

CHEO Research Institute

Healthy Active Living and Obesity Research Group

ANNUAL REPORT

2007





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Welcome from the Director

There has been a 300-500% increase in the prevalence of childhood obesity in Canada over the past couple of generations. The etiology of the condition varies by genotype and phenotype but it is generally believed that changes in physical activity and eating behaviours have precipitated this global pandemic. Systematic and progressive changes to the built and social environments have produced conditions that encourage overeating and sedentary behaviours. Biological, social and environmental factors contributing to this growing problem are complex and interconnected, and best examined using a multidisciplinary approach.

The increase in the prevalence and severity of childhood obesity in all areas of Canada has created increased demand for clinical care to address physical, mental and emotional co-morbidities. With this increased clinical demand emerged limitations and deficiencies in the availability of services, including sub-optimal physician training, insufficient pediatric obesity specialists, inadequate treatment options, under-developed models of care delivery, inadequate prevention initiatives and insufficient resources.

The Children's Hospital of Eastern Ontario (CHEO) and the Children's Hospital of Eastern Ontario Research Institute (CHEO-RI) have been concerned about, and interested in, childhood obesity for some time. An active research program in this area has been in place for several years. Responding to the individual, familial, community and societal call for help, the CHEO-RI recently made a strategic decision to invest further in childhood obesity research. This further investment included a commitment of resources for research and support staff, office and laboratory space, and office and research infrastructure. The CHEO-RI is committed to the development of a "Centre of Excellence" in childhood obesity research.

In October 2007 the newly expanded obesity research group held a strategic planning retreat to map out the future structure, function and priorities for this new group called the CHEO-RI "Healthy Active Living and Obesity Research Group" (HALO). The HALO Research Group is comprised of research scientists, clinicians, research staff, administrative support, and graduate and practicum students. Details of the HALO vision, mission, lines of business, structure, staff and research are provided in this first *Healthy Active Living and Obesity Research Group Annual Report*.

As the inaugural Director of the Healthy Active Living and Obesity Research Group at the CHEO-RI, it is my pleasure to provide you with this first annual report. In collaboration with our partners, we have accepted the challenge to overcome the clinical and public health challenges of childhood obesity and inactivity. We look forward to your ongoing support and involvement in our quest to preserve, enhance and restore the health and wellness of our most precious resource, our children.

Dr. Mark Tremblay Director of Healthy Active Living and Obesity Research Children's Hospital of Eastern Ontario Research Institute Ottawa, Ontario, Canada



Healthy Active Living and Obesity Research Group Strategic Positioning

Vision Statement:

HALO will...

Provide national leadership and research excellence in healthy active living for the prevention and treatment of obesity in children and youth.

Mission Statement:

HALO will...

Establish a multidisciplinary centre of excellence in healthy active living and obesity research in children and youth that will:

- Significantly contribute to the understanding of healthy body weights and prevention of obesity.
- Develop and evaluate innovative strategies to treat and manage obesity and its related health consequences.
- Ultimately reduce the overall prevalence of obesity and its social burden.



Lines of business:

1. Research

- Evaluation of current and future childhood obesity treatment options.
- Identification of environmental, behavioural and biologic predictors of obesity and physical inactivity, their interactions, enablers and inhibitors.

2. Leadership

• Development of innovative strategies to prevent and treat childhood obesity and inactivity.

3. Training

- Creation of a nationally recognized training centre for future researchers and health professionals interested in the prevention and treatment of childhood obesity and inactivity.
- Development, promotion and utilization of effective knowledge translation, transfer and exchange strategies to increase the uptake of prevention and treatment options reducing future disease burden.

4. Partnerships

• Cultivation of municipal, provincial, national and international partnerships to create, promote, implement and evaluate the effectiveness of healthy active living and obesity prevention and treatment programs aimed at achieving positive health outcomes in children and youth.

5. Advocacy

• Professional, informed and authoritative voice for healthy active living and obesity research in children and youth.

6. Good Governance

- Exemplary administrative and governance practices
- Effective, efficient and transparent policies and procedures



Healthy Active Living and Obesity Research Group



Healthy Active Living and Obesity Research Group strategic planning retreat, Calabogie Peaks Resort, October, 2007



Dr. Kristi Adamo earned an Honours B.Sc. degree in Human Kinetics and a M.Sc. degree specializing in exercise physiology through the University of Guelph Department of Human Biology and Nutritional Sciences. During this time she had the distinct opportunity to train at the Copenhagen Muscle Research Centre and August Krogh Institute in Denmark. Prior to commencing her doctoral work, Dr. Adamo worked for several years

at the University of Ottawa Heart Institute Prevention and Rehabilitation Centre in the area of primary and secondary prevention of cardiovascular disease. This experience spurred her interest in inter-individual response to treatment intervention and lead to her doctoral studies, completed through the University of Ottawa's Faculty of Medicine, Department of Cellular and Molecular Medicine,



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focusing on gene-environment interaction in diabetes and obesity. Dr. Adamo also spent a brief time as a Post-Doctoral Fellow with the obesity research group at the CHEO RI. Dr. Adamo holds an academic appointment as Adjunct Professor in the School of Human Kinetics at the University of Ottawa, is a Research Scientist with a multi-disciplinary background and is a founding member of the Healthy Active Living and Obesity (HALO) Research Group recently established at the CHEO Research Institute. She played a key role in the planning and development of this research team and through CFI/ORF funding, Dr. Adamo has been able to equip HALO's metabolic lab.

Kristi's most successful genetic experiment yet resulted in the birth of her daughter *Kysia* in July of 2007.

Dr. Adamo's current research interests include the irregular metabolic function associated with childhood obesity and type 2 diabetes and the role diet and exercise may play in predisposition or prevention. The primary research projects that she is currently involved in are listed below (and elaborated on in the section on Healthy Active Living and Obesity Research Group *Current Research Initiatives*).

- Kenyan International Development Study Canadian Activity Needs (KIDS-CAN) (Co-Principal Investigator)
- Physiological and psychological predictors and determinants of metabolic complications of pediatric obesity: A Cohort Study (Principal Investigator)
- <u>Think Tank:</u> Obesity and pregnancy an opportune time for intervention to prevent long-term sequelae in mothers and their offspring (Co-Principal Investigator)
- Prevalence of Markers of Insulin Resistance among Offspring Exposed to Gestational Diabetes: A 13 to 17 Year Follow-Up Study of a RCT Cohort (GDM) (Co-Investigator)
- Appetite Signaling Proteins and Energy Intake in Obese Adolescents with Binge Eating Disorder (**Principal Investigator**)
- Feasibility and Short-term Efficacy of the GameBike to Increase Physical Activity in Obese Adolescents (Co-Principal Investigator)
- YMCA Kids Fit study (CHEO based Principal-Investigator)
- Sleep Apnea in Obesity Youth (Co-Investigator)
- Champlain Healthy School Aged Children's Parent Attitudinal Survey (Co-Investigator)
- CIHR Team in Critical Periods of Body Weight Regulation: A Women's Health Perspective SOMET: Sherbrooke-Montréal-Ottawa Emerging Team (Co-Investigator)





Kristi, husband Rob and Kysia



Dr. Rachel Colley completed a Bachelor of Physical and Health Education and Bachelor of Science (Life Sciences) at Queen's University in 2003. Rachel completed her PhD at the Queensland University of Technology in Brisbane, Australia in October 2007. Rachel's doctorate work explored compensatory responses to exercise in obese women using a range of energy expenditure measurement techniques. She brings experience

to the HALO group in applied exercise physiology with specific skills in the measurement of energy expenditure and body composition.

Rachel joined the HALO team in August 2007 as a post-doctoral research fellow under the supervision of Dr. Mark Tremblay. Rachel is involved in a range of projects including the Maternal, Infant, Child and Youth Research Network (MICYRN), the Canadian Health Measures Survey (CHMS), a Canadian-Kenyan research collaborative project (KIDS-CAN), and the 2008 Active Healthy Kids Canada Report Card on Physical Activity in Children and youth.



Dr. Gary Goldfield has an Honour's Bachelor of Arts degree in Psychology, a master's degree in Experimental Psychology, and a doctorate in psychology from Carleton University. Dr. Goldfield completed a post-doctoral fellowship in Behavioural Medicine at the State University of New York at Bufffalo. Dr. Goldfield is presently a clinical scientist in the Healthy Active Living and Obesity Research Group at the Children's Hospital

of Eastern Ontario Research Institute. Dr. Goldfield is also an Assistant Professor of Human Kinetics and Pediatrics at the University of Ottawa, and is an Adjunct Research Professor of Psychology at Carleton University. Dr. Goldfield is the recipient of a New Investigator Award from the Canadian Institutes of Health Research, and holds several peer-reviewed grants from various funding agencies. Dr. Goldfield is also a registered psychologist who practices in the community of Ottawa and sees children, adolescents and adults. He is also a member of the Ottawa Academy of Psychologists, the Canadian Psychological Association, and the North American Association for the Study of Obesity (NAASO). Dr. Goldfield has published widely in the areas of child obesity, physical activity, behavioural psychology, and eating behaviour.

Dr. Goldfield's current research interests include child obesity, eating behaviour, physical activity in childhood and youth, pediatric exercise change and behaviour modification. The primary research projects that Dr. Goldfield is currently involved in are:

- Delivering Behavioural Therapy to Obese Children via Internet (Principal Investigator)
- Feasibility and Short-term Efficacy of the GameBike to Increase Physical Activity in Obese Adolescents (**Principal Investigator**)
- Healthy Eating, Aerobic and Resistance Training in Youth (Co-Principal Investigator)
- Prevalence of Markers of Insulin Resistance among Offspring Exposed to Gestational Diabetes: A 13 to 17 Year Follow-Up Study of a RCT Cohort (GDM) (Co-Investigator)
- <u>Think Tank:</u> Obesity and pregnancy an opportune time for intervention to prevent long-term sequelae in mothers and their offspring (Co-Investigator)
- Physiological and psychological predictors and determinants of metabolic complications of pediatric obesity: A Cohort Study (Co-Investigator)
- Appetite Signaling Proteins and Energy Intake in Obese Adolescents with Binge Eating Disorder (Co-Investigator)
- YMCA Kids fit study (Co-Investigator)
- Sleep Apnea in Child Obesity (Co-Investigator)



- Determinants of Obesity & Eating Disorders in Children and Youth (Co-Investigator)
- Resistance Exercise in Adults with Type-1 diabetes (Co-Investigator)
- Aerobic and Resistance Exercise in Adults with Type 1 diabetes (Co-Investigator)



Dr. Stasia Hadjiyannakis has an Honour's Bachelor of Science degree in biochemistry, and received her medical degree from The University of Toronto. Completing her pediatric residency training at Queens University and a fellowship in pediatric endocrinology at McGill University, Dr Hadjiyannakis is presently an assistant professor of pediatrics and chief of the division of endocrinology at the Children's Hospital of Eastern Ontario. Dr.

Hadjiyannakis is a pediatric endocrinologist whose area of clinical expertise is in pediatric obesity and related metabolic complications such as metabolic syndrome, dyslipidemia, polycystic ovarian syndrome and Type 2 diabetes mellitus. She is a member of the Canadian and American Diabetes Associations, the Canadian Pediatric Endocrine Group, the Canadian Obesity Network and the Endocrine Society.

Dr. Hadjiyannakis's current research interests include child obesity and obesity related complications.

- Prevalence of Markers of Insulin Resistance among Offspring Exposed to Gestational Diabetes: A 13 to 17 Year Follow-Up Study of a RCT Cohort (GDM) (Prinicipal Investigator)
- Healthy Eating, Aerobic and Resistance Training in Youth (Co-Principal Investigator)
- <u>Think Tank:</u> Obesity and pregnancy an opportune time for intervention to prevent long-term sequelae in mothers and their offspring (Co-Investigator)
- Physiological and psychological predictors and determinants of metabolic complications of pediatric obesity: A Cohort Study (**Co-Investigator**)
- Appetite Signaling Proteins and Energy Intake in Obese Adolescents with Binge Eating Disorder (Co-Investigator)
- Sleep Apnea in Child Obesity (**Co-Investigator**)



Tina Hutchinson graduated from Carleton University in the winter of 2000 with a Bachelor of Arts degree in Mass Communications; Tina then married and moved to Hamilton, Ontario with her husband Mark. With years of experience in retail pharmacy and retail management Tina relocated to Ottawa, Ontario.

In 2006 Tina was hired at the Children's Hospital of

Eastern Ontario's Research Institute where she worked with the Systematic Reviews Group. Tina provided financial and administrative assistance to the group in addition to co-coordinating the Cochrane Bias Methods Group.

In 2007 Tina joined the Healthy Active Living and Obesity Research Group to provide both financial and administrative support to the group's Director Dr. Mark Tremblay and the rest of the dynamic Healthy Active Living and Obesity Research Group.



Jane Rutherford completed a BSc. in Nutritional and Nutraceutical Sciences, and went on to attain an MSc. in Human Biology and Nutritional Sciences, with an emphasis in exercise physiology. Following graduation, working as a research coordinator at the University of Guelph, she coordinated human exercise studies on skeletal muscle metabolism. Jane then moved to the Ontario Aerobics Centre to take on the role of

exercise physiologist in cardiac and musculoskeletal injury rehabilitation.

While living in Guelph, in addition to her full-time job, Jane was self-employed as a Fitness Consultant through the Health and Performance Centre at the University of Guelph and was also an avid YMCA-YWCA of Guelph supporter, working there as a fitness trainer and group fitness class instructor. A proud accomplishment for Jane was the successful development of the Teen Girl Fit – a weekly health, empowerment and fitness program for teen girls at the Y.

In the fall of 2006, Jane moved to Ottawa to take on the role of Research Coordinator of the Healthy Active Living and Obesity Research Group where she was able to combine her love of research with her passion and skills for motivating and encouraging people to live healthy lives. Leading by example, Jane recently completed her 10th marathon.

In a volunteer capacity, Jane works for the Canadian Diabetes Association Speakers' Bureau and promotes the health of Canadians through presentations on diabetes related topics. Jane is also a regular Running Room presenter – giving talks to its running / walking clinics on general and sport specific nutrition.



Dr. Mark Tremblay joined the CHEO Research Institute as the Director of the Healthy Active Living and Obesity Research Group in June of 2007. Dr. Tremblay has an Honours Bachelor of Commerce degree in Sports Administration and an Honours Bachelor of Physical and Health Education degree from Laurentian University. His graduate training was from the University of Toronto where he obtained his M.Sc. and Ph.D. from the Department

of Community Health, Faculty of Medicine with a specialty in exercise science. Dr. Tremblay is presently the Senior Scientific Advisor on Health Measurement at Statistics Canada in addition to being the Director of HALO. Dr. Tremblay is a Full Professor in the Department of Pediatrics, in the Faculty of Medicine at the University of Ottawa; Fellow of the American College of Sports Medicine; a Fellow of The Obesity Society; former Dean of Kinesiology at the University of Saskatchewan; and current Chief Scientific Officer of Active Healthy Kids Canada. Dr. Tremblay has published extensively in the areas of childhood obesity, physical activity measurement, exercise physiology and exercise endocrinology. Dr. Tremblay's most productive work has resulted from his 19year marriage to his wife Helen, yielding four wonderful children.

Dr. Tremblay's current research and teaching interests include pediatric exercise science, childhood obesity, physical education and health, health surveillance and physical activity advocacy. The primary research projects that Dr. Tremblay is currently involved in are listed below.

- Canadian Health Measures Survey (Principal Investigator through Statistics Canada)
- Kenyan International Development Study Canadian Activity Needs (KIDS-CAN) (Principal Investigator)
- Active Healthy Kids Canada Report Card (Principal Investigator)
- Physical Activity Measurement and Guidelines Project (Principal Investigator – through the Canadian Society for Exercise Physiology)
- Maternal, Infant, Child and Youth Research Network (MICYRN) (Coinvestigator)
- ParticipACTION: A Baseline Assessment of Knowledge, Awareness, Understanding and the Physical Activity of Canadians (Co-investigator)
- ParticipACTION: Baseline Assessment of National Organizational Capacity (Co-investigator)
- Validation of Accelerometry as a Measure of Physical Activity and Inactivity in Children with Chronic Disease (Co-investigator)
- Emerging Childhood Obesity in Mexico: The Nutrition Transition and the Double-edged Sword (Co-investigator)



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- Self-reported vs directly measured indicators of health (Co-investigator)
- Accelerometry profiling of physical activity and inactivity (Co-investigator)
- Development of Canadian Growth Curves (Co-investigator)



Current Research Initiatives

1. Appetite Signaling Proteins and Energy Intake in Obese Adolescents with Binge Eating Disorder: A Pilot Study

Principal investigator: **Dr. Kristi Adamo** *Co-investigators*: **S. Hadjiyannakis, G. Goldfield,** E. Doucet

Funding Source: Children's Hospital of Eastern Ontario Research Institute (\$30,000)

Description: The increasing prevalence of obesity in youth is due to positive energy balance resulting from increased energy intake vs. energy expenditure. Our "toxic environment" characterized by an overabundance of palatable food rich in fat and sugar encourages over-eating. Appetite regulation and the control of food intake is thereby of great scientific interest and clinical relevance. Feeding behaviour is the result of complex interactions between genetic, biological, environmental and psychosocial factors. From a biological perspective, food intake is controlled by hunger and satiety signals. The signals are generated in peripheral organs, such as the digestive tract and adipose tissue, and in the brain itself. Hunger and satiety signals generated by the GI tract, including ghrelin, PYY, and GLP-1, have been implicated in the short-term regulation of food intake. The primary objectives of this study are to assess whether there are differences in the temporal patterns of ghrelin, PYY, and GLP-1 and sensations of satiety following a standardized test meal between obese adolescents with and without binge eating disorder (BED). Secondary objectives are to evaluate whether there are baseline differences between fasting levels of ghrelin (hunger stimulating peptide) and PYY, GLP-1 (satiety hormones) in obese adolescents with BED vs. obese adolescents without BED; determine whether the levels of signaling proteins released after a standard meal predict the sensation of satiety and fullness and/or the amount of food the adolescent will consume when provided with ad libitum access.

Status: The project will begin in April 2008 and will be completed by 2009.

2. Physiological and psychological predictors and determinants of metabolic complications of pediatric obesity: A Cohort Study

Principal investigator. **Dr. Kristi Adamo** *Co-investigators*: **S. Hadjiyannakis, G. Goldfield,** S. Dagenais

Funding Source: Canadian Diabetes Association (\$49,730)



Description: This study is intended to be an exploratory 2-year prospective, observational cohort feasibility study of obese children attending the CHEO pediatric endocrinology clinic. It is expected to generate data and hypotheses that will be used to inform sample size calculations in future studies. For this initial study, children will be recruited over 1 year and followed for a period of one year after recruitment. The initial plan is to gather clinical data obtained during a comprehensive patient assessment protocol to determine the feasibility of enrolling a larger group of patients into a long-term study with the goal of answering important research questions aimed at improving patient care in this population. There will be 4 dimensions related to child obesity being assessed bi-annually in the children visiting CHEO's PEC. These include: i) Biomarkersplasma, serum and urine factors as well as abdominal ultrasound and sleep study, ii) Body Composition- height, weight, BMI, and body fat, iii) Physical Activity, Fitness & Nutrition-7-day physical activity recall & accelerometry, VO₂ peak, and dietary intake, iv) Psychosocial & Behavioural Factors- eating behaviour and food practices, quality of life, depression, anxiety, stress, selfesteem, and coping. Ultimately, it is our intent to systematically evaluate the population visiting this clinic to determine the prevalence of and predictors of various obesity related co-morbidities. These data will aid us in developing an effective course of action for the management of obesity and related comorbidities at the CHEO Pediatric Endocrinology Clinic.

Status: Data collection infrastructure was put in place in late 2007 with project initiation projected for mid 2008. The pilot project is expected to be completed by 2010.

3. Feasibility and Short-term Efficacy of the GameBike to Increase Physical Activity in Obese Adolescents

Principal investigators: **Dr. Gary Goldfield and Dr. Kristi Adamo** Co-investigators: **S. Hadjiyannakis,** S. Bouchard, J. Lapierre

Funding Source: Canadian Diabetes Association (\$150,000) and Children's Hospital of Eastern Ontario Research Institute (\$30,000)

Description: The primary objective is to evaluate the feasibility of using the GameBike to increase physical activity in obese youth aged 13-17 years. While quantitative measures of feasibility including compliance, attrition, and safety/tolerability are important and will be measured, the primary objective will be to evaluate the degree to which the GameBike, a recumbent bicycle interfaced with a PlayStation, increases energy expenditure (kcal) during 2 weekly laboratory exercise sessions over a 10-week study period as compared to a standard cycling control group. Additionally measured and compared in both



groups before and after the intervention will be aerobic fitness, body composition, free living physical activity, sedentary behaviour, diet, and psychosocial functioning.

Status: The project began May 2007 and is expected to be completed by 2009.

4. Kenyan International Development Study - Canadian Activity Needs (KIDS-CAN) Research Alliance

Principal investigator. **Dr. Mark Tremblay** *Co-investigators*: **K. Adamo**, W. Sheel, V. Onywera, M. Boit, J. Waudo

Funding Source: Canadian Institutes of Health Research - International Opportunities Partnership (\$25,000)

Description: The objective of this project is to establish a collaborative partnership with the Department of Exercise and Sport Science, at Kenyatta University in Nairobi, Kenya that will: i) promote and facilitate research in the area of determinants/predictors of child obesity, specifically using Kenya as a model to study the physical activity and nutrition transition ii) facilitate international research exchange thereby allowing for the training and support of young researchers/trainees who are interested in this area of study, increasing research capacity in both countries (and perhaps others) iii) evolve into a long-term international collaboration to promote the generation of data, training opportunities, knowledge exchange and knowledge translation on child obesity-related factors (physical activity, eating behaviours, environmental and biological determinants) including effective dissemination of findings and iv) serve as a model (or nucleus) for expansion of the international partnership to other countries.

Status: The project began April 1st, 2007 and is expected to be completed in the fall of 2008.

5. Active Healthy Kids Canada 2008 Report Card

Principal investigators: **Dr. Mark Tremblay** Co-investigators: **R. Colley**

Funding Source: Active Healthy Kids Canada (\$119,500)

Description: Active Healthy Kids Canada's Report Card on Physical Activity for Children and Youth ("Report Card") is a research-based communications and advocacy piece designed to provide insight into Canada's "state of the nation"



each year on how, as a country, we are being responsible in providing physical activity opportunities for children and youth.

The development of each annual Report Card is largely supported by the work of a Research Work Group. The Research Work Group includes an interdisciplinary selection of experts that are responsible for identifying and ranking Report Card indicators based on available data, research and key issue areas that can be graded nationally. As part of the development process the Research Work Group also accesses additional experts/researchers to fill issue specific gaps as applicable. Once gathered, the raw report card data is organized into a detailed version (long form) of the Report Card and condensed to produce a summary (short form) Report Card. The Healthy Active Living and Obesity Research Group at the CHEO-Research Institute has entered into a strategic partnership agreement whereby the HALO research group will serve as the knowledge and research engine for the Active Healthy Kids Canada Report Card. HALO leads the development, coordination, data gathering, evidence synthesis and expert response related to the Report Card preparation and release.

Status: The project began September 1st, 2007 and is expected to be completed by June 1st 2008.

6. Maternal, Infant, Child and Youth Research Network (MICYRN)

Principal investigator. Dr. Terry Klassen *Co-investigators*: **Dr. Mark Tremblay**, **HALO Research Group**

Funding Source: Children's Hospital Foundations, Canadian Institutes of Health Research (CIHR), Canadian Foundation for Innovation (CFI) *(submitted)*

Description: The Maternal, Infant, Child and Youth Research Network (MICYRN) is a multi-disciplinary initiative to support world-class health research nationwide. The internationally unrivalled team proposes to establish the requisite and comprehensive national framework and infrastructure required to optimize the clinical care of, and health outcomes in, Canadian mothers, infants, children and youth. To achieve this goal, MICYRN has established eight interrelated core initiatives addressing key research needs: Training, Research Methods, Research Ethics and Regulatory Affairs, Data Management, Biobanking, Research Partnerships, Knowledge Translation and Funding Partnerships.

MICYRN has identified obesity as an emerging and poorly understood problem in Canada requiring urgent coordination and direction in its research efforts. The prevalence of obesity is increasing worldwide at an alarming rate; in 2003, the World Health Organization declared obesity as a global epidemic. Childhood obesity in Canada has risen 3-fold over the last three decades such that we now Research Institute Healthy Active Living and Obesity Research

have one of the highest rates of childhood obesity in the developed world. Canada is now faced with a unique and timely opportunity to bring researchers and clinicians together to increase the quality and strength of research efforts in a way that could not be achieved through independent initiatives.

MICYRN will undertake a comprehensive investigation of the biological and environmental determinants of obesity-related complications throughout the lifespan from the prenatal period through to adolescence with a particular interest in the development of innovative and effective interventions aimed at the prevention and management of obesity. To achieve this over-arching goal, MICYRN will build research infrastructure and investigate obesity-related research hypotheses within the Canadian context.

Status: The project began August 7th, 2007 and if the large CIHR and CFI grant submission is supported, is expected to be an ongoing program of research for many years.

7. Prevalence of Markers of Insulin Resistance among Offspring Exposed to Gestational Diabetes: A 13 to 17 Year Follow-Up Study of a RCT Cohort (GDM)

Principal investigators: **Dr. Stasia Hadjiyannakis** Co-investigators: Teresa Pinto, **Kristi Adamo, Jane Rutherford**, Janine Malcolm, Erin Keely, **Gary Goldfield**, Isabelle Gaboury, Margaret Lawson

Funding Source: Children's Hospital of Eastern Ontario Research Institute (\$28,912)

Description: Gestational Diabetes Mellitus (GDM) is defined as "carbohydrate intolerance of variable severity with first recognition during pregnancy". There is increasing evidence to suggest that offspring of women with GDM are at an increased risk of long-term consequences such as obesity and abnormalities of glucose metabolism including Type 2 diabetes. This study aims to determine whether differences in the prevalence of markers of insulin resistance and body composition exist in a cohort of offspring of women with GDM when compared to a control group matched for age, sex, pubertal stage and BMI. Offspring (aged 12-17 years of age) of mothers with GDM will be examined for markers of insulin resistance [increased waist circumference, hypertension, hypertriglyceridemia, low HDL-cholesterol, Impaired Glucose Tolerance,Impaired Fasting Glucose] and body composition as measured by percent body fat (DEXA), abdominal obesity (waist circumference) and compared to a matched control group. The possibility of prenatal and postnatal interventions, targeting known modifiable risk factors



could play an integral part in preventing or attenuating this epidemic of obesity and Type 2 Diabetes

Status: The project will begin spring 2008 and will be completed by 2010.

8. <u>Think Tank:</u> Obesity and pregnancy – an opportune time for intervention to prevent long-term sequelae in mothers and their offspring

Principal investigators: Dr. Erin Keely (Ottawa Hospital)

Co-investigators: **K. Adamo**, **S. Hadjiyannakis**, **G. Goldfield**, M. Walker, S. Wen, J. Malcolm, M. Lawson

Funding Source: Canadian Institutes of Health Research (CIHIR): Institute of Nutrition, Metabolism and Diabetes (INMD) (\$15,000)

Description: Maternal pre-pregnancy BMI and gestational weight gain (GWG) which, directly or indirectly modify the intrauterine environment, are known to be important predictors of growth/development trajectories and contributors to overweight/obesity in children. Mean infant birth weight is highest in women who are overweight/obese pre-pregnancy as well as those with excessive weight gain during pregnancy. This significantly increases the odds of overweight in pre-school, adolescence and adulthood making fetal development a critical period for preventative measures. Furthermore, high pregnancy weight gain is also associated with higher postpartum weight retention and higher risk of postpartum obesity leading to a wide range of associated downstream health conditions for mothers and offspring. Thus, maternal BMI and GWG may be amongst the most important issues related to the short and long-term risks for pediatric and maternal obesity and thus, interventions targeted at decreasing maternal BMI and GWG have the potential to significantly impact public health.

Researchers with expertise in this area were invited to attend a one-day symposium to discuss the development of an exercise and nutrition program for overweight/obese pregnant women that will aim to reduce excessive weight gain during pregnancy. The symposium served to inform the development of a lifestyle intervention for women with an elevated pre-pregnancy BMI, with the intent of applying to CIHR for funds to evaluate the efficacy of the program at limiting excessive GWG, macrosomia, post-partum weight retention and possibly obesity in early childhood.

Status: The symposium was held in June 2007, a summary of the proceedings will be submitted to the Journal of Obstetrics and Gynaecology Canada (JOGC) in April 2008 for publication, and the design and planning of the future



intervention is underway with a plan to submit a proposal for funding to CIHR in fall 2008.

9. CIHR Team in Critical Periods of Body Weight Regulation: A Women's Health Perspective SOMET: Sherbrooke-Montréal-Ottawa Emerging Team

Principal Investigator: Denis Prud'homme *Co-Investigators:* **Kristi Adamo** (Critical period of Pregnancy/Maternal Obesity Team Leader)

Funding Source: Canadian Institutes of Health Research (CIHR) (\$500,000)

Description: The proposed CIHR Team is a multidisciplinary research group that will investigate the problem of body weight regulation in women during three critical periods: gestation/post-partum, peri-menopause and menopause years. The objectives are to; (1) understand the complex interactions between the bio-psycho-social-cultural and environmental factors underlying body weight regulation in overweight and obese women with and without glucose intolerance (2) develop and evaluate integrative obesity prevention and treatment approaches, specific to these critical periods, with the combined expertise of an inter-professional health team and institutional partners using new multi-level intervention programs, (3) develop practical planning tools to promote the adoption of new knowledge into practice. The findings of this research program will improve the health of Canadians and the Canadian health care system.

The specific aim of the gestation/postpartum piece is to determine the effect of a structured physical activity and nutritional intervention provided to overweight/obese pregnant women on gestational weight gain, gestational diabetes, infant birth weight, post-partum weight retention, and longitudinal child BMI.

Status: The application for funding was submitted to CIHR in December 2007 and is under review.

10. Champlain Healthy School-Aged Children: Parental Attitudinal Survey

Principal Investigators: Champlain Healthy School-Aged Children Initiative working group (**Dr. Kristi Adamo** – CHEO/HALO representative)

Funding Sources: Eastern Ontario Health Unit (\$15,000), Leeds Grenville & Lanark Health Unit (\$5,000), City of Ottawa (\$15,000), Heart & Stroke



Foundation Ontario (\$20,000), Champlain LHIN (\$15,000), University of Ottawa Heart Institute (\$15,000), Children's Hospital of Eastern Ontario (\$15,000) (Total:\$115,000)

Description: The Champlain Healthy School-Aged Children Initiative is focused on addressing the cardiovascular health among children and youth, the goal being to create environments that encourage healthy eating and regular physical activity in school-aged children, and to facilitate knowledge and skill development to make healthy choices. The committee decided to undertake an attitudinal survey of parents to better understand perceptions, knowledge, and behaviours surrounding childhood overweight/obesity and related physical activity and healthy eating habits. The survey targeted 1940 parents of children aged 4 to 12 across the Champlain District and was conducted via telephone. The information generated from this survey will be used to inform next steps in our Champlain Healthy School-aged Children initiative, including development of a mass media communications campaign targeting parents of school-aged children that is supportive of existing healthy school programming in our region. The survey was conducted jointly on behalf of several regional partners, namely the University of Ottawa Heart Institute (UOHI), the 4 Champlain District Public Health Units (City of Ottawa, Renfrew County & District, Eastern Ontario, and Leeds, Grenville & Lanark), the Heart and Stroke Foundation of Ontario (HSFO), and CHEO.

Status: The survey was completed and results presented at the Champlain Healthy School Aged Children Summit held in October 2007. A local communications campaign is currently being planned that will base much of its direction on the results of the survey. A manuscript highlighting the results of this parental survey (K. Adamo as lead) is also being prepared for submission to Applied Nutrition, Physiology and Metabolism.

11. Family-Based Behavioural Treatment of Childhood Obesity via Internet: A Randomized Controlled Trial.

Principal Investigator: **Dr. Gary Goldfield** (CHEO/HALO) *Co-Investigators*: Dr. P. McGrath, **Dr. S. Hadjiyannakis**, Dr. R. Sigal

Funding Source: Heart & Stroke Foundation of Canada (\$100,000)

Description: Background: Because obese children are more likely to become obese adults than lean children, and research shows that obesity treatment in adults is largely ineffective in the long-term, intervention during childhood is critical to prevent adult obesity and related diseases. Family-based behavioural treatment for childhood obesity has been proven to be the treatment of choice, but this method of service delivery is labor-intensive, designed for small numbers of families, and not widely available. The deficits in service provision are striking when one considers that 25% of children are overweight or obese, yet there is



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only a few multidisciplinary childhood obesity clinic in Ontario. This discrepancy between the supply and demand for comprehensive child obesity treatment highlights the need to explore alternative methods of service provision. Rapid increases in access to the Internet make it a viable medium of public health intervention, but no studies have used this medium to deliver child obesity treatment.

Objectives: The primary objectives of this study are to evaluate the feasibility as well as the effects of a comprehensive family-based behavioural intervention for childhood obesity delivered via Internet and an education-control delivered by Internet on percent body fat measured using BIA in 8-12 year old overweight or obese children. Secondary objectives include evaluating the effects of the intervention on children's BMI, waist and hip circumference, and quality of life in children and parents will also be examined.

Study Design/Intervention: Parallel group randomized controlled trial conducted at a single site (CHEO). Forty children (and parents) will be randomized in equal numbers to family-based behavioural intervention via Internet or Internet-based The behavioural intervention will deliver behaviour education-control. modification in eating and activity behaviours through multiple forms of interactive media, including regular (3x/week) contact and individualized feedback from a therapist and dietician using email, chat rooms for social support/education, videographic instruction on behaviour modification techniques, and education modules in healthy eating and active living available for downloading (in modular format) on our secure website. The education-control group will just receive education in healthy eating and active living available for downloading on a separate secure website. The intervention period will last 3 months, with a follow-up assessment at 6-months post-randomization.

Status: The treatment materials and pilot testing of the website are being conducted. Gearing up for recruitment and baseline assessment. It is estimated that the study will be completed by December 2008.



Summary of Research Funding, Grants and Awards

YEAR	AWARDEE	FUNDING AGENCY	GRANT/AWARD	PROJECT
2007	Champlain Healthy School-Aged Children Initiative (Adamo – CHEO/HALO representative)	Eastern Ontario Health Unit, Leeds Grenville & Lanark Health Unit, City of Ottawa, Heart & Stroke Foundation Ontario, Champlain LHIN, University of Ottawa Heart Institute, Children's Hospital of Eastern Ontario	\$115,000	Create and administer an attitudinal survey of parents to better understand perceptions, knowledge, and behaviours surrounding childhood overweight/obesity and related physical activity and healthy eating habits.
2007 - 2008	Adamo (PI) Hadjiyannakis Goldfield Dagenais	Canadian Diabetes Association (CDA) Innovation Grant	\$49,730	Establishment of pediatric obesity cohort: physiological and psychological predictors and determinants of impaired glucose homeostasis
2006 - 2007	Adamo (PI) Hadjiyannakis Goldfield Doucet	Children's Hospital of Eastern Ontario Research Institute (CHEO RI)	\$30,000	Appetite Signaling Proteins and Energy Intake in Obese Adolescents with Binge Eating Disorder
2007	Adamo (PI) Goldfield (Co-PI)	Canadian Foundation of Innovation (CFI) Funding Infrastructure Grant	\$291,759	Childhood Obesity Research Unit Lab
2007	Prud'homme (PI) Adamo (project lead- pregnancy/maternal obesity)	Canadian Institute of Health Research (CIHR) - Team grant	\$500,000	Establish a multidisciplinary research group that will investigate the problem of body weight regulation in women during three critical periods: gestation/post-partum, peri-menopause and menopause years.
2006 - 2007	Ball (PI) Goldfield Newton Spence	Canadian Institute of Health Research (CIHR)	\$15,000	A National Think Tank for Health Services Delivery and Research in Pediatric Weight Management
2005 - 2007	Colley	Queensland University of Technology Tuition Fee Waiver Scholarship	\$20,000	
2007	Faulkner (Co-PI) Plotnikoff (Co. PI) Tremblay Brawley	Canadian Institute of Health Research (CIHR) – Interventional	\$99,885	The "new generation" ParticipACTION: A Baseline Assessment of National



	Chad Spence Gauvin	Research (Healthy Living)		Organizational Capacity
2007	Feldman (PI) Tremblay and 10 other co- applicants	Canadian Institute of Health Research (CIHR) – Institute of Musculoskeletal Health and Arthritis	\$64,985	Validation of accelerometry as a measure of PA and inactivity in children with chronic disease
2006 - 2008	Flament (PI) Goldfield Buchholz Henderson	Provincial Centre of Excellence for Child and Youth Mental Health	\$150,000	Examining a biopsychosocial model of the development of body image, eating behaviours and weight in youth: An Ontario prospective longitudinal Study
2006 - 2008	Goldfield (PI) Adamo (Co-PI) Hadjiyannakis Bouchard Lapierre	Canadian Diabetes Association (CDA)	\$150,000	Feasibility and short term efficacy of virtual reality immersion to increase physical activity in overweight or obese adolescents
2006 - 2007	Goldfield (PI)	Children's Hospital of Eastern Ontario Research Institute (CHEO RI)	\$30,000	Feasibility and short term efficacy of virtual reality immersion to increase physical activity in overweight or obese adolescents
2003 - 2008	Goldfield (PI)	Canadian Institute of Health Research (CIHR) New Investigator Salary Award	\$250,000	Increasing Physical Activity in Obese Children
200602008	Goldfield (PI) Hadjiyannakis Mcgrath Sigal	Heart & Stroke Foundation of Canada	\$100,000	Family-based Behavioural Treatment for Childhood Obesity delivered by Internet: A Randomized Controlled Trial
2007 - 2008	Hadjiyannakis (PI) Adamo Goldfield Rutherford Pinto Gaboury Malcolm Keely Lawson	Children's Hospital of Eastern Ontario Research Institute (CHEO RI)	\$28,912	Prevalence of Makers of Insulin Resistance Among Offspring Exposed to Gestational Diabetes: A 13-17 Year Follow Up Study of a RCT Cohort
2006 - 2007	Hamilton (PI) Dean (PI) Amed (PI) Hadjiyannakis Sellers Panagiotopoulos Booth	Canadian Diabetes Association (CDA)	\$47,825	National Surveillance of non Type 1 Diabetes Mellitus in Canadian Children



2007 - 2008	Katz (PI) Hadjiyannakis Adamo Goldfield	CHEO Research Institute Feasibility Grant Funding	\$30,000	Sleep Apnea in Obesity in Urban youth and its effect son Respiratory, Cardiovascular and Endocrine Systems (SOURCE)
2006 - 2010	Katzmarzyk (PI) Lopez Taylor (PI) Tremblay and 9 others	Global Health Research Initiative Teasdale-Corti Team Grant (LOI also funded \$15,000)	\$1,554,400	Emerging Childhood Obesity in Mexico: the Nutrition Transition and Double-edged Sword
2007	Keely (PI) Adamo (co-PI) Goldfield Hadjiyannakis	Canadian Institute of Health Research (CIHR) Institute of Nutrition, Metabolism and Diabetes Workshop grant	\$15,000	Obesity and pregnancy- an opportune time for intervention to prevent long-term sequelae in mothers and their offspring
2007	Klassen (PI) Atkinson Han Forest Knoppers Malkin McGrath Rosenburg Tremblay von Dadelszen	Canadian Institute of Health Research (CIHR) - (submitted)	\$10,000,000	Maternal, Infant, Child and Youth Research Network (MICYRN)
2007	Klassen (PI) Atkinson Han Forest Knoppers Malkin McGrath Rosenburg Tremblay von Dadelszen	Canadian Foundation for Innovation (CFI) (submitted)	\$9,787,190	Maternal, Infant, Child and Youth Research Network (MICYRN)
2006 - 2010	Sigal (PI) Hadjiyannakis Goldfield Kenny Gougeon Prud'homme	Canadian Institute of Health Research (CIHR)	\$1,256,975	Resistance Exercise in Active Adults with Diabetes Type 1
2005 - 2008	Sigal (PI) Hadjiyannakis (Co-PI) Goldfiled (Co-PI) Kenny (Co-PI) Gougeon (Co-PI) Prud'homme (Co- PI)	Canadian Diabetes Association (CDA)	\$225,000	Type 1 diabetes aerobic and resistance exercise (T1-DARE)
2005 - 2010	Sigal (PI) Hadjiyannakis (Co-PI) Goldfield (Co-PI)	Canadian Institute of Health Research (CIHR)	\$1,620,516	Healthy Eating Aerobic and Resistance Training in Youth
2007	Tremblay (through Canadian Society for Exercise	Public Health Agency of Canada	\$50,000	The Future of Physical Activity Measurement and Guidelines



	Physiology - CSEP)			(additional
2007	Tremblay	Maternal, Infant, Child and Youth Research Network (MICYRN)	\$10,000	Post-doctoral student support for MICYRM grant application development (Rachel Collev)
2007	Spence (Co-PI) Brawley (Co-PI) Tremblay Plotnikoff Chad Faulkner Craig Bauman	Canadian Institute of Health Research (CIHR) – Interventional Research (INMD Healthy Living)	\$99,776	The "new generation" ParticipACTION: A Baseline Assessment of Knowledge, Awareness, Understanding and the Physical Activity of Canadians
2007	Tremblay (PI) (through CSEP)	Public Health Agency of Canada	\$169,000	The Future of Physical Activity Measurement and Guidelines
2007	Tremblay (PI) (through Active Healthy Kids Canada – AHKC)	Public Health Agency of Canada	\$394,708	Canada's Physical Activity Report Card for Children and Youth
2007	Tremblay (PI) (through CSEP)	First Nations and Inuit Health Branch, Health Canada	\$15,000	Aboriginal Physical Activity Guide Background Publication
2007 - 2009	Tremblay (PI) (through Active Healthy Kids Canada)	The Lawson Foundation	\$563,000	Canada's Physical Activity Report Card for Children and Youth
2007	Tremblay (PI) Adamo Sheel Onywera Boit Waudo	Canadian Institute of Health Research (CIHR) International Opportunities Seed Grant	\$25,000	Kenyan International Development Study- Canadian Activity Needs (KIDS-CAN)
2007	Tremblay (PI)	Canadian Institute of Health Research (CIHR) – Institute of Population and Public Health	\$19, 853	National Physical Activity Report Card for Children – Think Tank 2007
2007	Tremblay (PI)	Canadian Institute of Health Research (CIHR) – Institute of Nutrition, Metabolism and Diabetes	\$7,500	ParticipACTION impact Research
2007	Tremblay (PI)	ParticipACTION	\$7,500	ParticipACTION impact Research



Peer-reviewed, Refereed Publications

- Adamo KB, Dent R, Langefeld CD, Cox M, Williams K, Carrick KM, Stuart JS, Sundseth SS, Harper ME, McPherson R, and F. Tesson. Peroxisome Proliferator-activated Receptor ³/₂ and Acyl-CoA Synthetase 5 Polymorphisms Influence Diet Response: Obesity 15(5): 1068-1075, 2007.
- 2. Adamo KB and Tesson F. Genotype-specific weight loss treatment advice how close are we? Applied Physiology, Nutrition and Metabolism 32: 351-366, 2007.
- Bassett DR, Tremblay MS, Esliger DW, Copeland JL, Barnes JD, Huntington GE. Physical activity and body mass index of children in an Old-Order Mennonite community. Medicine and Science in Sports and Exercise 39:410-415, 2007.
- 4. Colley R, Byrne N, Hills A. Implications of the variability in time to isotopic equilibrium in the deuterium dilution technique. European Journal of Clinical Nutrition 61:1250-1255, 2007.
- 5. Connor-Gorber S, **Tremblay MS**, Moher D, Gorber B. A comparison of direct versus self-report measures for assessing height, weight and body mass index: a systematic review. **Obesity Reviews** 8:307-326, 2007.
- Day B, Langlois R, Tremblay MS, Knoppers B-M. Canadian Health Measures Survey: Experiences and Perspectives on Socio-Ethical and Legal Issues. Health Reports (Statistics Canada, Catalogue 82-003) 18(Suppl.):37-52, 2007.
- Esliger D, Probert A, Connor-Gorber S, Bryan S, Laviolette M, Tremblay MS. Validity of the Actical Accelerometer Step Count Function. Medicine and Science in Sports and Exercise 39:1200-1204, 2007.
- Esliger DW and Tremblay MS. Physical Activity and Inactivity Profiling: The Next Generation. Canadian Journal of Public Health 98(suppl.2):S195-S207, 2007; and Applied Physiology, Nutrition and Metabolism 32(suppl.2E):S195-S207, 2007.
- Goldfield GS, Lorrello C, Doucet E. Methylphenidate reduces energy intake and dietary fat intake: A mechanism of reduced food reward. American Journal of Clinical Nutrition, 86: 308-315, 2007.
- Goldfield, G.S., Mallory, R., Parker, T., Lumb, A., Cunningham, T., Parker, K., Legg, C., Prud'homme, D. Adamo, KB. Effects of modifying physical activity and television viewing on psychosocial adjustment in overweight and obese children. Journal of Pediatric Psychology, 32 (7), 783-793: 2007.



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- 11. Katzmarzyk PT and Tremblay MS. Limitations of Canada's Physical Activity Data: Implications for Monitoring Trends. Canadian Journal of Public Health 98(suppl.2):S185-S194, 2007; and Applied Physiology, Nutrition and Metabolism 32(suppl.2E):S185-S194, 2007.
- 12. Katzmarzyk PT, Tremblay S, Morrison R, Tremblay MS. Effects of Physical Activity on Pediatric Reference Data for Obesity. International Journal of Pediatric Obesity 2:138-143, 2007.
- 13. Katzmarzyk PT, Janssen I, Tremblay MS, Morrison K. Classification of overweight and obesity in children and adolescents. Canadian Medical Association Journal 176(8 suppl):Online-27-32, 2007.
- 14. Keely, E, Malcolm J, Hadjiyannakis S, Gaboury I, Lough G, Lawson M. Prevalence of Metabolic Markers of Insulin Resistance in Offspring of Gestational Diabetes Pregnancies. Pediatric Diabetes 2008 Feb; 9(1): 53-9. Epub 2007 Nov 23
- 15. King, N., P. Caudwell, M. Hopkins, N. Byrne, R. Colley, A. Hills, et al. Automatic and volitional compensatory responses to exercise interventions: metabolic and behavioural barriers to weight loss. Obesity Research 15(6):1373-83, 2007.
- 16. LeBlanc C, Irving A, Tremblay MS. Individual approaches to the prevention of pediatric obesity using physical activity. Canadian Medical Association Journal 176(8 suppl):Online-95-101, 2007.
- 17. Marchand I, Tarnopolsky M, Adamo KB, Bourgeois JM, Chorneyko K, and Graham TE. Qualitative assessment of human muscle glycogen granules size and number in subcellular locations during recovery from prolonged exercise. Journal of Physiology 580(Pt 2):617-628, 2007.
- 18. Orpana HM, Tremblay MS, Finès P. Trends in weight change among Canadian adults. Health Reports 18(2):9-16, 2007.
- 19. Ross NA, Tremblay S, Khan S, Crouse D, Tremblay MS and Berthelot J-M. Body Mass Index in Urban Canada: Neighbourhood and Metropolitan Area Effects. American Journal of Public Health 97(3):500-508, 2007.
- 20. Sherar LB, Esliger DW, Baxter-Jones ADG, Tremblay MS. Age and gender differences in youth physical activity: Does physical maturity matter? Medicine and Science in Sports and Exercise 39:830-835, 2007.
- 21. Stone MR, Esliger DW, Tremblay MS. Comparative validity assessment of five activity monitors: Does being a child matter? Pediatric Exercise Science 19:291-309, 2007.



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- 22. Tremblay MS, Wolfson M, Connor-Gorber S. Canadian Health Measures Survey: Background, Rationale and Overview. Health Reports (Statistics Canada, Catalogue 82-003) 18(Suppl.):7-20, 2007.
- 23. Tremblay MS, Langlois R, Bryan S, Esliger D, Patterson J. Canadian Health Measures Survey Pre-Test: Design, Methods, Results. Health Reports (Statistics Canada, Catalogue 82-003) 18(Suppl.):21-30, 2007.
- 24. Tremblay MS. Learning the Unique and Peculiar Challenges of Direct Health Measures Surveys: The Canadian Experience. Proceedings of the International Statistics Canada Methodology Symposium: Methodological Issues in Measuring Population Health. Statistics Canada, Catalogue no. 11-522-XIE, 2007.
- 25. Tremblay MS. Major Initiatives Related to Childhood Obesity and Physical Inactivity in Canada: The Year in Review. Canadian Journal of Public Health 98:457-459, 2007.
- 26. Tremblay MS and Connor-Gorber S. Canadian Health Measures Survey: Brief Overview. Canadian Journal of Public Health 98:453-456, 2007.
- 27. Tremblay MS, Esliger DW, Tremblay A, Colley RC. Incidental movement, lifestyle-embedded activity and sleep: new frontiers in physical activity assessment. Canadian Journal of Public Health 98(suppl.2):S208-S217. 2007; Applied Physiology, Nutrition and Metabolism and 32(suppl.2E):S208-S217, 2007.
- 28. Tremblay MS, Shephard RJ, Brawley L, Cameron C, Craig CL, Duggan M, Esliger DW, Hearst W, Hicks A, Janssen I, Katzmarzyk PT, Latimer AE, Martin Ginis KA, McGuire A, Paterson DH, Sharratt M, Spence JC, Timmons B, Warburton D, Young K, Zehr L. Physical activity guidelines and guides for Canadians: facts and future. Canadian Journal of Public Health 98(suppl.2):S218-S224, 2007; and Applied Physiology, Nutrition and Metabolism 32(suppl.2E):S218-S224, 2007.
- 29. Tremblay MS, Shephard RJ, Brawley LR. Research that Informs Canada's Physical Activity Guides: An Introduction. Canadian Journal of Public Health 98(suppl.2):S1-S8, 2007; and Applied Physiology, Nutrition and Metabolism 32(suppl.2E):S1-S8, 2007.
- 30. Tremblay S, Morrison R, **Tremblay MS**. Estimating Child BMI Growth Curves for Canada. Proceedings of the Statistics Canada International Methodology Symposium: Methodological Issues in Measuring Population Health, Statistics Canada, Catalogue no. 11-522-XIE, 2007.



Non-Peer-Review Publications

- Hadjiyannakis S. The Origins of the Pediatric Obesity Epidemic and Potential Targets for Prevention and Treatment. Canadian Diabetes 20(2): p3-5 2007.
- 2. **Tremblay** M. Letter to the Editor. Preserving "surplus" green space for physical activity we owe our kids no less. Bracebridge Examiner/Weekender May 5.



Published Abstracts

- 1. Adamo KB, Tremblay MS, Onywera VO, Boit M, Waudo J, Sheel AW. Kenyan International Development Study – Canadian Activity Needs (KIDS-CAN) Research Alliance. International Conference on Physical Activity and Obesity in Children. Toronto, Canada, June, 2007.
- 2. Alberga, AS, Lemiere B, Prud'homme D, Goldfield GS, Hadjiyannakis S, Kenny G, Sigal RJ, Baseline maximal oxygen uptake and BMI in obese adolescents aged 14-18 years old. International Conference on Childhood Obesity and Physical Activity, Toronto, Canada, June, 2007.
- Alberga AS, Sigal RJ, Kenny GP, Prud'homme D, Goldfied GS, Hadjiyannakis S. Waist circumference, body mass index, and maximal oxygen uptake in obese adolescents aged 14-18 y. Applied Physiology, Nutrition and Metabolism, 32(S1):S2, 2007.
- Amed S, Dean H, Hamilton J and the Non-Type 1 DM study team (includes Hadjiyannakis S). National Surveillance for Non-Type 1 Diabetes in Canadian Children. Canadian Association for Health Services and Policy Research Annual Meeting, Toronto Canada, 2007.
- Amed S, Dean H, Hamilton J and the Non-Type 1 DM study team (includes Hadjiyannakis S). Risk factors for Type 2 Diabetes in Youth with Medication Induced Diabetes. Canadian Pediatric Society Annual Conference, Montreal Canada, 2007.
- Amed S, Dean H, Hamilton J and the Non-Type 1 DM study team (includes Hadjiyannakis S). National Surveillance of Non-Type 1 Diabetes (NT1DM) in Canadian Children. Canadian Pediatric Society Annual Conference, Montreal, Canada, 2007.
- Amed S, Dean H, Hamilton J and the Non-Type 1 DM study team (includes Hadjiyannakis S). Risk factors for Type 2 Diabetes in Youth with Medication Induced Diabetes. Pediatric Academic Society Scientific Meeting, Toronto, Canada, 2007.
- Davis, H., Peeters, C., Tulloch, H., Goldfield, G., Hadjiyannakis, S., Kenny, G. and Sigal, R. Exercise facilitators and barriers involved in a randomized trial of overweight and obese youth: A qualitative inquiry. Annals of Behavioral Medicine 33(suppl.): S077, 2007.
- Esliger DW, Probert A, Connor-Gorber S, Bryan S, Laviolette M, Tremblay MS. Validity of the Actical accelerometer step count function. Applied Physiology, Nutrition and Metabolism 32(S1):S28, 2007.
- 10. Solh Z, Platt JL, **Adamo KB**, Boyd E, Orrbine E, Cummings E, LeBlanc CMA. Practicing What We Preach: A Look At Healthy Active Living Policy and



Practice in Canadian Pediatric Hospitals. Canadian Pediatric Society, Montreal, Canada, 2007.

- 11. **Tremblay MS**. Canada's Report Card on Physical Activity for Children and Youth. **Australian Council for Health, Physical Education and Recreation Biennial International Conference Book of Abstracts**, page 66, 2007.
- 12. **Tremblay MS**. Automation, Mechanization, Digitization: How our changing world is changing us. **Australian Council for Health, Physical Education and Recreation Biennial International Conference Book of Abstracts**, page 12, 2007.



Conference and Invited Presentations

- 1. Adamo KB, Tremblay MS, Onywera VO, Boit M, Waudo J, Sheel AW. KIDS-CAN Research Alliance. International Conference on Physical Activity and Obesity in Children (Toronto), 2007.
- 2. Adamo KB, Spotlight on childhood obesity- the activity/nutrition transition. CHEO Research Institute- Grand Rounds (Ottawa), 2007.
- 3. Connor-Gorber S, **Tremblay MS**, Moher D, Gorber B. A comparison of direct versus self-report measures for assessing height, weight and body mass index: a systematic review. **Canadian Public Health Association Annual Conference** (Ottawa), 2007.
- Esliger D, Probert A, Connor-Gorber S, Bryan S, Laviolette M, Tremblay MS. Validity of the Actical Accelerometer Step Count Function. Annual Scientific Conference of the Canadian Society for Exercise Physiology, (London, ON), 2007.
- 5. Goldfield, GS. Body Image and Self-Esteem in obese and non-obese Children. B'Nai B'Rith of Ottawa Committee.
- 6. Hadjiyannakis S, and Adamo KB. Lifestyles of 5-10 year olds. 56th Annual Refresher Course for Family Physicians (Ottawa), 2007.
- 7. Hadjiyannakis S. Strategies for the Approach to Weight Loss: A Pediatric Perspective. Montreal Children's Hospital Pediatric Courses (Montreal), 2007.
- 8. Hadjiyannakis S. Pediatric Obesity: sounding the Alarm. Ontario Society of Clinical Chemists Annual Meeting (Ottawa), 2007.
- 9. Hadjiyannakis S. Pulling the Curtain Back on Type 2 Diabetes Mellitus in Children and Youth. 8th Annual Diabetes Education Conference for Health Care Professionals (Kingston), 2007.
- 10. Hadjiyannakis S. The Genetics of Obesity. Genetics Rounds, Children's Hospital of Eastern Ontario (Ottawa), 2007.
- 11. Hadjiyannakis S. The Three Faces of PCOS. Pediatric Grand Rounds, Children's Hospital of Eastern Ontario (Ottawa), 2007.
- 12. Lopez-Taylor JR, Katzmarzyk PT, Janssen I, Guzman Alatorre AB, Jauregui Ulloa E, Lara Esqueda A, Lévesque L, Ortis Leffort V, Power E, Rivera JA, Ross R, Salmon A, Tremblay MS, Vasquez Garabay E. The Double-Edged Sword: Tackling Childhood Obesity in the Context of the Nutrition Transition in Mexico. International Conference on Physical Activity and Obesity in Children (Toronto), 2007.



 Probert AW, Tremblay MS, Connor Gorber S. Desk Potatoes – The Importance of Occupational Physical Activity on Health. Canadian Public Health Association Annual Conference (Ottawa), 2007.

- 14. **Rutherford J.** Exercise, Physiology and its Role in Diabetes Management. Lecture at the University of Ottawa (Ottawa), 2007.
- Tremblay MS. Childhood Physical Inactivity: Insights and New Frontiers for Measurement and Guidance. Invited presentation at the Pennington Biomedical Research Center (Baton Rouge, LA), 2007.
- Tremblay MS. Physical Activity Guidelines for Canadians: Measurement Issues and New Frontiers. Invited symposium presentation at the Canadian Society for Exercise Physiology annual scientific conference (London, ON), 2007.
- 17. **Tremblay MS**. Overview of the Canadian Health Measures Survey. Invited lecture at the **McGill University Epidemiology Seminar Series** (Montreal), 2007.
- Tremblay MS. Major Initiatives Related to Childhood Obesity and Physical Inactivity in Canada: The Year in Review. Invited presentation at Pediatric Grand Rounds at the Children's Hospital of Eastern Ontario (Ottawa), 2007.
- 19. **Tremblay MS**. What Now? Implications for the Champlain Region. Invited lecture at the **Champlain Healthy School-aged Children Summit** (Ottawa), 2007.
- 20. **Tremblay MS**. Childhood Obesity in Canada: Current initiatives and future directions. Invited symposium presentation at the **Canadian Association of Pediatric Health Centres Annual Meeting** (Montreal), 2007.
- 21. Tremblay MS. Research Informing Canada's Physical Activity Guidelines and Guides. Workshop presentation at the 50th Annual Scientific Assembly of the College of Family Physicians of Canada: Family Medicine Forum 2007 (Winnipeg), 2007.
- 22. **Tremblay MS**. Canada's Report Card on Physical Activity for Children and Youth. **Australian Council for Health, Physical Education and Recreation Biennial International Conference** (Fremantle, Western Australia), 2007.
- 23. **Tremblay MS**. Automation, Mechanization, Digitization: How our changing world is changing us. Invited keynote address at the **Australian Council for Health, Physical Education and Recreation Biennial International Conference** (Fremantle, Western Australia), 2007.



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- 24. **Tremblay MS**. Major Initiatives Related to Childhood Obesity and Inactivity in Canada: The Year in Review. Invited presentation to the **Western Australia Department for Sport and Recreation** (Perth, Western Australia), 2007.
- 25. **Tremblay MS**. Overview of the Canadian Health Measures Survey. **Health Statistics Data Users Conference** (Ottawa), 2007.
- 26. **Tremblay MS** and Shields M. Applying the New WHO Child Growth Standards in Canada: What is our Prevalence of Obesity? Children and Exercise **XXIV: The 24th European Pediatric Work Physiology Meeting** (Tallinn, Estonia), 2007.
- 27. Tremblay MS. Major PWP-Related Initiatives in Canada: The Year in Review. Children and Exercise XXIV: The 24th European Pediatric Work Physiology Meeting (Tallinn, Estonia), 2007.
- Tremblay MS, Brownrigg M, R. Deans. Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth. Children and Exercise XXIV: The 24th European Pediatric Work Physiology Meeting (Tallinn, Estonia), 2007.
- 29. Tremblay MS. Overview and Update on the Canadian Health Measures Survey. KTL (Finnish Public Health Agency) Department Seminar Lecture (Helsinki, Finland), 2007.
- 30. **Tremblay MS.** Moving... To Beat Heart Disease. **Can-Fit-Pro Conference** (Toronto), 2007.
- 31. **Tremblay MS**. The Active Healthy Kids Canada 2007 Report Card on Physical Activity for Children and Youth. Invited presentation at the **International Conference on Physical Activity and Obesity in Children** (Toronto), 2007.
- 32. Tremblay MS. Data Quality Some Things Just Have to Be Measured Directly. Invited presentation at the 6th Annual Rapid Risk Factor Surveillance System Workshop – "Validation and Reliability – Checking up on the past and looking into the future" (Toronto), 2007.
- 33. **Tremblay MS**. Childhood Obesity: Moving Forward While Looking Back. Invited keynote presentation at the **Healthy Weights: Halton Takes Action Conference** (Milton, ON), 2007.
- 34. Tremblay MS. Canadian Health Measures Survey: Introduction and Overview. Invited presentation at the Ontario Society for Nutrition Professionals in Public Health annual conference (Toronto), 2007.
- 35. **Tremblay MS.** Canadian Health Measures Survey: Overview and Lessons Learned. Invited presentation at the **Canadian Cardiovascular Outcomes Research Team (CCORT) 7th Annual National Meeting** (Toronto), 2007.



 Tremblay MS. Physical Activity Marginalization and a Changing Frame of Reference: schools role and responsibilities. Small High School Summit A3: Awareness, Alignment and Achievement (Cornwall), 2007.

- 37. Tremblay MS. Challenging "Business as Usual" for Teachable Moments to Improve Lifestyle Report Cards for All Children. Invited presentation at the Follow-up Knowledge-to-Action Workshop to the 2006 McGill Health Challenge Think Tank, (Montreal), 2007.
- Tremblay MS. Physical Activity Marginalization, Distorted Perceptions and Measurement Concerns – Implications for Schools. Invited presentation to the Arts and Humanities Discipline Group, Lakehead University (Thunder Bay), 2007.
- Tremblay MS. Canadian Health Measures Survey: An Introduction and Overview. Invited presentation to Public Health Graduate Program, Lakehead University (Thunder Bay), 2007.
- 40. Tremblay S, Nadeau C, **Tremblay MS**. Validation Methods for Constructing Canadian Growth Curves. Presentation at the **Annual Joint Statistical Meeting** (Salt Lake City, UT), 2007.



Research, Clinical, Professional and Scholarly Service

Dr. Kristi Adamo

- Reviewer for the CIHR Canada Graduate Scholarships Master's Awards B
 Committee
- CIHR Doctoral Research Awards B Committee
- Reviewer for *Pediatrics* (2)
- Reviewer for Medicine and Science in Sport and Exercise (1)
- Reviewer for the Journal of School Health (2)
- Reviewer for Canadian Diabetes Association Journal (1)
- Reviewer for Diabetes Research and Clinical Practice Expert Opinion on Pharmacotherapy Applied Physiology (1)
- Reviewer for Nutrition and Metabolism (1)
- Reviewer for Canadian Medical Association Journal (2)

Dr. Rachel Colley

- Queensland University of Technology Faculty of Health Research Committee post-graduate student representative 2006-2007
- Queensland University of Technology School of Human Movement Studies post-graduate student representative 2005-2007

Dr. Gary Goldfield

- Reviewer for Canadian Institutes of Health Research (2 grants)
- Reviewer for Social Science and Humanities Research Council of Canada (3 grants)
- Reviewer for Canadian Medical Association Journal (1 paper)
- Reviewer for *Pediatrics* (1 paper)
- Reviewer for Obesity Research (2 papers)
- Reviewer for International Journal of Obesity (2 papers)
- Reviewer for American Journal of Psychiatry (1 paper)
- Reviewer for *Eating Behaviors* (3 papers)
- Reviewer for Personality and Social Psychology Bulletin (1 paper)
- Reviewer for Health Psychology (2 papers)
- Reviewer for *Preventive Medicine* (2 papers)
- Reviewer for Applied Physiology, Nutrition and Metabolism (1 paper)
- Reviewer for Journal of Psychosomatic Research (2 papers)
- Reviewer for CHEO Research Institute Science Sub-Committee (2 grants)



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- Reviewer for Alberta Heritage Foundation for Medical Research -Population Health Investigator Review Committee (2 grants)
- Co-Chair Ottawa Academy of Psychologists Mentorship Group
- Ministry of Research and Innovation YSTOP- Youth Science and Technology Outreach Program
- Member of Planning Committee- First Annual Pediatric Obesity Conference in Vancouver, Oct. 2008

Dr. Stasia Hadjiyannakis

- Chief, Division of Pediatric Endocrinology and Metabolism, Children's Hospital of Eastern Ontario
- Provincial Council for Children's Health Expert Panel on Child and Youth Weight-Related Issues

Jane Rutherford

Running Room clinics speaker: General and Sport Specific Nutrition

Dr. Mark Tremblay

- Reviewer for *Health Reports* reviewed 3 papers
- Reviewer for Canadian Journal of Public Health reviewed 1 paper
- Reviewer for *Pediatric Exercise Science* reviewed 1 paper
- Reviewer for BMC Medical Research Methodology reviewed 1 paper
- Reviewer for Children and Exercise XXIV (Routledge Book) reviewed 8 papers
- Reviewer for *Medicine and Science in Sports and Exercise* reviewed 2 papers
- Chair, Active Healthy Kids Canada
- Co-Chair. Rutenfranz Lecture and oral abstract session at Children and Exercise XXIV: The 24th European Pediatric Work Physiology Meeting (Tallinn, Estonia), 2007
- Editor-in-Chief of Special issue of Statistics Canada's Health Reports journal on the Canadian Health Measures Survey
- Mentor for the New Investigator Network 2 (NIN2) program of the SSHRC and the Canadian Research Institute for Social Policy
- Invited member of Silken Lauman's ActiveKids Movement Advisory Team
- Invited member of the Advisory Board of the Learning, Eating, Activity Programme (LEAP) at the University of New Brunswick
- Invited participant in the Workshop to Design and Implement the Ontario Cohort Consortium Platform (Ontario Institute for Cancer Research; Cancer Care Ontario; Heart and Stroke Foundation of Ontario)



Healthy Active Living and Obesity Research

- Invited member of the Theme Working Group #1 Strengthening Information Systems for Monitoring, Management, Evaluation and Policy Development of the Canadian Heart Health Strategy and Action Plan
- Board of Directors of ParticipACTION
- Executive Committee of the Board of Directors of ParticipACTION
- Chair of the Content and Collaboration Committee of ParticipACTION
- Chair of the preparation and release of the third annual Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth including preparation of summary report card, long-form report card, and press conference
- Founder and coordinator of the Canadian Health Measures Survey Colloquium Lecture Series
- Chair, Future of Canadian Physical Activity Guidelines and Guides Project. supported by the Public Health Agency of Canada in partnership with the Canadian Society for Exercise Physiology
- Scientific Committee for Children and Exercise XXIV European Pediatric Work Physiology Meeting (Tallinn, Estonia), 2007
- Scientific Steering Committee for the Public Population Project in Genomics (P³G) International Consortium
- Provincial Council for Children's Health Expert Panel on Child and Youth Weight-Related Issues
- International Advisory Board for the Healthy Alberta Communities Project
- ParticipACTION President Search Committee
- QA/QC Advisory Committee, Canadian Health Measures Survey, Statistics Canada
- Chair, Research Advisory Committee for the Active Healthy Kids Canada Report Card
- Chair, Expert Advisory Committee for the Statistics Canada Canadian Health Measures Survey
- Chair, Physician Advisory Committee for the Canadian Health Measures Survev
- Chair, Analysis Advisory Committee for the Canadian Health Measures Survey
- Chair, Laboratory Advisory Committee for the Canadian Health Measures Survey



Professional Development Activities

Dr. Kristi Adamo

- Champlain Healthy School-aged Children Summit (Ottawa)
- Childhood Obesity Research Network Think Tank meeting (Edmonton, Alberta)
- Provincial Council for Children's Health provincial obesity network planning meeting (Toronto, Ontario)
- Champlain Healthy School Aged Children Initiative Committee of the Champlain Cardiovascular Disease Prevention Network
- Ottawa Y Kids Fit Planning Committee

Dr. Rachel Colley

- Canadian Obesity Network Summer Boot Camp (Quebec City)
- Statistical Modeling of Complex Hierarchial Data (Montreal)
- CIHR Research Chair on Obesity International Symposia (Student Travel Award Recipient) (Quebec City)
 - 10th International Symposium: Childhood Obesity: Biological / Environmental Determinants and Preventative Strategies
 - 9th International Symposium: Gastrointestinal Tract, Obesity and Diabetes

Dr. Gary Goldfield

- Champlain Healthy School-aged Children Summit (Ottawa)
- Ottawa Y Kids Fit Planning Committee
- Canadian Psychological Association conference, 2007 (Ottawa)
- Ontario Psychological Association Conference (Toronto)
- North American Association for the Study of Obesity Conference (New Orleans)

Dr. Stasia Hadjiyannakis

- Montreal Children's Hospital Pediatric Courses (Montreal)
- Ontario Society of Clinical Chemists Annual Meeting (Ottawa)
- Annual Diabetes Education Conference for Health Care Professionals (Kingston)

Jane Rutherford

- International Conference on Physical Activity and Obesity in Children (Toronto)
- Champlain Healthy School-aged Children Summit (Ottawa)



Dr. Mark Tremblay

- High School SummitA³: Awareness, Alignment and Achievement Conference (Cornwall)
- Canadian Cardiovascular Outcomes Research Team (CCORT) 7th Annual National Meeting (Toronto)
- Ontario Society for Nutrition Professionals in Public Health Annual Conference (Toronto)
- Healthy Weights: Halton Takes Action Conference (Milton)
- 6th Annual Rapid Risk Factor Surveillance System Workshop Validity and Reliability Checking up on the Past and Looking into The Future (Toronto)
- International Conference on Physical Activity and Obesity in Children (Toronto)
- Children and Exercise XXIV: The 24th European Pediatric Work Physiology Meeting (Estonia)
- Health Statistics Data Users Conference (Ottawa)
- College of Family Physicians of Canada Family Medicine Forum (Winnipeg)
- Australian Council for Health, Physical Education and Recreation Biennial International Conference (Perth, Australia)
- Canadian Association of Pediatric Health Centres Annual Meeting (Montreal)
- Champlain Healthy School-aged Children Summit (Ottawa)



Academic Appointments

Dr. Kristi Adamo

 Adjunct Professor, School of Human Kinetics, Faculty of Health Sciences, University of Ottawa

Dr. Gary Goldfield

- Assistant Professor, Department of Pediatrics, Faculty of Medicine, University of Ottawa
- Cross appointment as Assistant Professor to Department of Human Kinetics, Faculty of Health Sciences, University of Ottawa
- Adjunct Professor, Department of Psychology, Carleton University

Dr. Stasia Hadjiyannakis

• Assistant Professor, Department of Pediatrics, Faculty of Medicine, University of Ottawa

Dr. Mark Tremblay

- Adjunct Professor, College of Kinesiology, University of Saskatchewan
- Adjunct Professor, Canadian Research Institute for Social Policy, University of New Brunswick



Supervision and Training

Dr. Kristi Adamo

- Zach Ferraro (PhD candidate), School of Human Kinetics
- Hanna Imad (BSc), summer fellowship student Biopharmaceutical Science, University of Ottawa. Project Title: Appetite Signaling Proteins and Energy Intake in Obese Adolescents with Binge Eating Disorder

Dr. Rachel Colley

• Supervised 3 practicum students (Roslyn Mortimer, Final Year Undergraduate Training; Clare Kreis, Final Year Undergraduate Training; Ainsley Groves, Honours Project)

Dr. Gary Goldfield

- Natalie Langdon (Research Practicum Student), Psychology, Carleton University. Supervisor
- Jameason Cameron (MSc), Co-Supervisor Master's Thesis in Human Kinetics, University of Ottawa. Title: The Effects of Food Deprivation on Food Hedonics and the Relative- Reinforcing Value of Food
- Rachel Vella-Zarb (MA), Supervisor Master's Thesis in Psychology, Carleton University Title: Effects of chewing gum on energy intake in obese and non-obese youth
- Stephanie Leclair (PhD candidate), Supervisor Dissertation, Department of Psychology, University of Ottawa. Title: Development, Implementation and Efficacy of a Family-based Treatment of Child Obesity Delivered via Internet: A randomized controlled trial
- Jameason Cameron (PhD candidate), Co-Supervisor Department of Human Kinetics, University of Ottawa. Dopamine Genotypes Predict Response to Obesity Treatment
- Monique Potvin Kent (Ph,.D candidate) Committee member on dissertation on the effects of television advertising on snack food consumption.

Dr. Stasia Hadjiyannakis

- Undergraduate Lecture, Pediatric Obesity, Clerkship, 3rd year medical students (3-4 times per year)
- Post grad *Central Control of Food Intake: Recent Findings,* Advanced Topics in Nutrition and Regulation of Metabolism, BCH8106, University of Ottawa



Dr. Mark Tremblay

- Dr. Rachel Colley Post-Doc supervisor, Childhood Obesity Treatment and Prevention
- Stephanie Prince Ph.D. co-supervisor, Physical Activity, Built Environment and Population Health
- Sarah Connor Gorber Ph.D. supervisory committee, Direct versus Self-Reported Health Measures
- Dale Esliger Ph.D. supervisor, Expanding the Utility of Accelerometry-Based Physical Activity Assessment

Strategic Partnerships

The Healthy Active Living and Obesity Research Group is honoured to have the following organizations as strategic partners:

Active Healthy Kids Canada Alberta Centre for Active Living Carleton University Champlain Cardiovascular Disease Prevention Network Ottawa Public Health Ottawa Hospital National Capital Region YMCA-YWCA ParticipACTION University of Ottawa



Professional Memberships

Dr. Kristi Adamo

Canadian Society for Exercise Physiology Canadian Obesity Network North American Society for Pediatric Exercise Medicine

Dr. Rachel Colley

International Association for the Study of Obesity The Obesity Society (North American Society for the Study of Obesity) Australasian Society for the Study of Obesity Canadian Obesity Network

Dr. Gary Goldfield

Ottawa Academy of Psychologists Canadian Psychological Association The Obesity Society (North American Association for the Study of Obesity)

Dr. Stasia Hadjiyannakis

Canadian Pediatric Endocrine Group American Diabetes Association Canadian Diabetes Association Canadian Society for Endocrinology and Metabolism Endocrine Society Lawson and Wilkins Pediatric Endocrine Society International Society for Pediatric and Adolescent Diabetes Canadian Obesity Network

Jane Rutherford

Canadian Diabetes Association Canadian Obesity Network

Dr. Mark Tremblay

North American Society for Pediatric Exercise Medicine Canadian Society for Exercise Physiology American College of Sports Medicine The Obesity Society (North American Association for the Study of Obesity) Canadian Obesity Network



Contact Us

Please visit our website at www.cheori.org/halo

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