation in the park program but all ten key themes have the ability to form both barriers and facilitators; and 2) Barriers and facilitators are formed depending on the way each theme is perceived to relate to the program. Therefore, in order to increase participation, program modifications should aim to alter parent's perceptions about the way the program relates to the 10 key themes. Priority should be given to the themes that are currently perceived to form barriers to participation.

From Evidence to Evaluation: Combining WHO Physical Activity Guidelines With Canadian Active Living Research to Develop Age-Specific Activity Profiles for Children

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Objective: To combine existing and evolving active living evidence to develop age-specific activity profiles for advancing the standardization of active living evaluation outcomes. **Methods:** Saskatoon's neighbourhood built environment was assessed by two replicable observation tools in 2009 (www.smartcitieshealthykids.com). Neighbourhood socioeconomic variables were derived from 2010 G5 Census projections. In 2010, after obtaining individual and household data, accelerometers were used to obtain activity data from 455 children. During accelerometer deployment, height and weight were measured to determine weight status. These data were used to generate daily thresholds for sedentary behaviour (SED) similar to age-specific, World Health Organization physical activity (PA) guidelines. Utilizing these thresholds, daily SED and PA were dichotomized. Thereafter, with dichotomized SED and PA as separate outcome variables, and with neighbourhood, individual and household factors as predictors, multilevel logistic regression models were used to develop these activity profiles: active/inactive and sedentary/non-sedentary. **Results:** A complex set of factors including denser built environment, positive peer relationships and consistent parental support increased the likelihood of children being profiled as active. These factors did not decrease the likelihood of children being profiled as sedentary; however, descriptive analysis depicted a high SED in children irrespective of them being active or inactive. **Conclusions:** Generation of activity profiles enabled a holistic picture of environmental influence on the inter-

play between two distinct, yet related behaviours — SED and PA. Evidence-based activity profiles facilitate standardization of active living evaluation outcomes that can be used to both, quantify the impact of interventions, and create a uniform platform to compare results across interventions. **Funding:** Canadian Institutes of Health Research, Heart and Stroke Foundation of Canada, and Rx&D: Health Research Foundation.

Searching for Pathways to Advance Inter-Disciplinary Population Health Research: Integrating Mobile-Health Initiatives With Child-Centric Active Living Research

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Objectives: Global population is predominantly inactive, yet mobile applications to increase physical activity (PA) are largely geared towards individuals who are already active. This study's objective is to design an evidence-based application specifically for the inactive population. **Methods:** In 2010, accelerometers were used to collect activity data from 455 10-14 year old children in Saskatoon, Saskatchewan, Canada (smartcitieshealthykids.com). During accelerometer deployment, height and weight were measured to determine weight status. These data were used to generate daily thresholds for sedentary behaviour (SED) similar to age-specific, World Health Organization physical activity (PA) guidelines. Utilizing these thresholds, an application was designed to optimize daily PA and SED ratio. This application has two components—daily and monthly activity reports. Daily report gives individuals green, amber or red signals based on their daily PA and SED. Monthly report aggregates daily signals to classify individuals into green, amber and red zones. **Results:** Participants were segregated into three traffic light groups based on their mean daily PA and SED. Between these groups, significant differences in obesity prevalence were observed—green: 2%; amber: 13%; red: 18%. **Conclusions:** Preliminary evidence generated here needs validation in a randomized trial which would provide an opportunity to obtain longitudinal digital PA and SED data. This application would not only aid individuals to be more active and less sedentary, but also provide practitioners an evidence-based method to consult on lifestyle interventions. Policy implications revolve around incorporating mobile-health initiatives into population health research and establishing long term strategies to ethically manage digital 'big data'. **Funding:** Canadian Institutes of Health Research, Heart and Stroke Foundation of Canada, and Rx&D: Health Research Foundation.

Investigating the Use of Punishment as a Potential Barrier to Organized Sport Participation

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Objective: To examine athletes' experiences of punishment in sport and the reported consequences of these experiences. **Methods:**

Semi-structured individual interviews were conducted with 23 inter-university male athletes from the sports of baseball, football and soccer. All of the athletes were asked about their previous experiences with various forms of punishment in sport that had been administered by the coaching staff. They were also asked about their reactions to and perspectives of various forms of punishment. **Results:** All of the athletes reportedly experienced punishment from coaches on a regular basis. Three main forms of punishment were experienced: being yelled at, being benched and being administered conditioning exercises. Being benched was reportedly the most detrimental form of punishment because it is done publically; it socially excludes the athlete, and denies the athlete the opportunity to demonstrate his athletic abilities. The athletes reportedly responded to punishment with a greater fear of failure, lessened risk taking, greater performance anxiety, and less enjoyment. As some athletes reported, the use of punishment took away their 'love of the game' and made them question their commitment to the sport. **Conclusion:** Overall, the athletes reported negative reactions to being punished by coaches. The reported lack of enjoyment of the sport experience has particular relevance as a potential threat to maintaining participation in organized sport.

Effect of Increasing the Choice of Active Options on Kids Physically Active Play in Saudi Arabia

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Objective: To determine whether increasing the choice of physical activity options increases the duration and intensity of kids physically active play. **Methods:** Boys and girls (n = 36, 8-12 y) were stratified, randomly assigned to a choice group that always provided access to each participant's most liked active toys, and allowed 45 min of free time. The same sedentary alternatives were freely available to all participants. Physical activity outcomes were measured by accelerometry, heart rate, and direct observation. **Results:** The number of active toys the kids played with increased (p < 0.001) across each choice group. Minutes spent in MPA were greater in the low choice (p < 0.05) and high choice (p < 0.02) groups than the no choice group. Active playtime was greater (p < 0.01) in the low choice (79%) and high choice (95%) groups compared to the no choice group. Girls in the low and high choice groups had greater (p < 0.05) percent heart rate reserve when compared to girls in the no choice group. There was no difference in the boys' percent heart rate reserve between the no choice, low choice and high choice groups. **Conclusion:** Increasing the choice of active toys increases both the duration and intensity of physically active, especially in girls.

Learning Through Experience: Training University Student Volunteers to Promote Physical Activity to Children

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Program Objectives: To fulfill the requirements of two fourth-year pre-education courses, 50-60 students volunteer their services and work with children in a physical activity promotion setting. One of their options is the Fit 4 Life program. Fit 4 Life is an after-

school, low-organized games program offered three days per week afterschool (2:30 – 4:30 p.m.) for 10 weeks each academic term to elementary school students in grades 3 to 5. **Outcomes:** University-students commit one day per week for the ten-week program and are assigned various roles each session although their overall role is to encourage higher levels of participation from the students. Prior to their first experience with the program, university-student volunteers are expected to participate in an orientation session where the overall goals, structure, and organization of the Fit 4 Life program are described. Practical experiences and resources are also provided during the two-hour orientation session. Teams of 10-12 university student-volunteers then begin 'learning through experience' as they actively promote physical activity through the various roles they play each day in the Fit 4 Life program. Various 'lead' roles are shared with two student-volunteers acting as overall coordinators and four to five students bringing game/activity ideas to be played. **Perspectives:** Following each session, the university-student-volunteers debrief with their professor and one another discussing their successes and challenges, adjusting their efforts accordingly. University-student-volunteers finish their service learning experience by writing a reflective paper and giving an oral report identifying what they have learned and how it will influence their future actions.

Promoting Physical Activity to Toddlers and Elementary School Students

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Program Objectives: Fit 4 Life is offered three days per week for ten weeks to students in grades 3 to 5. About 35 participants each day are walked from their school (~ 20-25 min) to the university for the program. After a small snack of vegetables or fruit, the participants and the university-student-volunteers (~ 10-12) engage in about 90 minutes of low organized games. Fit 4 Tots is a movement exploration program offered in two one-hour sessions, once per week for ten weeks. Participants (~ 50 each hour), accompanied by their parents/guardian, are under the age of 5. A unique playground is created each week by the 10-15 university-student-volunteers for the tots to explore. **Outcomes:** Fit 4 Life has been effective in providing the participants with almost 90 minutes of moderate or more intense physical activity (~75% of program time). When step counters were used, on average 7329 ± 2265 steps were taken by the participants and 6754 ± 1496 by the university-student-volunteers during the program. Fit 4 Tots is needed by the community! There is greater demand for the program than can be safely handle. Perhaps this demand exists elsewhere? Over the 10 years of Fit 4 Life and 5 years of Fit 4 Tots, 100s of university-student-volunteers were actively engaged in learning about and promoting physical activity to children. **Perspectives:** Future steps include greater dissemination of the success of these programs as well more research to understand the contribution of these programs to the participants, the university-student-volunteers, and to the community.

Children Encounter the Social World of Physical Activities

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Objective: To introduce the approach of PAR and to examine if the number of internalized meanings and physical activity among young people and children is associated. **Method:** Physical activity relationship (PAR) is a combination of the ways of attitude and commitment, through which we encounter the social world of physical activities. The main dimensions of physical activities are 1) competition and accomplishment, 2) healthy aspects, 3) play and joy, 4) expressive aspects, 5) social aspects and 6) the aspects of self. In addition each form of physical activities consists of their own meaning profile, where aspects as speed, endurance and accuracy are essential. In the analysis were used data from three research projects where the information was collected by the questionnaire. The meanings of physical activity were studied with the number of items and the sum of important items was counted. (Data A: n=456, aged 9-13 y, 28 items; B: n=356, aged 13-16 y, 28 items; C: n=808, aged 13-18 y, 69 items). **Results:** Regardless of the data the result can be stated that the more important meanings young people could recognize the more active they were physically. **Conclusion:** For physical education, the finding means that physical activities could be understood as a foreign language. The pupils should be helped to recognize the meanings of different kinds and generate the process of signification where the meanings could be internalized and linked with the meanings already adopted.

Socio-Cultural Differences of Physical Activity and Sedentary Behaviour in Youth are Independent of the Environment

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Background: Socio-cultural factors influence physical activity and sedentary behaviour in youth. Whether the environment explains some of these differences in youth behaviour is not clear yet. **Methods:** We pooled data of 6- to 16-year-old children from eight seven studies with an accelerometer-based assessment of physical activity and sedentary behaviour, information of the socio-cultural background and geographical information system-data from the German and French speaking area of Switzerland. A regression model adjusted for sex, age, accelerometer type, season wearing time and for the study was used to test associations between total PA (TPA), moderate-to-vigorous PA (MVPA) and SB (both min·d⁻¹) (dependent factor) with socio-demographic characteristics and neighbourhood attributes. **Results:** Children from the German compared to the French region were more physically active and less sedentary (by about 10-15%), and had a more favourable environment with less street density, more green and wood space, less population density and a higher socio-economic neighbourhood score (all differences $p < 0.001$). Despite these differences in environment between the French and German part, differences in physical activity and sedentary behaviour among the language regions could not be explained by the environment nor by other socio-demographic factors including obesity. **Conclusion:** The socio-cultural environment strongly determined physical activity and sedentary behaviour of youth even within a single country. These

differences persisted after adjustment for the environment, social factors or obesity. **Funding:** This study was supported by funding from the Federal Sports Commission of Switzerland.

Physical Activity and Sedentary Behaviour of Toddlers and Preschoolers in Alberta Child Care Centres

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Objective: To describe levels of physical activity and levels and bouts of sedentary time during child care in a sample of toddlers and preschoolers (19-60 months) from Alberta, Canada, and to examine if levels and bouts differed between sex and age groups. **Methods:** Results are based on 118 children, aged 19-60 months from eight participating child care centres throughout Alberta. Data were collected at baseline of a study examining revised Alberta Child Care Accreditation Program Quality Standards. Levels of physical activity (light, moderate-to-vigorous intensity (MVPA)) and levels and bouts (1-4, 5-9, 10-14, and >15 minutes) of sedentary time during child care were accelerometer-derived using 15-second epochs during October/November, 2013. Median [Interquartile ranges] and ANCOVAs were calculated while taking into account the clustered nature of the data. **Results:** The median minutes/hour spent in sedentary, light, and MVPA were 31.7 [IQR: 27.8, 34.1], 22.5 [20.9, 24.4], and 5.4 [3.3, 7.9], respectively. Additionally, the minutes/hour spent in sedentary bouts lasting 1-4, 5-9, 10-15 and >15 minutes were 16.6 [14.5, 18.4], 4.5 [2.7, 6.2], 0.8 [0.4, 1.4], and 0 [0, 0.6], respectively. No significant differences in levels or bouts were observed between toddlers (19-36 months) and preschoolers (36-60 months) or between boys and girls. **Conclusion:** This is the first Canadian study to report on the levels of physical activity and levels and bouts of sedentary time among toddlers and preschoolers attending child care centres. Children spent over half their time sedentary, mainly in shorter bouts, and spent minimal time participating in MVPA.

Why Do Youth Engage in Organized Sports and What Precludes Their Involvement? Results of an e-Survey With Canadian Adolescents

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Objectives: 1) To document the reasons adolescents engage in organized sports and the barriers that preclude some of them to do so. 2) To identify the potential differences according to age and gender. **Methods:** An e-survey on sport participation was conducted among French high-school students of Québec, Ontario and Alberta. We used the Bière et al. (1995) questionnaire on sport motivation to evaluate the reasons motivating two groups of participants: those currently involved and those who were involved at some point. We used the Casper et al. (2011) questionnaire on the barriers to sport involve-

ment with adolescents not currently involved in organized sports. **Results:** The convenience sample includes 750 adolescents (43,3% girls), mean age:14,1, 367 were currently involved in organized sports, 241 not currently involved but were involved in the past two years, and 142 not involved since the last 3 years. The three most important reasons for being involved in organized sport are: "For the excitement I feel when I am really involved in the activity", "For the intense emotions I feel doing a sport I like" and "Because it is absolutely necessary to do sport if one wants to be in shape". The three main barriers to sport involvement relate to time constraints (school work, family or friends, busy overall). Analyses of variance showed statistical differences between the three categories of respondents and according to gender and age. Results are discussed in light of the best strategies to promote sport participation among adolescent boys and girls. **Funding:** Social Sciences and Humanities Research Council.

Mobilizing Quebecers to Encourage Active Transportation Among Youth

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Objective: Québec en Forme is a non-profit organization that encourages all Quebecers to promote healthy eating habits and active lifestyles, essential to the full development of our young people. **Findings/Outcomes:** Some negative trends regarding active transportation among youth: 1) In less than 30 years, active transportation to school has dropped by 50 percent; 2) One child in five walks or bikes to school; 3) More than 80% of elementary-age children live less than 1.6 km from their school; and 4) 60% of children report transport as one of the main barriers to physical activity during their leisure time. Québec en Forme liaises with thousands of local, regional and provincial partners in different sectors: daycare centres, schools, municipalities, healthcare facilities, community groups and associations seeking to positively influence individual behaviours, social norms and environments. To encourage kids to get into the habit of walking or riding a bike, Québec en Forme believes that government officials, decision-makers, professionals and numerous other stakeholders must get involved. By pooling and coordinating their resources, knowledge and skills, they will be able to 1) build environments conducive to active transportation, and apply measures and policies to promote them; 2) develop young people's skills; and 3) create positive social norms that encourage active transportation. **Conclusion/Perspectives:** This poster will present the ways in which local communities, regional authorities, NGOs, government departments and their networks are working together to take concerted, complementary action. Québec en Forme supports all of these players in their efforts to promote lasting change. **Funding :** Québec en Forme is a non-profit organization founded through a partnership agreement between the Lucie and André Chagnon Foundation and the Quebec government.

The Impact of a Structured Lifestyle Intervention on Body Composition and Exercise Capacity in Obese Children With Congenital Heart Defect (Smart Heart Trial)

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Objective: To assess the effects of a 12-month structured lifestyle intervention on body composition, exercise capacity and quality of life of 40 obese children with congenital heart defect (CHD). **Methods:** The lifestyle intervention involves three clinic assessment visits (entry, six month, and one year) and bi-weekly telephone/web-based counseling with a registered dietitian and fitness specialist, using smart phones. The following measures were collected at each clinic visit: body mass index, % body fat, visceral adipose density, muscle mass, peak oxygen consumption, 3-day food records, physical activity (PA), echocardiogram, endothelial function, and metabolic risk factors (triglyceride, cholesterol, etc.). The counseling focuses on making sustainable changes in PA levels, diet and related lifestyle behaviours. **Results:** 20 patients have entered the program and ongoing recruitment continues. Positive results and adherence rates thus far are encouraging. We anticipate improvements in body composition, exercise capacity, metabolic profiles, cardiovascular and endothelial function, and quality of life. **Conclusion:** We have developed Apps for Smart Phone device to allow participants to log their daily progress for their combined exercise and dietary programs. Exploring smart phone technology enables us to deliver programs to patients over larger distances to monitor and encourage regular interaction with our program tools. Our results may help future investigations to elucidate factors in the management of obesity in children, and subsequently, the development of obesity management strategies for CHD patients. **Funding:** Academic Medical Organization of South-Western Ontario Innovation Fund and grants from Children Health Foundation to Dr. K. Norozi.

Socio-Demographic and School-Level Correlates of Active School Transport in Canadian Children

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Objective: Active school transport (AST) is an important source of children's daily physical activity (PA). However, Canadian studies show low rates of AST. **Methods:** A stratified sample of children (N=567, mean age = 10.0 years) was recruited in the Ottawa area. Four sources of data were used for analyses: 1) child questionnaire including questions on school travel mode and time; 2) parent questionnaire providing information on household socio-demographic characteristics; 3) survey assessing school policies and practices pertaining to PA; and 4) school site audit done by the study team. Generalized linear mixed models were used to identify socio-demographic and school-level correlates of AST while controlling for school clustering. **Results:** Individual factors associated with higher odds of AST were male gender (OR=2.02; 95% CI=1.33-3.07), journey time <5 minutes vs. >15 minutes (OR=2.44; 95% CI=1.27-4.70), and 5-15 minutes vs. >15 minutes (OR=2.36; 95% CI=1.33-4.19). Children were more likely to engage in AST if school principals reported that crossing guards were employed (OR=2.35; 95% CI=1.24-4.43). In schools that identified safe routes to school and where traffic calming measures were observed, children were

much more likely to engage in AST (OR=7.90; 95% CI=2.76-22.58). The independent effects of these two variables were not significant after addition of the interaction term in the model. **Conclusion:** These findings suggest that providing crossing guards may facilitate AST. Additionally, there was a synergy between the identification of safe routes to school and the presence of traffic calming measures suggesting that these strategies should be used in combination.

Correlates of Objectively Measured Sedentary Time in Canadian School-Aged Children

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Objective: The objective of the current study was to examine correlates of objectively measured sedentary time (SED) in Canadian children. **Methods:** Data from the International Study of Childhood Obesity, Lifestyle and the Environment (ISCOLE) were used to determine correlates of SED in Grade 5 children. Anthropometric variables were measured using standard procedures; parent- and child-report questionnaires were used to collect information on demographic and lifestyle variables. Univariate linear regression was used to examine individual relationships between correlates and outcome variables. Stepwise multiple linear regression was used to build the final model. All explanatory variables significantly associated (i.e., p<0.05) with SED in univariate analyses were considered in the final model. Variables that remained significant in the final model were considered to be predictors of SED. **Results:** Complete data were available on 477 children (41.7% boys, mean age=10.0 years). Mean total sedentary time was 8.52±1.1 hours/day. In univariate models, increased weight status (waist circumference, % body fat, BMI), increased weekday computer use, self-report meeting physical activity guidelines, participation in leisure activities (sports teams, art/music), increased sleep (self-report quantity, mean accelerometer), diet (potato chips, cheese, whole grains, sports drinks, ice cream, TV snacking), and sports equipment ownership (skates/skateboard/scooter) were associated with SED. In the final model, increased percent body fat, participation in art/music classes, self-report meeting physical activity guidelines, TV snacking, increased self-report sleep quantity, and increased accelerometer measured sleep remained significant predictors of SED. **Conclusion:** A number of modifiable factors are associated with increased accelerometer-measured SED in children.

School Lunch Programs, Breakfast Consumption, and Parental Income

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Objective: To combat child hunger and poor diet due to low-income status, the government of Ontario initiated the Student Nutrition Program in 2004. In 2004-2005, 186,000 children participated. This has more than tripled with 630,000 children, and 4172 centres participating in 2011-2012. This work aims to assess availability, and uptake of the school lunch program with respect to parental income status. **Methods:** Data from the International Study on Childhood Obesity, Lifestyle and the Environment were used to examine the relationship between household income, breakfast consumption, and use of the school lunch program. Breakfast consumption and use of school lunches were determined via child self-report. Regression models were used to test for associations. **Results:** The current analysis included 567 children (42.2% male, mean age =10.0 years), from Ottawa, Ontario, Canada. Parent report showed the majority of children are Caucasian (66.6%), Canadian born (87.5%), and have one sibling (51.3%). Parent-report median total household income was \$110,000-\$139,999. Only half (52.7%) of children reported their school offered lunch programs with median consumption of 2 lunches/week. Total household income was positively associated with frequency of weekday breakfast consumption ($p=0.03$), weekend breakfast consumption ($p=0.02$), school lunch consumption ($p=0.01$), and number of restaurant meals consumed ($p=0.02$). **Conclusions:** Household income was positively associated with breakfast consumption, school lunch program, and restaurant meal consumption. Over half of children included in this analysis reported having school lunches available to them, yet frequency of school lunch consumption was low. Future work should examine awareness and perception of school lunch programs.

Comparison of Elementary School Children Physical Activity Between Hong Kong and the United States

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Objectives: The objective of this study was to compare the physical activity policies for elementary school children between Hong Kong and Connecticut, United States. The policies comply with the Physical Activity Guidelines for Americans (USHHS, 2008) and the Global Recommendations on Physical Activity for Health (WHO, 2010) were compared with the two systems. The scopes of the programs were: (a) physical education in elementary schools; (b) after-school and community programs; and (c) organized sport programs. School and community partnerships, environments and parental supporting physical activity, social determinants, and cultural difference were investigated. **Findings:** The parental involvement and financial supports are significant in Hong Kong. Individual competitive sports are popular and provided by the nonprofit and private entities. In Connecticut, after-school programs are popular for working parents, but they may not include physical activities. Municipal recreation programs are city or town based; some towns do not have independent facilities, and only using the facilities at public schools with limited hours. Competitive children sports are popular if they are also available in high school interscholastic level. School physical education lessons are still the primary opportunity of children physical activity. **Conclusion:** School physical educa-

tion is not enough for children to comply with the physical activity guidelines in both places. Parental, community, and municipals supports are critical to promote health and prevent obesity through physical activity. Therefore, community partnerships with effective public policies are extremely important to promote physical activity among children.

Are Korean Boys More Physically Active Than Girls Regardless of Biological Maturity?

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Introduction: Biological determinants of adolescents' physical activity have been examined in recent years. Notably, when biological maturity is controlled, the well-documented sex differences in physical activity are attenuated (Sherar et al., 2007; Thompson et al., 2002). The purpose of this study was to examine the association between biological maturation and physical activity, and sedentary time in Korean adolescents. **Methods:** A total of 74,186 students aged between 12 to 18 years who participated in the eighth Korea Youth Risk Behavior Web-based Survey (KYRBS) were selected for the analysis. All participants were categorized by both chronological age (CA) and biological age (BA), and each age group was compared by sex in vigorous physical activity (VPA), moderate physical activity (MPA), and sedentary time during weekdays and weekend days. **Results:** A series of independent t-tests revealed sex differences in VPA and MPA for CA ($p < .05$). For BA, sex differences did not exist among -3 year olds (matured 3 years ahead compared to average age of maturity), but were significant for all other ages. Sex differences in sedentary time during weekdays also existed in both CA and BA ($p < .05$), except for -3 year olds. Significant sex differences in sedentary time during weekends were also observed in 12, 13 and 14 year olds (CA) and from -2 to 1 year olds (BA). **Conclusion:** Sex differences in physical activity and time spent in sedentary behaviour remain regardless of the variation in biological maturity among Korean adolescents, except in one age group with advanced maturation (BA -3 year old). The effect of biological maturation on physical activity in adolescents may not exist among Asian populations. Further investigation on the interrelationship between bio-psychosocial correlates of physical activity is warranted. Funding: Faculty of Physical Education & Recreation, University of Alberta.

It's All About Sport! Physical Activity, Fitness, Academic Achievement, and Motivation Among a Cohort of Quebec's Adolescents Involved in Organized Sport

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Objective: To verify for the presence of sport-type and age-associated differences in four characteristics: (1) attainment of national guidelines in physical activity, (2) perceived fitness, (3) academic

achievement, and, (4) intrinsic motivation towards physical activity, among a sample of Quebec's adolescents involved in organized sport. **Methods:** Sample is drawn from a cohort of adolescents athletes (N=1900) who took part in the 2012 summer Quebec's Games. Participants completed a questionnaire measuring self-reported physical activity, perceived fitness, academic achievement, perceived autonomy and intrinsic motivation. Sport type (4 intensity categories), and age (early vs. late adolescence) were categorized for group comparisons. The sport-type by age interaction was also analyzed. **Results:** Early adolescents are more involved in MVPA, with nearly 60% (versus 45%) attaining the national guidelines. Sport associated differences were also observed, where almost 80% of the "high intensity" individual sports participants take part in daily MVPA (versus 47%). Perceived fitness was higher among the younger participants, and those who are involved in "high intensity" sports. Academic achievement differences were explained by age, where early adolescents had higher scores. Finally, younger adolescents were more intrinsically motivated towards exercise. Being involved in high intensity sports was also associated with higher intrinsic motivation. **Conclusion:** Results from this study suggest considering declines in MVPA and motivation for exercise among late adolescents. Stakeholders and sport organizations should promote participation in vigorous physical activities on a regular basis, especially among late adolescents. Results from this study suggest some practical implications to support adolescents' towards academic achievement. Funding: Québec en Forme, Québec, Canada.

Training Leaders to Implement Environment Favorable to Healthy Eating and Active Living in Youth: Analyzing Stakeholders' Intentions

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Objective: Healthy environments are crucial in the adoption of regular physical activity and eating behaviors among youth. The purpose of this study is to identify the determinants of Quebec's health promotion stakeholders' intentions to implement healthy environments in their districts (schools, family and community). The Theory of Planned Behavior (TPB) is the theoretical framework for this study. **Methods:** 1076 participants answered the survey. The sample was drawn from individuals enrolled in training sessions aimed at developing the stakeholders' awareness and competencies to set up healthy built environments in their districts. After each training session, questionnaires measuring attitudes, subjective norms, perceived control, and intentions to implement healthy environments were completed. Structural equation modeling was conducted to analyze the causal paths between each variable. **Results:** Results revealed very good fit indices (CFI > 0.95, RMSEA < 0.07), meaning a good adjustment of the variables to the model. Attitudes, subjective norms, and perceived control predicted significantly the participants' intentions to implement healthy environments ($p < 0.05$). Subjective norms and perceived control were the most important predictors of intentions. Attitudes were the weakest predictors of the stakeholders' intentions. **Conclusion:** Key components to consider when designing training sessions for stakeholders involved

in health promotion for youth were identified. Future training sessions should continue to enhance the stakeholders' attitudes and involve participation at the community district. Furthermore, training sessions should emphasize on the stakeholders' perceived control by enhancing their abilities and competencies to take action toward environments favorable to healthy eating and active living.

Correlates of Physical Activity in First Nations Youth Residing in First Nations Communities in Canada

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Objective: To examine associations between intrapersonal, family, and community factors with physical activity (PA) within First Nations youth. **Methods:** Participants were 4,837 youth (12-17 years old) responding to the 2008/10 First Nations Regional Health Survey, a representative cross-sectional study of First Nations persons residing in First Nations communities within Canada. Youth responded to survey questions about moderate-to-vigorous physical activity (MVPA), participation in traditional physical activities, 10 intrapersonal factors, four family factors, and six community factors via in-person interviews using a Computer Assisted Personal Interview (CAPI) system. **Results:** When averaged across all days of the year, 65% of First Nations youth accumulated at least 60 minutes/day of MVPA and 48% of youth participated in at least one traditional First Nations PA in the past year. Male gender, lower number of chronic conditions, living in balance physically, living with at least one biological parent, having more relatives help youth understand their culture, having more community challenges and more leisure/recreation facilities were independently associated with an increased likelihood of accumulating ≥ 60 minutes of MVPA. Younger age, male gender, knowledge and use of First Nations language, living in balance spiritually, living with at least one biological parent, having more relatives help youth understand their culture, living in a community of ≤ 300 people, and perceiving the natural environment and community health programs as strengths, were independently associated with an increased likelihood of participation in traditional First Nations physical activities. **Conclusion:** There are several PA correlates from diverse ecological levels within First Nations youth. **Funding:** First Nations and Inuit Health Branch, Health Canada.

Are Inequities in School Facilities and Policies Contributing to Socio-Economic Gradients in Physical Activity Participation in Australian School Children?

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Objective: There are clear socio-economic gradients in Australian children's moderate-to-vigorous physical activity (MVPA) participation. This study aimed to determine whether school facilities and policies supporting physical activity varied according to school socio-economic status (SES). **Method:** 528 children from 26 randomly-selected schools in metropolitan Adelaide participated in the International Study of Childhood Obesity, Lifestyle and the Environment. School-level SES was determined by the Australian Government's 'Index of Community Socio-Educational Advantage'. Minutes of MVPA were determined from 7-day hip-worn accelerometry. School facilities (n=28 items) were evaluated with an objective audit of the school grounds which rated schools on criteria such as the number and quality of playground equipment. School policies related to physical activity (e.g. written policy on physical activity, sports offered) were collected (n=21 items) in a school principal survey. Relationships between school-level SES and facilities and policies were examined using regression analyses. **Results:** School facilities were not associated with SES, with the exception that lower SES schools were more likely to have a sports field (p=0.02). School policy relating to physical activity and sports were not associated with SES, apart from Australian Rules Football which was associated with higher SES schools (p=0.03). There were no significant associations between school facilities and in-school MVPA. This was despite a socio-economic gradient in MVPA in this dataset, including for in-school MVPA. **Conclusion:** School facilities and policies supporting MVPA were unrelated to school-level SES. Therefore, it appears that some other mechanism must be underlying the socioeconomic gradients seen in MVPA participation in Australian children. **Funding:** The International Study of Childhood Obesity, Lifestyle and the Environment (ISCOLE) was sponsored by The Coca Cola Company, however the sponsor had no role in the study's design, conduct, analysis or interpretation of results.

The Relationship Between Changes in Motor Coordination and Physical Activity in Children With Developmental Coordination Disorder: A Three-Year Follow-Up Study

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Objective: To investigate whether change in motor coordination in children with possible Developmental Coordination Disorder (pDCD) is associated with change in physical activity (PA). **Methods:** Seventy-six 12- to 14-year-old children with pDCD (43 boys; 33 girls) participated in this three-year longitudinal study. The Movement Assessment Battery for Children-Second Edition (MABC-2) and accelerometers were used to assess motor coordination and physical activity respectively. Subscale and total test scores (TTS) of the MABC-2 test were assessed each year. Changes in these scores overtime were used to predict changes in the daily average time of the total PA, light-intensity PA (LPA), and moderate-to-vigorous-intensity PA (MVPA). **Results:** 21 boys

(61.8%) and 13 (38.2%) girls with valid data of the MABC-2 test and PA completed all 3 years of the study. According to the manual of the MABC-2 test, children's performance was divided into three categories: non-DCD (>15th %tile), pDCD (5th-15th %tile), and severe DCD (<5th %tile). One child declined from pDCD in the 1st year to severe DCD in the 3rd year, 20 improved motor skills, and 13 remained in the same category. The result of the linear regression showed that neither change in the TTS nor the subscale scores could significantly predict changes in total PA, LPA and MVPA. **Conclusion:** In the DCD population, change in motor coordination may not be strongly related to change in PA. Therefore, in order to enhance these children's participation in PA, more research is needed to identify other determinants.

Building Blocks for Young Children's Health: Improving Physical Activity Policy and Practices in Small-Group Childcare Settings

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Objective: America's young children increasingly have a high participation rate in some form of childcare; about forty-one percent of preschool children are in childcare for thirty-five or more hours per week. Thus, childcare providers have increasingly become a primary source of early social influence for young children, and care settings represent a potential venue to help children develop healthy eating and physical activity (PA) habits. However, care providers, particularly in small group and family home settings, may have limited skills and training resources to help foster these early healthful foundations for the young children they serve. **Methods:** We identified three types of agencies established in Massachusetts (MA) that are affiliated with family childcare homes in terms of regulation, monitoring, and training. In four unique geographic areas of MA, we interviewed at least one representative of each agency type regarding agency's role, practices, and regulations, including those associated with PA. Qualitative methods will be used to code the information into categories and compile reports. **Results:** We will describe findings in terms of: comparison of existing PA standards of each agency with current national and professional recommendations; potential methods and venues recommended for enhancing PA of children receiving care in small group settings; limitations to children's PA in these settings. **Conclusions:** Providers of childcare would benefit from increased coordination of agency services and standards. Enhanced training and educational resources are needed to foster PA in the family childcare home setting. **Funding:** Funding support for this research is provided by Aetna Foundation.

How to Deliver and Evaluate Effective Movement Programs in Head Start Centers

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Objective: Emerging evidence support the teaching of fundamental motor skills in early childcare programs to promote physical activity in later years. **Approach:** This workshop will provide attendees with evidence-based programs and evaluation methods regarding the development of movement instruction/programming and assessment of movement skills from two diverse preschool settings. **Empirical Evidence:** Sample 1 determined the effectiveness of the All 4 Kids[®] nutrition and physical activity curriculum that incorporates teach state pre-k physical standards into music and dance activities. Preschoolers, predominantly Hispanic, at 12 Head Start sites in Clark County, Nevada served as the control and intervention sites and were assessed (pre- and post- intervention) for physical movement skills. Children participating in the All 4 Kids[®] program demonstrated significant improvements ($p < .001$) in 11 of the 12 individual movement skills overtime. Using an ANCOVA, preschoolers in the intervention group demonstrated a significantly higher composite score than preschoolers in the control group ($< .001$). Sample 2 determined the effectiveness of three 9-week motor skill programs (low autonomy, high autonomy, and free play) on object control skill development, physical activity participation, and perceived physical competence in a predominantly African American population in Alabama. An ANOVA with repeated measures revealed a significant Group X Time interaction ($p < .001$). Post-hoc analyses reported the low and high autonomy groups ($p = < .001$) significantly improved their object control skill overtime and no differences were present between groups. However, only high autonomy participants demonstrated significant improvements in perceived physical competence and physical activity participation overtime. **Funding:** United States Department of Agriculture, National Institute of Food and Agriculture, Food and Nutrition Service.

Psychosocial and Environmental Determinants of Physical Activity in Elementary School Children: Implications for Interventions to Reduce Childhood Obesity

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Objective: To explore the psychosocial and environmental determinants of physical activity (PA), and examine the influence of wearing pedometers on the hypothesized determinants (PA self-efficacy, enjoyment, parental influence, and environment) of PA, among elementary school children attending afterschool programs. **Methods:** A cross-sectional correlational design was used to explore the determinants of PA in 133 children aged 8-11 years old. A pretest-posttest study was also conducted to examine the influence of wearing pedometers on the determinants of PA among a subsample of 50 randomly selected children. Cluster sampling was used to recruit children from 10 elementary schools with afterschool programs in a Midwestern U.S. school district from August through October 2013. Children's PA was assessed by a 7-day recall scale, and 7-day pedometer steps. **Results:** Approximately 49% of the children were overweight or obese, but only 13% met national PA recommendations. Overweight or obese children took fewer pedometer steps than non-overweight children, and pedometer steps were negatively correlated with children's BMI z-score. Wearing pedometers did not have a significant influence on the determinants of PA. Parental influence partially mediated the relationships of PA self-efficacy and enjoyment

with PA. For self-reported PA, enjoyment had the strongest effect followed by self-efficacy, while parental influence had the strongest effect on pedometer steps. **Conclusion:** Given that parental influence is the mediator for promoting physical activity in children and has the greatest effect on children's pedometer steps, future interventions should target parental influence to improve children's physical activity as a means to reduce childhood obesity. **Funding:** Commission on Diversity and Racial Equality Grant, Iota Zeta Chapter Research & Scholarship Grant, Community Engagement Grant, and Graduate Student Council Research Grant at University of Louisville.

A Scoping Review of Physical Activity and Sedentary Behaviour in After-School Programs

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Objective: To provide a preliminary assessment of factors that influence physical activity (PA) and sedentary behaviour (SB) in after-school programs (ASPs) from a broad range of literature. **Methods:** A scoping review of academic and grey literature was conducted to identify the breadth of knowledge on factors that promote or discourage PA and SB in children attending ASPs. Databases, websites, and Google were searched for publications (articles, conference proceedings, reports, etc.) related to PA, SB, and ASPs from 2000 to July 23, 2013. Descriptive characteristics and content analysis of the literature were charted. Themes were identified from the content analysis and categorized according to the social ecological model (SEM) (individual, interpersonal, community, organizational, environmental and policy) (McLeroy et al., 1988). **Results:** 5227 records were identified through database and grey literature searching, after a series of screening steps 41 publications were considered eligible and included in the scoping review. **Conclusion:** The key findings suggest that PA and SB are influenced by all levels of the SEM in ASPs. The most common factors influencing PA and SB in ASPs included staff confidence, ability of staff to facilitate PA, staff professional development, program design, support from management, policies, connections in the community and logistics. Many PA and SB influences in ASPs were categorized as factors from the organizational-level of the SEM. The multifaceted nature of factors influencing PA and SB in ASPs sheds light on the complexity of the public health issue of physical inactivity among children.

PASS (Physical Activity School Score): A Tool to Promote Evidence-Based Physical Activity Practices in Elementary Schools

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Objective: To design and implement a user-friendly tool to inform diverse constituents about evidence-based physical activity (PA) practices in elementary school settings and (b) permit users to

compare PA program practices at their local school to both recommended practices and other schools. **Methods:** PASS (Physical Activity School Score) was designed to increase awareness of recommended evidence-based PA practices related to physical education, recess, and other PA opportunities including classroom activity breaks, before and after school programs, and active transport. We reviewed evidence-based literature, created the instrument, revised it several times based on reviews of constituents (e.g., teachers, administrators), and developed the tool for use on an electronic platform. **Results:** The PASS has eight multiple choice items. Upon responding to an item, (e.g., PE frequency) immediate feedback is provided that includes (a) a point value for the specific response (b) evidence-based recommendations, and (c) feasible strategies for improvement. After completion of all eight items, a total school score out of 30 possible points is provided along with a school Grade (A-F) and the opportunity to compare the score to other schools nationally and within the same state. PASS also provides links to online resources about evidence-based school PA program practices. **Conclusions:** PASS is a free, user-friendly, web-based, 8-item tool that increases awareness of evidence-based PA practices at elementary schools. Respondents can assess aspects of PA programs and, based on information provided by the tool, determine their school status and receive information on feasible strategies for making improvements. **Funding:** Active Living Research Program of the Robert Wood Johnson Foundation.

MoveU: An Active Healthy Living Initiative Targeting First Year University Students

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Background: Recent research has highlighted a steep decline in physical activity (PA) levels among teenagers during the transition to university. In response, the University of Toronto (UofT), in collaboration with ParticipACTION, developed a social marketing campaign called MoveU, to encourage in active healthy living among first year female students. **Purpose:** To present preliminary findings from the process evaluation of the first year of the MoveU campaign including campaign awareness and correlates of awareness. **Methods:** The campus recreation impact survey (n=1603) was distributed in November 2012 to students at the St. George campus. This survey assessed demographics; frequency of physical activity and sport participation; and awareness of the MoveU campaign. A secondary data analysis was conducted in order to assess awareness and correlates of awareness of MoveU. In addition, interviews and focus groups with key partners and peer leaders involved in the campaign were analyzed. **Results:** Shortly after campaign implementation, 33% of respondents had heard, read, or saw something with the slogan or logo "MoveU". Significant predictors of awareness of MoveU included being female (OR = .714; 95% CI .535-.953) and living on campus (OR = .388; 95% CI .194-.777). Analysis of partner interviews and peer leader focus groups revealed that the social media presence, the peer-to-peer teams, and having multiple partnerships were identified as effective components of the campaign. **Conclusion:** In its first year, MoveU was successful in generating awareness and reaching the target audience of female undergraduates. Future evaluations will assess impact on levels of physical activity. **Funding:** Ontario Trillium Foundation.

Sports Day in Canada: Examining Benefits for Community Organizations

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Objective: Sports Day in Canada (SDIC) is an annual, week-long celebration of sport that aims to inspire a more active and healthy population. The objectives of this study were to examine the types of organizations who participated in SDIC and how organizations benefited from hosting a SDIC event. **Method:** All community host organizations who registered an event in 2012 received an invitation to complete an online survey (n = 1188) and 371 completed the survey (RR = 31%). Descriptive analyses of the survey respondents who target youth (up to 19 years old; n = 292 organizations) were conducted to identify organizations' location, setting, and sector and assess organizers' perceptions of benefits derived from hosting an event. **Results:** Organizations were mainly from Ontario (31.8%), British Columbia (22.9%) and Quebec (12%) and from an educational (52.7%), recreational (29.1%) or sport (37%) sector. 90.8% of these organizations agreed that they benefited from hosting a SDIC event and 70.3% reported that their organization will still be benefiting in 6 months. The main benefits endorsed by organizations included 1) an increase in awareness and interest in sports programs offered by their organization (42.8%); 2) an increase in awareness and interest in their organization (38%); and 3) an increase in participation or registration in the program (37.7%). **Conclusion:** Evaluations of physical activity related mass-events like SDIC have focused on impact on individual behaviour. Our findings suggest such events may be leveraged by organizations to have a longer lasting impact beyond the event itself. **Funding:** Canadian Institutes of Health Research.

The Active Play Patterns of Young Children With Autism Spectrum Disorder

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Objective: The objective of this study is to examine the motor skill, physical activity and active play patterns of young children with autism compared to their peers without autism. While the hallmark characteristics of autism spectrum disorder (autism) include deficits in social communicative skills and restricted behaviors, a less well-recognized, but equally important, characteristic is the presence and persistence of motor skill deficits. How early motor skill deficits manifest in children's early physical activity experiences and active play skills has been relatively underexplored. **Methods:** Young

children between the ages of 2- 7 years old with autism (n= 9) and without autism (n=9) were recruited for this study. Participants were assessed on their motor skills, physical activity, measured through accelerometry (ActiGraph), and active play skills, coded through video analysis. **Results:** ANCOVA, revealed significant differences in gross motor skills ($p < 0.05$) between children with and without autism, however there were no significant differences in physical activity patterns across sedentary, light or moderate to vigorous physical activity. Children with autism used less proficient motor skills in their active play. **Conclusion:** The motor skills of young children with autism are less developed than their peers without autism, yet at an early age there do not appear to be extensive differences in physical activity patterns. During active play, less proficient motor skills were evident in young children with autism. Given that motor skill deficits have been clearly indicated in this young group of children, motor skills need to be considered in early intervention. **Funding:** The contents of this presentation were developed under a grant from the US Department of Education, #H325D100061. However, the contents do not necessarily represent the policy of the US Department of Education, and you should not assume endorsement by the Federal Government. Project Office, Louise Tripoli.

Impact of Early Childhood Weight Status on Motor Skill Development Between Kindergarten and Grade 2

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Objective: Numerous cross-sectional studies have demonstrated a negative correlation between youth BMI and functional motor skill (FMS) proficiency. However, the degree to which early childhood BMI affects ensuing motor skill development is unknown. This study examined the effects of BMI on FMS proficiency in a regional sample of British Columbian children as they progressed from kindergarten to grade 2. **Methods:** FMS proficiency, determined by the Test of Gross Motor Skills-2 (TGMD-2), was measured in 173 kindergarten children (Female=81), then again in the same participants two years later. BMI determinants, height and weight, were measured via stadiometer and spring scale, respectively, on the same days as motor skill testing. Both TGMD-2 scores and BMI percentiles were adjusted for age and gender. **Results:** Multivariate analyses of variance revealed significant increases in object control and locomotor skill proficiency for both boys and girls between kindergarten and grade 2. Girls' locomotor skills scores increased from 26.9 ± 6.7 to 32.8 ± 4.9 and object control skills scores increased from 20.2 ± 6.5 to 27.4 ± 5.5 . Similarly, boys' locomotor skills increased from 25.2 ± 7.7 to 29.8 ± 6.1 and object control skills increased from 22.8 ± 8.3 to 31.5 ± 7.0 . Linear regression models showed that, in boys, kindergarten BMI predicted grade 2 locomotor skills ($p=0.027$, $R^2=.045$), and grade 2 BMI predicted grade 2 object control skills ($p=0.013$, $R^2=.077$). Neither kindergarten nor grade 2 BMI predicted FMS proficiency for girls at either age. **Conclusions:** These findings suggest that early childhood weight status is likely to exert a compounding effect on FMS development in boys between kindergarten and grade 2. **Funding:** This research is funded by a SSHRC Insight Development Grant #430-2012-0343.

Examining Peer Influences to Reduce Sport Attrition in Female Adolescents

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Objective: To examine the potential influence of peers in the prevention of female adolescent attrition from organized sport. **Methods:** A qualitative design was implemented for this study and involved two phases of data collection: photo-voice and semi-structured interviews. Eight female athletes aged 13-17 years from eight different sports participated in the study. Individual and team sports were included, and the competitive levels ranged from club to international level. **Results:** The results indicated that female adolescent athletes learn about three major aspects of the self—psychological, social, and physical—through interactions with peers in sport. An overview of the personal characteristics developed through interactions with peers (e.g., confidence, supportiveness, competitiveness, perseverance), as well as the influence of peers on participants' perceptions of their personal body-image, will be discussed. The data from the interviews and photos indicate that peers had primarily positive influences on identity development. The findings will be examined in relation to female adolescent attrition from organized sport. **Conclusion:** Overall, approximately two-thirds of youth athletes aged 7-18 drop out of sport each year, with most of these being female adolescents (Fraser-Thomas, Côté & Deakin, 2008; Petlichkoff, 1996; Wankel & Mummery, 1996). It is suggested that drop out from sport in adolescence may be related to the challenges of identity development faced by young female athletes. The results of this study convey the importance of sport involvement for female adolescent identity development and the potentially positive role of peers in this developmental process.

Planning for Active Transportation to School in the Kanien'kehàka (Mohawk) Community of Kahnawàke, Quebec, Canada

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Objective: To discuss: 1-the School Travel Planning (STP)-Committee's collaboration and refinement of Active & Safe Routes to School (ASRTS) activities; 2-baseline findings; 3-STP-action plans; and 4-implications for research and practice. **Methods:** Guided by principles of community-based participatory research (CBPR), STP-Committee works in a close and equitable partnership. Through ethnography, data were drawn upon participant observation, field notes, meeting minutes, and a coordinated action partnership survey and interviews. Serving school active transportation (AT) action plans ASRTS activities were adapted, including family survey, in-class travel survey, pedestrian-traffic observations, Pedestrian Environment Data Scan (PEDS) walkability checklist, and school profile

survey. **Results:** Formed January 2013, the STP-Committee meets monthly and includes two teachers/parents, school administrators, transportation management, one community protection representative, and Kahnawáke Schools Diabetes Prevention Project (KSDPP) staff. Guided by a co-developed timeline and terms of reference, local knowledge and expertise are incorporated into all aspects of research. Except for limited time and meeting opportunities, few barriers occurred. Commitment and ongoing support from recognized community organizations facilitated the process. ASRTS data are jointly collected, analyzed, and interpreted from August 2013 to April 2014. Findings from ASRTS data and partnership evaluation are forthcoming. **Conclusion:** Combining CBPR with STP is suitable for merging community and researcher expertise for STP in Kahnawáke. Future steps include translation of data into action plans, implementation, and follow-up evaluation. The project will contribute to evidence-informed practice for KSDPP's objectives to promote active living through school- and community-wide interventions. Experiences and findings could benefit other Indigenous and non-Indigenous communities wishing to undertake STP. **Funding:** Canadian Institutes of Health Research (CIHR)—Anisnabe Kekendazone Network Environment for Aboriginal Health Research (AK-NEAHR) PhD scholarship to the first author.

The Influence of Parental Encouragement on Physical Activity Behaviours of High School Females at Risk of Physical Inactivity

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Objective: Establishing patterns of behaviour in childhood and adolescence is important for immediate health benefits and the development of healthy behaviours in the future. Certain factors, such as, the lack of parental support and encouragement have been identified as barriers in nurturing physical activity behaviour (Dwyer et al., 2006). The purpose of this study was to examine the influence of parental encouragement on community sport involvement, school sport involvement, non-traditional sports participation, physical activity attitudes, and the likeability of being physical active among high school females at risk of physical inactivity. **Methods:** A paper-based survey was administered to 137 females in grades 10-12 at risk of physical inactivity, as identified by their teachers in 20 schools. Students were asked to rate their level of parental encouragement, measured in four levels: strongly disagree, disagree, agree, and strongly agree. An ordinal logistic regression analysis was used to determine the influence of parental encouragement (dependent variable) on age, ethnicity (white vs. other), school sport participation, community sport participation, non-traditional sports participation, attitudes toward physical activity, and the likeability of being physically active. **Results:** 91% of females responded that they agree/strongly agree that their parents encouraged them to be physically active. Participants were more likely to have higher parental encouragement if they had higher (vs. lower) positive attitudes towards physical activity (OR=1.39 (95%CI: 1.20, 1.61), p<0001). **Conclusion:** In conclusion, parental encouragement is important in shaping positive attitudes towards physical activity in high school females at risk of physical inactivity. **Funding:** This research was supported by Leadership Advancement for Women in Sport.

Relationships Among Fitness Measures and Health Outcomes in Youth

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Objective: To examine relationships among fitness measures and health outcomes in 10-13 year old children. **Methods:** Participants (N=61) were tested twice on handgrip (HG), standing long jump (SLJ), vertical jump (VJ), isometric knee extension (IKE), push-up (PU), and modified pull-up (MPU). Health outcomes were aerobic fitness (VO₂max), percent fat, physical activity (accelerometer), and blood pressure (BP). **Results:** Reliability was high (R_z.93) for all variables. Relationships differed by gender. For girls, the following variables were moderately correlated with VO₂max (r_z.62), percent fat (r_z-.65), and BP (r_z-.33): SLJ, VJ, PU, and MPU. HG was moderately associated with health outcomes in the unexpected direction, but not significant when HG was expressed relative to mass⁻⁶⁷. Correlations were moderate for boys, but slightly lower than for girls. Associations with HG·mass⁻⁶⁷ were moderate and in the expected direction with percent fat and VO₂max (r_z.40, p<.05), but low with physical activity and BP. Logistic regression examined how accurately fitness tests categorized participants into health groups. For girls, significant associations were found between SLJ, VJ, MPU, PU, and HG and at least one health outcome. For boys, significant associations were found between SLJ, MPU, PU, and HG and at least one health outcome. No significant relationships between HG·mass⁻⁶⁷ or IKE were found with any health outcome classifications. **Conclusion:** Relationships between fitness measures and health outcomes differ by gender. Some evidence that SLJ, VJ, MPU, PU, and HG reflect health-related fitness was found. When HG is controlled for body mass, it is unrelated to health-related fitness classification.

Can Physical Activity and Sedentary Behaviour Be Predicted From Socioeconomic Status? The Australian ISCOLE Study Cohort

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Objective: To examine the associations between socioeconomic status (SES) and time spent in moderate-to-vigorous physical activity (MVPA) and sedentary behaviour in a cohort of Australian children. **Methods:** 528 9-11 year old children residing in Adelaide were recruited as part of the International Study of Childhood Obesity, Lifestyle and the Environment (ISCOLE). Weekly and daily (weekday and weekend day) MVPA and sedentary minutes were determined from 7-day accelerometry. Children self-reported their television and computer gaming behaviour, while age, sex, parental education level and household income were collected by parental survey. *Associations were examined using multivariable linear*

regression. **Results:** Household income was associated with MVPA across the whole week and on week days, though not weekend days. On average, children with the lowest income obtained nearly 30% less MVPA than those from the highest income (29 vs 39 min/d). Household income was not associated with total sedentary time, nor time spent watching television or playing computer games. In contrast, parental education was associated with television time, with children with lowest educated parents watching 57% more television than those with the highest educated parents (130 vs 83 min/d). Parents' education level was unassociated with computer game time, total sedentary time and MVPA. **Conclusion:** Relationships between SES and activities varied depending on the SES marker used. These differences may provide clues regarding underlying mechanisms and potential intervention targets. Findings suggest financial assistance (e.g. subsidies) may improve participation in MVPA, while educational programs may assist in reducing screen time in children from disadvantaged families. **Funding:** The International Study of Childhood Obesity, Lifestyle and the Environment (ISCOLE) was sponsored by The Coca Cola Company, however the sponsor had no role in the study's design, conduct, analysis or interpretation of results. Carol Maher receives a fellowship from the Australian Research Council.

Identifying Barriers and Solutions to Active School Travel: Exploring the Perspectives of Professionals Across the Greater Toronto Area and Canada

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Objectives: One source of physical activity (PA) that can contribute to children attaining recommended PA guidelines is Active School Transportation (AST; walking/biking to school). However, AST levels have been on the decline internationally. Increasing attention has been placed on identifying solutions to reverse this trend. The purpose of this study was to identify challenges and potential solutions to increasing AST among practitioners and policy makers involved with school travel in Canada. **Methods:** Semi-structured telephone interviews were conducted with purposely-chosen practice and policy professionals (n=40; public health, police, municipal planners & traffic engineers, school boards, & school administrators) involved in school travel across Canada. A thematic analysis approach was adopted. **Results:** The commonly cited barriers related to safety concerns, built environment characteristics and inconvenience/time issues. Suggestions to address safety concerns included increasing parental engagement and incorporating walk/bike safety training into the school curriculum. It was indicated that built environment barriers could be addressed during the design process of new neighborhoods. The issue of convenience and time were suggested to be tackled through organizing AST parental supervision (e.g., walking school buses), promoting the health benefits of AST, and implementing anti-idling zones near schools. **Conclusion:** Findings indicate the need for multidisciplinary and multi-sectoral approaches to addressing the decline in AST. In conjunction with efforts to make communities and environments more supportive of active travel, Transportation Demand Management (TDM) policies and strategies, such as School Travel Planning, may be the basis for identifying solutions at a local level to AST barriers. **Funding:** PhD candidate George Mammen is

co-funded by two Canadian Institute for Health Research (CIHR) Strategic Training Program's in Population Interventions for Chronic Disease Prevention and Public Health Policy. George Mammen is also provincially funded holding an Ontario Graduate Scholarship.

Sedentary Screen-Based Activities are Independently Associated With Symptoms of Depression and Anxiety in a Community Sample of Ontario Youth

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Objective: Sedentary behaviour, especially screen time, has an adverse effect on cardiometabolic risk profile and adiposity in youth independent of physical activity; however, less is known about its impact on mental health. The present study examined the relationship between sedentary screen-based activities (television viewing, computer use, and video game playing) and depression and anxiety in a large community sample of youth, controlling for age, gender, ethnicity, parental education, geographic area, physical activity, and body mass index (BMI). **Methods:** Participants included 2482 (1048 males) English-speaking grade 7-12 students in Ottawa, Canada. Mean BMI was 21.03 kg/m², (SD=3.66). Cross-sectional data from the Research on Eating and Adolescent Lifestyles (REAL) study were used. Mental health status was assessed using the Children's Depression Inventory and the Multidimensional Anxiety Scale for Children-10. Screen time was assessed using the Leisure-Time Sedentary Activities questionnaire. **Results:** Hierarchical multiple regressions indicated that increased time spent engaging in sedentary screen-based activities was significantly associated with increased symptoms of depression and anxiety. Computer use was significantly associated with increased symptoms of depression, and video game playing was significantly associated with increased symptoms of depression and anxiety. **Conclusions:** Increased sedentary screen time is independently associated with feelings of depression and anxiety in youth. Moreover, different screen time behaviours may be differentially associated with mental health outcomes, which may have important implications for identifying risk factors and intervention targets in treatment and prevention of depression and anxiety in youth. Future research using longitudinal designs will better elucidate these relationships, and will help to identify potential causal pathways. **Funding:** Ontario Graduate Scholarship, The Ontario Centre of Excellence for Child and Youth Mental Health, University of Ottawa Medical Research Funds

An Exploration of Early Childhood Education Students' Knowledge and Preparation to Facilitate Physical Activity for Preschoolers

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Objective: Early childhood educators play an important role in influencing preschoolers' physical activity levels. The current study sought to explore Early Childhood Education (ECE) students' physical activity (PA)-related knowledge and educational experience. **Methods:** A total of 1,113 ECE students from 20 Ontario Colleges completed the study survey (online or on paper), which examined students' PA course content; awareness of PA guidelines; understanding of health-related benefits of PA; self-efficacy to facilitate PA for preschoolers; as well as PA resource needs. **Results:** Survey results identified that 72% of ECE students had not completed any PA/physical education specific courses, while only 28.7% were familiar with, and 2.0% accurately reported, the Canadian PA Guidelines for the Early Years. ECE students' mean self-efficacy to facilitate PA ranged from 6.0-7.0 (out of 10.0). **Conclusion:** The results indicate that the current ECE college curriculum represents an excellent opportunity to provide future childcare providers with enriched PA-related training and support.

Economy Of Children's Movements To Treadmill Speeds and Active Play

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Objective: To determine if children's gross economy of movement (GE) over a range of self-paced physical activity (active play (AP)) is related to age, stature and body dimensions. **Methods:** Oxygen uptake for children (9.8±0.9yrs) and youth (18.2±1.1yrs) were assessed on a treadmill. Accelerometers (ActiGraph) were collected in epochs of 3-10sec and used to quantify physical activity (PA). Similar measurements were collected during the playing (4-7min each) of active games (n=33) Gross economy (GE) for TM speed (TS) and AP was expressed as relative $VO_2/m/min$; and GE for physical activity (PA) was expressed relative $VO_2/cnt/min$. ANOVA and post-hoc assessments were at $p=0.05$. **Results:** The GE-TS ($VO_2/m/min$) for children and youth increased from 0.170±0.017 to 0.213±0.018 over speeds of 66.6 and 132.6 metres/min ($p<0.05$). The GE-PA ($VO_2/cnt/min$) values ranged from 0.0056±0.001 and 0.0057±0.001, respectively ($p>0.05$). The r between GE-PA and height and leg length (LL) were -0.13 and -0.31, respectively ($p>0.05$). BMI, body fatness and aerobic power were related to GE-PA but not GE-TS. Minimal relationship was observed for GE-TS and GE-PA ($r^2=0.01$). When GE was assessed by PA using AP format, the GE results showed a size-independent relationship. **Conclusion:** The primary finding was that gross economy for measured over a range of TM speeds and PA levels are impacted differently by stature/growth for children and youth. As predicted GE-TS was highly related to stature/growth; in contrast minimal impact of stature/growth was observed for GE-PA with either TM and/or AP of games. **Funding:** Supported by GSK, Canada.

The Epode Approach to Change Sedentary Behaviours

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Objectives: The objective of the Epode approach is the coordinated mobilization of the whole community through sustainable interventions to prevent childhood obesity. This is made possible through the organisation of actions in the field, which focus on promoting physical activity and reducing sedentary behaviour. **Methods:** The Epode methodology uses a positive approach, with no stigmatization of people or behaviour, step-by-step experienced based learning tailored to the needs of all socio-economic groups. Therefore, social marketing campaigns, including key messages and actions, developed for promoting physical activity and less sedentary behaviour encourage children and families to actively play and to have fun together. Activities are proposed on a regular basis and in various settings (schools, leisure centres, game areas, sport clubs...) in order to target all of the community and all stakeholders. The physical environment is also modified with for instance the development of new game and gardening areas. **Results:** Programmes implementing the Epode methodology (11,175,000 people in 8 countries) are mobilising their communities so they can benefit from the actions developed. A positive effect is witnessed in terms of reduction of overweight. Concerning the Belgian programme Viasano, significant decrease (-22%, $p<0,05$) of overweight prevalence in a town implementing the Epode methodology was observed, compared to a control town, after four years of implementation. **Conclusion:** The Epode approach is successful in implementing actions that promote physical activity and aim to reduce sedentary behaviour. A positive impact is seen on the reduction of the prevalence of overweight in the communities involved in the Epode programmes.

Beyond the Problem and the Intervention: Understanding Contextual Factors Influencing Adoption of a Comprehensive School Health Program

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Objective: This qualitative inquiry was designed to explore factors that influence the adoption of a school health program (Go Girls!). Early life/adolescence represents a key stage for public health interventions aimed at improving health in all stages of life. Given the burden of childhood obesity, it has become more critical to pay attention to school-aged children. **Methods:** Using multiple cases, the focus was an in-depth exploration of perspectives of the decision-making process surrounding the program adoption. Analysis of participants' perspectives as expressed through semi-structured interviews and document analysis will provide holistic understanding of the process. Roger's Diffusion of Innovation theory guides the design and analysis of data. Four schools within the Lakehead Public School Board where the program have been offered and adopted were invited to participate in this study. Key informants within the schools were chosen in order to capture the perspectives from various hierarchical levels. **Results:** A key factor across all cases is the fit of the program within the schools' values and goals. That is, the program appropriately complements the schools' set goal. Another emerging factor across the cases is the ease of program delivery. The program is appealing as the schools have to do very little; program delivery (including resources) is provided by a community agency. **Conclusions:** With the increasing priority to address healthy-active living among school-aged

children, public health practitioners should consider the complexity of proposed school health programs and ensure that initiatives do not require additional resources from the school's already strained pool of resource.

Randomized Controlled Pilot Study on the Effectiveness of a Physical Activity Intervention, SKIP! (Small Kids in Physical Activity), in 2-3 Year-Old Children

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Objective: To determine the feasibility and effectiveness of a structured physical activity intervention on physical activity (PA) levels in toddlers and their parents/caregivers in an urban Early Head Start program. **Methods:** SKIP!, the intervention, was designed from an interdisciplinary blend of theory and evidenced-based research. Approximately 200 families at an urban Early Head Start program are being recruited to participate in this ongoing randomized controlled pilot study of SKIP!. Control groups follow the Early Head Start program's typical curriculum that includes minimal structured PA; intervention groups receive a 27-session, structured PA intervention as a weekly classroom activity. Quantitative, qualitative, and process data are currently being collected. Parent-child pairs in the study wear an ActiGraph (model wGT3X+) for five days; parents complete the International Physical Activity Questionnaire (IPAQ) and engage in structured group interviews. Classroom sessions are videotaped, and will be coded and analyzed using direct observation methods (OSRAC; Observational System for Recording Physical Activity in Children – Preschool and Home). **Results:** ActiGraph, IPAQ, structured interviews, and process data will be presented. **Conclusion:** Initial process data from a 6-month project demonstration of SKIP! showed that it is an acceptable and feasible curriculum for 2-3 year olds in an Early Head Start program. Anecdotal evidence to date describes an effective and well-received physical activity intervention for toddlers and their caregivers in an urban Early Head Start program. Objective data will demonstrate the intervention's affect on PA behavior and attitudes surrounding PA in participating toddlers and parents. **Funding:** Arthur Zankel Urban Fellowship, Teachers College, Columbia University.

Keeping Kids Safe: Sedentary Activity in Aboriginal Canadian Households

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Objective: One of the aims of this study was to explore the underlying factors that influence physical activity among Aboriginal children. **Methods:** This study was conducted between September 2012 and February 2013 in six First Nation communities in Northeastern Ontario. Parents whose children had participated in an earlier phase of this study as well as interested community members were invited to participate in focus groups. Five focus groups and three parent interviews were conducted for a total of 33 participants. An analysis of the transcripts using open coding was conducted using NVivo 10. **Results:** Two dominant themes emerged from the data. The first

theme was the recognition that current patterns of physical activity are different from previous generations who were physically active through outside, unorganized play along with physically demanding chores. The second major theme was that current patterns of activity are sedentary and are influenced by technology and safety. Four main safety concerns were cited as the reason for this shift: safety from dogs and bears, safety from drugs and alcohol, safety from being reported to child welfare agencies, and safety from sexual assault. **Conclusion:** Safety concerns stem from intergenerational trauma and colonial policies like the child welfare system. Health messaging that is aimed at encouraging families to be physically active together can ameliorate safety concerns.

How Do Urban Aboriginal Community Members Describe 'Community' Within the Context of Sport?

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Objective: There is general consensus that sport programs for Aboriginal youth should be community-driven but how urban Aboriginal youth perceive 'community' is not well documented within the sport literature. This qualitative description study is part of a larger community-based participatory research (CBPR) study that seeks to enhance sport opportunities for Aboriginal youth in Edmonton, Alberta. The purpose of this phase of the CBPR study was to better understand the meanings of 'community', particularly as it is understood within the context of sport, for urban Aboriginal youth and community partners. **Methods:** The research objectives and methodology for this CBPR were co-developed by a team of researchers, Aboriginal youth, and Aboriginal community partners. For this phase, a total of 18 participants (9 Aboriginal youth and 9 Aboriginal community partners) participated in one-on-one interviews. Interviews were transcribed verbatim and content analysis used as the primary method of data analysis. **Results:** The findings are represented by five themes that are supported by the words of the participants. Within the context of sport, participants described community as: (1) belonging, (2) family and friends, (3) supportive interactions, (4) where you live and come from, and (5) sport. **Conclusion:** Participants described the key features that comprise their meanings of community, suggesting ways that communities can support sport opportunities for urban Aboriginal youth. Participants also argued that sport can foster a sense of community, which may be particularly important for urban Aboriginal youth. This presentation will highlight the participant's perspectives of the unique relationship between sport and community. **Funding:** Social Sciences and Humanities Research Council of Canada (SSHRC).

Municipal Child Care Active Living Guidelines

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Program Objective: In 2012, Ottawa Public Health partnered with the City of Ottawa Municipal Child Care Services to develop

Healthy Eating and Active Living Guidelines for its 12 child care centres. The Active Living Guidelines provide guidance to child care centres around their physical activity programming and include specific recommendations related to physical literacy and sedentary time. Two staff training sessions accompanied the launch of the guidelines. These sessions provided relevant background information and concrete ideas for incorporating the guidelines into practice. The City of Ottawa, Parks and Recreation Department has now partnered on this project to provide advanced training around physical literacy development for identified municipal child care physical activity champions. **Findings/Outcomes:** The Active Living Guidelines were piloted in 2 centres in the spring of 2013 prior to full implementation in late 2013. The pilot evaluation demonstrated that the guidelines were well received by the child care educators and led to programming and environmental changes. Physical activity resources and parent engagement were two areas flagged for further development. Results from the full implementation of the guidelines to all municipal centres will be available in late 2014. **Conclusions/Perspectives:** In the midst of rising obesity rates, child care has been identified as an important setting for promoting physical activity and healthy eating in young children. The Child Care Active Living Guidelines help ensure consistent standards of practice in the child care setting by addressing the environment, sedentary time, and the types and amount of physical activity programming offered.

“It’s Ruining My Recess Time!” Ecological Factors That Hinder Active Play and Physical Activity During Recess: Lessons Learned and Recommendations

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Objective: There is a breathtaking gap in the scholarly literature with respect to school recess and the ways in which ecological factors influence play and physical activity. Our intention is to analyze the context of recess critically. Does it afford opportunities for positive, meaningful play and physical activity? For all children? What are the challenges? What are the possibilities? Our overarching goal is to highlight the potential cumulative impact that recess might have on children’s overall developmental health. **Methods:** A qualitative, longitudinal inquiry of the recess environment in 5 Ontario (Canada) elementary schools is being conducted. A variety of qualitative instruments (interviews, questionnaires, focus groups, participant observation) are utilized to gather perspectives of students, teachers, administrators, yard duty supervisors, and volunteers. **Results:** Crowded, minimally supervised school playgrounds with little to no equipment are challenging for many children to negotiate. Boredom, social conflict, and exclusion appear to lead to maladaptive habits and patterns of behavior that undermine meaningful active play and physical activity. We draw on university, community, and school resources to explore a variety of regularly scheduled indoor and outdoor options (Frisbee, skipping, Zumba, yoga, non-competitive games, intramural sports) on a continuum of structured to unstructured. University students and grade 5-8 recess leaders provide encouragement, scaffolding, and guidance. Many children take advantage of these opportunities for activities and equipment—increasing physical activity and prosocial

engagement. **Conclusion:** Given the potential cumulative effects of daily recess, we are neglecting an important part of children’s day to influence children’s positive active play and physical activity.

Short Sleep Duration and Later Bedtime Are Associated With More Time Spent in Sedentary Activities and Greater Adiposity in a Sample of Canadian Children

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Objective: To examine the association between sleep duration and sleep timing (combination of bedtime and wakeup time) with adiposity indicators, physical activity (PA) and total sedentary time (SED) in a sample of children from Ottawa, Canada. **Methods:** Of the 567 children who took part in this cross-sectional study, 516 (58.9% female; age: 10.0±0.37 years) had valid sleep measurements. PA, SED and sleep parameters were assessed via accelerometry. Height, body weight (BW) and waist circumference (WC) were measured according to standardized procedures. Body fat percentage (BF%) was assessed using bioelectric impedance analysis. **Results:** In this cohort, 453 children (88%) had a mean sleep duration below the recommended 10h of sleep/night. BW, WC and SED were significantly greater in children with shorter sleep durations, according to tertiles. BF%, BMI z-score and waist-to-height ratio were greater in girls with shorter sleep durations. SED was significantly greater in children with later sleep timing midpoints, whereas moderate-to-vigorous PA was lower in boys with later sleep timing midpoints. BW, WC, BF%, BMI z-score and waist-to-height ratio were greater in girls with later sleep timing midpoints. After adjusting for covariates, regression models showed that sleep duration was inversely associated with BW and SED. Sleep duration was inversely associated with BF%, WC, BMI z-score, waist-to-height ratio and light PA in girls. Only BF% in girls remained positively associated with sleep timing after adjusting for covariates. **Conclusion:** Shorter sleep durations and later bedtimes are associated with greater adiposity indicators and more time spent in sedentary activities, especially in girls.

Children’s Cardiorespiratory Fitness in Response to an Eight-Week Guided Active Play Program: Relationship to Sex and Maturity Status

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Objective: To examine the efficacy of a self-paced guided active play (GAP) program in eliciting changes in aerobic power for children and adolescents (8-12yrs). **Methods:** Girls and boys (n=33)

registered in summer camp where recruited to participate in a guided active play program (8-weeks) focused on active playing of self-paced cooperative games (1h/d;5d/wk). Physical activity participation was assessed daily by attendance and accelerometry (ActiGraph GT3X+; 10s epoch) by vector magnitude (vm counts/min) for children/adolescents. Anthropometric (stature, weight, leg length, and maximal aerobic power (20m MSSR) were collected prior to and following the program. Maturity status (MS) was estimated from anthropometric variables and used with multiple linear regression equations to predict days from age at peak height velocity (APHV). ANOVA (main effects) and tukey post-hoc test (individual group differences) were performed ($p=0.05$). **Results:** Prior to the program, children (age: 9.8 ± 1.3 yrs; BMI: 20.7 ± 2.6 kg/m²; maturity offset: -4.2 ± 1.0 yrs) had an estimated aerobic power of 44.1 ± 0.9 mlO₂/kg/min; with boys (45.4 ± 1.0 mlO₂/kg/min) higher than girls (42.5 ± 0.7 mlO₂/kg/min) ($p<0.05$). In response to the GAP program, aerobic power improved by $4.3\pm 3.8\%$ ($p<0.05$) for all children, with girls $>$ boys ($p>0.05$). Maturity status (MS) ranged from -2.4 to -7.0 yrs; with the girls averaging (-3.7 ± 1.0 yrs) and boys (-4.4 ± 1.2 yrs). In general the relationship between MS and improvement in aerobic performance was moderate ($r=0.46$), except for the girls that showed a good-very good relationship ($r=0.76$) ($p<0.05$). **Conclusion:** Active playing of children's games is associated with improvements in aerobic power and increases in AP are related to maturity status. **Funding:** Faculty of Health, York University—Grants-in-Aid.

An Ecological Model Perspective of Children's Experience of Active Play

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Objective: To investigate the participation in and perception of active play by 9 to 12 year old children to uncover the nature of their experiences from their own perspectives. Guided by an ecological model of behaviour, which includes intrapersonal, interpersonal, and environmental factors, children's play behaviours and perceptions will be explored using a modified time diary approach and follow-up interview. **Methods:** The study will include two phases. In the first phase, an adapted time diary method will be used with children 9 to 12 years of age to collect data on when, where, and with whom children are playing. Participants will complete a modified time diary designed to have them report each instance of active play over a 4-day period. The collection of responses will follow the event contingent method, meaning the participant fills out a diary entry every time a defined event occurs. For each episode of active play the children engage in during the study period, they will be asked to record when, where, and with whom they engaged in active play. This will serve to give context to children's active play as well as identify some of the factors influencing children's active play from the three levels of the ecological model. In the second phase, a sample of the participants will be selected for follow-up semi-structured interviews to further explore their perceptions of their active play, how they experience it, and to gain further insights into the intrapersonal, interpersonal, and environmental factors associated with their play. **Results:** This project is for my master's thesis. Data collection has not yet occurred. **Research Support:** Bryan Smale (supervisor), Department of Recreation and Leisure Studies, University of Waterloo, Canada; Steven Mock (committee

member), Department of Recreation and Leisure Studies, University of Waterloo, Canada.

Perceptions of Physical Competence and Motor Skill Proficiency of Girls and Boys in Grade 2

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Objective: Perceptions of physical competence (PC) are a predictor of engagement in physical activity and sport. Self-perceptions are influenced by peer comparisons, feedback, and internal sources of information (e.g. proficiency). This study examined the relationships between motor skill proficiency and PC of children in grade 2. **Methods:** 365 children (Mage=7y10m; boys=51%) from eight schools participated. Motor skills (Test of Gross Motor Development-2) were videoed in physical education and PC was assessed using the Self-Perception Profile for Children. **Results:** Mean scores for the dependent measures locomotor skills, object control skills, and PC for girls were: 32.4 ± 5.1 , 27.5 ± 5.7 , and 20.5 ± 2.8 , respectively; and for boys were: 29.0 ± 6.0 , 31.8 ± 6.3 , and 19.0 ± 2.7 . A multivariate analysis of variance with sex as a factor showed a significant overall effect for the dependent measures $F(6, 720)=24.5$, $p<.001$; all univariate F-tests were significant. For boys and girls separately, two models were specified. The first model predicted PC from object control skills and the second model added locomotor skills as a predictor. Object control skills significantly predicted PC for both boys and girls ($R^2=.164$ and $.024$, respectively). When locomotor skills were added to the models, there was a significant change in R^2 for boys ($R^2=.204$); but not for girls. **Conclusions:** Boys and girls differed in their motor skills and PC. Motor skill proficiency was a meaningful predictor of boys' PC (20% of the variance), but only object controls predicted girls' PC and the relationship was weak. It is possible that the importance of motor skill proficiency emerges later for girls. **Funding:** This research is funded by a SSHRC insight development grant #430-2012-0343.

Screen-Time Reduction Initiative in Pre-schools Designed to Support the Primary Prevention of Childhood Obesity

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Background: In Canada, 15.2% of 2-5 year olds are overweight and another 6.3% are obese. Early action to prevent obesity is of utmost importance since obesity during preschool years often persists and increases the risk of adult obesity. Excessive screen time (ST), the time children spend watching TV, playing video games, and using the computer, is one type of sedentary behaviour correlated with obesity. **Program Objective:** To address excessive ST, engaging and supporting families early in the child's lifespan is critical as parents provide the first opportunity for creating the social, physical, and cultural environments that promote healthy growth and development. An intervention aiming to decrease ST was developed based on behaviour change theories and current research. Learning

activities on the topic of ST were developed to fit the curriculum of the Nobody's Perfect™ parenting program. Evaluation of these activities piloted within parenting programs measure the caregivers' self-efficacy, outcome expectations, knowledge, awareness, and behaviour change. The feasibility of implementing the intervention in the Nobody's Perfect™ program as well as its generalizability to various other parenting programs was also evaluated. **Findings/Outcomes:** Participants reported an improvement in self-efficacy by the conclusion of the program. Participants also reported small but positive improvements in their outcome expectations of decreasing their child's ST. **Conclusion/Perspectives:** Recommendations from this program are to strengthening ST reduction interventions within different parenting programs and settings and to provide training for facilitators in the practice of screen time reduction programming.

The Weight of Place: The Role of the Neighborhood in Pre-School Obesity

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Background: The neighbourhood environment provides both a social and physical context that is thought to have an effect on behaviours that may influence weight gain. The objective of this study is to examine the association between the built environment and body mass index (BMI) among preschool-age children. **Methods:** A cross sectional study of children 1 to 5 years of age was conducted using data from the TARGet Kids! cohort in Toronto, Canada which includes prospectively collected data from 3,928 children. We characterized a child's neighbourhood using a validated neighbourhood walkability index based on 1) car ownership; 2) population per square kilometer; 3) services per 10,000 population; 4) average distance from residential points to nearest 5 retail locations; 5) crime per 100,000. The main outcome was child's zBMI. **Results:** The mean age of participants at baseline was 33.5 months. The proportion of children included in TAR-GetKids! with zBMI >1 (overweight) was 20.5% and zBMI >2 (obese) was 4.8%. The outcome, zBMI, was adjusted for: gender, ethnicity, age, birthweight, parental BMI, mother's education, free play outdoors, immigration status and neighbourhood-level income. The mean zBMI decreased as the walkability of the neighbourhood increased. Compared to the most walkable neighbourhood, the average zBMI of the least walkable was 0.269 vs 0.063 in the most walkable neighbourhood in Toronto. This relationship was maintained after adjustment for individual level factors. **Conclusions:** Living in a walkable neighbourhood was associated with lower zBMI after adjustment for individual level factors known to be associated with obesity in young children.

Association Between Sleeping Time, Spent Using Screen, and Body Mass Index With Blood Pressure Among Pre-School Children

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Objective: The aim of this study was to examine the association between sleeping time (SLT), time spent using screen (ST), obesity status (BMI) with Systolic Blood Pressure (SBP) among preschool children. **Methods:** The sample comprised 628 preschool children (50%female), aged 3-6 years-old. SLT and ST were reported by parents. BMI values were categorized according to IOTF. SBP cut points were based on SBP percentiles for age, sex, and height. ST was dichotomized according to the following criteria: ≤1h vs >1h and SLT: ≤10.5h vs >10.5h. Participants were then categorized into one of four category profiles: Low ST /HighSLT; High ST /Low SLT; Low ST /LowSLT and High ST /HighSLT. **Results:** Children assigned to High ST/LowSLT group were 2 times more likely to have high SBP values compared to those who were assigned to Low ST/HighSLT group (OR: 2.4; IC: 1.1 - 5.1). Furthermore, those who were assigned as OW and OB were more likely to be classified as having high BP (OR: 1.8; IC: 1.1 - 3.2 for overweight and OR: 3.1; IC: 1.6 - 5.8 for obese, respectively). **Conclusion:** Our data showed that High ST exposure time and low SLT are associated with enhanced blood pressure in children at preschool. **Funding:** This study was founded by grants PTDC/DES/098309/2008, SFRH/BPD/81566/2011 and SFRH/BSAB/1025/2010, PEST-OE/SAU/UI0617/2011

Behavioural and Social Characteristics Associated With Physical Activity Among Prince Edward Island (Canada) Youth

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Objective: The purposes of this study were to explore the influence of behavioural and social characteristics on the levels of physical activity of youth in Prince Edward Island, Canada and determine how to use new evidence to inform global health practices of youth for the future. **Methods:** This quasi-experimental study used provincially representative repeat cross-sectional data collected as part of the 2008 and 2010 waves of SHAPES-Prince Edward Island (SHAPES-PEI). Data were available from students in 44 schools in grades 7-12 from PEI (2008, n=2,958; 2010, n=1,983). A linear regression model was conducted to examine characteristics associated with energy expenditure (KKD) and a logistic regression model was used to explore characteristics associated with the likelihood of meeting national physical activity guidelines. **Results:** Higher

levels of KKD was positively and significantly associated with: 1) being male, 2) having more friends that were active compared to non-active friends, 3) active commuting, 4) participation in school intramurals, 5) participation in competitive school sports, 6) playing sports outside of school, 7) individual physical activity, and 8) current smokers. In the second model, students who met the physical activity guidelines were positively and significantly more likely to: 1) be male; 2) have 3 or more active friends compared to none; 3) actively commute; 4) participate in school intramurals, competitive school sports, sports outside of school, and individual physical activity. **Conclusions:** Understanding the characteristics that influence youth physical activity can support evidence-informed development and implementation of programs and policies that support positive physical activity outcomes for youth. **Funding:** Prince Edward Island Department of Education and Early Childhood Development, Prince Edward Island Department of Health and Wellness, and Health Canada.

Socioeconomic Differences in Objectively Measured Overweight/Obesity and Physical Activity in Kenyan School Children: Results From ISCOLE-Kenya

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Background: As childhood overweight/obesity increases and physical activity levels decrease, worldwide child and youth populations are facing a rise in chronic diseases. To adequately inform public health efforts, it is imperative that we explore the correlates of overweight/obesity and physical activity, particularly in lower income countries, where this information may be less available. The objective of this study was to investigate socioeconomic factors associated with overweight/obesity and physical activity in Kenyan children (9 - 11 years). **Methods:** Data collection was conducted in Nairobi as part of a larger International Study of Childhood Obesity, Lifestyle and the Environment. Body weights and physical activity of participating children were objectively measured using anthropometry and accelerometry, while information on indicators of socioeconomic status obtained via questionnaires. **Results:** Of the 563 participants, 14.4% were overweight, and 6.4% were obese based on WHO cut-points. Mean daily time spent in moderate-to-vigorous physical activity was 36 minutes based on cut-points developed by Treuth et al., and only 12.8% of participating children were meeting global physical activity guidelines. Proportions of overweight/obesity increased, while number of children meeting physical activity guidelines decreased, with increasing maternal and paternal education attainment, and increasing household socioeconomic status. More children attending private schools were overweight/obese and less met the physical activity guidelines compared to those in public schools. **Conclusions:** The findings of this study revealed a positive socioeconomic status relationship with overweight/obesity and a negative relationship with physical activity. Strategies to address the growing threats of obesity and inactivity should therefore focus on higher socioeconomic status populations.

Physical Activity Policies and Practices in Australian Primary Schools 2006-2013: How Far Have We Really Come?

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Purpose: Despite significant investment over the last decade, the extent to which schools have implemented obesity prevention policies and practices has not been routinely reported. The aims of this paper are to; describe the prevalence of physical activity policies and practices in Australian schools over time and; to determine if school size, rurality or socio-economic location influences practice adoption. **Methods:** Over an eight-year period, a representative randomly selected cohort of primary schools in NSW, Australia (n=476) participated in four telephone surveys regarding their implementation of 7 physical activity and 8 healthy eating policies and practices. Repeated measures logistic regression in a GEE framework was undertaken to examine trend over time. **Results:** Between 2006 and 2013 whilst there was a significant increase in the number of schools adopting all eight healthy eating practices; of the seven physical activity practices, only one significantly improved over time i.e. schools provision of playground markings and sports equipment during recess and lunch (52.3% to 70.2%, p<0.0001). Adoption of practices did not significantly differ by school characteristics. **Conclusion:** Government policy/ investment appears to be improving for healthy eating, however additional and/or different dissemination strategies may be required to increase adoption of physical activity practices if all primary school children are to experience the benefits of such investment. Routine monitoring of such outcomes over time is needed to ensure the intended benefits of government policy and investment are achieved, and the need for remedial action identified.

Action Schools! BC: Is the level of Program Implementation Associated With Children's Physical Activity Outcomes?

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Objective: To explore whether the level of program implementation is associated with physical activity (PA) outcomes of children participating in Action Schools! BC. **Methods:** Action Schools! BC is a whole school PA model designed to increase PA opportunities for children across six Action Zones. 'Classroom Action' asks teachers to provide 15 min additional PA/day in the classroom. We estimated PA delivery using weekly activity logs (teachers). We measured PA via accelerometry in a subgroup of children (n=629; 9 schools)

at baseline and at the end of two school years. We report counts/min (total PA) and used age-specific thresholds to classify activity intensity as sedentary (SED), moderate-to-vigorous (MVPA) or vigorous (VPA). **Results:** On average teachers completed activity logs 57% (year 1) or 66% (year 2) of the time (range 0%-100%). Only 10% (year 1) and 12% (year 2) of teachers completed all activity logs. On average, intervention teachers provided 7 min Classroom Action PA in year 1. Classroom PA provided by teachers was positively correlated with the change in counts/min, MVPA and VPA during school. When dichotomized into 'high' (above average) and 'low' (below average) Classroom Action PA, children with high exposure had greater increases in school day MVPA than children with low exposure. **Conclusion:** Despite the challenges we observed in measuring program implementation, these preliminary findings suggest that the volume of PA delivered by teachers is positively associated with changes in children's PA. This suggests that teacher support will play a key role in the success of interventions. **Funding:** Canadian Institutes of Health Research (OCO 74248; PJN, PI).

Examining the Relationship Between Sedentary Behaviour and Physical Self-Perceptions in Adolescent Girls

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Objective: Limited research has examined the relationship between sedentary behaviour and mental health. The aim of this study was to consider cross-sectional and 12-month longitudinal associations between the sedentary behaviour of television (TV) viewing and physical self-perceptions in adolescent girls, whilst controlling for physical activity levels. **Methods:** Data were collected in a school setting and participants (n=100; mean age=12.3 ±0.3) self-reported their average daily hours of weekday and weekend TV viewing (Currie et al., 2002) and completed measures of physical self-perceptions (CY-PSPP; Whitehead, 1995) and 7-day recall of physical activity (PAQ-C; Crocker et al., 1997). At 12 months, participants again completed the CY-PSPP. Multiple regression analyses were undertaken to examine the extent to which baseline TV viewing predicted self-perceptions at baseline and 12 months later. **Results:** At baseline, participants watched more than 2 hours TV during the week (mean = 2.1 ± 1.5) and at the weekend (mean = 2.6 ± 1.6). Analyses indicated that higher weekday TV viewing significantly predicted lower baseline scores on the CY-PSPP subscales of body attractiveness, physical self-worth and global self-worth. Baseline weekend viewing had no significant associations with any of the CY-PSPP subscales. At 12 months, a significant small negative association between baseline weekday viewing was maintained only for global self-worth. **Conclusion:** These findings indicate that weekday TV viewing is associated with aspects of poorer mental health but the longitudinal findings do not suggest a directional relationship. Instead it is plausible that lower self-perceptions may lead to increased TV viewing, especially during the week.

Assessment of Health Related Physical Fitness and Motor Skill Ability of 9-11 Year Old School Children in Nairobi County, Kenya

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Objective: To assess the ability to perform selected motor skills required in active play and to determine levels of several health-related physical fitness components such as endurance, strength, flexibility and body composition of 9-11 year old school children in Nairobi County, Kenya. **Methods:** Using a cross-sectional descriptive survey design, 199 school children aged between 9-11 years were measured for anthropometry, aerobic endurance, muscular strength, muscular endurance, flexibility, body composition and motor skill ability. Standardized procedures were used to measure height, weight, waist circumference, low back flexibility, grip strength, abdominal muscular endurance, and aerobic fitness. A novel obstacle course was used to assess the motor skill ability. Body Mass Index (BMI) cut-offs were based on the WHO standards. **Results:** Children with high motor skill ability were the more physically fit compared to their counterparts. The prevalence of overweight and obesity was 24.2%, Males showed a better motor performance than females, 28.6% of the children were at the beginning level, 55.3% progressing, only 4% and 3% were achieving and excelling respectively. 38.2% had very low cardiovascular fitness, 31.7% progressing, 11.6% were achieving and 9.5% were excelled. 46.2% had low torso muscular endurance while only 2.5% were excelling. Girls performed significantly better than boys in the low back flexibility test. **Conclusions:** The children performed averagely in motor skill ability, aerobic endurance, muscle strength, muscle endurance, and body composition, their performance in flexibility was above average. Children's motor skill ability may be a good target for increasing physical activity in youth.

Kids Helping Kids—Healthy is Happy

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Objective : To increase levels of physical activity, food knowledge and sense of community in elementary and high schools while utilizing a student led trimentorship model. **Methods:** High school students are trained in healthy eating and active living using a "train the trainer" model. The high school students then facilitate a day of training for the elementary students using a station approach with active team building opportunities interspersed. During the training, the elementary students are encouraged to reflect how to share ideas in their own schools. A former Olympian assists in the development of an individual school pledge and with the support of Action Schools! BC, each school is presented with materials that they can begin using immediately. At a celebration event several months later, students share their own school's success and network to gain

ideas. **Results:** Teachers acknowledged a higher level of activity was occurring more regularly for their entire student body while students identified the activities as exciting, unique and engaging. **Conclusion:** Healthy is Happy has led to increased physical activity in schools while helping students make healthier food choices. While schools received identical training, personalizing it for their own schools led to greater student engagement, and the realization that Healthy is Happy!

A Community-Based, Family-Centred Lifestyle Intervention Improves Physical Activity and Health-Related Quality of Life in Overweight Adolescents

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Objective: We conducted a staggered-entry, wait-list controlled clinical trial to test the effects of an 8-week community-based family-centred lifestyle intervention on the physical activity, sedentary time, weight status and health-related quality of life levels of overweight and obese. **Methods:** Adolescents (14.±1.6 years) and their parents completed an 8-week intervention at three community sites in Western Australia across three waves. The initial intervention was followed with telephone and SMS follow-ups at decreasing frequency. Participants (n=56) were weighed and measured, wore accelerometers, and completed the PedsQL health-related quality of life (HRQoL) instrument at baseline, before beginning the intervention, immediately following the intervention, and at 3- and 6-months follow-up. Linear mixed models with repeated measures, adjusted for age, wear-time, intervention site and wave, were used to test the effects of the intervention on accelerometer-measured and self-reported physical activity. **Results:** We present here pre-post data for 56 completers. From pre-program to 6-months, sedentary time decreased by 19 min/d, and total physical activity increased by the same amount. BMI z-score fell from 2.05±0.45 to 2.00±0.45. Health-related quality of life scores increased from 70.3±18.0 to 81.1±20.2 (all p<0.05). **Conclusion:** This program resulted in modest but significant improvements in activity patterns, weight status and HRQoL after a 6-month maintenance period.

The Relationship Between Use of Time and Health-Related Quality of Life in Australian Children and Adolescents

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Objective: Determine the associations between various aspects of time use and health-related quality of life (HRQoL) in children and adolescents. **Methods:** 239 Australian children aged 10 to 13 years

completed the Pediatric Quality of Life Survey (PedsQL) survey to quantify health-related quality of life. Time use was quantified over four days using the Multimedia Activity Recall for Children and Adolescents (MARCA), a validated 24 h recall tool. The average number of minutes spent in physical activity (divided into sport, active transport and play), screen time (divided into television, videogames and computer use) and sleep was calculated. Body fat was measured using DXA, Tanner stage by self-report and household income by parental report. Analysis used Partial Least Squares regression, with age, percentage body fat, Tanner stage, household income and time use as independent variables and PedsQL total, physical and psychosocial subscale scores as dependent variables. Analyses were stratified by gender. **Results:** For boys, the most important predictors of HRQoL were body fat percentage (negative), videogames (negative), sport (positive) and Tanner stage (positive). For girls, the significant predictors were body fat percentage (negative), TV (negative), sport (positive) and household income (positive). Active transport, active play, computer use, sleep, bedtime and morning wake time were not associated with HRQoL. **Conclusion:** While body fat was the most significant predictor of HRQoL, sport was independently associated with better HRQoL and TV and videogames with poorer HRQoL. HRQoL appears to be associated only with particular types of physical activity and particular types of sedentary behaviour.

Physical Activity and Sedentary Guidelines; What are the Similarities and Differences Across the Globe?

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Objectives: As a result of evidence documenting the health benefits of physical activity and risks associated with sedentary behaviour, many countries have created physical activity and sedentary behaviour guidelines. This research aimed to systematically identify individual countries guidelines for children and adolescents and to explore consistencies and points of difference between guidelines internationally. **Methods:** Two authors independently searched the literature in four databases to identify papers reporting on physical activity and sedentary behaviour guidelines. The google search engine was used to recover additional sources not previously identified in the academic literature. **Results:** There were guidelines for thirteen individual countries. Additional guidelines exist for Nordic countries, European Union, and World Health Organisation. Most guidelines recommended at least 60 minutes of physical activity each day, however intensities varied, while some did not provide definitions to substantiate intensity levels. Guideline age categories ranged from two to 18 years, however most were for five to 17 year olds. Some countries included recommendations for sedentary behaviour or a reduction in screen time (N=4), while most did not. **Conclusions:** Nuances in wording could lead to varied interpretations of physical activity requirements. In some instances physical activity guidelines were written up to ten years ago, emphasising the need to maintain currency. Differences in age groupings can cause concern if making international comparisons. There is a need for global consistency for accurate across country comparisons based on current evidence. Guidelines should contain details about the frequency, duration, types, and amount of physical activity and sedentary behaviour, as well as physical activity intensity.

Physical Activity and Physical Fitness of 6-9 Year Old Indian Urban School Children

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Objectives: 1) To assess time spent by 6-9 years old urban Indian school children on active sports and to determine its influence on anthropometric measurements, body fat. 2) To assess physical fitness and examine association between physical fitness, physical activity, anthropometric measurements. **Methods:** School children (n=1500) were studied for their physical activity pattern. Height, weight and skinfold thicknesses (triceps, biceps, subscapular, suprailiac) were measured. BMI, percent body fat were calculated. Physical fitness was assessed using step test, sit and reach, grip strength on 354 children. **Results:** 30.6% children were underweight, 12.1% overweight, 12.5% obese. Mean time spent on active games by all children was 172 minutes/ week. Boys had significantly higher activity than girls. Underweight children spent significantly less time in active sports than normal weight, overweight/obese children. Mean height, weight, skinfold thicknesses, body fat were highest in the highest quartile of time spent on active games. Socioeconomic status significantly influenced participation in active games. Physical fitness score of all children was below the cut-off (39), indicating poor physical fitness. Mean score for the Sit and Reach test was at the 25th percentile of AAHPERD standards. Obese children had better PFI, grip strength scores than underweight children. Underweight children had poor grip strength but better flexibility scores. PFI and grip strength were significantly correlated with time spent on active games. **Conclusion:** Children's participation in games/sports was limited. Physical activity influenced anthropometric measurements, physical fitness index, grip strength. Time spent on active games is influenced by socioeconomic status, gender, nutritional status.

Falling Short! Evaluating the Daily Physical Activity Program in Ontario Elementary Schools

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Objective: We investigated the provincially mandated Daily Physical Activity program through three distinct but interconnected studies. First, Teachers perceptions of the DPA program were investigated. Second, a parallel study of the students' perceptions of the DPA program was conducted. The final study comprised of objective measurement using accelerometers of school day physical activity including the DPA program. **Methods:** The studies of teacher and student perceptions of the DPA program each included a hard copy questionnaire that was distributed through an Ontario school board. Teachers from kindergarten- grade 8 and students from grades 4-8 were recruited. The final study included the collection of accelerometer data for a selected class of grade 5&6 students during two separate collec-

tion periods, each four days in duration. **Results:** Both teachers and students acknowledged that the DPA program is not being performed as mandated both in regards to frequency and intensity. Teachers report time, resources and space as barriers to program delivery while students report that disruptive students and poor behavior are the largest barriers to DPA. DPA sessions averaged just over 3 minutes of moderate to vigorous physical activity during the 20 minute DPA sessions. DPA had no effect on the total school day physical activity of the students. **Conclusion:** Daily Physical Activity is not being run as mandated and even ignored in some cases. For the program to be effective a complete restructuring of the program needs to occur including the activity suggestions and how the program is monitored through the school board or province to ensure it is in fact being done.

Growing Healthy Bodies: The Development of a Healthy Body Score-Card for Canadian Children and Youth

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Objective: We aim to develop a new, user-friendly health screening tool for children that will address limitations with BMI and focus upon the lifestyle and environmental factors that influence a child's health including physical activity and nutritional factors. This preliminary research aimed to investigate current health screening practices among Canadian health care practitioners as well obtain expert opinion on items to include in the Healthy Body Scorecard. **Methods:** An online survey of Canadian paediatric health care practitioners was distributed through membership lists of the Canadian Obesity Network (CON), Canadian Child and Youth Health Coalition (CCYHC), the Sandbox Project and Holland Bloorview Kids Rehabilitation Hospital. Quantitative survey data were analyzed using SPSS 19.0. Qualitative Survey data was analyzed using content analysis. **Results:** The online survey had 250 respondents with a majority being dietitians (54%). Weight is the most commonly collected information with 76% of respondents claiming to record it regularly. Obtaining sedentary behavior information was deemed very useful by 61% of participants. Growth velocity was deemed to provide important information with 75% of respondents claiming it to be moderately or very useful. **Conclusion:** The respondents to the survey had varying views on what should be included in the Healthy Body Scorecard, but placed heavy focus placed on collecting nutritional and behavioral information. An importance was placed on the food environment (where and how food is eaten). Further research will investigate the inclusion of specific items and how to format items such as physical activity and sedentary activity for the scorecard.

Does Overweight and Obesity Increase From 7 yrs to 10 yrs in South African Children?: A Longitudinal Analysis

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Objective: To determine if overweight and obesity among 7yr-old children in the North West Province (NWP) of South Africa (SA), increased over a 3-yr longitudinal period. **Methods:** A randomized

longitudinal study including baseline and follow-up measurements, 3 years later. The group, stratified for school district, school type and gender included 816 learners from 20 schools, 4 educational districts and 5 different school Quintiles (N=816; 419 boys; 397 girls; 567 black, 218 white, 31 other race groups). Standard anthropometric techniques and International BMI cut-off points (Cole et al., 2000) were used to determine overweight and obesity. **Results:** Two way frequency tables indicated a percentage of 11.1% of overweight (7.5%) and obesity (3.6%) among 7-yr-old learners. Higher ($p>0.05$) prevalence's of overweight and obesity were found in girls, in white learners ($p<0.05$) and in Q4 and Q5 school types which is associated with higher SES in grade 1. Overweight and obesity increased significantly in 3 years' time in both genders, all racial groups and in all school types. Most learners, who were overweight or obese during baseline in grade 1, were still obese in grade 4. Overweight increased slightly but obesity levels almost doubled in genders, race groups and school types. **Conclusion:** Overall, a significant increase in overweight and obesity were found, especially in obesity levels over a period of 3 years. Prevention strategies are thus needed to combat overweight and obesity and the associated negative consequences of this health risk, with special attention to white children living in higher SES. **Funding:** The Medical Research Council of South Africa and the Sugar Association of South Africa.

Physical Activity Behavior of Youth With Autism Spectrum Disorders Learning to Ride a Two-Wheeled Bicycle

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Bicycle riding is a form of active transportation and physical activity for youth, but is challenging to learn for youth with autism spectrum disorders (ASD). **Objective:** To test the efficacy of an intervention to teach youth with ASD to ride a two-wheeled bicycle and examine factors that differentiate the maintenance of bicycle riding 12 months after acquisition. **Methods:** A total of 38 youth (21% female), age 9-18 years (M=11.80), with a confirmed ASD diagnosis completed the bicycle training intervention. We measured objective physical activity (Actigraph-GT3X+) and physical activity participation (Children's Assessment of Participation and Enjoyment) prior to and 12 months post-intervention. We also followed riders during the first 3 months post-intervention to track bouts of bicycle riding. T-tests were used to examine differences between participants that maintained or lost the skill. **Results:** In total, 32 participants (84%) learned to independently ride and 56% maintained bicycle riding 12 months after acquisition. Practice during the first 3 months following the intervention was a significant predictor of riding status at 12 months ($p<0.01$). Despite a seasonal decline in overall activity, riders that maintained the skill engaged in more MVPA min/day ($p<0.01$) and participated in more total physical activities ($p<0.01$) with greater frequency ($p<0.05$) at 12 months post-intervention than riders that lost the skill. **Conclusions:** This bicycle intervention was successful in teaching a high percentage of participants with ASD to independently ride a two-wheeled bicycle. Results indicate that continued practice is important for skill maintenance and physical activity behaviors needed to promote health and independence. **Funding:** National Institute on Disability and Rehabilitation Research (NIDRR).

Screen Time Behaviours in Ontario Preschoolers

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Objective: To determine the amount and type of screen time (ST) preschool-aged children engage in and determine if preschoolers with higher amounts of ST have lower physical activity (PA) levels. **Methods:** Two-hundred and sixty-nine 3 and 4 year olds (age: 4.0 ± 0.6 years, 135 girls) from south-central Ontario participated. Parents reported the amount of time their child spends watching television, using a computer, and playing videogames on a typical day using the following options: 0h, <1h, 1-2h, 2-3h, 3-4h, 4-5h, and >5h. Responses were scored 0-6, summed, and then divided into quartiles. PA was measured by accelerometers set to record in 3-sec epochs over 7 days. Chi-square and one-way ANOVA were used to compare groups. **Results:** Ninety-six percent of parents reported that their child engaged in ST behaviours. Ninety-four percent of the participants watched television daily, with half watching 1-2 hours. Thirty-seven percent and twenty-two percent of participants used computers and videogames, respectively, each day. There was no difference in ST between boys and girls ($\chi^2=0.9$, $p=0.8$) or 3 and 4 year olds ($\chi^2=2.6$, $p=0.5$). Total PA and moderate-to-vigorous PA were not different between quartiles of ST (Total PA range: 251.1-260.8 min/day, $F=0.7$, $p=0.6$; moderate-to-vigorous PA range: 93.1-97.7 min/day, $F=0.8$, $p=0.5$). **Conclusion:** Almost all preschoolers engaged in some form of ST daily. Given that PA levels were not lower in children who engaged in higher amounts of parent-reported ST, evaluating the context of ST behaviours may provide additional insights. **Funding:** Funded by Canadian Institutes of Health Research (CIHR, MOP 102560).

The Effect of Activity Type on Physical Activity and Sedentary Time During an After School Program for Inner City Youth

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Objective: To provide an objective assessment of activity levels during after-school physical activity (PA) sessions for youth, and determine the effect of activity type on moderate-to-vigorous PA (MVPA) and sedentary behaviour. **Methods:** This research was conducted on 20, grade 9/10 students (M=14.4, SD=xx yrs) participating in an after school PA and nutrition program at a downtown (inner city) Winnipeg secondary school. During 4 PA sessions, participant's energy expenditure (EE), time spent in MVPA, intensity (METs) and sedentary time were measured using accelerometry. The PA sessions were led by a physical education specialist and each session focused on different activity types: badminton, TGFU invasion games, handball, and omnikin/basketball. **Results:** A significant effect of activity type was detected for EE, MVPA, intensity and sedentary bouts. The combined omnikin/basketball session was associated with greater EE (M=49.6, SE=7.9%), intensity (M=28.0, SE=3.3%) and MVPA (M=69.0, SE=10.0%) than all other ses-

sions. The TGFU and badminton sessions involved significantly longer bouts of sedentary behaviour (M=96.9, SE=2.0%) than the other sessions. However, the overall dose of sedentary time during each session was found to be similar. **Conclusion:** The type of PA chosen for an after school program should be carefully considered as it influences the total MVPA and EE achieved, as well as periods of continuous sedentary time, which are important determinants of health benefit (or risk) associated with PA. Funding: Sun Life Financial Canada.

Summer Science Camps: An Opportunity to Educate, Experiment, and Be Active

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Objective: To enhance integration of PA into summer science camps in northern British Columbia as a way to increase opportunities for children to meet the Canadian Physical Activity and Sedentary Behaviour Guidelines and achieve physical literacy (PL). **Methods:** This community-based pilot project involved: (1) a needs assessment for two science camps, (2) development of a leader training manual that integrated science and PA curricula, (3) Ten hours of PA, PL and FMS training for camp leaders, and (4) leaders' evaluations of the manual and training (N = 7). **Results:** Evaluations indicated that training increased the leaders' understanding of the importance of PA, PL and FMS. The majority expressed how beneficial it was to have a breakdown of the FMS stages and examples of activities that included these skills. All leaders recommended training for future leaders. The manual appeared to serve as a referral resource for integrated activities and backpack games when leaders needed ideas, and was particularly useful for leaders without a "sporty" background. Leaders recommended having the manual and training early in program planning, with additional activity content and modifications for children with disabilities. Leaders believed that campers were meeting the Canadian guidelines during camp. **Conclusion:** Summer science camps are a setting where children can be active while learning. Providing leaders with a manual and training on PA, PL and FMS appears to be advantageous for encouraging integration of PA into science activities. Further research could use objective measures to explore the impact of these activities on children's PA.

A Longitudinal Analysis Examining Daily Physical Education and Cognition Among African American Youth: Is There a Link?

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Objective: The objective of the study was to examine the impact of 45 minutes of daily physical education on Fluid Intelligence among African American youth attending Legacy Charter School from 2010-2013. **Methods:** An analysis of variance (ANOVA) mixed effect linear model was used to evaluate the effectiveness of 45 minutes of daily physical education on Fluid Intelligence among youth in grades 2nd-8th attending Legacy Charter, a Title I school in the southeastern US. Gain scores (final post-test assessment in

May 2013 - original pre-test assessment in September 2010) were calculated and analyzed for significance and for the interaction between school and time was estimated for each outcome. Each analysis was stratified by grade level and adjusted by age to control for baseline differences by school. Two Title I control schools who did not provide daily physical education were identified and utilized as comparisons. **Results:** Legacy Charter elementary school students observed significant gain increases on: 1 of 5 (p<.05) Fluid Intelligence sections, compared to 0 of 5 for controls (p<.05). Legacy Charter middle school students observed significant gain increases on: 4 of 5 Fluid Intelligence sections compared to 0 of 5 for controls (p<.05). Legacy Charter elementary and middle school students therefore observed significant gains on 50% of the Fluid Intelligence sections from 2010-2013 compared to 0.00% for elementary and middle school control students. **Conclusions:** 45 minutes of daily physical education lead to increases in Fluid Intelligence among Legacy Charter elementary and middle school youth. Funded by Campbell Young Leaders Foundation.

Impact of Daily Physical Education on BMI of Elementary Aged African American Youth: A Longitudinal Analysis

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Objective: The objective of the present study was to examine the impact of 45 minutes of daily physical education on the body composition among elementary school African American youth. **Methods:** An analysis of variance (ANOVA) mixed effect linear model was used to evaluate the effectiveness of 45 minutes daily physical education on the body composition among youth in grades 2nd-5th attending Legacy Charter School, a Title I school in the southeastern US. Gain scores (final post-test assessment in May 2013 - original pre-test assessment in September 2010) were calculated and analyzed for significance and for the interaction between school and time was estimated for each outcome. Each analysis was adjusted by age to help control for baseline differences by school. A Title I control school who did not provide daily physical education was identified and utilized as a comparison. **Results:** BMI number was plotted on the CDC BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. The growth charts show the weight status categories used with children and teens (underweight, healthy weight, overweight, and obese). BMI increases were significantly lower (p<.05) compared to control elementary school students. BMI increase was almost **4 times greater** (1.48 vs. 0.46) among controls compared to Legacy Charter elementary school students from 2010-2013. **Conclusions:** Providing 45 minutes of daily physical education lead to reductions in BMI among Legacy Charter elementary school youth. Funded by Campbell Young Leaders Foundation.

Making Tracks 1.0: Action Researching a School-Based Active Transportation Education Program

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Objective: To examine the implementation of a school-based after-school active transportation (walking and cycling) education program. **Methods:** Utilizing a case study methodology, a two-cycle action research design was employed in which elementary school students' (ages 7-9), middle school students' (ages 10-12), and high school students' (ages 15-17) experiences with an active transportation education program (Making Tracks) were investigated. Qualitative data were collected through field observations, student questionnaires, and follow-up focus group interviews with elementary school "walkers," middle school "cyclists," and high school leaders. **Results:** All qualitative data were originally analyzed by an initial researcher who searched for key issues, similarities, differences, recurring ideas, clustering, patterns, and relationships. By coding and categorizing this verbatim data according to methods outlined by Creswell (2005) and Miles and Huberman (1994), dominant themes emerged, allowing for analysis and interpretation. To confirm and/or disconfirm the identified themes and supporting comments, the other members of the research team also analyzed the written responses. Results related to elementary and middle school students revealed that program benefits included improved knowledge related to safe walking/cycling and active transportation in addition to improved confidence and autonomy. Results related to high school students revealed that program benefits included improved knowledge related to active transportation, the development of transferable leadership skills, a developed sense of achievement related to community service, and a stated likelihood of continuing active transportation into the future. **Conclusion:** The Making Tracks active transportation education program had positive results for elementary and middle school participants as well as high school leaders. Given these positive results, the program ought to be recognized as one that has great potential in school and after-school community contexts. Notwithstanding these positive results, additional changes to the program might be considered so as to enable additional positive results in the future. **Funding:** Ecology Action Centre, Halifax, Nova Scotia.

Accuracy of Self-Reported and Measured Height and Weight in Low-Income, Rural African American Children

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Objective: Self-reported anthropometric data are commonly used to estimate prevalence of obesity in population and community-based studies. This study aimed to determine accuracy of self-reported and measured anthropometric data in a community-based sample of low-income, rural African American youth. **Methods:** 95 children and youth from a rural area in the Southeast US with a mean age of 10.16 + .85 years of age served as participants. Participants were asked to self-report height (inches) and weight (pounds) prior to being measured by researchers. Body Mass Index (BMI) was calculated and classified to percentile rank (BMIpct) according to the Centers of Disease Control BMI-for-age growth charts. **Results:** Self-report data were obtained on 93 of 95 children. Using measured BMIpct, 8.4% were underweight, 60.0% were normal, 14.7% overweight, and 16.8% as obese. Self-reported

measures indicated that BMIpct were: 17.4% were underweight, 52.2% were normal, 15.2% overweight, and 15.2% obese. Gender differences were not present regarding participants ability to correctly classify their weight status. Overall, overweight and obese children were more likely to incorrectly classify themselves compared with children classified as having a normal BMIpct ($p < .05$; 60% vs. 20% incorrect). Intra-class correlation coefficients were 0.72 ($p < 0.001$) for BMIpct, 0.93 ($p < 0.001$) for weight, and .33 for height ($p > .05$). The sensitivity and specificity were 62.1% and 83.6%, respectively. **Conclusion:** Self-report heights and weights from low-income, rural, African American children can be used to obtain a general overview of height and weight for classifications based on BMIpct and could be beneficial for large school population-based studies.

Educating the Student Body—Taking Physical Activity and Physical Education to School

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Objective: The 2012 Institute of Medicine (IOM) report, *Accelerating Progress in Obesity Prevention*, outlined solutions to the U.S. obesity crisis and recommended that a major focus on childhood obesity prevention take place in schools, and that physical activity is integral to obesity prevention. Following that report, the IOM Committee on Physical Activity and Physical Education in the School Environment was tasked to review the current status of physical activity and physical education in the school environment as well as the evidence on the relationship between physical activity, physical education, or physical fitness and physical, cognitive and brain, and psychosocial health and development. **Methods:** Within a life-stage framework, the committee considered the role of physical activity and physical education-related programs and policies offered in the school environment in contributing to short- and long-term health, health behaviors, and development (e.g., motor and cognitive). **Results:** The report provides six recommendations (i.e., taking a whole-of-school approach, considering physical activity in all school-related policy decisions, designating physical education as a core subject, monitoring physical education and opportunities for physical activity in school, providing preservice training and professional development for teachers, ensuring equity in access to physical activity and physical education and actions plans that put physical activity and physical education back in schools. **Discussion:** The committee's report, which was released in May 2013, provides approaches for strengthening and improving programs and policies for physical activity and physical education in the school environment, including before, during, and after school. **Funding:** The Robert Wood Johnson Foundation.

Assessing the Daily Contribution of Physical Education to School Day Physical Activity Levels Among Children

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Objective: Physical education (PE) provides children with time to engage in structured physical activity. In this study we: (a) assessed the contribution of PE to total school-day physical activity; and (b) compared PE activity levels by gender and grade. **Methods:** A total of 78 children in grades 3 and 6 wore the Yamax SW-200 pedometer to assess their total school-day, recess, class time and PE step counts. Data were collected over 10-days. **Results:** Students had on average: 4.8 PE classes (Grade 3: 6.4; Grade 6: 3.4). The average number of steps accumulated during PE was 859 (SD±332.7) representing 14.6% of the average total school-day step count of 5899 (SD±1444.0). However, when we calculate the average step-count during PE, only on days when the students received PE, step counts increased to 1491(±369.6) representing 24.4%. Boys accumulated significantly ($p<0.001$) more steps than girls daily, this was largely due to differences accumulated during recess. Grade 3 students accumulated significantly more steps than grade 6 students during PE over the 10-days ($p<0.001$), but this was due to the fact that grade 3 students had more PE classes as no difference was found when comparing steps only on days when the students received PE. **Conclusion:** These results suggest that PE is minimally contributing to daily physical activity. Furthermore, they underscore the importance of incorporating daily PE and thereby enhancing children's opportunities to accumulate healthful levels of physical activity. This recommendation is important for all children, but may be especially critical for older children and girls. **Funding:** This project was supported by a Louise Picard Public Health Research Grant.

Exploring the Link Between Active Video Games and the Psychomotor Component of Physical Literacy

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Objective: This project aimed to explore whether an active video game intervention may be a useful tool to impact the psychomotor component of physical literacy for children aged 6-9 who are in the FUNdamental movement stage of Canada's Sport for Life Long Term Athlete Development Model. Specifically, agility, balance and coordination changes were evaluated. **Methods:** Measures of agility, balance and coordination were compared for a control group and an experimental group. The experimental group completed an active video game intervention that consisted of twelve, 30 minute gaming sessions distributed over a seven-week window. Purposeful sampling technique was used to recruit participants (seven males, seven females: age 7.5 ± 1.5 years) and each group was matched for age and gender. Children had to be physically able to participate in active video games and the specified activities. **Results:** Improvements were noted in agility ($p<0.05$) for the experimental group however no changes were detected with balance or coordination measures. **Conclusion:** Although results do not provide conclusive evidence to support active video games as a tool to enhance physical literacy, the data from this exploratory study provide encouraging indications that active video games impact psychomotor development in children.

An Evaluation of the Girls in Motion Workshop Among High School Females at Risk of Physical Inactivity

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Objective: Founded in 2003, Girls in Motion (GIM) was created to educate girls about the importance of enjoyable participation in physical activity (PA). This one day workshop promotes physical activities to girls at risk of physical inactivity and is underlined by the notion of promoting what they learned to others. This is the first time an evaluation of GIM has occurred. **Methods:** A paper-based survey was administered to 137 females in grades 10-12 at risk of physical inactivity (pre-test) while attending GIM (November 2013). Post-testing occurred 3 months later (January 2014) and eighty-two pairs could be matched. Variables included PA level, enjoyment, attitudes, self-efficacy, and sedentary behaviours. Leading PA for others, as a result of GIM, was also examined at post-test. Paired t-tests and multiple linear regression analyses were used to determine changes. **Results:** Less than 10% of at-risk females achieved ≥ 60 minutes of moderate-to-vigorous PA every day. There were no differences in PA levels, enjoyment, attitudes, self-efficacy, or sedentary time between pre-/post-tests. At post-test, 76% ($n=61$) of females reported promoting PA to others. Participants were more likely to motivate others if they had greater female encouragement to be physically active ($p=0.017$), compared to parents ($p=0.242$), or males ($p=0.534$). **Conclusion:** While the one day GIM workshop did not increase PA behaviours or attitudes, results indicate that interventions (such as GIM), which are female only, may be the best way to help high school females at risk of PA motivate others to improve their PA behaviour. **Funding:** This research was supported by Leadership Advancement for Woman and Sport (LAWS).

Validity of Pedometer-Derived Moderate and Vigorous Physical Activity During Treadmill Walking and Running in a Heterogeneous Sample of Children and Youth

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Objective: The purpose of this study was to determine the validity of the SC-StepRx pedometer to assess moderate and vigorous physical activity during treadmill walking and running in a heterogeneous sample of children and youth aged 10-17 years. A secondary purpose was to compare the performance of the SC-StepRx with that of the NL-1000 and Walk4Life MVP pedometers, as well as the Actical and ActiGraph GT3X accelerometers. **Methods:** Physical activity intensity assessed via indirect calorimetry served as the criterion standard. A convenience sample of 40 participants (20 boys, 20 girls) wore 6 SC-StepRx pedometers, 2 ActiGraph GT3X accelerometers,

2 Actical accelerometers, 1 Walk4Life MVP pedometer and 1 NL-1000 pedometer while walking/running at speeds approximating 2, 3, 4, 6 and 7 METs. Associations between indirect calorimetry and each activity monitor were assessed using SAS 9.2. **Results:** Estimates of moderate and vigorous physical activity from all monitors were significantly associated with the criterion standard of indirect calorimetry. The strongest associations with the criterion measure were observed for the SC-StepRx with moderate/vigorous thresholds of 110/130 steps•minute⁻¹, and the NL-1000 ($R^2 = 0.82$, $p < 0.05$). The SC-StepRx with moderate/vigorous thresholds of 110/130 steps•minute⁻¹ also exhibited the highest combined sensitivity (92.9%) and specificity (96.5%) for correctly identifying a bout of moderate-to-vigorous physical activity. **Conclusions:** This study demonstrates that the SC-StepRx pedometer is a valid tool for the measurement of moderate and vigorous physical activity in children and youth. **Funding:** StepsCount, Inc, Deep River, Ontario, Canada.

Associations Between Friendship Networks and Physical Activity and Sedentary Behavior Among Adolescents

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Objective: To examine the association between characteristics of adolescent friendship networks and both physical activity and sedentary behaviour in children. **Methods:** We conducted a social network analysis of 1112 adolescents (aged 11-15 years) to examine cross-sectional associations between: proportion of active friends; proportion of sedentary friends; reciprocated friendship nominations; popularity, and; clique membership, and meeting the Canadian youth physical activity (≥ 60 minutes/day) and sedentary behavior (≤ 2 hours/day) guidelines. Sex-stratified logistic regression models estimated odds ratios (OR) and confidence intervals (CI) for the associations between social network variables and physical activity and sedentary behaviour adjusting for sociodemographic characteristics and perceptions of social support. Physical activity and sedentary behavior of isolates (no friendship nominations) and non-isolates were also examined. **Results:** Boys with more reciprocated friendships were less likely to meet the physical activity guidelines (OR 0.14; 95%CI 0.03-0.68), while boys who perceived higher levels of friend support were more likely to be sedentary (OR 1.63; 95%CI 1.08-2.47). Girls with a greater proportion of active friends were more likely to be active (OR 4.17; 95%CI 1.47-11.78), and were also more likely active if they perceived social support from friends to be higher and had more friends who were sedentary (i.e., interaction effect). Isolate boys and girls participated in significantly ($p < .05$) less physical activity compared to non-isolates. **Discussion:** Friendship networks are an influential and potentially amendable determinant of adolescent physical activity and sedentary behaviour. Modifying friendship networks, or the behaviors among those within a friendship network, has the potential to improve these behaviours. **Funding:** 2013 Queen Elizabeth II Scholarship (University of Calgary), Canadian Institute of Health Research (CIHR) Natural Experiment Operating Grant.

Friendship Networks and Physical Activity and Sedentary Behavior Among Youth: A Systematized Literature Review

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Objective: To undertake a systematized literature review on the association between characteristics of friends and friendship networks (friend behaviors, network positioning, popularity, strength of bonds) and both physical activity and sedentary behavior among youth. **Methods:** Seven scientific databases were searched and title and abstracts scanned for relevance. Eligible studies included a measure of participant physical activity and/or sedentary behavior and a social network measure of participant's friends (e.g., who is your best friend?) or number of friends (i.e., popularity). Studies that assessed perceptions of social support or perception of friends' behavior only were excluded. Thirteen studies were eligible for inclusion, all of which assessed the association between friendship networks and physical activity, while three studies also assessed sedentary behavior. **Results:** Overall, higher levels of physical activity among friends were associated with higher levels of physical activity of the individual. Longitudinal studies revealed that an individual's level of physical activity changed to reflect his or her friends' higher level of physical activity. Boys tended to be influenced by their friendship network to a greater extent than girls. There was mixed evidence surrounding friends' sedentary behavior and individual sedentary behavior, and no studies analyzed network positioning and behavior (i.e., clique member, isolate). **Conclusion:** Friends' physical activity appears to be associated with individual's physical activity. Findings for an association between friendship networks and sedentary behavior was equivocal. Findings from our review could inform public health interventions that harness the influence of social connections between friends to increase physical activity levels among youth. **Funding:** 2013 Queen Elizabeth II Scholarship (University of Calgary), Canadian Institute of Health Research (CIHR) Natural Experiment Operating Grant.

Gender Differences in Clustering Patterns of Risk Behaviours for Non-Communicable Diseases Among Brazilian Adolescents

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Objective: To investigate gender differences in individual and clustering of risk behaviours to chronic non-communicable diseases among Brazilian adolescents. **Methods:** A cross-sectional survey was conducted in 2011 comprising 6,529 adolescents aged 15-19 years old from Santa Catarina State, Brazil. Excessive screen-time,

insufficient moderate-vigorous physical activity (MVPA), low fruits/vegetables (FV) and alcohol intake were investigated. Relative Frequencies and 95% Confidence Intervals were performed to identify differences between genders, in individual and clustering risk behaviours. **Results:** Girls presented higher insufficient MVPA (76.3%; 95%CI: 73.9%-78.6%) estimates, while boys presented lower FV intake (53.0%; 95%CI: 51.1%-55.0%), and greater alcohol intake (40.8%; 95%CI: 37.5%-44.0%). Excessive sedentary behaviour was higher in both genders (boys: 6.7%; 95%CI: 57.4%-64.1%; girls: 59.6%; 95%CI: 56.7%-62.4%). A total of 21.2% of the teenagers held one - risk behaviour; 37.3% two; 28.5% three, and 8.0% presented all risk behaviours. Both genders exhibited a greater prevalence of two (boys: 36.0%; 95%CI: 33.6%-38.4%; girls: 38.2%; 95%CI: 35.5%-40.8%) and three (boys: 28.80%; 95%CI: 26.7%-31.0%; girls: 28.2%; 95%CI: 25.9%-30.5%) risk behaviours. **Conclusion:** There was difference between genders for individual risk behaviours, and higher occurrence for clustering in both genders. Prevention programs could explore these behaviours in order to reduce health damage in adolescence. **Funding:** Foundation for Research and Innovation in the State of Santa Catarina (FAPESC). National Council of Technological and Scientific Development (CNPq) and Universities Santander Program.

The Goryeb KidFIT Program: The Utilization of Technology to Enhance Assessment and Design of Physical Activity Interventions as Part of a Hospital-Based Pediatric Weight Management Program

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Background: Chronic medical conditions due to sedentary lifestyle are having a greater impact on the pediatric population. Increasing levels of obesity, type II diabetes and hypertension at a younger age impacts morbidity and mortality. Low activity levels in children correlate to weight gain. Evaluation of activity is difficult, due to the individual's inability to assess their own level of physical activity (PA) accurately. Current technology can track activity which is beneficial when developing an exercise and nutritional weight loss program. **Program Delivery:** Patients are seen monthly and are initially evaluated with the Sensewear WMS System (SWMSS) which calculates caloric expenditure, steps taken, exercise intensity/duration and sleep duration/efficiency. SWMSS assessments are utilized when body fat loss either plateaus or a "rebound" occurs. These additional assessments are critical in the understanding of "seasonality" of physical activity behaviors in the pediatric population. **Evaluation:** Analysis of self-reported physical activity using the Physical Activity Questionnaire for older children (PAQ-C) reveals over reporting of total activity, moderate and vigorous activity when compared to SWMSS data. The primary result of the SWMSS system utilization is that by 6 months 78% of patients have either stopped gaining body fat or are losing body fat. A secondary result to date is our lower attrition rate of patients (31%) as compared to other programs (65%). **Conclusions:** SWMSS technology is a useful tool to accurately assess energy expenditure, which improves caloric intake recommendations in an exercise /nutritional based program for weight loss and health maintenance.

Influence of Parenting Style on Body Mass Index, Physical Activity, and Sedentary Time

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Objective: To determine the influence of parenting style on body mass index (BMI) percentile and objectively measured physical activity (PA) and sedentary time (ST) in 5th grade children. **Methods:** Physical activity and ST were assessed via accelerometer in 152 5th grade children for 7 days. Daily minutes of ST, light physical activity (LPA), moderate physical activity (MPA), vigorous physical activity (VPA), and moderate-to-vigorous physical activity (MVPA) were calculated using age appropriate cut points. Parenting style was assessed by the child participant's responses to modified questions from the Parenting Style Inventory II, which focused on parents' levels of responsiveness, demandingness, and autonomy-granting with their child. Based on these responses, parents were then categorized into one of Baumrind's four parenting styles: authoritative, authoritarian, permissive, or uninvolved. Authoritative parenting style was compared against all non-authoritative parenting styles, for statistical analysis purposes. **Results:** Multiple linear regression models revealed that authoritative parenting style did not predict ST, LPA, MPA, VPA, or MVPA; however, BMI percentile and gender were found to be significant predictors of MPA, VPA, and MVPA ($p < 0.01$ for both predictors at each intensity). BMI percentile was predicted to be lower in females with authoritative mothers ($p < 0.01$). **Conclusion:** While authoritative and non-authoritative parenting style did not predict objectively measured PA or ST in 5th grade children, authoritative parenting style did predict BMI percentile in female participants. Authoritative parenting style may provide protection from overweight and obesity in adolescent girls and could be utilized as a parent education component in family-based interventions aimed at reducing childhood obesity. **Funding:** US Department of Agriculture-National Institute of Food and Agriculture-Agriculture and Food Research Initiative Grant no. 2011-67002-30202.

Temperament is Associated With Free Play in Young Children

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Objective: To determine if negative affect, surgency and effortful control, constructs of child temperament, are associated with outdoor free play (OFP) in young children. There is evidence that temperament may influence obesity-related behaviors in children, but OFP has not been evaluated. **Methods:** Subjects were 3784 children <6 years old recruited through the TARGet Kids! research network. The outcome was parent-reported daily OFP (minutes). A linear regression model was performed, adjusting for covariates. Age and sex were identified a priori as potential interactions; stratified analysis was planned accordingly. Analysis was repeated with effortful control and surgency as exposures. **Results:** On average, children participated in OFP for 58 minutes/day. Time in OFP was associated with negative affect ($p < 0.01$) and surgency ($p = 0.01$), but not effortful control ($p = 0.23$). The multivariate model including interactions revealed that boys with higher negative affect had reduced OFP; for boys at the lowest and highest quartile of OFP time, with each 1-point increase in negative affect, OFP decreased by 3.5 (95% CI: 1.8, 5.2) and 6.2 (95% CI: 3.1, 9.4) minutes/day, respectively. There was no association in girls. Children >2 years old with higher surgency had increased OFP; for those at the lowest and highest quartile of OFP, with each 1-point increase in surgency, OFP increased by 3.1 (95% CI: 0.9, 5.3) and 4.5 (95% CI: 1.3, 7.8) minutes/day, respectively. There was no association for children <2 years old. **Conclusions:** Negative affect and surgency are associated with OFP in young children. This information may help with developing effective interventions to promote physical activity in this age group. **Funding:** Funding to support TARGet Kids! is from multiple sources including the Canadian Institutes for Health Research (CIHR), namely the Institute of Human Development, Child and Youth Health and the Institute of Nutrition, Metabolism and Diabetes, as well as, the St. Michael's Hospital Foundation and the Sickkids Foundation. Funding agencies had no role in the design, collection, analyses or interpretation of the results of this study or in the preparation, review, or approval of the manuscript.

Exergame Playing in Novice and Experienced Children: A Pilot Study

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Objective: Exergames may decrease sedentary video game playing in children. By evaluating the experiences of those playing these video games, we may learn valuable insights as to the potential uses of this new generation of video games for encouraging physical activity. The purpose of this study was to compare total and effective playing time between novice and experienced exergame players. **Methods:** 10 healthy children aged 7-10 yrs played "Michael Phelps: Push the Limit" swimming Exergame using Xbox and Kinect. The game was divided into different phases tagging as active or inactive. Total Playing Time (TPT), Effective Playing Time (EPT), Resting Time (RT) and Effort to Rest Ratio (E:R) were measured based on video analysis. Exergame experience was based on self-report. **Results:** Data are presented as [Novice vs. Experienced] respectively. Mean TPT (1072 vs. 1034s), RT (580 vs. 503s), EPT (427 vs. 509s) and E:R (0.79 vs. 1.04) were not significantly different between groups based on independent t-test

($t(9) = -0.374$, $p = 0.717$; $t(9) = -0.742$, $p = 0.477$; $t(9) = 1.204$, $p = 0.259$; $t(9) = 1.238$, $p = 0.247$ respectively for TPT, RT, EPT and E:R) ($p \leq 0.05$). **Conclusion:** Players with lower experience spent more time navigating between the menus before really engaging in the activity, which increased their resting period. **Acknowledgement:** Authors would like to thank Ana Inês Alves and Andreia Flores for their help.

Adolescents' Subjective Health: Associations With Physical Activity and Obesity

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Objective: To assess the associations between self-rated health and physical activity (PA) among U.S. adolescents. **Methods:** Participants included 999 12-17 year old adolescents surveyed in the 2011-12 U.S. NHANES. Participants self-rated general health, self-reported hours/day of TV and computer use, and self-reported minutes/day and days/week of sedentary activity, moderate and vigorous leisure-time PA, and walking/bicycling for transportation. Total minutes/week for each PA domain was multiplied by the metabolic equivalents (METs) recommended by NHANES (4.0 for transportation and moderate PA, 8.0 for vigorous PA), thereby creating METs/week scores. Variables were censored if exceeding 3 standard deviation units, resulting in 928 adolescents in the final sample. Objectively measured height and weight were used to categorize obesity status according to CDC BMI percentile. General linear modeling was used to investigate the association of self-rated health with physical activity and obesity, controlling for age, sex, and race. Analyses were weighted to be nationally representative. **Results:** Youth rated their health as excellent/very good (54.5%), good (36.2%), and fair/poor (9.3%). Those who rated their health as fair/poor had a 4.3 higher odds of being obese (95% CI: 2.1 to 8.6). A better health rating was significantly associated with more total METs ($p < 0.001$), including more METs at the vigorous ($p < 0.001$) and moderate ($p < 0.05$) intensities. Transportation METs, minutes of sedentary activity, and hours of TV or computer time did not differ based on health rating. **Conclusion:** Adolescents' subjective health ratings may provide insight into PA habits and obesity status, though sedentary activity did not differ by health rating. **Funding:** AES is funded by the Louisiana Clinical & Translational Sciences Center (NIH 1U54GM104940-01). PTK is supported by the Marie Edana Corcoran Endowed Chair in Pediatric Obesity and Diabetes.

Does a Group Intervention Improve Moderate to Vigorous Physical Activity and Sedentary Behaviour in Children With Movement Difficulties?

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Objective: To examine the effects of a multidisciplinary program designed to improve participation in moderate- to vigorous-intensity physical activity (MVPA) in young children with coordination difficulties identified using the Test of Gross Motor Development—

2nd edition. **Methods:** Nine boys (5 to 7 years) participated in an intervention program consisting of seven sessions, lead by a team of four therapists. Exercises and activities focused on improving aerobic endurance, strength, postural stability, and child-selected goals (e.g., ball skills, balance activities). Time spent in MVPA and sedentary behaviour over 7 days was measured before and after the intervention using GT3X accelerometers. **Results:** Changes in the time spent in MVPA were not significant; however, mean scores did improve following the intervention. Of particular concern, only two children achieved the recommended 60 minutes of MVPA on 3 days per week. Sedentary behaviour, which accounted for more than 80% of time spent each day at both time points, was not significantly changed following the intervention. **Conclusion:** This intervention served as a pilot program to determine its potential for promoting MVPA participation in children with coordination difficulties. Group intervention has the potential to facilitate service delivery to larger groups of children. It would be expected that a longer program and more time spent targeting the development of fundamental movement skills would result in further participation in MVPA. Understanding and decreasing sedentary behaviour should be a focus of additional program development and research.

Identifying Imputation Strategies for Dealing With Missing Accelerometer Data: A Systematic Review

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Missing data are a problem that can affect studies examining the relationship between physical activity measured with accelerometers and health outcomes. Statistical techniques are available to deal with missing data, however available techniques have not been synthesized. **Objective:** A systematic review was conducted to summarize methods of identifying and dealing with missing data from accelerometers. **Methods:** Four electronic medical and health databases were searched. Methods for dealing with missing data were identified, and decision rules for identifying missing accelerometer data were summarized. **Results:** 2884 articles were identified from the initial search. Ninety-six articles discussed missing data, and 68 provided details for how missing data were handled. Sixteen studies employed single imputation, 27 used maximum likelihood methods, 7 used a Bayesian approach, 6 employed multiple imputation, 4 did not describe the technique used, 4 last observation carried forward, 1 intention to treat, and 3 used listwise deletion. Decision rules for identification of missing data varied widely with 6 different methods for defining wear time; 8 definitions of a valid day and no consensus about type of day (weekday vs. weekend) needed for inclusion. **Conclusions:** Missing data poses a threat to the validity and interpretation of trials employing physical activity data from accelerometry. Wide variability in decision rules to identify missing data limits the comparability of studies. Consensus regarding decision rules for missing data is required to ameliorate this problem. Imputation using multiple imputation techniques is recommended to deal with missing data and improve the validity and interpretation of studies using accelerometry.

Validation of Accelerometer Prediction Equations in Children With Chronic Disease

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Objective: The purpose of this study was to assess the validity of existing accelerometer-based energy expenditure (EE) prediction equations among children with a variety of chronic conditions, and to develop new prediction equations for children ages 7 to 18 years with chronic disease. **Methods:** Children diagnosed with congenital heart disease (CHD), cystic fibrosis (CF), dermatomyositis (JDM), juvenile arthritis (JA), inherited muscle disease (IMD), and haemophilia (HE), completed 6 physical tasks while EE was measured using indirect calorimetry and with counts determined by both Actical and Actigraph accelerometers. Agreement between EE predicted from current equations and measured EE was assessed using intra-class correlation coefficients (ICC). Mixed linear regression modelling was used to develop disease-specific equations. Cut points for determining intensity thresholds were derived using area under the receiver-operating curve. **Results:** 196 subjects were enrolled: 15 CHD, 32 CF, 31 JDM, 31 JA, 29 IMD, and 29 HE and 29 healthy controls. Subjects had a mean \pm SD age of 12.8 \pm 2.9 years, weight 48 \pm 16 kg, and height 155 \pm 17 cm. Agreement between predicted and measured EE varied across disease group and ranged (ICC) 0.13-0.39 in Actigraph and 0.34-0.46 in Actical. Disease specific prediction equations for Metabolic Equivalents exhibited a range of results (ICC 0.62 to ICC 0.88) (SE 0.45-0.78) with good to excellent model fit and low standard errors of prediction. **Conclusion:** Poor agreement was demonstrated using current prediction equations in children with chronic conditions. Disease-specific equations and cutoff points were developed to assess activity EE in children with chronic conditions. **Funding:** This study was funded by a grant from the Canadian Institutes of Health Research (# 167391/CIHR).

Mobilizing People Across Quebec to Help Young Quebecers Develop Basic Motor Skills During Early Childhood

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Objective: Québec en Forme is a non-profit organization that encourages all Quebecers to promote healthy eating habits and active lifestyles, essential to the full development of our young people. **Findings/Outcomes:** Some negative trends with regard to motor skill development: a) 42.5% of girls and 27% of boys identify the lack of physical ability as a barrier to being physically active; b) Studies show a 25% reduction in young people's opportunities to move freely; c) In daycare, children are engaged in sedentary or low-intensity activities nearly 90% of time. Québec en Forme

liaises with thousands of local, regional and provincial partners in different sectors: daycare centres, schools, municipalities, healthcare facilities, community groups and associations seeking to positively influence individual behaviours, social norms and environments. Since 2002, Québec en Forme has encouraged government officials, decision-makers, professionals and numerous stakeholders to pool and coordinate their resources, knowledge and skills in order to help kids acquire and develop motor skills: a) Offer children a wide range of opportunities to move, explore and gain proficiency at the earliest stage possible; b) Implement effective initiatives guided by qualified staff; c) Increase access to a variety of affordable services, parks and public areas; d) Promote a better understanding of the relevance and importance of motor skills in the overall development of children and their academic success. **Conclusion/Perspectives:** This poster will present the ways in which local communities, regional authorities, NGOs, government departments and their networks are working together to take concerted, complementary action. Québec en Forme supports all of these players in their efforts to promote lasting change. **Funding:** Québec en Forme is a non-profit organization founded through a partnership agreement between the Lucie and André Chagnon Foundation and the Quebec government.

Mobilizing People Across Quebec to Promote Daily Physical Activity Among Youth

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Objective: Québec en Forme is a non-profit organization that encourages all Quebecers to promote healthy eating habits and active lifestyles, essential to the full development of our young people. **Findings/Outcomes:** Some negative trends with regard to physical activity: a) Only 33% of young people get 60 minutes of physical activity per day; b) Girls get 15% to 30% less physical activity than boys; c) Physical activity levels drop significantly from age 13 or 14; d) Teens identify lack of time as the most important barrier to engaging in physical activities; however, 67% spend more than two hours a day in front of a screen. Québec en Forme liaises with thousands of local, regional and provincial partners in different sectors: daycare centres, schools, municipalities, healthcare facilities, community groups and associations seeking to positively influence individual behaviours, social norms and environments. Québec en Forme encourages government officials, decision-makers, professionals and numerous stakeholders to pool and coordinate their resources, knowledge and skills in order to keep kids physically active every day: a) Offer children and parents a wide range of opportunities to learn and try out new physical activities; b) Implement effective initiatives; c) Increase access to a variety of affordable services, parks and public areas; d) Create built environments and foster positive social norms to encourage physical activity. **Conclusion/Perspectives:** This poster will present the ways in which local communities, regional authorities, NGOs, government departments and their networks are working together to take concerted, complementary action. Québec en Forme supports all of these players in their efforts to promote lasting change. **Funding:** Québec en Forme is a non-profit organization founded through a partnership agreement between the Lucie and André Chagnon Foundation and the Quebec government.

Lowering Intimidation and Competitiveness for Maximum Participation: Case Study of The Aussie X

Emile Studham, CEO and co-owner of Aussie X

Objective: To demonstrate the positive relationship between children and physical activity in schools using the Aussie X Active Learning Method. Aussie X activates even the most disengaged kids and makes exercise and healthy lifestyles accessible and fun. Programs provide a level playing field that helps build confidence and self-esteem while promoting inclusiveness. Traditional North American elite sports model can alienate kids and prevent them from enjoying sport and physical activity. Emile Studham shows that removing the evaluation component from physical activity in schools fosters an atmosphere which activates ALL students in participation. **Methods:** Australian sports programming and coaching to actively engage kids. The sports of Aussie X create a level playing field as they are not already popular sports in Canada. Using a charismatic Australian coaching team, Aussie X helps kids who would normally be too shy to participate find common ground with their classmates. **Results:** Kids see that just “havin’ a go” is cause for celebration. They feel valued and encouraged to try something new instead of feeling judged or critiqued. The outcome is kids view physical activity as a mechanism to feel better and more energized. Kids come together as a team of mates and learn that the energy you give off is the energy you get back, anchored through the term “Goodonya Mate”. **Conclusion:** Develop the physical and emotional connection that exercise makes you feel good.

Objectively Measured Sedentary Behavior in Secondary School Physical Education Lessons

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Objective: Physical Education (PE) should provide an important opportunity for young people to engage in health enhancing physical activity, yet reviews demonstrate PE lessons may not be providing young people with the recommended 50% of a lesson in moderate-to-vigorous physical activity (MVPA). This cross-sectional study examined the levels of objectively measured sedentary activity in secondary school PE lessons. A secondary aim was to determine if student characteristics were associated with sedentary activity levels. **Methods:** Grade 7 students (12-13 years of age) from 10 Australian secondary schools in low socio-economic areas were invited to wear an accelerometer for 1 week. Data represent recordings for students that wore their accelerometer for at least 3 days, including 100% of at least one PE lesson. The Everson cut-points were used to determine the average minutes and percentage of PE lesson time per student spent in sedentary, light, and moderate-to-vigorous physical activity (MVPA). After adjustments were made for clustering, mean

minutes of sedentary activity for student subgroups were compared using t tests. **Results:** 1028 students undertook on average 2.2 PE lessons (range 1-5) during the measurement period. On average, students were sedentary for 21.0 minutes, representing 50.2% of the lesson whilst participating in only 6.31 minutes of MVPA, representing 14.7% of the lesson. Girls engaged in significantly more sedentary activity than boys (52.5% v's 49.3% $P < 0.001$). There was no significant difference in sedentary behaviour by weight status. **Conclusion:** In addition to encouraging a minimal level of MVPA, limiting sedentary activity throughout PE should be a priority. Strategies targeting teaching methods and students' participation and motivation are needed to ensure sedentary activity throughout PE in minimised.

A Systematic Review of Dropout From Soccer Among Children and Youth

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Objective: Bronfenbrenner's ecological systems theory of development was used as a framework to systematically review factors associated with dropout from soccer among children and youth. **Methods:** Keyword searches for the population, and construct of interest (dropout or attrition or quit) identified scholarly peer reviewed publications from seven databases to 30 June, 2013. The initial search bore 102 studies, 13 met the inclusion criteria. **Results:** 11 studies were conducted in Europe and 2 in the US. The proportion of dropout from one season to the next was typically in the range of 20 - 35%; but as high as 60% among players who travelled a great deal to compete. Common microsystem factors (that the individual experiences in a face-to-face setting e.g. at training) were: high demands on time, feeling unsupported by the coach, a lack of teamwork or team spirit, and insufficient game time. The foremost mesosystem factor (linkages between settings the individual operates in e.g. between school and sport) was competing demands. The high time commitment identified as a dominant microsystem factor interacted with the players' commitments to academic pursuits, other sports, and time to be with their friends. The relative age effect was the only exosystem factor (factors from settings that the individual does not directly interact with, but is influenced by) identified. **Conclusions:** This study synthesizes what is known about dropout from soccer among children and youth and demonstrates the need to systematically examine multiple levels of context to better understand why children and youth discontinue with soccer.

Investigating the Impact of School Scheduling on Patterns of Physical Activity and Behaviour in Kindergarten Students

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Objective: Physical activity is an important component of children's health and is related to classroom behaviour. Since children spend 6 hours in school daily, the contribution of school-time to energy expenditure deserves attention. The effects of ELK scheduling on

student activity and behaviour has never been examined; therefore we compared traditional and ELK scheduling on physical activity and behavior in kindergarten. **Methods:** Participation was requested of all kindergarten children attending two schools: one using the traditional kindergarten schedule; and one using the ELK schedule. Schools were matched for socioeconomic status and geographic proximity. Data was collected over five days using pedometers to estimate physical activity and Direct Behaviour Rating Scales to measure student behavior during class time. **Results:** Five-day averages were calculated and student t-tests were performed based on schedule and gender. A total of 133 students participated; 72 girls and 61 boys for a response rate of 70%. The results showed that the students in the traditional kindergarten schedule achieved significantly more steps than the ELK schedule. The results also showed that regardless of schedule, boys achieve more steps per day than girls. Data is currently being analyzed to also assess the impact of scheduling on classroom behaviour. **Conclusion:** This data suggests that the new ELK program does not provide students with the same amount of physical activity as the traditional kindergarten program and highlights the importance of a structured approach to physical activity. **Funding:** Louise Picard Public Health Research Grant.

Physical Activity and Watching TV, but not Cardiorespiratory Fitness, are Related to Metabolic Risk Among Children: The Physical Activity and Nutrition in Children (PANIC) Study

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Objective: Physical activity (PA), watching TV and cardiorespiratory fitness (CRF) have been linked to metabolic risk in children. However, few studies have investigated the independent associations of PA and watching TV with metabolic risk. Moreover, most previous studies have used weight-proportional CRF measures that are confounded by adiposity. **Methods:** We investigated the independent associations of PA, watching TV and CRF with metabolic risk. Participants were 479 children aged 6–8 years. We assessed PA and watching TV using questionnaire and maximal CRF using maximal workload scaled by lean mass (LM) from maximal cycle ergometer exercise test. LM and fat percentage (%BF) were assessed by DXA. Metabolic risk score (MetS) was computed using Z-scores of waist circumference, fasting glucose, fasting insulin, HDL cholesterol, triglycerides and mean of systolic and diastolic blood pressure. Data were analyzed using linear stepwise regression and adjusted for sex and growth maturation index (GMI) and additionally for %BF. **Results:** Among all children, PA was inversely ($\beta = -0.139$, $P = 0.002$) and watching TV was directly ($\beta = 0.092$, $P = 0.035$) associated with MetS whereas CRF was not related to MetS after adjustment for sex and GMI and by including these measures in same stepwise linear regression model. However, the association of PA was no longer statistically significant and the relationship of watching TV was attenuated ($\beta = 0.078$, $P = 0.046$) after further adjustment for %BF. **Conclusions:** Lower levels of PA and larger amounts of watching TV were related to higher MetS, but these associations were partly

explained by %BF. Correspondingly, CRF was not associated with MetS. **Funding:** The Aino Eerola Trust and the Orion scientific Trust of Finnish Medical Foundation.

Exploring Physical Literacy From the Perspectives of New Teachers: “Something That was Talked About but Never Really Understood”

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Background: Physical literacy is a concept that was largely proposed by Whitehead in 1993. In recent years there has been a growing applied interest among sports organizations, PA and health promoters and school PE curricula and design. **Objective:** To explore new teachers’ perceptions of physical literacy and gain an understanding of their experiences implementing physical literacy into regular practice. **Methods:** Ten new teachers (i.e. graduated from a Faculty of Education within the last 5 years) engaged in semi-structured interviews. All participants held an Ontario Intermediate/Senior qualification, with Health and Physical Education as their first teachable. **Results:** Findings suggest participants valued the concept of physical literacy, but had limited understanding as to how to implement or evaluate the concept in the classroom, gymnasium, or broader contexts. As teacher candidates, participants experienced difficulties incorporating physical literacy into the existing physical education structure, suggesting physical education classes provided physical activity underpinned by sport, rather than education for life-long activity. Further, participants experienced disconnect between the provision of resources and their training in physical and health education, within the ever-evolving health and physical education landscape. **Conclusion:** The study highlights critical issues related the alignment of physical literacy, the physical and health education curriculum, and teacher training experiences. Findings have implications for the design and delivery of teacher education in Ontario.

Children’s Guided Active Play: a Novel Approach Using Self-Paced Games to Establish Physical Activity Program Targets

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Objective: To investigate the potential of using children’s self-paced games in determining the ‘dose’ of physical activity for a children’s guided active play (GAP) program. **Methods:** Cooperative games (n=33) were categorized (vector magnitude (vm)) into light, moderate and vigorous (p<0.05) physical activity (PA) and used to prescribe PA targets during an eight-week children’s GAP program (1h/d; 5d/wk). Children’s (8-12yrs; n=25) PA participation was measured in wk-1 (i.e., baseline (PA-BL)). Weekly PA targets (i.e., 10-30% percent above PA-BL) were randomly assigned for wk-2 to wk-8. Calibrated accelerometers (GT3X+) assessed the suitability of prescribing children’s self-paced games (using GAP) on achieving PA targets (vm counts/min; metabolic equivalents (MET) and %time MVPA). **Results:** PA for children’s self-paced

games averaged 3600±385 vm cnts/min and 4.1±0.6MET for all games (n=33) (range 1142-5169 vm cnts/min (p<0.05); and 2.5 to 6.5MET (P<0.05)). Heart rates ranged from 115-158 bpm (p<0.05); mean of 138±17bpm (66%HR_{max}). The PA-BL averaged 140,327 vm cnts/session over wk-1 (1hr/d). PA participation ranged from 159,795 to 185,087 vm cnts/session from wk-2 to wk-8 (p<0.05); mean of 169,669±13,556 vm cnts/session. PA targets for wk-2, wk-3 and wk-4 (i.e., >20%, between 10-20% and <10% of PA-BL) were on average 2%, 1.5%, and 1% of prescribed PA levels (p>0.05). For wk-6 to wk-8 achieving PA targets (of >20%; <10%; 20-30% above PA-BL) were -31%, -0.5% and -18% when compared to PA-BL (p<0.05). **Conclusion:** The use of children’s self-paced games in targeting the ‘dose’ of PA with GAP programs might promote children’s PA participation and health benefits. **Funding:** Faculty of Health, York University – Grants-in-Aid.

Integrating a Period of Daily Physical Activity in the School Activity Timetable to Promote Academic Achievement

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Program: The “Je bouge” (Let’s Move) project is based upon the implementation in an elementary school, by classroom teachers in collaboration with the physical education and health teacher, of a daily 20 minutes physical activity program before class, within the school activity timetable. A program to promote the emergence of factors predisposing students to academic achievement. **Objective:** This communication aims to present the structure which allowed to implement the “Je bouge” (Let’s Move) project. **Findings/Outcomes:** The development and success with this program are based on seven pillars: 1) Teachers, who individually believe in the values of the project and are ready to animate a period of daily physical activity; 2) A school that integrates the period in the schedule and engages all stakeholders of the school; 3) Adequate environmental organization and infrastructure as well as providing appropriate physical activity equipment; 4) Parents who support the physical activity of children school and at home; 5) Students participating in the program and who are involved in selecting and organizing activities; 6) A school board that financially supports the project; 7) An external resource that can facilitate the development and implementation of the project (in this instance the University). **Conclusion:** The development and success of this program are based upon many factors. This project can inspire other schools to implement the same kind of initiatives, which is why it is important to consider the factors influencing the implementation of this type of program. **Funding:** Le ministère de l’Éducation, du Loisir et du Sport.

Get Active ‘N Play

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Objective: If television and video games are made so easily accessible, then why aren’t sports? Our goal is to create active communities by turning elementary schools into outdoor sports hubs where

students and the local community can play a variety of sports before, during and after school. Teaching physical literacy/leadership skills and motivating students with in school, after school programs and through social media. **Methods:** Painting Sports Walls on the outdoor school walls to create free access to play a variety of sports like tennis, volleyball and hockey at school. With over 670 elementary schools in Toronto alone, every community regardless of income level/social status would have a place to play. Provide in school and after school programming to teach students physical literacy, teamwork and leadership skills while playing games using the Sports Walls. Encouraging other physical activity and youth programs to use the space as well to get active and play. Also creating online presence to encourage everyone to seek and live out a healthier lifestyle. Creating an app that connects people with others that want to play, have physical literacy how to and game rule videos and an option for members to create local competitions/games and track scores. **Results:** Kids will play more! Without physical literacy, research shows many children and youth withdraw from physical activity and sport. Children report that not having the skills to play is one major reason they drop out. **Conclusion:** If we build it and educate, everyone will Get Active 'N Play.

Does Neighbourhood Scale Modify Built Environment—Physical Activity Associations of Youth?

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Objective: To examine whether neighbourhood scale influences relationships between objectively measured built environment characteristics and moderate to vigorous physical activity (MVPA) of youth. **Methods:** A cross-sectional analysis was conducted using a sample of 366 children aged 8-11 y, living in the lower mainland region, British Columbia. MVPA was assessed using ActiGraph GT1M accelerometers and age specific cut-points (Troost et al. 2002). Predictor variables were derived from spatially integrated assessment, street network and park data using ArcMap 10 Geographic Information Systems software. Predictors included a standard index of walkability (a sum of normalized measures of commercial density, residential density, land use mix and street connectivity), as well as measures characterizing street design and measures of access to: parks, recreation sites and school. Buffer-based predictors were calculated at 200, 400, 800 and 1600 meter buffer sizes. Sex specific regression models were created to relate these variables to MVPA while controlling for age and ethnicity. **Results:** For both boys and girls, significant associations were most frequently noted with the largest (1600 m) buffer sizes. Distinct sex specific differences were also noted, with cul-de-sac density and proportion of low speed limit streets being significantly associated with MVPA for girls, and walkability measures (intersection density, land use mix, residential and commercial density) significantly associated

with MVPA of boys. **Conclusion:** Choice of scale for derivation of neighbourhood built environment measures dramatically influences observed relationships between built environment characteristics and youth physical activity. **Funding:** Canadian Institutes of Health Research, Heart and Stroke Foundation of Canada.

Neighborhood Environment Associations With Youth Fitness

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Objective: To examine whether features of the neighbourhood environment known to predict moderate-to-vigorous physical activity (MVPA) are also associated with cardiovascular fitness in children aged 8-11 y. **Methods:** We measured cardiovascular fitness (Leger 20-metre shuttle run) and MVPA (Actigraph GT1M with age-specific cutpoints) in 569 children aged 8-11 y living in the lower mainland region, British Columbia. Predictor variables were derived from spatially integrated assessment, street network and park data using ArcMap 10 Geographic Information Systems software. Predictors included a standard measure of walkability (a sum of normalized measures of commercial density, residential density, land use mix and street connectivity) widely used in studies involving adults and children, as well as a measures of 'playability' gauging access to parks. Regression models were created to explore the cross-sectional relationship between these variables and cardiovascular fitness or MVPA while controlling for age, sex and ethnicity. Sex-stratified models were also created. **Results:** Walkability and walkability component measures were negatively associated with fitness levels of both boys and girls, despite being positively associated with MVPA. Associations were generally weaker for girls. The playability measure was not significantly associated with fitness levels. **Conclusion:** Walkability-type measures of the built environment associated with MVPA were not associated with youth fitness. Playability type measures of access to recreational amenities may better gauge built environment characteristics supportive of cardiovascular fitness of children, but further work is needed to identify playability measures that better capture relevant features of the built environment. **Funding:** Canadian Institutes of Health Research, Heart and Stroke Foundation of Canada.

Physical Activity Among Preschoolers in Home-Based Childcare: A Systematic Review

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Objective: While activity levels of preschoolers in center-based childcare have received considerable attention, less is known regarding this group's activity levels within home-based childcare. This review aimed to explore and synthesize the literature on preschoolers' physical activity behaviors in home-based childcare. **Methods:** Nine online databases were searched for peer-reviewed, English-language, primary studies which quantitatively measured physical activity levels of preschoolers attending home-based childcare. Exclusion occurred if studies were: non-primary research; absent of a preschool-aged sample; did not quantitatively measure physical activity; or if the environment was ineligible (i.e., center-based childcare). **Results:** Six articles met the inclusion criteria for this review; three of which objectively measured physical activity, while three relied on non-objective measures. Accelerometry data suggests that preschoolers' average moderate-to-vigorous and total physical activity levels in home-based childcare ranged from 1.76–9.70 mins/hr and 10.40–33.80 mins/hr, respectively. Outdoor playtime, a physical activity proxy, appears to be inconsistent in home-based childcare. **Conclusion:** Physical activity among preschoolers attending home-based childcare appears to be relatively low and widely varied. Future research examining physical activity in this unique environment could assist in highlighting whether intervention is needed to support increased active opportunities.

Screen-Viewing Among Preschoolers in Childcare: A Review

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Objective: To systematically review all relevant literature to assess preschoolers' (i.e., those aged 2.5-5 years) screen-viewing levels in childcare. A proxy measure (i.e., availability of screen activities) was also used to help ameliorate the understanding of preschoolers' screen behaviours in care. A secondary objective was to examine the influential factors of screen-viewing among preschoolers in childcare. **Methods:** Electronic database and manual searching techniques were used to retrieve appropriate articles for inclusion in this paper. All inclusion criteria were established a priori. **Results:** Fifteen international studies published between 2004 and 2012 were integrated in this review. Of those, seven studies reported rates of screen-viewing and found that preschoolers in childcare spent approximately 0.1 to 2.4 hrs/day engaged in this behaviour. With regard to access to and opportunities for screen-viewing in childcare, this review found this particular environment to be conducive to this behaviour. High staff education (negative association) and type of childcare arrangement (notably, home-based childcare; positive association) were identified as two strong influential factors in relation to preschoolers' screen-viewing levels in childcare. **Conclusion:** This review highlights the infancy of this body of research and encourages the undertaking of additional studies that examine objectively preschoolers' screen-viewing levels in childcare. Additional exploration into the correlates of screen-viewing among preschoolers in childcare is also required.

Do School-Based Health Promotion Programs Reduce or Exacerbate Inequalities in Children's Physical Activity?

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Objective: Weekends have been identified as critical-windows for health promotion. We aimed to determine whether school-based health promotion programs affect children's weekend activity levels and whether they reduce or exacerbate physical activity inequities. **Methods:** This was a quasi-experimental trial of school-based programs implemented in schools in disadvantaged neighborhoods in Alberta, Canada. In 2009 and 2011, pedometer (7 days) data was collected from cross-sectional samples of grade 5 students from 10 intervention and 20 comparison schools. Parents reported their socioeconomic status. Low-active, active, and high-active children were defined according to step-count tertiles. Multilevel models assessed the inequity in step-counts between groups over-time. **Results:** In 2009, relative to those attending comparison schools, children from intervention schools were less active on weekends (9048 vs. 11216 steps/day $p < 0.01$). Two years later, activity levels of children from intervention schools increased such that they approximated those of children from comparison schools (12148 vs. 12121 steps/day $p = .96$). The relative difference in steps between intervention and comparison schools on weekends reduced from -21.4% to 0%. They also reduced from -43% to -16%, -27% to +3.2%, and -14% to +2.7% among low-active, active, and high-active students, respectively. Further, the difference reduced from -21% to +2% and -19.1 to +3.9% among normal-weight and overweight students, and was balanced across socioeconomic subgroups. **Conclusions:** These findings provide evidence for the effectiveness of school programs in disadvantaged neighborhoods to reduce physical activity inequalities during critical-windows. Investments in health promotion are essential to improve activity, prevent obesity, and may also reduce health inequalities. **Funding:** The APPLE Schools program was funded through a philanthropic donation to the School of Public Health at the University of Alberta. The research was funded through a Canada Research Chair in Population Health and Alberta Innovates Health Solutions Health Scholarship to Dr. Paul Veugelers. All interpretations and opinions in the present study are those of the authors. Dr. Jonathan McGavock is a CIHR New Investigator and holds the Robert Wallace Cameron Chair in Evidence-based Child Health.

Physical Activities and Health Aspects—the Perspective of Finnish Children and Young People

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Objective: The focus of this paper is to analyze what is the role of health aspects in Finnish children's and young people's physical activity. The aim is to study if the attitude to health differs according to the physical activity and how important is the role of

health dimension in the physical activity of the youth. In addition it is analyzed how lasting are the interpretations of health aspects from childhood to youth and adulthood. The main focus in our perspective is on the physically inactive children and young people. **Methods:** The study is a part of a longitudinal research, where the first measure was done in 2003 when the age of the target group was 3-18 years. The second measure was done ten years later in 2013. In 2003, the sample was 2032 and in the second phase we reached 35 per cent of them (n=689). Our methodological approach applies so called mixed methods orientation where both the quantitative and qualitative materials and methods of analysis are used. **Results:** Young people in Finland understand the significance of health aspects and they figure out physical activities as one of the central factor of health. Especially for those who were physically very active the association was clear in both measures. However the group of physically inactive recognized the importance of health as well and they commonly understood the central role of physical activities in this context. In spite of that, they were not interested in practicing physical activities.

The Associations Among Self-Efficacy for Physical Activity in High School Females at Risk of Physical Inactivity

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Objective: Physical inactivity is prevalent among Canadian youth, especially adolescent females. This cross-sectional investigation examined the associations among self-efficacy for physical activity among a group of high school females at risk of physical inactivity. **Methods:** A paper-based survey was administered to 137 females in grades 10-12 at risk of physical inactivity, as identified by their teachers in 20 schools. Self-efficacy (SE) was measured using a modified version of Motl et al. (2000) SE Questionnaire. Independent variables included school and community sports participation, non-traditional sports/activity participation, meeting Canada's Physical Activity Guidelines, and physical activity enjoyment. A general linear model analysis, including grade and ethnicity as descriptor variables, was used to assess the associations among SE. **Results:** The mean SE score was 22.6±4.2 (out of a possible 32) and was not different by grade or ethnicity. SE was positively associated with non-traditional sports participation (e.g., participating=23.9±3.2 vs. not participating=20.3±4.7; p<0.001) and with enjoying physical activity (e.g., "love it"=24.5±3.7 vs. "not fond of"=21.2±4.5; p<0.001). **Conclusion:** Interventions aimed at increasing SE for physical activity, which may include non-traditional sports participation and physical activity enjoyment, are recommended for high school females at risk of physical inactivity in the future. **Funding:** This research was supported by Leadership Advancement for Women in Sport.

Pubertal Status, Self-Efficacy, and Physical Activity Levels in Adolescent Girls

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Objective: To examine the relationships between pubertal status, self-efficacy, and physical activity (PA) levels in adolescent girls. **Methods:** Girls in 5th-7th grade (N=509) from 8 urban schools in the Midwestern U.S participated in the study. Pubertal status (categorized as early/mid vs. late) and self-efficacy (0-3 scale) were assessed through self-report. PA levels were measured using accelerometry for moderate-to-vigorous physical activity (MVPA) and light PA plus MVPA (LMVPA). Independent samples t-tests, Pearson's product moment correlations, and multiple linear regression were used for analysis. **Results:** Girls in early/mid-puberty participated in significantly more PA than those in late puberty: mean (SD) minutes/hour MVPA: 3.32 (1.32) vs. 2.71 (1.24), t=4.97, p<.001; mean (SD) minutes/hour LMVPA: 22.79 (4.01) vs. 20.29 (4.46), t=6.28, p<.001. Girls in early/mid-puberty had significantly higher mean (SD) self-efficacy scores than girls in late puberty: 2.27 (0.58) vs. 2.15 (.61), t=2.29, p=.02. Self-efficacy had a significant direct relationship with PA: MVPA (r=.126, p=.007); LMVPA (r=.128, p=.006). Self-efficacy and pubertal status significantly predicted MVPA: self-efficacy (B=0.24, t=2.33, p=.02), pubertal status (B=-0.58, t=-4.76, p<.001) and LMVPA: self-efficacy (B=0.76, t=2.30, p=.022), pubertal status (B=-2.42, t=-.607, p<.001). Together, pubertal status and self-efficacy explained some of the variance in MVPA: adjusted R²=.058, F[2,459]=15.20, p<.001 and in LMVPA: adjusted R²=.085, F[2,459]=22.54, p<.001. **Conclusion:** Increasing self-efficacy for girls in late puberty may increase their physical activity. For girls in late puberty, other factors may also be instrumental for increasing PA and deserve exploration. Results can be used to guide development of PA interventions. Funding: Supported by NIH R01HL109101.

Walking Further to School Increases Physical Activity in a Dose-Dependent Manner

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Objective: To investigate the dose-response relationship between objectively measured walking distance (GPS) and trip-based minutes of moderate-to-vigorous physical activity (MVPA) in walkers and public transit users during the school-trip. **Method:** High-school students (n=49, 13.8±0.6 yrs, 63% male) from Vancouver wore accelerometers (GT3X+) and GPS monitors (QStarz). We identified school-trips (distance, mode) in GIS software and time-aligned them with 1s accelerometry data to calculate 'trip-based' MVPA (Stata v. 10.0); for transit trips, we additionally identified trip segments which were walking vs. motorised travel. We excluded students without school-trip data, school-trips not starting/ending at home, and school-trips with >15% missing GPS waypoints, and car trips. We used multilevel regression models to assess the association between distance walked and trip-based MVPA. **Results:** Twenty-nine students had 52 valid school-trips (n=26 transit, n=26 walk). Transit trips were longer than walking trips (3.6 vs. 1.2 km, p<.001). However, transit users walked approximately 1/4 of their trip (735 m), which explains why trip-based MPVA was similar between walkers and transit users (9.4 vs. 7.3 min, p=0.097). We found a strong positive relationship between distance walked and trip-based

minutes of MVPA ($r^2=0.711$, $p<0.001$). For every additional 138 m walked, students accrued an extra minute of MVPA. **Conclusion:** Importantly, both transit and walking trips contribute substantially toward youth accruing physical activity, in a dose-response manner. Although the amount walking (and thus trip-based MVPA) may vary by community and transit locations, both transit and walking trips should be encouraged as opportunities for physical activity through daily travel. **Funding:** The author is supported by postdoctoral fellowships from the Heart and Stroke Foundation of Canada and the Michael Smith Foundation for Health Research. The study is funded by the Heart and Stroke Foundation of Canada (G-13-0002906) and the Canadian Institutes of Health Research (POH-127210).

Association Between BMI and Percent Body Fat Status and Screen-Based Sedentary Activity of Kenyan Urban School Children: Results From ISCOLE-Kenya

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Objective: This study assessed the time spent on screen-based sedentary activities and its association to body weight status and percent body fat of Kenyan children aged 9 to 11 years. **Methods:** Data collection was conducted in Nairobi as part of a larger International Study of Childhood Obesity, Lifestyle and the Environment. Body Mass Index and percent body fat were objectively measured while information on screen time was obtained through questionnaires. **Results:** Children spent an average of 1.75 hours engaged in recreational screen-based sedentary activities on school days, and 4.25 hours on weekend-days. On school days, 32.1% had more than 2 hours of screen time while on weekend days, 74.2% exceeded this target. Majority of participants with high levels of screen time were males and those from private schools. There was a significant association, $\chi^2 = 18.057$, $p = 0.035$, between weight status and overall screen time levels but non significance for % body fat. Among the participants, 11.5% had access to a home computer, 17.4% to hand-held video game device, 21.5% to a cell phone and 10.8% to a non-hand held video game system while 18.5% had a television in their bedroom. There was significant relationship between the presence of the above devices and screen time levels except for home computer. **Conclusions:** A high proportion of children were spending more than the recommended amount of time on sedentary screen activities on weekends. Interventions and strategies should focus on the males and those attending private schools. **Funding:** The study was part of the International Study of Childhood Obesity, Lifestyle and the Environment which was funded by the Coca-Cola Company.

SPARK—The Revolutionary New Science of Exercise and the Brain: Exercise Increases the Mental Health and Well-Being of Children and has a Direct Impact on Academic Success

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Objective: An initiative to increase mental health and well being of children and to increase academic achievement through exercise. An initiative based on John Ratey's "Spark" Brain Research. **Methods:** SPARK is a motivational fitness program that inspires students to believe in themselves and builds their confidence. The SPARK initiative was implemented in five elementary schools. The schools timetabled a minimum of three high intensity physical activity times within a five-day cycle lasting 45 minutes. The block of physical activity took place directly prior to literacy or numeracy instruction. Outcomes included increased levels of fitness, healthier students, better self-image, improved academic results and a reduction in office referrals. **Results:** Students experienced an increase in academic success. Their mentality about fitness shifted and they gained confidence. Physical activity has a positive influence on memory, concentration and cognitive function. Exercise improves learning. It optimizes your mind-set to improve alertness, attention and motivation. **Conclusion:** Physical activity has a profound impact on cognitive abilities, mood, attention, self-esteem, social skills and overall mental health. Exercise is crucial to the way we think and feel.

Physical Activity Instruments in Children and Youth With Mobility Impairments: A Systematic Review

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Objective: Children and youth with mobility impairments (MIs) are less physically active than their typically developing peers. There is a need to examine the physical activity (PA) instruments that have been employed among this target population in order to inform future interventions. The objectives of this review were to identify the objective and subjective PA instruments used in research examining PA among children and youth with MIs and to examine the reliability and validity of those instruments. **Method:** Following a standardized protocol, a systematic review was conducted using five electronic databases and a range of search terms. **Results:** 36 studies (N = 1991; Mage = 10.9 yrs; 52% male) were included. Majority of studies focused on cerebral palsy (n = 22) and juvenile arthritis (n = 6). Subjective instruments used in the studies consisted of a variety of questionnaires (13 studies) and activity diaries (7 studies). Objective instruments used included accelerometers (21 studies), direct observation (4 studies), pedometers (1 study), motion sensors (1 study), and inclinometers (1 study). The majority of studies (n = 29) reported on reliability and/or validity of the instruments; seven of which were specific to the target group. **Conclusion:** The majority of research measuring PA in children and youth with MIs has been in the areas of cerebral palsy and has measured PA with accelerometry. Further research is warranted among other MIs and in establishing reliability and validity of PA instruments specific to these target groups.

Analysis of Cardiovascular Risk Factor Profile in Children With Developmental Coordination Disorder

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Objective: There have been very limited studies to examine cardiovascular risk factors of children with developmental coordination disorder (DCD). Several research studies have shown that physical fitness and cardiorespiratory function of children with DCD was poorer than typically developing children, and this may increase the cardiovascular disease (CVD) in adults when children with DCD grow up. The purposes of this study were to analyze the cardiovascular risk factors influencing children with DCD and to compare children with DCD in health-related factors to children without DCD. **Methods:** Using the Movement ABC-2 test, 141 school children aged 11 to 12 years were recruited for screening motor coordination. All children (9 DCD and 132 controls without DCD) attended Leger 20-meter shuttle run, measures of blood pressure and body composition, and pulmonary function test. Children were asked to complete Pediatric Quality of Life (P-QOL) and Children's Self-Perception of Adequacy in and Predisposition for Physical Activity Scale (CSAPPA). **Results:** Children with DCD were poorer in aerobic capacity and were higher in body fat and body mass index than controls. However, no significant differences in other CVD factors between two groups were found. In addition, children with DCD were not significantly different from controls in quality of life and perceived competence and generalized self-efficacy. **Conclusion:** Children with DCD were less fit than children without DCD. Although we preliminarily examined the differences in CVD and health behavior between two groups, the longitudinal study to monitor children with and without DCD to adolescents is essential. **Funding:** National Science Council, Taiwan.

Getting Kids' Fit for the Future!

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Program Objective: The 60 Minute Kids' Club is a collaborative movement designed to re-instill physical activity, physical literacy and healthy habits in children aged 5-14 years of age. We meet federal guidelines for providing 60 minutes of daily physical activity and entrench holistic behaviours by activating participants, connecting partners, and amplifying stories. **Findings/Outcomes:** 60MKC is the missing "activation strategy" for supporting kids around the clock in making the right choices—anywhere and anytime—about diet, physical activity, sleep, hydration and positive thoughts. It was developed to specifically address the lack of an effective, ongoing activation strategy available to parents and teachers who want to help entrench good, daily habits in kids. 60MKC is introduced through the elementary school, but registration takes place with parental involvement in the home. The program provides an engaging way to learn about health and physical literacy, while tracking and rewarding the right choices and behaviours through a fun and friendly inter-school challenge. The 60MKC program works because kids, teachers and families are all involved in supporting a culture where making healthy choices is not only the norm, its fun! Further, the program is inclusive, scalable and, most importantly,

free of charge. **Conclusion/Perspectives:** Based on sound principles of physical and health literacy, the 60MKC program reinforces healthy daily choices around diet, activity, sleep, hydration, and other health promoting behaviors that contribute to physical and mental wellbeing. Critically, 60MKC makes it easier for Canadian youth and their families to embrace healthy behaviours in the face of unhealthy cultural and environmental norms.

Accelerometer-Based Estimates of Physical Activity in Children With and Without Movement Difficulties: Are They Meeting Health Canada Guidelines?

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Objective: Physical activity levels between children who demonstrate movement difficulties (MD) and their typically developing peers were compared and examined relative to physical activity guidelines recommended by Health Canada. **Methods:** Thirteen children with MD and 10 typically developing peers between 7 and 10 years of age participated in this study. Children with MD were identified using the Movement Assessment Battery for Children (2nd ed.). The physical activity levels of each child were monitored over 7 consecutive days using GT3X accelerometers. The time in minutes and percentage of time spent in the different physical activity intensities was calculated based on 3 weekdays and 1 weekend day of wear time using the Puyua (2002) cut points. **Results:** Significant differences ($p < .05$) were revealed between the two groups for the time in minutes spent in moderate-to-vigorous physical activity and percentage of time in sedentary and moderate-to-vigorous physical activity. Only one child with MD and four typically developing children met the daily guidelines for moderate-to-vigorous physical activity over the monitoring period, with children averaging between 19.61 and 92.28 minutes per day. When vigorous activity was examined, no children within this sample averaged 20 minutes each day for a minimum of 3 days. Rather, the amount of time children spent in vigorous intensity physical activity ranged from 0.24 to 15.95 minutes per day. **Conclusion:** Children with MD appear to engage in greater amounts of sedentary behaviour and less health-related physical activity than their peers, which may be the result of their limited movement experiences.

Assessing Canadian School Environments Through the Healthy School Planner Physical Activity Module

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Program Objective: Healthy School Planner (HSP) is a free, online tool that helps Canadian schools "EVOLVE": Evaluate current conditions; Validate untapped resources within the community; Organize increased support for change; Lead the decision-making

process to determine action steps; Visualize outcomes through shared success stories; and, Evaluate progress over time. After completion, schools receive tailored feedback and a list of resources guiding action for identified priorities. Users complete up to three valid and reliable modules, each assessing four pillars of comprehensive school health(CSH) approaches: Foundational (20 indicators), Express physical activity (7 core indicators) and Detailed physical activity (23 additional indicators). Over 740 self-selected elementary and secondary schools have received feedback on the physical activity indicators. **Findings/Outcomes:** The following selected outcomes reflect pillar of the CSH approach. Only 10% of schools offer ≥ 30 minutes of physical education daily to every grade for the

entire school year. In two Canadian provinces with required daily physical activity (DPA) policies, only 66% of schools provide ≥ 20 minutes of DPA during instructional time to all grades taught in the school. 61% of schools report offering supportive social and physical environments for physical activity and 17% of schools have effective partnerships to promote and support physical activity. **Conclusion/Perspectives:** While considerable variation exists across schools, by jurisdiction, school type (elementary/secondary), and location (urban/rural), overall ratings for Canadian schools indicate room for improvement. **Funding:** Funds for HSP were provided by Pan-Canadian Joint Consortium for School Health and Canadian Cancer Society through Propel.