CHEO Research Institute
Healthy Active Living and Obesity Research

Healthy Active Living and Obesity Research Group

ANNUAL REPORT 2009

Children's Hospital of Eastern Ontario (CHEO) Research Institute

401 Smyth Road, Ottawa, ON K1H 8L1

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WELCOME FROM THE DIRECTOR

Statistics Canada recently released the first findings from the Canadian Health Measures Survey – the most comprehensive direct health measures survey ever done in Canada. The findings indicate the "fitness of the nation" has declined significantly and meaningfully over the past generation (1981-2009) with the greatest declines noted in children and youth. Children today are taller, heavier, fatter, rounder, weaker and less flexible than in 1981. These results forecast accelerated non-communicable disease development, increased health care costs, and loss of future productivity. The Heart and Stroke Foundation of Ontario warns that a "perfect storm" of risk factors and demographic changes are converging to create an unprecedented burden on Canada's fragmented system of cardiovascular disease care, and no Canadian young or old will be left unaffected. A new report from the Kaiser Foundation in the U.S. reports that 8-18 year-old children and youth are spending nearly eight hours per day on screen-based media – an unprecedented amount of sedentary time. The U.S. Surgeon General (Dr. Regina Benjamin) and the First Lady (Michelle Obama) have targeted their energies towards resolving the growing problem of childhood obesity.

What a challenge we face! The demand for research, leadership, training and advocacy in this area has never been greater and the Healthy Active Living and Obesity Research Group (HALO) at the CHEO Research Institute continues to try and meet these demands. As a national centre of excellence, HALO strives to provide national and international leadership in the prevention, management and treatment of pediatric obesity and the promotion of healthy body weights and active living. Strategic partnerships with Active Healthy Kids Canada, ParticipACTION, and the Champlain Cardiovascular Disease Prevention Network, among others, provide momentum for solutions and change. Much more needs to be done, and HALO will work arm-in-arm with partners in an attempt to conquer this public health crisis.

The clinical demands to manage and treat the growing number of obese children and youth with co-morbidities and health complications are escalating. Although demand far exceeds the service capabilities, recent grant success has provided some support for the establishment of a multi-disciplinary obesity treatment clinic designed to assist the most challenging obesity cases. This is good news for patients and for the clinical research focus of HALO.

The HALO research group continues to be very productive, dynamic and impactful. Highlights for the HALO group in 2009 included the acquisition of resources for the establishment of a multi-disciplinary obesity treatment clinic; the development of the Canadian Assessment of Physical Literacy; the completion of the Game Bike study; successful release of the 2009 Active Healthy Kids Canada Report Card; the completion of two papers from the KIDS-CAN Research Alliance pilot study data collection in Kenya; and a much greater impact on training future leaders. Please read more details about the work of the HALO research group in the pages that follow.

This Annual Report provides a catalogue of the activities and contributions of HALO in 2009 and is intended to inform partners, stakeholders, funders, potential students and staff, and other interested

parties about our group. It also serves as a means for HALO to archive its work and facilitate assessments within and between years. Comments and suggestions on the Annual Report are always welcome. The Annual Report is available in print form upon request and also on our website at www.cheori.org/halo.

The successes of HALO are attributed to the ability and commitment of the HALO faculty, staff, students and volunteers, and the institutional support received from CHEO, the CHEO Foundation, the CHEO Research Institute, the University of Ottawa and other strategic partners as identified in the Report.

I hope you enjoy reading our Annual Report. If you have any questions, suggestions or opportunities for HALO, please do not hesitate to contact us.

Best wishes for a healthy, active 2010.

Dr. Mark Tremblay
Director, Healthy Active Living and Obesity Research Group (HALO), CHEO-RI
Professor/Scientist, Department of Pediatrics, University of Ottawa
Chief Scientific Officer, Active Healthy Kids Canada

ABOUT HALO

OUR HISTORY

Obesity-related research began in the CHEO Research Institute with a part-time researcher in 2001 and shortly thereafter with the hiring of an endocrinologist with a research interest in childhood obesity. This research direction was initiated in response to the escalating obesity crisis and the increasing complexity of related co-morbidities. The Healthy Active Living and Obesity Research Group (HALO) was established in 2007 and rapid growth in the group occurred since that time.

HALO'S VISION

Provide national leadership and research excellence in Healthy Active Living for the prevention, management and treatment of obesity in children and youth.

HALO'S MISSION

Establish a multidisciplinary centre of excellence in Healthy Active Living and Obesity research in children and youth which will:

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

HALO'S LINES OF BUSINESS

1. Research

- Development and evaluation of current and future childhood obesity prevention, management and treatment options.
- Identification of environmental, behavioural, psychological and biological predictors of obesity and physical activity, their interactions, enablers and inhibitors.

2. Leadership

- Development and dissemination of innovative strategies to prevent, manage and treat childhood obesity and promote healthy body weights and physical activity.

3. Training

- Creation of a nationally recognized training centre for future researchers and health professionals interested in the prevention, management and treatment of childhood obesity and promotion of healthy body weights and physical activity.
- Develop, promote and practice effective knowledge translation strategies to increase the uptake of prevention, management and treatment options reducing future disease burden.

4. Partnership

- Utilization of municipal, provincial, national and international partnerships to create, promote and evaluate the effectiveness of healthy active living 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

- Effective, efficient and transparent.

OUR HALO TEAM

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 led to her doctoral studies, completed through the University of Ottawa's Faculty of Medicine, Department of Cellular and Molecular Medicine, 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 HALO Research Group. 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. One of her key research focuses is related to upstream prevention of childhood obesity (i.e., maternal obesity management during pregnancy). Kristi's most successful genetic experiments have resulted in the birth of her daughter Kysia in July of 2007 and Mallea in November 2009.

Dr. Rachel Colley is a Junior Research Scientist with the HALO group. She holds a Bachelor of Science and a Bachelor of Physical and Health Education (Honours) from Queen's University. Rachel completed her Ph.D. in Brisbane, Australia in 2007 at the Queensland University of Technology. Rachel's Ph.D. thesis explored compensatory weight loss behaviours and the effect of exercise on non-exercise activity thermogenesis (NEAT) in obese individuals. She then came to Ottawa in August 2007 to complete a 1-year postdoctoral fellowship with the HALO group, under the supervision of Dr. Mark Tremblay. She brings experience to the group in applied exercise physiology with specific skills in the measurement of physical activity, energy expenditure and body composition. Rachel is currently the Scientific Officer and lead author of the Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth. She also works part-time at Statistics Canada leading the development of the physical activity data analysis for the Canadian Health Measures Survey. In early 2010, Rachel was awarded a CHEO Research Institute grant to explore physical activity preferences, fitness and motor development in obese children.

Kristine De Jesus completed both her B.Sc. in Physiology, and M.Sc. in Experimental Medicine at McGill University. Her graduate work consisted of studying the effects of IGF-I over-expression in somatic and islet cell growth, in a specific line of transgenic mice. She is a native of Ottawa, and returned in the fall of 2009 to join the HALO team as a Research Assistant. In addition to playing soccer at both the competitive and recreational levels, Kristine was also

a member of the McGill Varsity Cheerleading Team for two years, during which time they competed at the National Championships.

Dr. Gary Goldfield has an Honour's Bachelor of Arts degree in Psychology, a Master's degree in Experimental Psychology, and a Ph.D. in psychology from Carleton University. Dr. Goldfield completed a post-doctoral fellowship in Behavioural Medicine at the State University of New York at Buffalo. Dr. Goldfield is presently a clinical scientist and one of the founders of 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, Pediatrics and Psychology 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. Dr. Goldfield has published widely in the areas of child obesity, physical activity, behavioural psychology, rewarding value of food, and eating behaviour. Dr. Goldfield is the proud father of two wonderful girls.

Dr. Stasia Hadjiyannakis received her medical degree from the University of Toronto (1996) and completed her pediatric residency at Queen's University with an endocrine fellowship at McGill University. She worked as a Visiting Professor at the University of California San Francisco (2003) where she received more in-depth training in the area of pediatric obesity and lipid disorders. Stasia is currently the Chief of the Division of Endocrinology at the Children's Hospital of Eastern Ontario (CHEO) and an Assistant Professor of Pediatrics at the University of Ottawa. She has been an active member of the Department of Pediatrics at CHEO in the division of endocrinology since November 2001 and is the Medical Director of the Pediatric Obesity and Lipid Clinics. Her clinical, advocacy and research interests are in the area of pediatric obesity and related co-morbidities such as metabolic syndrome, dyslipidemia, Type 2 diabetes and polycystic ovarian syndrome. Her research interests are in examining the dynamic interplay between behavioural/psychosocial, genetic and intrauterine factors in predicting risk for obesity related co-morbidities.

Emily Knight has a B.Sc. in Exercise Science from the University of Winnipeg, and is a Canadian Society for Exercise Physiology – Certified Exercise Physiologist (CSEP-CEP). After graduation, Emily relocated to Ottawa where she joined HALO as a research assistant in the winter of 2009. Emily is currently the project coordinator for the Canadian Assessment of Physical Literacy, and research assistant to Dr. Meghann Lloyd. After training at professional ballet schools across North America, Emily danced professionally in Canada until 2004. Her ballet career ended early due to injury, which ignited a passion for injury rehabilitation. Emily enjoys volunteering in her community and working with people who have suffered injury or are managing chronic illness to overcome physical limitations and maintain both independence and a high quality of living.

Dr. Meghann Lloyd is a Junior Research Scientist in the HALO group. Dr. Lloyd earned a B.Kin. (Honours) degree from Acadia University and an M.A. from McGill University. She then completed her Doctoral work at The University of Michigan in the Division of Kinesiology, specifically within the Center for Motor Behavior and Pediatric Disabilities. She then completed a short post-doctoral fellowship in Michigan before moving back to Canada to join HALO. Dr. Lloyd's research takes a multidisciplinary approach to investigate the physical activity and motor development of infants and young children with and without disabilities. Dr. Lloyd's current research within HALO at the Children's Hospital of Eastern Ontario Research Institute is funded by a CIHR grant received in 2009 and focuses on developing a comprehensive assessment tool of physical literacy – The Canadian Assessment of Physical Literacy. This will provide information to both educators and medical professionals about the status of physical literacy in Canadian children. In 2009 Dr. Lloyd also entered into a partnership with Special Olympics International to analyze and disseminate the data from their Healthy Athletes assessments. Future research will further investigate the factors that influence early physical activity, to prevent obesity from emerging in the preschool age range, for children with and without Down syndrome. Dr. Lloyd is also an active Special Olympics Soccer coach in Ottawa.

Jane Rutherford completed a B.Sc. in Nutritional and Nutraceutical Sciences and an M.Sc. in Human Biology and Nutritional Sciences from the University of Guelph. Jane's previous work experience includes coordinating human exercise research trials, working in cardiac and musculoskeletal injury rehabilitation as an exercise physiologist and sharing her passion for health promotion by working as a Fitness Consultant. Joining the HALO Research Group in the role of Research Coordinator in the fall of 2006 allowed her to combine her love of research with her passion and skills for motivating and encouraging people to live healthy lives. Leading by example, Jane is an avid runner – recently completing her 12th marathon – and plays competitive field hockey in the summer months. In a volunteer capacity, Jane is a regular Running Room presenter – giving talks to its running/walking clinics on general and sport specific nutrition, and is a Fitness Instructor at the YMCA/YWCA.

Michelle Takacs happily joined HALO in the fall of 2009 and provides administrative, human resource and financial services assistance to the Director and the HALO team. Michelle embraces the HALO mission, strives for optimum health and wellbeing, and enjoys outdoor activities including walking/hiking, badminton, swimming and kayaking.

Dr. Mark Tremblay has a Bachelor of Commerce degree in Sports Administration and a 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 the Director of HALO at the Children's Hospital of Eastern Ontario Research Institute and Professor of Pediatrics in the Faculty of Medicine, University of Ottawa. Dr. Tremblay is a Fellow of the American College of Sports Medicine, a Fellow of The Obesity Society, former Dean of Kinesiology at the University of Saskatchewan and is currently the Chief Scientific Officer of Active Healthy Kids Canada and Chair of the Research Advisory Group of ParticipACTION. Dr. Tremblay was the Scientific Director for the Canadian Health Measures Survey being conducted by Statistics Canada and currently chairs its Expert Advisory Committee. 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 21-year marriage to his wife Helen, yielding four wonderful children.

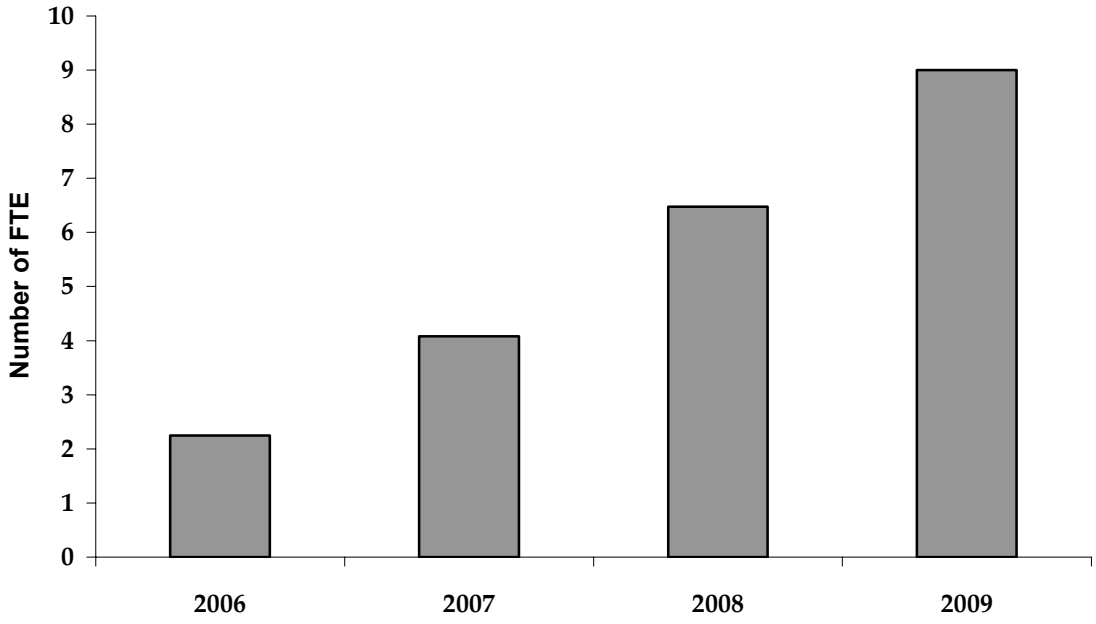


Figure 1. Number of Full Time Equivalent (FTE) positions in HALO Research Group from 2006 to 2009. Between 2006 and 2009, there was a 300% increase in FTE, and between 2008 and 2009, there was a 39% increase in FTE.

OUR STUDENTS AND TRAINEES

Peter Breithaupt, M.Sc. Student
Supervisors: Dr. Kristi Adamo and Dr. Rachel Colley
Research Program: M.Sc. Human Kinetics, University of Ottawa
Thesis Topic: Validation of Cardiovascular Fitness and Body Composition Assessment Methodologies in the Overweight/Obese Pediatric Population

Cynthia Colapinto, RD, Ph.D. Student, CIHR Doctoral Studies in Public Health Fellow; Statistics Canada Tom Symon's Fellow
Ph.D. Supervisor: Dr. Mark Tremblay
Research Program: Ph.D. in Population Health, University of Ottawa
Dissertation Topic: Examining the folate status of Canadians, in particular women of childbearing age, using the Canadian Health Measures Survey

Zach Ferraro, Ph.D. Student, Ontario Graduate Scholar
Ph.D. Supervisors: Dr. Kristi Adamo and Dr. Denis Prud'homme
Research Program: Ph.D. Human Kinetics, University of Ottawa
Dissertation Topic: Insulin-like Growth Factor-1 dynamics (nutrient transport proteins), maternal-fetal endocrinology, 'programming' adult disease during growth and development, randomized controlled lifestyle intervention trials during pregnancy

Richard Larouche, Ph.D. Student, CIHR Banting and Best Doctoral Scholar
Ph.D. Supervisors: Dr. Mark Tremblay and Dr. Rachel Colley
Research Program: Ph.D. Human Kinetics, University of Ottawa
Dissertation Topic: Obesity Prevention and Physical Activity Promotion Through Increased Active Transportation and Lifestyle Activities

Stephanie Leclair, Ph.D. Student
Ph.D. Supervisor: Dr. Gary Goldfield
Research Program: Ph.D. Clinical Psychology, University of Ottawa
Dissertation Topic: Delivering behavioural intervention for obese children via the Internet

Stephanie Prince-Ware, Ph.D. Student, SSHRC Scholar, Ontario Graduate Scholar, University of Ottawa Excellence and Research Scholar
Ph.D. Supervisors: Dr. Denis Prud'homme and Dr. Mark Tremblay
Research Program: Ph.D. Population Health, University of Ottawa
Dissertation Topic: Built and social environmental determinants of physical activity, overweight & obesity in City of Ottawa neighbourhoods

Travis Saunders, Ph.D. Student, CIHR Doctoral Clinical Scholar
Ph.D. Supervisors: Dr. Mark Tremblay and Dr. Rachel Colley
Research Program: Ph.D. Human Kinetics, University of Ottawa
Dissertation Topic: The relationship between sedentary time and metabolic health in children and youth

FORMER STAFF, STUDENTS AND VISITORS

Kerry Hamilton completed her University of Ottawa 4th year Honours Thesis by working on the Appetite Signaling Proteins study in the fall and winter of 2008/2009. Kerry is now pursuing a Masters in Health Promotion at Queen's University and is thankful for the wonderful learning opportunity she was given by working with the HALO team.

Kelly Heffernan was the first Research Assistant for the Canadian Assessment of Physical Literacy project funded on a grant from the CHEO Research Institute. Kelly is currently completing a very prestigious internship at Toronto's Hospital for Sick Children to become a registered dietician.

Heather Huggins-Slack is a University of Ottawa Human Kinetics student who worked on the Canadian Assessment of Physical Literacy project during the summer of 2009 on a CHEO Research Institute summer studentship grant.

Tina Hutchinson worked with the Healthy Active Living and Obesity Research Group for two years, and left the team in the fall of 2009 to pursue other opportunities. The HALO team appreciates all the great support provided by Tina and wishes her well in all her current and future life adventures.

Emily Meisner selected the HALO Research Group as her mentoring organization for 12 weeks to satisfy the public policy summer internship component of her Canada Merit Scholarship. Emily is completing her kinesiology degree at Dalhousie University where she also participates in cross-country running and track as a varsity athlete.

Dr. Vincent Onywera, visiting scholar from Kenyatta University, Nairobi, Kenya studied with the HALO team in Ottawa from June to September 2009. We will continue to be working closely with Dr. Onywera on the KIDS-CAN Project (see project summary further in this Annual Report).

Pilar Rodriguez, visiting scholar from Guadalajara, Mexico studied with the HALO team in Ottawa from February to June 2009. Pilar continues to work with Drs. Tremblay and Colley on the CAMBIO research program (in Partnership with Queen's University – see project summary further in this annual report).

Wai-May Wong worked with the HALO Research Group as a student research assistant for about half of 2009. She worked on a number of the research projects, most notably the KIDS-CAN project. She was also instrumental in developing the 2008 Annual Report. Wai-May is currently studying at Ryerson University to become a Registered Dietician.

Cici Zhu worked as a summer research assistant on the Appetite Signaling Proteins study. She is finishing her 2nd year of medical school at Queen's University and will be completing a research elective in Vancouver during the summer of 2010.

HALO PHOTO GALLERY

Dr. Mark Tremblay, Director of HALO – Proud Torchbearer for the Vancouver 2010 Olympics – Byward Market, Ottawa – Dec. 12, 2009

HALO Christmas Celebration at Rachel's place along with co-host, Marley – Special guests included Mallea and Evan – Dec. 17, 2009

HALO Team Retreat – Wakefield Mill Inn

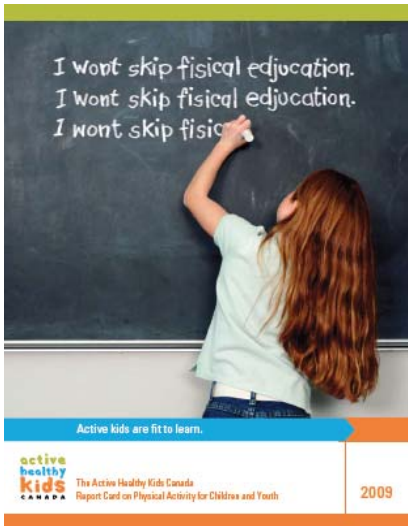
Meeting with visiting scholar from Kenya, Dr. Vincent Onywera (from left to right: Vincent Onywera, Meghann Lloyd, Gary Goldfield, Stasia Hadjiyannakis, Mark Tremblay, Rachel Colley, Kelly Heffernan, Tina Hutchinson, and Jane Rutherford)

HALO Golf Team (FORE!) – Travis Saunders, Zach Ferraro, Vincent Onywera and Mark Tremblay

HALO TEAM!

HALO HIGHLIGHTS IN 2009

The 2009 Active Healthy Kids Canada Report Card



The Active Healthy Kids Canada's (AHKC) Report Card on Physical Activity for Children and Youth ("Report Card") is an evidence-informed 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.

In May 2005, the first annual Report Card was released with an overall grade of D. The 2005 Report Card sounded the alarm and underscored the need for action. The 2006-2008 Report Cards maintained a failing grade of D; however they included new data, additional indicators and specific Recommendations for Action. The Recommendations for Action identified what changes could be made amongst various stakeholder groups to improve the grade.

The development of the content for each annual Report Card is supported by the work of a Research Work Group, for which Dr. Mark Tremblay, has been the Chair to date. 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 are organized into a detailed version (long form) of the Report Card and condensed to produce a summary (short form) Report Card. The summary report card is very concise and is designed to be a compelling communication piece, while the more detailed version provides the evidence base for indicator grades. The promotion and distribution of the Report Card involves a variety of communication methods, ranging from media distribution to direct mail dissemination and via various stakeholder networks.

In 2009, the content development process and the activities of the Research Work Group were managed by CHEO-HALO through a strategic partnership with AHKC. Under the guidance of Mark Tremblay, Rachel Colley led the development, analysis and writing of the long form Report Card in 2009 and will continue in the same capacity for the 2010 Report Card. In addition, CHEO-HALO supported a number of knowledge exchange and consultation activities for AHKC. In essence, HALO is the 'knowledge partner' of AHKC and provides specialized expertise in the area of physical activity for children and youth.

A key story in the 2009 Report Card was the link between physical activity and academic performance in children and youth. It was noted that many schools were cutting physical education programs and recess in an attempt to increase academic grades. However, no empirical evidence has

suggested that academic performance is hindered in any way by regular participation in physical education and physical activity. In fact, the majority of empirical evidence suggests the opposite is true – that academic performance is improved by engagement in regular physical activity.

The Report Card's influence is not limited to Canada. The model has now been replicated in several other jurisdictions including South Africa, Louisiana, Saskatchewan, and Mexico. In 2007, South Africa produced the "Report Card on Physical Activity, Nutrition and Tobacco Use for South African Children and Youth" (http://www.mrc.ac.za/chronic/healthykids.pdf) modelled after the AHKC Report Card. The state of Louisiana in the USA has produced 2 Report Cards (2008, 2009; http://www.pbrc.edu/report_card/) titled "Louisiana's Report Card on Physical Activity & Health for Children and Youth". The province of Saskatchewan has long been a leader in the healthy active living movement in Canada and in September 2009 produced their own provincial supplement to the national Report Card (http://www.saskatchewaninmotion.ca/whats_new/?a=95). Researchers in Mexico and Canada have recently collaborated on a grant to initiate a Report Card in Mexico and a similar partnership is underway in Kenya.

The Active Healthy Kids Canada Report Card receives significant media exposure with over 150,000,000 media impressions in 2009 – CHEO-HALO is acknowledged on all report cards and most media interviews, generating tremendous positive exposure for CHEO and HALO.

Who is Active Healthy Kids Canada?

Established in 1994, Active Healthy Kids Canada (AHKC) is a national organization with a passionate voice for the development of active healthy children and youth in Canada. AHKC is focused on making physical activity a major priority in the everyday lives of Canadian families and is committed to providing expertise and direction to policymakers and the public on increasing and effectively allocating resources and attention toward physical activity for children and youth.

HALO HIGHLIGHTS IN 2009 (*continued*)

The Canadian Assessment of Physical Literacy (CAPL)

Many children today lack the basic skills, knowledge and physical activity behaviours needed to lead healthy active lifestyles and the evidence is illustrated in the startling inactivity and obesity rates. Given the childhood obesity crisis and repeated failing grades on the Active Healthy Kids Canada Report Card there is an opportunity – even a responsibility – to create a school-based assessment program to examine the physical literacy of Canadian school-aged children. A better understanding of physical literacy will facilitate the development of effective interventions, and promote the development of appropriate standards in the realm of physical education and health. For the purpose of the CAPL:

Physical literacy is a construct which captures the essence of what a quality physical education or a quality community sport / activity program aims to achieve. It is the foundation of characteristics, attributes, behaviours, awareness, knowledge and understanding related to healthy active living and the promotion of physical recreation opportunities.

Physical literacy is deemed to have four core domains:

a) ***Physical Fitness*** – cardio-respiratory endurance, muscular strength and endurance, and flexibility;
b) ***Motor Behaviour*** – fundamental motor skill proficiency;
c) ***Physical Activity Behaviour*** – objectively measured daily activity; and
d) ***Psychosocial/Cognitive Factors*** – awareness, knowledge and understanding.

Being physically literate is conceived to be the result of the integrated interaction of these domains to facilitate lifelong healthy physical activity behaviours.

The aim of this project is to develop a comprehensive tool to measure physical literacy in Canadian children thus allowing education, sport, recreation, and health leaders to better understand the quality and effectiveness of current programming. Currently there is no comprehensive measurement to address the multi-dimensional nature of physical literacy in children – there is no accepted battery of tests to assess whether the outcome of quality physical education, sport, or recreational programming is achieved. The absence of such a test, or series of tests, may reduce accountability, the quality and quantity of effort, and the priority assigned to the area.

To be physically literate, we propose it is necessary to have a level of proficiency in the four core domains which reciprocally interact – fundamental motor skill, physical fitness, physical activity behaviour, and psycho-social/cognitive factors. Despite the reciprocal and interactive nature of the core domains, domain specificity is conserved for assessment purposes because of logistics and content specificity. This allows for a separate score in each domain and a composite score to reflect an individual's level of physical literacy. **To our knowledge, the CAPL will be the first consolidated comprehensive assessment tool of its kind.**

Children who participate in the CAPL take part in activities they are familiar with through their regular physical education activities to complete the following assessment modules:

i. *Physical Fitness Assessment* – PACER test, hand grip strength, sit and reach hip/back flexibility, partial curl ups, 90 degree push ups, back extension, standing 1-leg balance, and anthropometric measures of height, weight and waist circumference.
ii. *Motor Skill Assessment* – static motor skills (overhand throwing, 2-hand catching, kicking [ball], striking [t-ball], dribbling, and running) as well as a new and novel obstacle course to assess dynamic motor skills (jumping, dodging, kicking, hopping, catching and throwing while running).
iii. *Physical Activity Behaviour Assessment* – participants wear a pedometer for seven consecutive days, and complete a log sheet outlining their physical activities for the same week.
iv. *Psychosocial/Cognitive Assessment* – several iterations of a new questionnaire are being pilot tested for use with the CAPL. The questionnaire is based on the Ontario Health and Physical Education curriculum for grade 4.

2009 CAPL Project Update

After receiving ethical approval from the Children's Hospital of Eastern Ontario Research Ethics Board, we began collecting data during the spring of 2009. In addition to working with multiple local school boards, in the community we have partnered with the City of Ottawa, the National Capital Region YMCA/YWCA, and KidsFest Running and Reading programs. To date, 26 teachers/program directors from 14 schools and community groups have opted to allow their classes/programs to participate; which has allowed 596 children between the ages of 9-13 years (i.e., grades 4-6) to participate in the CAPL.

In addition to the first two CAPL background papers being accepted for publication in *Pediatric Exercise Science* and the *Physical and Health Education Journal*, two abstracts have been accepted for presentation at the International Congress on Physical Activity and Public Health in Toronto in May 2010. CAPL pilot results and background information were also presented at:

- ✓ European Pediatric Work Physiology Conference – France, October 2009
- ✓ CHEO-RI Clinical Research Day – Ottawa, October 2009
- ✓ Quality Daily Physical Education Conference for the Upper Canada District School Board – Gananoque, August 2009
- ✓ International Symposium of Adapted Physical Activity – Sweden, June 2009
- ✓ Annual PHE Canada Conference: Moving Mountains – Banff, May 2009

Funding Partners:

- ✓ In March of 2009, we received an operating grant of $74,900 from the Canadian Institutes of Health Research.
- ✓ We received a Summer Studentship Grant from the CHEO Research Institute which allowed us to hire an undergraduate student from the University of Ottawa for the summer of 2009.
- ✓ The Ontario Ministry of Health Promotion provided $30,000 in matching funds to the research grant we received from the CHEO-Research Institute in December 2008.

- ✓ The Public Health Agency of Canada (PHAC) provided $15,000 to support pilot work around the development of certain aspects of the psychosocial domain measures, particularly physical activity preferences.
- ✓ Both ParticipACTION and the Champlain Cardiovascular Disease Prevention Network (CCPN) contributed funding for CAPL development for the second consecutive year in 2009.

HALO HIGHLIGHTS IN 2009 (*continued*)

Pediatric Regional Assessment and Treatment Centre for Severe Complex Obesity

CHEO has been identified as one of two provincial sites for the establishment of a Pediatric Regional Assessment and Treatment Centre for severe complex obesity. This will be a Ministry of Health and Long-Term Care funded program, with a multidisciplinary team of experts. A strong evaluative component will be built in to the program as effective treatment of pediatric severe complex obesity remains elusive. The anticipated start date for the program is fall 2010.

One of four top priorities for CHEO this year continues to be the identification of Areas of Clinical and Research Excellence that will become CHEO's flagship programs where the hospital will aim at being the best in the province and/or country. Pediatric obesity has been touted as one of several areas of excellence for CHEO. A strong presentation was made to the Medical Advisory Committee in support of this initiative in June 2009.

CURRENT RESEARCH INITIATIVES

Summary List – Please see details on these HALO Research Initiatives further in this section:

1. Appetite Signaling Proteins and Energy Intake in Obese Adolescents with Binge Eating Disorder: A Pilot Study
2. Physiological and Psychological Predictors and Determinants of Metabolic Complications of Pediatric Obesity: A Cohort Study
3. Feasibility and Short-term Efficacy of the Game Bike to Increase Physical Activity in Obese Adolescents
4. Kenyan International Development Study – Canadian Activity Needs (KIDS-CAN) Research Alliance
5. Active Healthy Kids Canada 2009 Report Card
6. Maternal Obesity Management – The MOM Trial (PILOT)
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)
8. CIHR Team in Critical Periods of Body Weight Regulation: A Women's Health Perspective SOMET: Sherbrooke-Ottawa-Montréal Emerging Team
9. Champlain Healthy School-Aged Children: Parental Attitudinal Survey
10. Family-Based Behavioural Treatment of Childhood Obesity via Internet: A Randomized Controlled Trial
11. Revising Canada's Physical Activity Guidelines
12. Built and Social Environmental Determinants of Physical Activity and Obesity in Ottawa Neighbourhoods
13. Examining the Folate Status of Canadians
14. Canadian Assessment of Physical Literacy (CAPL)
15. Tackling the Childhood Obesity Epidemic – Starting with MOM
16. Evaluation of the 'Freggie Fridays Program' in Ottawa Schools
17. Healthy Eating, Aerobic and Resistance Training in Youth (HEARTY)
18. A Tertiary Care Approach to the Management of Pediatric Obesity and its Co-morbidities
19. Canada – Mexico Battling Childhood Obesity (CAMBIO)
20. Canadian Health Measures Survey: Analyses of healthy active living indicators of Canadians

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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 are 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: Actively recruiting. We anticipate having all 20 participants completed in 2010. A research assistant (Kristine De Jesus) was hired to aid in bringing this study to completion.

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 an exploratory, 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 one 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 Pediatric Endocrinology Clinic. These include: i) Biomarkers & Clinical Markers- plasma, 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 and accelerometry, VO2 peak, Resting Energy Expenditure and dietary intake, iv) Psychosocial & Behavioural Factors – eating behaviour and food practices, quality of life, depression, anxiety, stress, self-esteem, 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 co-morbidities at the CHEO Pediatric Endocrinology Clinic.

Status: Active recruitment and assessment underway. The pilot project is expected to be completed by 2010. We have enrolled 45 participants thus far into the pediatric obesity cohort. It is our intent to apply for funding in order to continue recruitment and yearly follow-up on our participants.

3. Feasibility and Short-term Efficacy of the Game Bike 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 Game Bike 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 Game Bike, a recumbent bicycle interfaced with a *PlayStation*, increases energy expenditure (kcal) during 2 weekly laboratory exercise sessions over a 10-week study period when compared to a cycling to music control group. Also 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: Recently completed and manuscript has been submitted.

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

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

Funding Source: Canadian Institutes of Health Research – International Opportunities Partnership ($25,000); University of Ottawa ($5,000); International Research Development Centre, through CAMBIO ($7,000)

Description: Kenya is a country where traditionally most children live an active lifestyle and thus have been protected from the childhood obesity pandemic. Currently, their growing affluence and global economic and technological influences place them at-risk of transitioning to more obesity-promoting environments and behaviours common-place in North America. However no data currently exist regarding obesity prevalence, fitness levels or physical activity patterns in their pediatric population. Thus the Canadian contingent of the KIDS-CAN Research Alliance (Tremblay, Adamo, Sheel) visited Kenya in November 2008 for meetings with University and Government officials (Education, Statistics, Health) and to collect pilot data on body composition, aerobic fitness, strength and flexibility at 2 urban and 2 rural schools. Data were also collected from parents on their health beliefs and physical activity patterns. We hope to extend this project and gather similar data on a nationally representative sample in Kenya and compare to our Canadian population.

Status: Pilot data collection is complete. Follow-up grant submissions are being prepared for continuation of the research alliance and the development of an International Ambassadors Team is underway. Dr. Onywera from Kenya spent three months studying with the HALO team in 2009 thanks to generous support from Kenyatta University, the University of Ottawa and HALO. Two manuscripts are submitted from the pilot research.

5. Active Healthy Kids Canada 2009 Report Card *(please see more information on this in the HALO Highlights section on pages 14-15 of this report)*

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

Funding Source: Active Healthy Kids Canada ($135,300)

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 are 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 serves as the knowledge and research engine for Active Healthy Kids Canada, including the writing of the 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 August 1, 2008 and the report card was released in June 2009. A provincial supplement was also prepared for Saskatchewan and was released in September, 2009.

6. Maternal Obesity Management – The MOM Trial *(PILOT)*

Principal investigator: **Dr. Kristi Adamo**
Co-investigators: E. Keely, M. Walker**, S. Hadjiyannakis, G. Goldfield,** N. Barrowman, G. Tawagi, J. Sylvain
Collaborators: A. Gruslin, F. Tesson

Funding Source: Canadian Institutes of Health Research Team Grant ($300,000)

Description: Obesity is our society's most prevalent public health problem. It affects Canadians of all ages, ethnicity and socioeconomic status and it is very important to address obesity as early as possible because the longer it persists the harder it is to treat. Prevention is therefore the key. Current evidence is pointing towards pregnancy as an incredibly critical period in the programming of downstream child obesity and later adult obesity and therefore a potentially valuable prevention target. Approximately 40% of pregnant women are carrying more weight than is considered healthy. A woman's weight status prior to pregnancy and the amount of weight she gains over this period is linked to her baby's birthweight as well as weight status in childhood, adolescence and beyond. The goal of this specific study is to test whether a structured physical activity and nutrition program offered to overweight or obese women over the course of their pregnancy will help to limit the amount of weight they gain during this time and, if this lifestyle program will result in fewer of these women giving birth to very large babies. Being overweight and gaining more weight than recommended also puts women at risk of other pregnancy-related complications such as gestational diabetes and post-partum weight retention that can affect the health of their babies and their own long-term health. We will explore the affect this intervention has on these outcomes as well. We hope that adopting healthy exercise and dietary behaviours during pregnancy will assist overweight and obese women halt the cycle of obesity.

Status: We received initial Research Ethics Board (REB) approval in 2009 and began active recruitment. We are awaiting final approval on an REB amendment to extend recruitment to the General Hospital.

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 investigator: **Dr. Stasia Hadjiyannakis**
Co-investigators: T. Pinto, **K. Adamo, J. Rutherford**, J. Malcolm, E. Keely, **G. Goldfield**, I. Gaboury, M. 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 13-17 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: Active recruitment and assessment underway.

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

Team Lead: Denis Prud'homme
Co-Principal investigators: **K. Adamo** (PI for Critical period of Pregnancy and early childhood- the MOM trial described above), E. Doucet and R. Rabasa-Lhoret (PIs for perimenopause), M. Brochu (PI for post-menopause/aging) and D. Stacey (PI for Knowledge translation)
Co-investigators: I. Strychar, F. Tesson, J-M Lavoie, A. Dumas, **G. Goldfield**, **S. Hadjiyannakis**, E. Keely, M. Walker

Funding Source: Canadian Institutes of Health Research (CIHR) ($2,500,000 over 5 years)

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: Two of the three major project themes have received REB approval and are moving forward. The yearly SOMET update meeting took place in Ottawa in June, and the SOMET retreat took place in Quebec this fall. The knowledge translation project REB application has recently been submitted. The National and International speaker series has been well received.

9. Champlain Healthy School-Aged Children Initiative

Principal investigators: Champlain Healthy School-Aged Children Initiative working group (**K. 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: Recent projects:

- Parental attitudinal survey: 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. The survey targeted 1,940 parents of children aged 4 to 12 years across the Champlain District and was conducted via telephone. The intent was to better understand parental perceptions, knowledge, and behaviours surrounding childhood overweight/obesity and related physical activity and healthy eating habits.
- School-based Policy Framework Project: the CCPN commissioned Silta Associates to produce a framework outlining the need for school-based policies covering healthy eating and physical activity in the 9 school boards in the Champlain District.
- The Champlain Declaration – A Call to Action for Physically Active & Healthy Eating Environments in Schools: Following the framework project the Champlain declaration was conceived whose vision is for the nine School Boards in the Champlain District of Ontario, in partnership with the Champlain Cardiovascular Disease Prevention Network (CCPN), to commit to creating healthy school environments so that school-aged children (aged 4 to 18) in the Champlain District can be physically active and can make healthy food choices at school on a daily basis.

Status: A manuscript based on the survey data was accepted for publication in *Paediatrics & Child Health* (the official journal of the Canadian Paediatrics Society).

The Champlain Declaration: A Call to Action for Physically Active & Healthy Eating Environments in Schools (English and French) has been signed by all nine Champlain Directors of Education and disseminated to all schools. A public relations campaign, "Know More Do More," designed to reach parents of school-aged children and to encourage healthy active living will be launched on March 27, 2010 at three sites in the Champlain region.

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

Principal investigator: **Dr. Gary Goldfield**
Co-investigators: P. McGrath, D. Prud'homme, **S. Hadjiyannakis**, R. Sigal

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

Description:
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 are only a few multidisciplinary childhood obesity clinics 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 few 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 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: Twenty children (and parents) will be recruited to family-based behavioural intervention via Internet. The behavioural intervention will deliver behaviour modification in eating and activity behaviours through multiple forms of interactive media, including regular (3x/week) contact and individualized feedback from a therapist and dietitian 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 intervention period will last 3 months, with a 3-month follow-up assessment post treatment.

Status: The treatment materials and pilot testing of the website have been completed and active recruitment is underway It is estimated that the study will be completed by August 2010.

11. Revising Canada's Physical Activity Guidelines

Principal investigator: **Dr. Mark Tremblay**
Co-investigators: Steering Committee through the Canadian Society for Exercise Physiology

Funding Source: Canadian Society for Exercise Physiology and Public Health Agency of Canada

Description: This project builds on the substantial work already done on the "future of physical activity measurement and guidelines" project. It utilizes the intellectual capital summarized in the foundation document (Canadian Journal of Public Health 98(suppl.2), 2007; Applied Physiology, Nutrition and Metabolism 32(suppl.2E), 2007) as it was intended and serves to meet or advance several needs related to public health in Canada. The development and dissemination of the existing Physical Activity Guides and the recent foundation document is the result of an effective and productive partnership between the Canadian Society for Exercise Physiology (CSEP) and the Public Health Agency of Canada (PHAC). This partnership is well positioned and qualified to continue to lead this project which clearly falls under federal responsibility, with leadership being provided by Dr. Mark Tremblay of the Healthy Active Living and Obesity Research Group at the Children's Hospital of Eastern Ontario Research Institute.

Over the past several decades habitual physical activity among Canadians has almost certainly decreased, and the consequences of this reduced physical activity include obesity and increased prevalence of chronic disease. Canada's Physical Activity Guidelines provide an indication of the minimal level of regular physical activity for health, but the Guides do not suitably address all subpopulations in Canada. The CSEP is proposing to revise and expand the guidelines to take into consideration the growing body of scientific knowledge associated with recommendations for the quality and quantity of physical activity to promote and maintain health and promote healthy body weights. The current guidelines require further assessment to determine whether they need to be updated and the gaps in target populations need to be examined to determine future needs. The gaps include: young children (0-5 years of age), older youth (15-19 years of age), and special populations like Aboriginals and Canadians with physical disabilities. In addition to addressing these gaps areas, emerging evidence suggests clear public health guidelines on sedentary behaviours are also required and are complimentary to, but independent from, physical activity guidelines. The project includes not only updating and expanding the current guidelines (using careful evaluation of the research literature and collaboration with international colleagues) but also exploring and launching new initiatives to get this essential information to the general public. If supported by a comprehensive, integrated, sustained strategy to encourage and support physical activity, this initiative has tremendous potential to enhance the health of Canadians by guiding them towards an appropriate amount of habitual physical activity.

Status: Five systematic reviews, a summary consensus paper and a descriptive process paper are in press as a "Thematic Series" in the *International Journal of Behavioral Nutrition and Physical Activity* and significantly extend the work published in the earlier foundation document. In partnership with ParticipACTION and HALO, the Canadian Society for Exercise Physiology is planning a dissemination strategy for the findings from this thematic series. It is hoped that revisions to the existing Physical Activity Guides will begin in 2010 in partnership with the Public Health Agency of Canada.

12. Built and Social Environmental Determinants of Physical Activity and Obesity in Ottawa Neighbourhoods

Principal investigators: **Drs. Mark Tremblay** and Denis Prud'homme

Co-investigators: **S. Prince Ware** and **R. Colley**

Funding Source: Faculty of Health Science and CHEO Research Institute partnership grant ($14,986)

Description: This research project looks at the potential influences of the built and social environments on objectively measured physical activity, overweight and obesity in parents and children across 86 City of Ottawa neighbourhoods. The project is a cooperative venture involving City of Ottawa Public Health and the Ottawa Neighbourhood Survey under the direction of Dr. Elizabeth Kristjansson (School of Psychology), the University of Ottawa, Dr. Denis Prud'homme, Faculty of Health Sciences and Dr. Mark Tremblay from the CHEO Research Institute. The pilot data will identify whether possible cross-sectional relationships exist between the built and social environments and physical activity and overweight/obesity in parents and children in the City of Ottawa.

Status: This project is underway and it is hoped that data collection will be completed in 2010.

13. Examining the Folate Status of Canadians

Principal investigators: **Drs. Mark Tremblay** and Debbie O'Connor
Co-investigators: **C. Colapinto** and L. Dubois

Funding Source: Canadian Institutes of Health Research (CIHR) Fellowship in Public Health for Cynthia Colapinto ($220,000)

Description: For her dissertation research, Cynthia Colapinto will investigate the folate status of the Canadian population, in particular women of childbearing age, using direct biochemical blood measures available for the first time in 30 years from a nationally representative sample through Statistics Canada's Canadian Health Measures Survey (CHMS). Prevalence of folate deficiency in the general population, and folate inadequacy for maximal protection against neural tube defects in women of childbearing age, will be determined and risk factors identified (e.g., demographic, socioeconomic status, folic acid supplement and folate-rich food intake). An international collaboration has been formed with the National Center for Health Statistics (NCHS, United States) allowing for comparison of CHMS data to relevant American data (i.e., the National Health and Nutrition Examination Survey (NHANES)). This research will provide a novel opportunity to inform policy makers with respect to food fortification and prenatal supplementation recommendations for the Canadian population.

Status: Cynthia Colapinto is a 2nd year Ph.D. Candidate in the Population Health program at the University of Ottawa. CIHR operating grant funding is being sought to further support this research.

14. Canadian Assessment of Physical Literacy (CAPL) *(please see more information on this in the HALO Highlights section on pages 16-19 of this report)*

Principal investigator: **Dr. Meghann Lloyd**
Co-investigator: **M. Tremblay**

Funding Sources: Multiple sources including Canadian Institutes of Health Research (CIHR)

Description: Many children today lack the basic skills, knowledge and physical activity behaviours needed to lead healthy active lifestyles. For the purposes of the Canadian Assessment of Physical Literacy (CAPL):

> ***Physical literacy is a construct which captures the essence of what a quality physical education or a quality community sport/activity program aims to achieve. It is the foundation of characteristics, attributes, behaviours, awareness, knowledge and understanding related to healthy active living and the promotion of physical recreation opportunities.***

Physical literacy is deemed to have four core domains:

1) Physical Fitness – cardio-respiratory endurance, muscular strength & endurance, and flexibility
2) Motor Behaviour – fundamental motor skill proficiency
3) Physical Activity Behaviours – objectively measured daily activity
4) Knowledge, Awareness and Understanding – psycho-social/cognitive factors

Being physically literate is conceived to be the result of the integrated interaction of these domains to facilitate lifelong healthy physical activity behaviours. The aim of this project is to develop a comprehensive tool to measure physical literacy in Canadian children thus allowing education, sport, recreation, and health experts to better understand the quality and effectiveness of current programming. Currently there is no comprehensive measurement to address the multi-dimensional nature of physical literacy in children – there is no accepted battery of tests to assess whether the outcome of quality physical education, sport, or recreational programming is achieved. *The absence of such a test, or series of tests, may reduce accountability, the quality and quantity of effort, and the priority assigned to the area.*

What is the Canadian Assessment of Physical Literacy (CAPL) project?
We are currently pilot testing a new, comprehensive tool for Canadian children in grades 4 through 6 (ages 9-13 years) that will allow Canadian education, recreation, sport, and health professionals to better understand the state of physical literacy in Canada.

Children who participate in the CAPL will be asked to participate in activities they are familiar with through their regular physical education activities. Participants will be asked to complete the following assessment modules:

1) ***Physical Fitness Assessment*** – participants will complete activities such as running to assess cardiovascular endurance, squeezing a dynamometer to measure hand grip strength, sit and reach assessment of flexibility, partial curl up assessment of abdominal strength and endurance, push up assessment of upper body strength and endurance, and balance while standing on one leg. Additionally, participants will have their height, weight, and waist circumference measured in a private and confidential manner.
2) ***Motor Skill Assessment*** – participants will complete an obstacle course which includes skills such as jumping, hopping, dodging, kicking, catching, and throwing while running.

3) ***Physical Activity Behaviour Assessment*** – participants will wear a pedometer for seven consecutive days, and will be asked to fill in a log sheet outlining their physical activities for the same week. A pedometer is a small black device that looks similar to a pager (worn at the child's hip) and counts the number of steps the participant takes. It does not measure what the participant does or where they are.
4) ***Knowledge, Awareness and Understanding Assessment*** – participants will complete a short questionnaire that is based on the Ontario Health and Physical Education curriculum for grade 4.

Status: The CAPL has been approved by the Children's Hospital of Eastern Ontario (CHEO) Research Ethics Board (REB), as well as two local school boards. There are currently over 700 children enrolled in this study. This project is currently recruiting participants through schools and community sport/recreation programs. Four background papers have been prepared and submitted from this developmental research, and two are now in press. Many research conference abstracts have been prepared and presented from the work to date.

15. Tackling the childhood obesity epidemic – Starting with MOM

Principal investigator: **Dr. Kristi Adamo**

Funding source: Ministry of Research and Innovation ($190,000 over 5 years)

Childhood obesity (OB), the most common pediatric disorder in the developed world is a costly disease in Ontario. OB is the product of complex interactions; genetic, biological, environmental, behavioral and societal factors. In its simplest form, obesity results when energy intake exceeds energy expenditure. My research will perform randomized control trials to test the ability of structured lifestyle intervention, incorporating activity and nutrition during pregnancy to prevent excessive gestational weight gain in overweight or obese women. We will determine if intervention results in fewer macrosomic infants and pregnancy complications. Successful intervention will benefit Ontario by limiting the future presentation of pediatric obesity and the social and economic burden.

Status: A part time research assistant has been hired to assist with MOM trial, graduate student funding has been postponed (due to Kristi's maternity leave) until 2010 when Ph.D. students will be recruited.

16. Evaluation of the 'Freggie Fridays Program' in Ottawa Schools

Principal investigator: **Dr. Kristi Adamo**
Co-investigators: **G. Goldfield** & **C. Colapinto**

Funding source: Canadian Produce and Marketing Association ($30,000)

The eating habits children learn when they are young will help them maintain a healthy lifestyle when they are adults and the modification of school cultures to encourage healthful eating and reduce consumption of unhealthy foods could provide perpetuity allowing successful interventions

to continue to benefit students year after year. Given the amount of time children and youth spend in school, this environment can significantly influence students' food choices and intakes and thus is an ideal location intervene and target healthy eating.Recognizing that an adequate diet is of profound importance in childhood, the Canadian Produce Marketing Association (CPMA) began introducing the 'Freggie Fridays Program' to interested schools across Canada in 2007. This program has been developed to give educators and students the tools to think creatively about the benefits of healthy eating and to encourage Canadian children to eat their recommended number of fruit and vegetable servings each day as recommended by Health Canada in Eating Well with Canada's Food Guide.

Objectives: This research has two objectives:

1. To test the effectiveness of the CPMA endorsed 'Freggie Fridays Program' to increase the consumption of fruit and vegetables and reduce the consumption of high-density, high sugar based snack foods consumed by children during snack time, recess and lunch time at school.
2. To determine if children's awareness, knowledge, preference, willingness and self-efficacy to increase fruit and vegetable consumption is improved as a result of the 'Freggie Fridays Program.'

Status: Awaiting Ottawa School Board ethics approval and evaluation is set to start in September 2010.

17. Healthy Eating, Aerobic and Resistance Training in Youth (HEARTY)

Principal investigator: Dr. Ron Sigal
Co-Principal investigators: **G. Goldfield,** G. Kenny, **S. Hadjiyannakis**

Funding Source: Canadian Institutes of Health Research ($1,600,000)

Description
Background: Obesity among youth has reached epidemic proportions. Exercise and diet modification can reduce adiposity and the risk of co-morbidities in obese adults and youth, diabetes and other chronic diseases. Obesity can make adherence to aerobic activity difficult but may be less of an obstacle to resistance training, which has shown favourable effects on lean body mass, metabolic rate, insulin resistance and quality of life in adults. Resistance training may offer an effective alternative or adjunct to aerobic training in overweight adolescents, but no randomized controlled trials has yet evaluated resistance exercise in this population.
Objectives: To assess the effects of resistance training, aerobic training, and combined resistance and aerobic training on body composition (DEXA), cardiovascular disease risk markers and psychosocial functioning in overweight adolescents.
Study Design: Randomized controlled trial. In the full trial, after a 4-week supervised low-intensity run-in period, 300 overweight adolescent youth age 14-18 will be randomized to 4 arms: Diet alone (C) or in combination with aerobic exercise (A), resistance exercise (R), or combined aerobic and resistance exercise (A+R). The intervention will last 16 weeks, with a follow-up assessment at immediately and 6 months post-treatment.
Hypothesis: Reductions in percent body fat will be larger in diet + aerobic and diet + resistance exercise than diet only controls at post-treatment, and the combined aerobic and resistance training

will be superior to either aerobic or resistance training alone in reducing percent body fat at post-treatment. The combined resistance and aerobic group will show greater improvements in percent body fat, body composition, and physiological and psychosocial function at post-treatment and 10-months follow-up. Groups that include resistance training will produce greater psychosocial changes and better adherence than aerobic training alone at post-treatment and follow-up.
Significance: More effective intervention in overweight adolescents is needed. This study may identify that resistance training is an important component in the treatment of overweight adolescents. As such, findings may influence clinical decision making in the management of juvenile obesity, as well as inform public health exercise guidelines and school-based physical education curricula in attempt to reduce the economic, medical, and psychosocial burden of obesity on youth.

Status: The final subjects have been randomized. We anticipate the study will be completed by August 2010.

18. A Tertiary Care Approach to the Management of Pediatric Obesity and its Co-morbidities

Principal investigator: **Dr. Stasia Hadjiyannakis**
Co-investigators: **K. Adamo**, **G. Goldfield**, **M. Tremblay**

Funding Source: Academic Health Sciences Centre (AHSC) AFP Innovation Fund ($78,020)

The primary purpose of this study is to evaluate the efficacy of the 2006 Canadian Obesity Clinical Practice Guidelines. Children with obesity related health conditions are seen and evaluated by multiple physicians and their clinics here at CHEO and the complications associated with obesity are assessed and treated. This results in patients and their families having to make multiple visits to the hospital and it creates a heavy load on the health care system. Furthermore, the management of their obesity is not being managed. With a program that follows the Canadian Clinical Practice Guidelines for the Prevention and Management of Obesity, the hope is that the health of the patients would greatly improve and the number of visits to the specialists by each patient would decrease allowing greater and more effective access to care for patients and their families. Children and their families in the intervention group will take part in a structured program that has them meet regularly with a dietitian, exercise specialist and psychologist over a 12-month period. At the end of one year, results of a variety of health measures (resting energy expenditure, body composition, fitness testing, biomarkers, and psychosocial questionnaires) will be compared to those of children in the control group.

Status: Awaiting final Research Ethics Board approval with project to begin immediately thereafter.

19. Canada – Mexico Battling Childhood Obesity (CAMBIO)

Principal investigators: Dr. Ian Janssen and Dr. Juan Lopez Taylor
Co-investigators: P.T. Katzmarzyk, **M.S. Tremblay,** R. Ross, L.Y. Lévesque, E.M. Power, A.B. Guzmán Alatorre, E. Jáuregui Ulloa, A. Lara Esqueda, V. Ortis Lefort, J.A. Rivera Dommarco, A. Salmon, E.M. Vásquez Garibay

Funding Source: Teasdale-Corti Grant Agreement from the International Development Research Centre (IDRC) on behalf of the Global Health Research Initiative ($1,554,400)

Description:

CAMBIO is funded through Queen's University at Kingston, Canada in collaboration with the University of Guadalajara, Mexico. The collaboration began in 2006. Childhood obesity is emerging as a public health crisis in many countries. In industrialized, high income countries, under-nutrition and infectious diseases have been largely replaced by diseases of over-nutrition such as type 2 diabetes, heart disease, and cancers. However, in low and middle income countries such as Mexico, simultaneous under-nutrition and obesity are placing a double burden on public health as the population undergoes rapid economic and social changes, leading to a nutritional transition. The rapid emergence of obesity in developing countries has the potential to replace under-nutrition and infectious disease as the primary health concern in the coming years. The CAMBIO Program is anchored on developing an active collaboration between researchers from Canada and Mexico, as well as partners from government in both countries. The plan of research development is built around four main activities: 1) Development and Delivery of an Annual Obesity Short-Course, 2) Development of Collaborative Program of Research, 3) Student and Faculty Exchanges, and 4) Building Partnerships and Networking. The CAMBIO Program is intended to develop the capacity for a sustainable, on-going multi-disciplinary research program to study childhood obesity and healthy body weights in Mexico. This research will inform the development of intervention programs and healthy public policies to combat the double-edged problem of obesity and under-nutrition in Mexico and in other developing countries beginning to experience similar problems. The long-term goal of the Program is to increase research capacity in Mexico in the field of childhood obesity, within the context of the nutrition transition.

Status: The CAMBIO Research Program is half way through its 5 years of funding. The third annual short course in obesity research was recently completed successfully, several faculty and student exchanges have occurred (including Pilar Rodriguez spending three months with the HALO team) and many subsidiary research projects are underway, including the development of a Mexico Report Card modeled after the Active Healthy Kids Canada Report Card. Many manuscripts are currently being prepared from this research. A formal partnership is also in place linking the CAMBIO and KIDS-CAN research alliances.

20. Canadian Health Measures Survey: Analyses of Healthy Active Living Indicators of Canadians

Principal investigators: **Dr. Mark Tremblay and Dr. Rachel Colley**
Co-investigators: M. Shields, I. Janssen, C.L. Craig, S. Wong, D. Garriguet, M. Laviolette, T. Bushnik, S. Connor Gorber, J. Clarke

Funding Source: Partnership with Statistics Canada

Description: The Canadian Health Measures Survey (CHMS) is the most comprehensive direct health measures survey ever conducted in Canada. It has direct measures of health indicators related to

physical activity, fitness, blood pressure, anthropometry, oral health, chronic disease, infectious disease and environmental exposures on a representative sample of Canadians aged 6-79 years. The data from the first cycle of the CHMS began to be released in early 2010. The HALO team, led by Drs. Tremblay and Colley have developed an analytical plan to prepare several manuscripts based on the CHMS data related to fitness, physical activity, blood pressure, sleep, spirometry and several biospecimen analytes. The results of these analyses will yield unique and impactful evidence to inform future research and policy development in Canada.

Status: The preparation of over 15 manuscripts based on the CHMS data is currently underway. External funding support from the Canadian Institutes of Health Research has been applied for to provide further support for the analyses and for the dissemination of findings.

SUMMARY OF RESEARCH FUNDING, GRANTS AND AWARDS

GRANTS APPLIED FOR IN 2009

Name of the PI(s)	Organization / Agency	Title of Submission	Status
Adamo	Ministry of Research and Innovation	**Tackling the childhood obesity epidemic- starting with MOM** Research – Early Researcher Award program: Funding for graduate students and technicians	Successful 2009-2014
Adamo	Canadian Produce Marketing Association	**Evaluation of the Freggie Fridays Program in Ottawa Schools** Research Trial	Successful 2009-2010
Adamo	Canadian Institutes of Health Research (CIHR)	**Childhood Obesity Development and Progression: prevention from conception** New Investigator – salary award	Pending
Adamo	University of Ottawa Faculty of Health Science / CHEO Research Institute Partnership Grant	**Exploring the role of the insulin-like growth factor axis in overweight/obese women undergoing a lifestyle intervention**	Pending
Adamo	Canadian Institutes of Health Research (CIHR)	**Exploring the role of the insulin-like growth factor axis in overweight/ obese mothers undergoing a lifestyle intervention** Research – start-up grant	Unsuccessful
Adamo	Canadian Institutes of Health Research (CIHR)	**The Maternal Obesity Management (MOM) Trial – A Lifestyle intervention during pregnancy to minimize downstream obesity** Randomized control trial	Unsuccessful
Colley	Children's Hospital of Eastern Ontario Research Institute	**Understanding the roles and interplay of motor skills, fitness and preferences to increase physical activity engagement in overweight and obese children**	Pending

Name of the PI(s)	Organization / Agency	Title of Submission	Status
Colley (Co-PI) Katz (Co-PI)	The Lung Association	**Co-Existent Obstructive Sleep Apnea and Obesity: Finding NEAT Targets for Intervention**	Pending
Colley	University of Ottawa Faculty of Health Science / CHEO Research Institute Partnership Grant	**Validation of a sub-maximal treadmill protocol to measure fitness in overweight and obese children and youth**	Pending
Goldfield	Heart & Stroke Foundation of Canada	**Behavioural Engineering of Obese Children: A Randomized Controlled Trial**	Pending
Goldfield	Canadian Institutes of Health Research (CIHR)	**Effects of smoking during pregnancy on metabolism and adiposity in young children**	Unsuccessful
Sigal (PI), **Goldfield, Hadjiyannakis &** Kenny (Co-PIs)	Canadian Institutes of Health Research (CIHR)	**Healthy Eating, Aerobic and Resistance Training in Youth (HEARTY): A renewal**	Unsuccessful
Hadjiyannakis	AHSC AFP Innovation Fund	**A Tertiary Care Approach to the Management of Pediatric Obesity and its Co-morbidities**	Successful 2009-2010
Lloyd	Canadian Institutes of Health Research Operating Grant (Priority Announcement for New Investigators)	**Creation of a Canadian Assessment of Physical Literacy: Development and Validation**	Successful 2009-2010
Lloyd	CHEO Research Institute Summer Studentship 2009	**Assessment of Physical Literacy: Feasibility and Pilot Study: Summer studentship**	Successful 2009
Lloyd (PI)	Social Sciences and Humanities Research Council of Canada	**Physical Literacy: Influence on Sport Participation in Canadian Children**	Pending
Tremblay (Co-PI) **Lloyd** (Co-PI)	Champlain Cardiovascular Disease Prevention Network	**Canadian Assessment of Physical Literacy** – To conduct pilot testing on the second cycle of the Canadian Assessment of Physical Literacy	Successful 2009-2010

Name of the PI(s)	Organization / Agency	Title of Submission	Status
Tremblay (PI) **Lloyd** (Co-PI)	ParticipACTION	**Canadian Assessment of Physical Literacy** – To conduct pilot testing on the Canadian Assessment of Physical Literacy	Successful 2009-2010
Tremblay (PI) **Lloyd** (Co-PI)	Ontario Ministry of Health Promotion	**Canadian Assessment of Physical Literacy** – pilot testing	Successful 2009
Tremblay (PI) **Lloyd** (Co-PI)	Public Health Agency of Canada	**Canadian Assessment of Physical Literacy – knowledge, awareness and understanding**	Successful 2009
Tremblay	Anonymous Donor CHEO Foundation (matching)	**Healthy Active Living and Obesity Research**	Successful 2009-2012
Tremblay	University of Ottawa	**Visiting Scholar Support for Dr. Vincent Onywera from Kenya**	Successful 2009
Tremblay	CAMBIO – IDRC	**Visiting Fellowship for International Student (Pilar Rodriguez, Mexico)**	Successful 2009
Tremblay	Active Healthy Kids Canada	**2009 Active Healthy Kids Canada Report Card Development and Support**	Successful 2009-2010
Tremblay	The Lawson Foundation The CHEO Foundation	**HALO Junior Research Chairs Program**	Successful 2010-2015
Tremblay (for Travis Saunders)	Canadian Institutes of Health Research (CIHR)	**Doctoral Research Award –** Relationship between sedentary time and metabolic health in children and youth	Successful 2009-2011
Tremblay (PI) O'Connor (Co-PI)	Canadian Institutes of Health Research (CIHR)	**Examining the Folate Status of Canadians**	Pending 2010-2011
Tremblay (Co-PI) **Lloyd** (Co-PI)	Canadian Institutes of Health Research (CIHR)	**Children with and without movement difficulties: A 20-year follow up study of health related fitness and habitual physical activity**	Unsuccessful

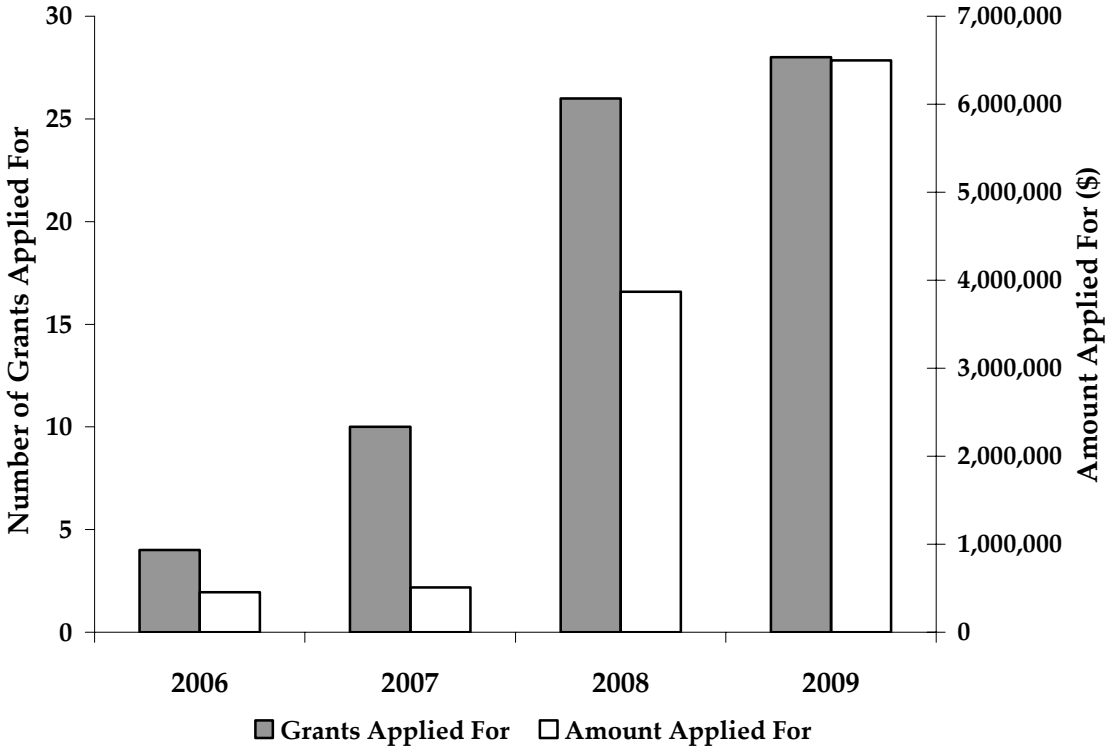

Figure 2. Number of grants applied for and amount of funds applied for as principal or co-principal investigator by HALO Research Group from 2006 to 2009. Between 2006 and 2009, there was a 600% increase in the number of grants applied for and a 1,340% increase in the amount applied for. Between 2008 and 2009, there was an 8% increase in the number of grants applied for and a 69% increase in the amount applied for.

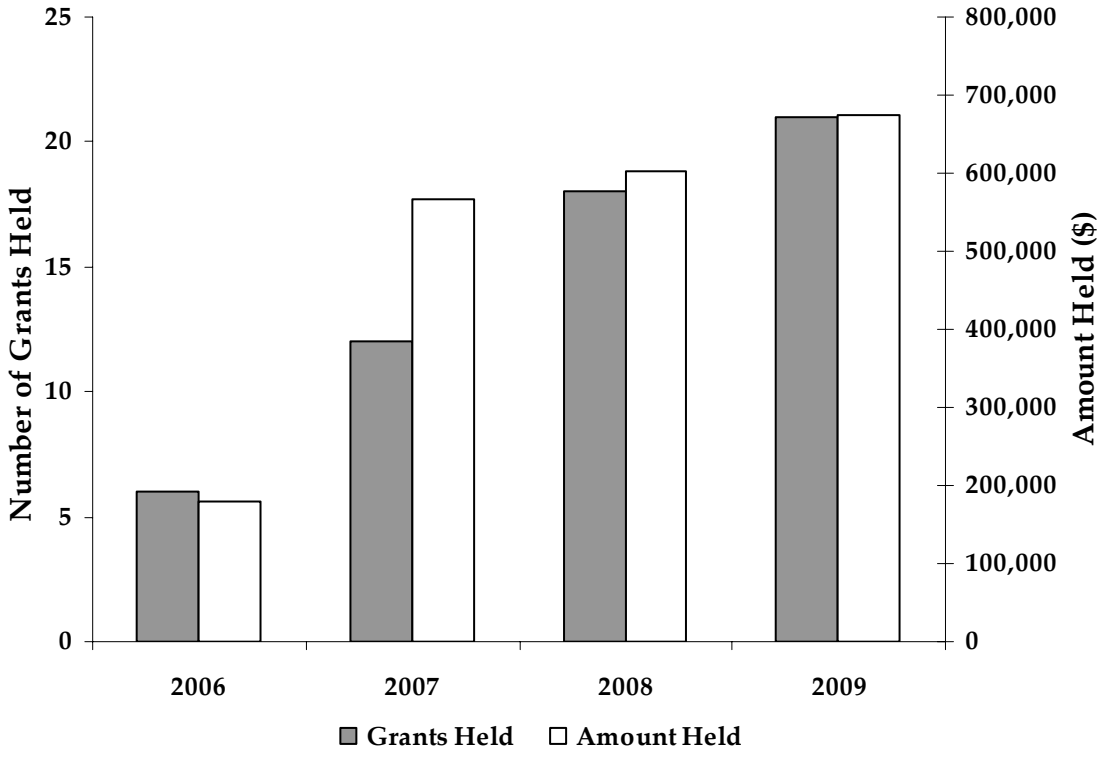

Figure 3. Number of grants held and amount of funds held as principal or co-principal investigator (attributed to 2009) by HALO Research Group from 2006 to 2009. Between 2006 and 2009, there was a 250% increase in the number of grants held and a 275% increase in the amount held. Between 2008 and 2009, there was a 17% increase in the number of grants held and a 12% increase in the amount held.

PEER-REVIEWED, REFEREED PUBLICATIONS

In recognition of all the great work done by all HALO students and staff (some of which may have occurred outside of HALO) this report includes all publications from 2009.

1. **Adamo, K.B.**, **S.A. Prince**, A.C. Tricco, S. Connor Gorber, **M.S. Tremblay**. A comparison of indirect vs. direct measures for assessing physical activity in the pediatric population: a systematic review. **International Journal of Pediatric Obesity** 4:2-27, 2009.

2. Connor Gorber, S., M. Shields, **M.S. Tremblay**, I. McDowell. Correcting self-reported estimates of obesity: can we more closely approximate measured values? **Proceedings of the Statistics Canada International Methodology Symposium 2008 – Data Collection: Challenges, Achievements and New Directions** Statistics Canada, Catalogue no. 11-522-XIE, 2009.

3. Connor Gorber, S., S. Schofield-Hurwitz, J. Hardt, **M.S. Tremblay**, G. Levasseur. The accuracy of self-reported smoking: a systematic review of the relationship between self-reported and cotinine assessed smoking status. **Nicotine and Tobacco Research** 11:12-24, 2009.

4. Cui, W., **K. De Jesus**, H. Zhao, S. Takasawa, B. Shi, C.B. Srikant and J.L. Liu. Overexpression of Reg3α gene increased cell growth and the levels of cyclin D1 and cdk4 in insulinoma cells. **Growth Factors** 27 (3):195-202, 2009.

5. **De Jesus, K.**, X. Wang, J.L. Liu. A general IGF-I overexpression effectively rescued somatic growth and bone deficiency caused by growth hormone receptor knockout in mice. **Growth Factors** 27 (6): 438-47, 2009.

6. Faulkner, G., C. McCloy, R. Plotnikoff, A. Bauman, L. Brawley, K. Chad, L. Gauvin, J. Spence, **M.S. Tremblay**. ParticipACTION: Qualitative assessment of Canadian organization's capacity available to the 'New' ParticipACTION. **International Journal of Behavioral Nutrition and Physical Activity** 6:87, 2009.

7. **Goldfield, G.S.** Predictors of Response to an Intervention Modifying Physical Activity and Sedentary behaviour in Overweight/Obese Children: Attitudes vs. Behaviour. **Journal of Physical Activity & Health**, 6 (4), 463-466, 2009.

8. **Goldfield, G.S.** Body Image, Disordered Eating, and Anabolic steroid use in female bodybuilders. **Eating Disorders: Journal of Treatment and Prevention**, 17 (3), 200-210, 2009.

9. **Goldfield, G.S.** and A. Lumb. Effects of Dietary Restraint and Body Mass Index on the Relative Reinforcing Value of Snack Food. **Eating Disorders: Journal of Treatment and Prevention**, 17 (1): 46-62, 2009.

10. **Goldfield, G.S.**, B. Woodside. (2009). Body Image, Disordered eating, and anabolic steroid use in male bodybuilders: Current vs. Former Users**. The Physician & Sportsmedicine**, 36 (2), 1-4, 2009.

PEER-REVIEWED, REFEREED PUBLICATIONS *(continued)*

11. Kuk, J.L., **T.J. Saunders**, L.E. Davidson and R. Ross. Age-related Changes in Total and Regional Fat Distribution. **Ageing Research Reviews**, 8 (4): 339-348, 2009.

12. Plotnikoff, R.C., I. Todosijczuk, G. Faulkner, M.A. Pickering, S. Cragg, K. Chad, J.C. Spence, **M.S. Tremblay**, C.L. Craig, A. Bauman, L. Brawley, L. Gauvin. ParticipACTION: Baseline assessment of the 'New' ParticipACTION: A quantitative survey of Canadian organizational awareness and capacity. **International Journal of Behavioral Nutrition and Physical Activity** 6:86, 2009.

13. **Prince, S.A.** A population health approach to obesity in Canada – Putting the problem back into context. **Transdisciplinary Studies in Population Health Series**, 1 (1):22- 33, 2009.

14. **Saunders, T.J.**, L.E. Davidson, P.M. Janiszewski, J-P Despres, R. Hudson and R. Ross. Associations of the limb fat to trunk fat ratio with markers of cardiometabolic risk in elderly men and women. **Journals of Gerontology Series: Medical Sciences**, 64A (10): 1066-1070, 2009.

15. Shields, M., S. Connor Gorber, **M.S. Tremblay**. Methodological issues in anthropometry: self-reported versus measured height and weight. **Proceedings of the Statistics Canada International Methodology Symposium 2008 – Data Collection: Challenges, Achievements and New Directions.** Statistics Canada, Catalogue no. 11-522-XIE, 2009.

16. Spence, J.C., L.R. Brawley, C.L. Craig, R.C. Plotnikoff, **M.S. Tremblay**, A. Bauman, G. Faulkner, K. Chad, M.I. Clark. ParticipACTION: Awareness of the ParticipACTION campaign among Canadian adults: testing the knowledge gap hypothesis. **International Journal of Behavioral Nutrition and Physical Activity** 6:85, 2009.

17. Teng, ACT, **K.B. Adamo**, F. Tesson, AFR Stewart. Functional characterization of a promoter polymorphism that drives ACSL5 gene expression in skeletal muscle and associates with diet-induced weight loss. **The FASEB Journal**, 23 (6):1705-9: 2009.

18. **Tremblay, M.S.** and C.L. Craig. ParticipACTION: Overview and Introduction of Baseline Research on the 'New' ParticipACTION. **International Journal of Behavioral Nutrition and Physical Activity** 6:84, 2009.

19. **Tremblay, M.S.** and M. Shields. Applying the New WHO Child Growth Standards in Canada: What is our Prevalence of Obesity? **Children and Exercise XXIV: Proceedings of the 24th Pediatric Work Physiology Meeting**, Routledge, U.K., p. 119-122, 2009.

20. **Tremblay, M.S.** Initiatives Related to Childhood Obesity and Inactivity in Canada: Year 2007 in Review. **Children and Exercise XXIV: Proceedings of the 24th Pediatric Work Physiology Meeting,** Routledge, U.K., p. 111-114, 2009.

PEER-REVIEWED, REFEREED PUBLICATIONS *(continued)*

21. **Tremblay, M.S.**, M. Brownrigg, R. Deans. Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth. **Children and Exercise XXIV: Proceedings of the 24th Pediatric Work Physiology Meeting**, Routledge, U.K., p. 115-118, 2009.

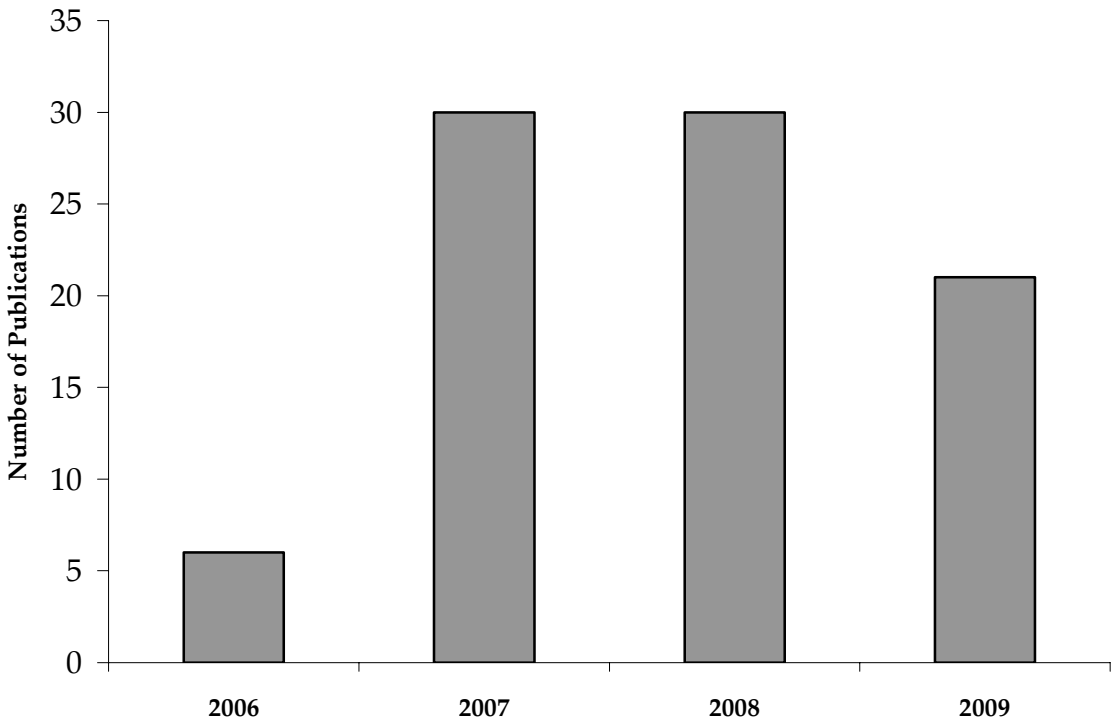

Figure 4. Number of peer-reviewed, refereed publications by HALO Research Group from 2006 to 2009. Between 2006 and 2009 there was a 350% increase in number of publications; between 2008 and 2009, there was a 30% decrease.

NON-PEER-REVIEWED PUBLICATIONS

1. **Colley, R.C. and the HALO Team**. Active Healthy Kids Canada. Active Kids are Fit to Learn – Canada's Report Card on Physical Activity for Children & Youth. Toronto: **Active Healthy Kids Canada,** 2009.

2. **Tremblay, M.S.** Suggestions for Updating the UK Physical Activity Guidelines for Young People Based on the Current Scientific Evidence Base. Report submitted to the U.K. Physical Activity Guidelines Coordinating Group (25 pages), 2009.

PUBLISHED ABSTRACTS

In recognition of all the great work done by all HALO students and staff (some of which may have occurred outside of HALO) this report includes all abstracts from 2009.

1. **Adamo, K.B.**, A.W. Sheel, **V. Onywera**, J. Waudo, M. Boit, **W.-M. Wong**, **M.S. Tremblay**. Is there evidence for the nutrition and physical activity transition in Kenya? A KIDS-CAN Research Alliance pilot study. **Applied Physiology, Nutrition and Metabolism** 34:267-268, 2009.

2. **Colley, R.C.**, M. Brownrigg, **M.S. Tremblay**. Canada's 2009 Report Card on Physical Activity for Children and Youth. **Proceedings of the European Pediatric Work Physiology Symposium**, 2009.

3. **Colley, R.C.**, M. Brownrigg, **M.S. Tremblay**. Synthesizing multiple data sources to assess progress in physical activity levels and translating this knowledge to policy makers: Canada's Report Card on Physical Activity for Children and Youth**. Proceedings of the International Conference on Diet and Activity Methods**, 2009.

4. **De Jesus, K.**, J.L. Liu. A general IGF-I overexpression effectively rescued somatic growth and bone deficiency caused by growth hormone receptor knockout in mice. **Proceedings of the Endocrine Society**, 2009.

5. **Ferraro, Z., J. Rutherford**, E.J. Keely, L. Dubois, and **K.B. Adamo**. Prenatal Lifestyle Intervention – Are women willing to participate? **Applied Physiology, Nutrition and Metabolism** 34: 2009.

6. **Ferraro, Z.**, D. Prud'homme, **K.B. Adamo**. Exploring maternal obesity and the intrauterine environment- Can attenuation of gestational weight gain through a lifestyle intervention reverse the programming of pediatric obesity? **Applied Physiology, Nutrition and Metabolism** 34: 2009.

7. Giguere, I., **K.B. Adamo**, I. Strychar, S. Yasari, E. Doucet, and D. Prud'homme. Influence of gestational weight gain on body composition in pre-menopausal women. A MONET Study**. Proceedings of the European Congress of Obesity**, 2009.

8. **Larouche, R.**, R.J. Shephard, F. Lavoie, L. Laurencelle, G. Murray, and F. Trudeau. Impact of life events on the level of physical activity from childhood to adulthood. 2009 CSEP Annual Scientific Conference. **Applied Physiology, Nutrition and Metabolism**, 34 (Suppl. 1), S54, 2009.

9. **Onywera, V.**, M. Boit, J. Waudo, **M.S. Tremblay**, **K. Adamo,** W. Wong, A.W. Sheel. Childhood obesity and physical inactivity threat in Kenyan: The time for action is now! **Proceedings of the International Conference on Urban Health**, Nairobi, Kenya 2009.

10. **Saunders, T.J.**, A. Palombella, K.A. McGuire, P.M. Janiszewski, and R. Ross. Temporal changes in plasma triglyceride levels following acute exercise in abdominally obese men: effect of exercise intensity. **Applied Physiology, Nutrition, and Metabolism**, 34: S82, 2009.

PUBLISHED ABSTRACTS *(continued)*

11. Spence, J.C., L. Brawley, C.L. Craig, R.C. Plotnikoff, **M. Tremblay**, A. Bauman, G. Faulkner, K. Chad, and M.I. Clark. Education, motivation and the knowledge gap: Effects of a campaign to promote physical activity. **Psychology and Health** 34 (Suppl. 1): 373, 2009.

12. **Tremblay, M.S., K.B. Adamo**, **V.O. Onywera**, A.W. Sheel, M. Boit, J. Waudo, W-M Wong. Fitness Levels of Urban and Rural Kenyan Children: Emerging Evidence of the 'Physical Activity Transition?' **Proceedings of the European Pediatric Work Physiology Symposium**, 2009.

13. Wong, S.L., **R.C. Colley**, S. Connor Gorber, **M.S. Tremblay**. Development of a threshold to classify sedentary behaviour using the Actical accelerometer. **Proceedings of the International Conference on Diet and Activity Methods**, 2009.

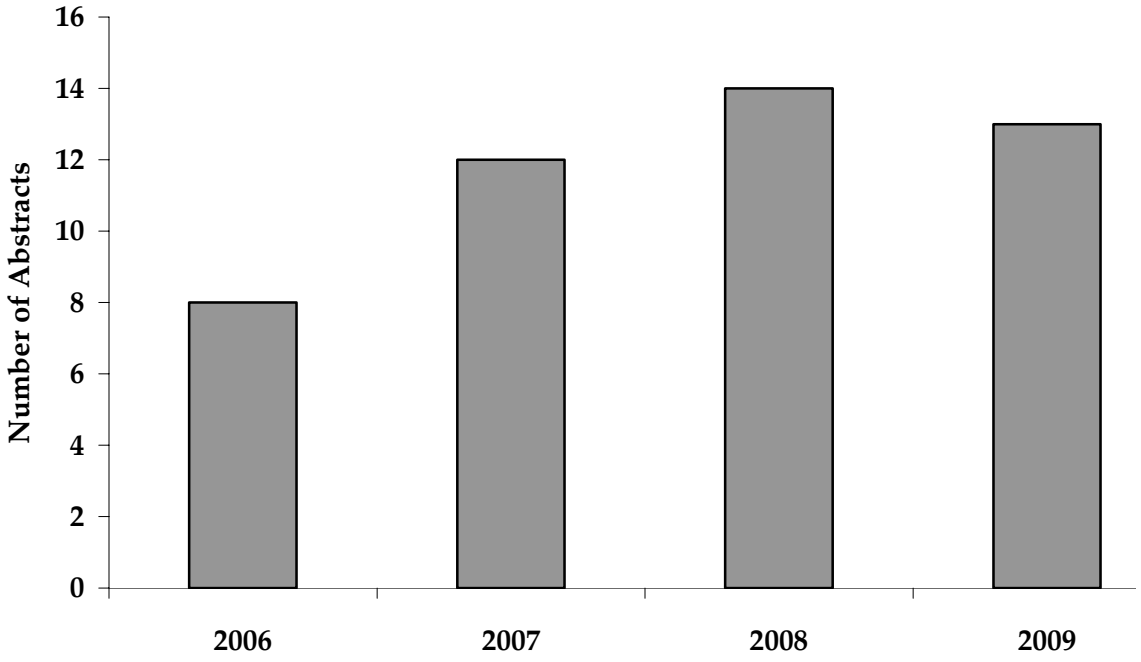

Figure 5. Number of published abstracts by HALO Research Group from 2006 to 2009. Between 2006 and 2009 there was a 62% increase in the number of published abstracts; between 2008 and 2009, there was a 7% decrease.

CONFERENCE AND INVITED PRESENTATIONS

In recognition of all the great work done by all HALO students and staff (some of which may have occurred outside of HALO) this report includes all conference and invited presentations from 2009.

1. **Adamo, K.B.** CHEO's Healthy Active Living and Obesity Research Group - research opportunities. Invited presentation at **University of Ottawa Research in Action – HK symposium** (Ottawa), 2009.

2. **Adamo, K.B.** Childhood Obesity: How bad? Why? What can we do? Invited presentation at **Academy of Medicine – Annual Clinical Day** (Ottawa), 2009.

3. **Adamo, K.B.** Childhood Obesity and the Nutrition/Physical Activity Transition. Invited keynote address at **Best Start Resource Centre Conference session: Promotion of Healthy Weights in the Early Years** (Toronto), 2009.

4. **Adamo, K.B.** Reorient Health Services: Ottawa Charter for Health Promotion. Invited presentation at **Best Start Resource Centre Conference** (Toronto), 2009.

5. **Adamo, K.B.** Is Interactive Video Game Cycling Better than Music to Increase Exercise and Aerobic Fitness in Obese Adolescents? Invited Pediatric Grand Rounds at the **Children's Hospital of Eastern Ontario** (Ottawa), 2009.

6. **Adamo, K.B., J.A. Rutherford, G.S. Goldfield**. Is Interactive Video Game Cycling Better than Music to Increase Exercise and Aerobic Fitness in Obese Adolescents? Presentation at the **2nd Annual CHEO Clinical Research Day** (Ottawa), 2009.

7. **Adamo, K.B.** KIDS-CAN: The Nutrition/Physical Activity Transition. Invited presentation to the **Society of Clinical Research Associates** (Ottawa), 2009.

8. **Adamo, K.B.**, A.W. Sheel, **V. Onywera**, J. Waudo, M. Boit, **W-M Wong**, **M.S. Tremblay**. Is there evidence for the Nutrition/Physical Activity Transition in Kenya? A KIDS-CAN Research Alliance- pilot study. Presentation at the **Annual CHEO Clinical Research Day** (Ottawa), 2009.

9. **Adamo, K.B.**, A.W. Sheel, **V. Onywera**, J. Waudo, M. Boit, **W-M. Wong**, **M.S. Tremblay**. Is There Evidence for the Nutrition / Physical Activity Transition in Kenya? A KIDS-CAN Research Alliance Pilot Study. Presentation at the first **Canadian National Obesity Summit** (Kananaskis), 2009.

10. Angulo-Barroso, R., L-C Chen, C. Tiernan, **M. Lloyd**, and D. Ulrich. Effects of treadmill training on physical activity in infants at risk for neuromotor delay. **4th International State-of-the-art Congress of Rehabilitation: Mobility, Exercise, and Sport** (Amsterdam), 2009.

11. **Colley, R.C.** Pediatric Obesity – Is it time to consider NEAT strategies for intervention? **34th Annual Pediatric Obesity Refresher Course** (Ottawa), 2009.

CONFERENCE AND INVITED PRESENTATIONS *(continued)*

12. **Colley, R.C.** Development of a threshold to classify sedentary behaviour using the Actical accelerometer. **International Conference on Diet and Activity Methods** (Washington, D.C.), 2009.

13. **Colley, R.C.** Promoting healthy lifestyle in obese individuals – One approach does not fit all. **National Eating Disorder Information Centre Conference – Body Image and Self-Esteem: Shades of Grey** (Toronto), 2009.

14. **Colley, R.C.** Targeting childhood obesity through a family-centered approach. **Champlain Diabetes Network Meeting** (Ottawa), 2009.

15. **Colley, R.C.** Tackling childhood obesity: What can young investigators bring to the table? **Canadian Obesity Network Student Network Meeting** (Ottawa), 2009.

16. **Colley, R.C.**, M. Brownrigg, **M.S. Tremblay**. Canada's 2009 Report Card on Physical Activity for Children and Youth. Presentation at the **European Pediatric Work Physiology Meeting** (Le Touquet, France), 2009.

17. **Goldfield, G.S.**, S. Leclair, A. Byrne. Using the Internet to deliver Interventions: Strengths and Challenges. Oral session presented at the **70th Annual Canadian Psychological Association Conference, Montreal** (Quebec), 2009.

18. **Goldfield, G.S.**, E.M. Hill, A. Kukaswadia, A. Buchholz, K. Henderson, B. Virley, M.F. Flament. Parent weight teasing as a moderator in the relationship between "internalization of the ideal body figure" and restrained eating among adolescents: A cross-gender analysis. Paper presented at the **Royal Ottawa Hospital/University of Ottawa Academic and Research Day** (Ottawa), 2009.

19. **Goldfield, G.S.** Behavioural Engineering of Physical Activity in Obese Children, **Pediatric Grand Rounds**, Children's Hospital of Eastern Ontario (Ottawa), 2009.

20. **Goldfield, G.S.**, C. Moore, K. Henderson, A. Buchholz, N. Obeid and M. Flament. The relationship between weight-based teasing and psychological adjustment in adolescents. Poster presented at the **2nd Annual Clinical Research Day of the Children's Hospital of Eastern Ontario** (Ottawa), 2009.

21. **Goldfield, G.S.**, H.A. Raynor, E.V. Walleghen, K. Osterholt, C. Hart, E. Jelalian, R. Wing. The influence of child food liking, parent food liking, and parent dietary intake on overweight children's dietary intake. Paper presented at the **Society of Obesity Conference** (Washington, DC), October 2009.

22. **Hadjiyannakis, S.** Strategies for Dealing with Metabolic Syndrome and Type 2 Diabetes in Children. **5th Annual Update in Endocrinology and Diabetes** (Ottawa), 2009.

CONFERENCE AND INVITED PRESENTATIONS *(continued)*

23. **Hadjiyannakis, S.** Big Kids, Big Problems: Childhood Obesity. **5th Annual Update in Endocrinology and Diabetes** (Ottawa), 2009.

24. **Hadjiyannakis, S.** Insulin Pump Therapy – Is it Right for You? **Pump Information Evening, Children's Hospital of Eastern Ontario** (Ottawa), 2009.

25. **Hadjiyannakis, S.** Approach to Lipid Disorders in Pediatrics. **Pediatric Grand Rounds, Children's Hospital of Eastern Ontario Research Institute** (Ottawa), 2009.

26. **Hadjiyannakis, S.** Healthy Lifestyles for Children, Youth and their Families. **First Nation, Metis & Inuit Diabetes Network Day** (Ottawa), 2009.

27. **Hadjiyannakis, S.** Targeting Childhood Obesity Through a Family-Centered Approach. **Champlain Diabetes Network Meeting** (Ottawa), 2009.

28. Kukaswadia, A., E. Hill, A. Bucholz, K. Henderson, **G. Goldfield**, B. Virley, F. Flament. The Prevalence of Eating Disorder Symptoms among Competitive Youth Athletes Contrasted with Non-competitive Peers. **Royal Ottawa Hospital/University of Ottawa Academic & Research Day** (Ottawa), 2009.

29. **Larouche, R.** Le transport actif : revue de la littérature et situation sur le campus de l'UQTR et dans les environs. **Comité citoyen pour les transports durables de Trois-Rivières**, 2009.

30. **Larouche, R.,** F. Lavoie, L. Laurencelle, G. Murray & F. Trudeau. Impact d'un programme d'éducation physique enrichi sur l'évolution de la pratique d'activités physiques et sportives de l'enfance à l'âge adulte. **77th ACFAS Congress** (Ottawa), 2009.

31. **Lloyd, M.** Obesity interventions: applicable to individuals with intellectual disabilities? **International Association for the Scientific Study of Intellectual Disabilities Roundtable: International Collaboration to Improve the Health of Individuals with Intellectual Disabilities** (ICID) (Kingston), 2009.

32. **Lloyd, M.** Motor development and physical activity in infants and young children with Down syndrome. **Down Syndrome Association: National Capital Region** (Ottawa), 2009.

33. **Lloyd, M.** Canadian Assessment of Physical Literacy: Cycle 1. **Quality Daily Physical Education Conference** (Gananoque), 2009.

34. **Lloyd, M.** Canadian Assessment of Physical Literacy: Methods and procedures. **Quality Daily Physical Education Conference** (Gananoque), 2009.

35. **Lloyd, M.** Motor development and physical activity in infants and young children with Down syndrome. **Research Rounds, The Children's Hospital of Eastern Ontario Research Institute** (Ottawa), 2009.

CONFERENCE AND INVITED PRESENTATIONS *(continued)*

36. **Lloyd, M.** Helping infants with Down syndrome learn how to walk: Recent advances in research. **The Ottawa Children's Treatment Centre (CHEO)** (Ottawa), 2009.

37. **Lloyd, M.** Assessment of Physical Literacy: Feasibility and Pilot Study. **Research in Progress Rounds, Children's Hospital of Eastern Ontario Research Institute** (Ottawa), 2009.

38. **Lloyd, M.** Helping infants with Down syndrome learn how to walk: Recent advances in research. **The Ottawa Children's Treatment Centre** (Ottawa), 2009.

39. **Lloyd, M., K. Heffernan, M. Tremblay**. Introducing the Canadian Assessment of Physical Literacy. **Children's Hospital of Eastern Ontario – Clinical Research Day** (Ottawa), 2009.

40. **Lloyd, M.** and D.A. Ulrich. Onset of walking predicts preschool physical activity levels in children with and without Down syndrome. **The International Symposium of Adapted Physical Activity** (Gavle, Sweden)**,** 2009.

41. **Lloyd, M.** and **M. Tremblay**. Use of the WHO-ICF model to create a Canadian assessment of physical literacy. **The International Symposium of Adapted Physical Activity** (Gavle, Sweden), 2009.

42. **Lloyd, M., M. Tremblay**, and C. Higgs. What is physical literacy? How do you measure it? Why does it matter? **Physical and Health Education Conference: Moving Mountains** (Banff), 2009.

43. Murray, M., E. Hill, A. Kukaswadia, A. Bucholz, K. Henderson, **G. Goldfield**, F. Flament. Body Mass Index and Age as Predictors of Sociocultural Attitudes about Thinness Among Female Adolescents. **Royal Ottawa Hospital Academic & Research Day 2009**, (Ottawa), 2009.

44. Nadeau, C., G. Rowe, R. Wall, **M. Tremblay**, D. Manuel, D. Garriguet, W.M. Flanagan, J. Oderkirk, S. Gribble, J. Wadell-Trumble. Modeling and microsimulation of obesity and physical activity in Canada. Presentation at the **International Microsimulation Association Conference** (Ottawa), 2009.

45. **Onywera, V.**, M. Boit, J. Waudo, **M.S. Tremblay**, **K. Adamo, W. Wong**, A.W. Sheel. Childhood obesity and physical inactivity threat in Kenyan: The time for action is now! Presentation at the **International Congress on Urban Health** (Nairobi, Kenya), 2009.

46. **Prince Ware, S.**, E.A. Kristjansson, K. Russell, A. Ali, D. Prud'homme, **M.S. Tremblay**, M. Sawada. Built and Social Environmental Determinants of Adult Physical Activity, Overweight and Obesity in City of Ottawa Neighborhoods. Presentation at the **Canadian Society of Epidemiology and Biostatistics Student Conference** (Ottawa), 2009.

47. Quinney, A., **M.S. Tremblay**, M. Brownrigg. Canada's Report Card on Physical Activity for Children and Youth. Presentation at the **Australian National Physical Activity Conference** (Brisbane), 2009.

CONFERENCE AND INVITED PRESENTATIONS *(continued)*

48. **Saunders, T.J.**, A. Palombella, K.A. McGuire, P.M. Janiszewski, and R. Ross. Temporal changes in plasma triglyceride levels following acute exercise in abdominally obese men: effect of exercise intensity. **Canadian Society for Exercise Physiology, Annual Scientific Conference** (Vancouver), 2009.

49. Spence, J.C., L. Brawley, C.L. Craig, R.C. Plotnikoff, **M. Tremblay**, A. Bauman, G. Faulkner, K. Chad, & M.I. Clark (September 2009). Education, motivation and the knowledge gap: Effects of a campaign to promote physical activity. Presentation at the **European Health Psychology Conference** (Pisa, Italy), 2009.

50. Stephens, S., T. Takken, J. , **M. Tremblay**, D. Esliger, Schneiderman, D. Bigger, B. Banwell, P. Longmuir, V. Wright, B. McCrindle, A. Coates, M. Hendricks, J. Beyene, A. Abad, P. Govan, D. Ingas, A. Balemans, D. Cooper, J. van der Net, B.M. Feldman. Validation of Accelerometry as a Measure of Physical Activity and Inactivity in Children with Chronic Disease: Preliminary Results. Presentation at the **European Pediatric Work Physiology Meeting** (Le Touquet, France), 2009.

51. Takken, T., A. Balemans, S. Stephens, M. Hendricks, J. Van Der Net, **M. Tremblay**, D. Esliger, J. Schneiderman, A. Coates, B. McCrindle, P. Longmuir, V. Wright, D. Biggar, J. de Koning, B. Banwell, J. Beyene, A. Abad, P. Govan, D. Cooper, B.M. Feldman. Calibration of the Actiheart accelerometer for the prediction of activity energy expenditure in children with chronic disease. Presentation at the **European Pediatric Work Physiology Meeting** (Le Touquet, France), 2009.

52. **Tremblay, M.** and **M. Lloyd.** Introducing the Canadian Assessment of Physical Literacy. **European Paediatric Work Physiology Congress** (Le Touquet, France), 2009.

53. **Tremblay, M.S.** Childhood obesity in Canada: Societal and policy level initiatives and future directions. Invited presentation to **University of Ottawa Medical Students** (Ottawa), 2009.

54. **Tremblay, M.S.** Building Capacity in East Africa to Curb the Impending Physical Activity Transition: The KIDS-CAN Research Alliance. Invited presentation at the **International Conference on Child Rights** (Ottawa), 2009.

55. **Tremblay, M.S.** Canada's Physical Activity Guidelines: An Update. Invited keynote presentation at the **Canadian Society for Exercise Physiology Annual Scientific Conference** (Vancouver), 2009.

56. **Tremblay, M.S.** Changing Perspectives on Sedentarism. Invited presentation to the **Ontario Society for Health and Fitness Professional Development Day** (Toronto), 2009.

57. **Tremblay, M.S.** Changing Perspectives on Sedentarism. Presentation to **University of Guelph Bachelor of Applied Science in Kinesiology** students (Toronto), 2009.

CONFERENCE AND INVITED PRESENTATIONS *(continued)*

58. **Tremblay, M.S.**, S. Biddle, J. Reilly, C. Riddoch, F. Bull. Updating U.K. Physical Activity Guideline for Children and Young People: Recommendations Based on Current Scientific Evidence. Invited presentation at the **U.K. Physical Activity Guidelines Consensus Conference** (Marlow, U.K.), 2009.

59. **Tremblay, M.S.**, **K. Adamo, V. Onywera**, A.W. Sheel, M. Boit, J. Waudo, **W. Wong**. Fitness Levels of Urban vs Rural Kenyan Children: Emerging Evidence of the 'Physical Activity Transition'? Presentation at the **European Pediatric Work Physiology Meeting** (Le Touquet, France), 2009.

60. **Tremblay, M.S.** The Emerging Field of Sedentary Physiology: Implications and Opportunities. Invited presentation at the **McMaster University Department of Kinesiology Research Seminar Series** (Hamilton), 2009.

61. **Tremblay, M.S.** 2009 Saskatchewan Supplement to the Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth. Invited presentation at the **Saskatchewan in *motion* Report Card Partnership Workshop** (Regina), 2009.

62. **Tremblay, M.S.** Obesity: Definition, Prevalence, Cost. Invited presentation at the **Canadian Obesity Network Obesity Summer Boot Camp** (Quebec City), 2009.

63. **Colley, R.C.**, **M.S. Tremblay**, M. Brownrigg. Synthesizing multiple data sources to assess progress in physical activity levels and translating this knowledge to policy makers: Canada's Report Card on Physical Activity for Children and Youth. Presentation at the **International Conference on Dietary and Activity Methods** (Washington, D.C.), 2009.

64. **Tremblay, M.S.** Automation, Mechanization, Digitization: Contemporary Role Reversal of Physical Activity and Sedentarism. Invited presentation at the **Wellcome Trust Frontiers Meeting on Environmental and Behavioural Determinants of Childhood Obesity** (Hinxton, England), 2009.

65. **Tremblay, M.S**. The Role of Physical Activity and Practical Tips for Physical Activity Intervention. Invited presentation at the **Canadian Obesity Network *Management of Obesity in Primary Care Workshop*** (Kananaskis), 2009.

66. **Tremblay, M.S**. Physical Literacy Panel Discussion. Presentation at the **75th Annual Physical and Health Education Canada Conference** (Banff), 2009.

67. **Tremblay, M.S**. Literacy: Why does it matter? Presentation at the **75th Annual Physical and Health Education Canada Conference** (Banff), 2009.

68. **Tremblay, M.S**. 2009 Active Healthy Kids Canada Report Card Preview. Invited presentation at the **Annual Meeting of the Joint Consortium for School Health** (Banff), 2009.

CONFERENCE AND INVITED PRESENTATIONS *(continued)*

69. **Tremblay, M.S**. Physical Activity for the Promotion of Healthy Body Weight: beyond exercise. Invited presentation at the **University of Alberta "Obesity: Why the Weight?" Symposium** (Edmonton), 2009.

70. **Tremblay, M.S**. Obesity Debate: Nature vs Nurture – thinking outside the gene. Invited presenter of the nurture side of the debate against Dr. Robert Lustig at the **Canadian Pediatric Endocrinology Group Annual Scientific Meeting** (Ottawa), 2009.

71. **Tremblay, M.S**. Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth. Invited keynote presentation at the **Coalitions Linking Action and Science for Prevention (CLASP) Social Behavioural Consultation Workshop** (Toronto), 2009.

72. **Tremblay, M.S**. Making the Truth or Masking the Truth: Measure, and Measure Carefully. Invited presentation at the **Queen's University Lunch and Learn Lecture Series** (Kingston), 2009.

73. **Tremblay, M.S**. Thinking Outside the Gland: Putative Contributors to Obesity, Inactivity and Metabolic Co-morbidities. Invited presentation at **Endocrinology and Metabolism Grand Rounds, Ottawa Hospital** (Ottawa), 2009.

74. **Tremblay, M.S**. Designing and Planning Large Scale Surveys. Invited presentation at the **CAMBIO 2nd Annual Course in Childhood Obesity** (Cuernavaca, Mexico), 2009.

75. Wong, S.L., **R.C. Colley**, S. Connor Gorber, **M.S. Tremblay**. Development of a threshold to classify sedentary behaviour using the Actical accelerometer. Presentation at the **International Conference on Dietary and Activity Methods** (Washington, D.C.), 2009.

CONFERENCE AND INVITED PRESENTATIONS *(continued)*

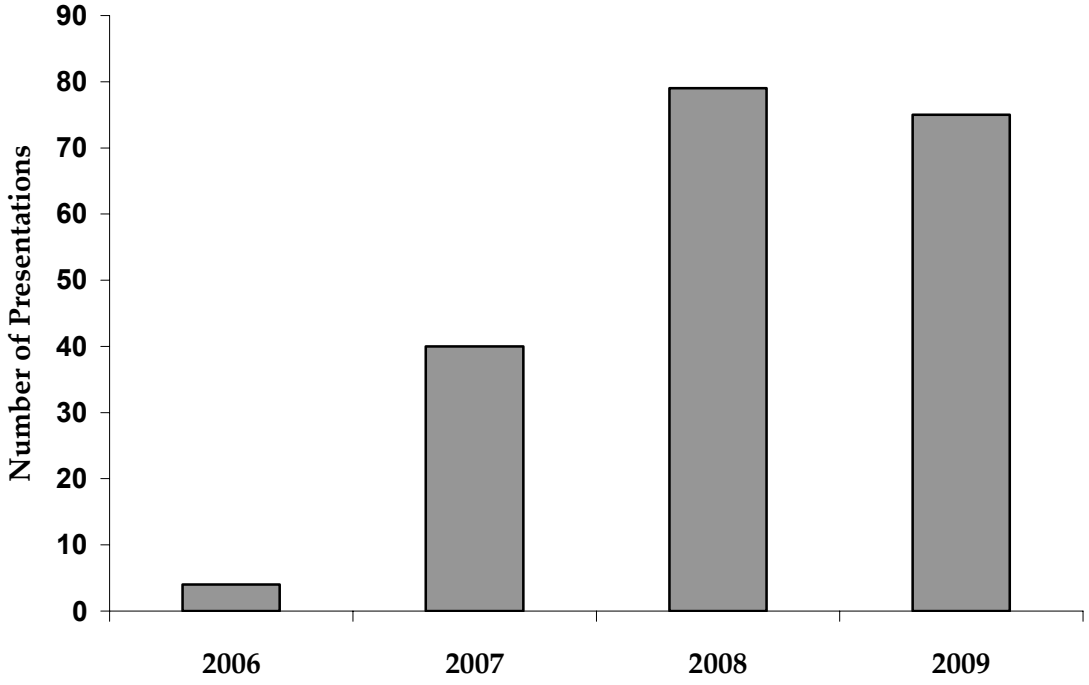

Figure 6. Number of scholarly presentations by HALO Research Group from 2006 to 2009. Between 2006 and 2009 there was a 1,900% increase in the number of scholarly presentations; between 2008 and 2009 there was a 4% decrease.

In addition to the above conference and research presentations, the HALO Research Group arranged and sponsored the following CHEO Research Rounds speakers for 2009:

- **Dr. Tim Takken** (Utrecht, The Netherlands) – Role of the Pediatric Exercise Physiologist in the Clinic: from Bench to Bedside
- **Dr. William Harvey** (McGill University, Montreal) – Running Before We Learn to Crawl? Finding the Physical Activity for Children with Attention-Deficit Hyperactivity Disorder
- **Dr. Geoff Ball** (University of Alberta, Edmonton) – Optimizing Weight Management Care for Overweight Children and Their Families
- **Dr. William (Bill) Sheel** (University of British Columbia, Vancouver) – The Pulmonary Physiology of Exercise in the Forgotten Sex

RESEARCH, CLINICAL, PROFESSIONAL AND SCHOLARLY SERVICE

Dr. Kristi Adamo

- Grant Reviewer for CFI/Alberta Heritage Foundation
- Grant Reviewer- Physicians Services Incorporated
- Champlain Cardiovascular Disease Prevention Network: Champlain Healthy School Age Children Initiative Committee Member
- Member of the Obesity Research Clinical Alliance
- Member – Canadian Obesity Network; and Ottawa Chapter Faculty Advisor
- Member – Canadian Society for Exercise Physiology and Certified Exercise Physiologist
- Member – The Obesity Society (NAASO)
- Journal Reviewer for:
  - *Medicine and Science in Sports and Exercise*
  - *Journal of School Health*
  - *Pediatrics*
  - *Journal of Pediatrics*

Dr. Rachel Colley

- Panel Member (2008-2009) – Monitoring, Surveillance and Evaluation Expert Panel for the Champlain Cardiovascular Disease Prevention Network (CCPN)
- Scientific Committee Member (2008-2009) – The Canadian Assessment of Physical Literacy
- Champlain Diabetes Strategy Team (Member, 2009-2010)
- 3rd Conference on Recent Advances in the Prevention and Treatment of Childhood and Adolescent Obesity (Planning Committee, 2009)
- PRATC Steering Committee (Obesity Clinical Program at CHEO) (Member, 2009)
- University of Ottawa Medical School – Obesity Education Committee
- *Medicine and Science in Sports and Exercise* (Reviewer)
- *Canadian Medical Association Journal* (Reviewer)
- *Applied Physiology, Nutrition & Metabolism* Journal (Reviewer)
- *Research Quarterly in Exercise Science* (Reviewer)
- *Journal of Sport Sciences* (Reviewer)
- Nova Scotia Health Research Foundation (Grant Reviewer)

Dr. Gary Goldfield

- Reviewer for Canadian Institutes of Health Research (1 grant)
- Reviewer for Social Science and Humanities Research Council of Canada (1 grant)
- Reviewer for Alberta Heritage Foundation for Medical Research – Population Health Investigator Review Committee
- Reviewer for *Canadian Medical Association Journal* (1 paper)
- Reviewer for *Pediatrics* (1 paper)
- Reviewer for *Obesity* (1 paper)
- Reviewer for *International Journal of Obesity* (2 papers)
- Perceptual Motor Skills (1 paper)
- Reviewer for *Applied Physiology, Nutrition and Metabolism* (1 paper)

RESEARCH, CLINICAL, PROFESSIONAL AND SCHOLARLY SERVICE *(continued)*

Dr. Gary Goldfield *(continued)*

- Reviewer for Child & Adolescent Psychopharmacology (1 paper)
- Reviewer for BioMed Central (1 paper)
- Reviewer for CHEO Research Institute Science Sub-Committee (1 grant)
- Ministry of Research and Innovation YSTOP – Youth Science and Technology Outreach Program
- Member of the Steering Committee for the multidisciplinary Child Obesity Clinic at CHEO
- Travis Saunders – Ph.D. Candidate, School of Human Kinetics Advisory Committee
- Clinical psychologist – Private practice in the Ottawa community
- Consulted with Active Healthy Kids Canada for the 2009 Report Card – focusing on the physical activity and mental health

Dr. Meghann Lloyd

- Co-taught APA6908 Examination of Biophysical Literature – Psycho-motor section, University of Ottawa, School of Human Kinetics (*Graduate level course*)
- Reviewer for *Adapted Physical Activity Quarterly* (1 paper)
- Consulted with Active Healthy Kids Canada for the 2009 Report Card – focusing on the physical activity of children with disabilities
- Sat on advisory board for PHE Canada to advise on the development of resources for teachers teaching children with physical disabilities
- Coaches Special Olympics Soccer in Ottawa and volunteered at the regional science fair

Dr. Stasia Hadjiyannakis

- *Canadian Diabetes* Peer Review
- *Obesity* Peer Review
- *CIHR* Peer Review
- *Pediatrics and Child Health* Peer Review
- Member of Obesity Research Clinical Alliance
- Canadian Obesity Network; Ottawa Chapter Faculty Advisor

Jane Rutherford

- Regular *Running Room* Expert Speaker – Nutrition, Heart Rate Training, Cross-training techniques
- YMCA/YWCA Group Fitness Instructor
- YMCA/YWCA Y Kids Fit Lifestyle Coach
- YMCA/YWCA Individual Conditioning Coach

Dr. Mark Tremblay

- *CVD Prevention and Control* – reviewed 1 paper
- NASPEM Grant Review – reviewed 1 grant
- *Annals of Behavioral Medicine* – reviewed 1 paper
- *Health Reports* – reviewed 1 paper
- *Obesity* – reviewed 2 papers
- *Applied Physiology, Nutrition and Metabolism* – reviewed 2 papers
- *Pediatric Exercise Science* – reviewed 1 paper

RESEARCH, CLINICAL, PROFESSIONAL AND SCHOLARLY SERVICE *(continued)*

Dr. Mark Tremblay *(continued)*

- *International Journal of Pediatric Obesity* – reviewed 1 paper
- University of Ottawa Department of Epidemiology and Community Medicine M.Sc. thesis examiner
- *Journal of Physical Activity and Health* – reviewed 1 paper
- Chief Scientific Officer, Active Health Kids Canada
- Chair, Canadian Physical Activity Guidelines Revision Project, Canadian Society for Exercise Physiology
- Honorary selection to carry the Olympic torch (in Ottawa) for 2010 Vancouver Olympics
- Co-editor (with Adrian Bauman) of a thematic series "ParticipACTION: Baseline Research on the Resurgence of Canada's Physical Activity Social Marketing Leader" (6 papers published in the *International Journal of Behavioral Nutrition and Physical Activity*)
- Board of Directors, *Child and Nature Alliance* (Canada)
- Chair of *BMI vs Waist Circumference: If you had to pick, which should you choose?"* symposium at the Canadian Society for Exercise Physiology Annual Scientific Conference (Vancouver)
- Co-Chair, Rutenfranz Memorial Lecture. XXV European Pediatric Work Physiology International Symposium (Le Touquet, France)
- Invited International Expert Consultant to the World Health Organization for the Development of Global Physical Activity Recommendations and member of the WHO Global Physical Activity Recommendations – Guideline Development Expert Group
- Invited International Expert Consultant for the Updating of Physical Activity Guidelines for Children and Young People for the United Kingdom
- External Referee for evaluation of two candidates for tenure and promotion to rank of Associate Professor at Western Canadian Universities
- Invited member of the Advisory Board of the Pediatric Lifestyle Management Program at the University of New Brunswick (Fredericton)
- Invited participant in the Wellcome Trust Frontiers Meeting on Environmental and Behavioural Determinants of Childhood Obesity (Hinxton, England)
- Invited participant in the Coalitions Linking Action and Science for Prevention (CLASP) Phase 2: Advancing Healthy Public Policy Planning Meeting (Calgary)
- Invited participant in the Building Authentic Trust to Address the Epidemic of Obesity & Chronic Diseases Workshop – Research, Industry, Government Partnerships (Toronto)
- Invited judge of poster presentations at The 1st National Obesity Summit of the Canadian Obesity Network (Kananaskis)
- Symposium Co-Chair (with Ian Janssen): Environmental and Socio-cultural Determinants of Obesity. Symposium at The 1st National Obesity Summit of the Canadian Obesity Network (Kananaskis)
- Symposium Chair: Physical Literacy: What is it? How do you measure it? Why does it matter? Symposium at the 75th Annual Physical and Health Education Canada Conference (Banff)
- Invited member of the Scientific Committee for Children and Exercise XXV – European Pediatric Work Physiology Meeting (Le Touquet, France)
- Invited judge of University of Alberta Nutrition 401 Undergraduate Research Poster Competition (Edmonton)

RESEARCH, CLINICAL, PROFESSIONAL AND SCHOLARLY SERVICE *(continued)*

Dr. Mark Tremblay *(continued)*

- Invited participant in the Coalitions Linking Action and Science for Prevention (CLASP) Phase 1: Social Behavioural Consultation Workshop (Toronto)
- Chair of the Research Work Group for the preparation and release of the fifth 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 activities (which achieved >100 million media impressions)
- Board of Director, Child and Nature Alliance (Canada)
- Chair, Scientific Advisory Committee for the Canadian Assessment of Physical Literacy Project
- Chair, Steering Committee for the Canadian Assessment of Physical Literacy Project
- Addressing Childhood Obesity through Research and Networking (ACORN) Steering Committee
- Inaugural Chair, ParticipACTION Research Advisory Committee
- Member of the Champlain Cardiovascular Disease Prevention Network Coordinating Committee
- Invited member of the Theme Working Group #1 – *Strengthening Information Systems for Monitoring, Management, Evaluation and Policy Development* of the Canadian Heart Health Strategy
- Chair, Statistics Canada's Expert Advisory Committee for the Canadian Health Measures Survey

PROFESSIONAL DEVELOPMENT ACTIVITIES

Dr. Kristi Adamo

- Best Start Resource Centre conference (Toronto)
- Academy of Medicine- Annual Clinical Day (Ottawa)
- Canadian Obesity Network Meeting (Kananaskis)
- CAPHC: Healthy Hospitals Meeting (Edmonton)
- 2nd Annual Research Day – CHEO Research Institute (Ottawa)

Dr. Rachel Colley

- International Conference on Diet and Activity Methods (Washington, D.C.)
- International Congress on Pediatric Work Physiology (Le Touquet, France)
- Sport Canada Research Initiative Conference (Ottawa)

Dr. Gary Goldfield

- Ontario Psychological Association Conference (Toronto)
- Canadian Psychological Association Conference (Montreal)
- Member – Ottawa Academy of Psychologists Mentorship Group
- 2nd Annual Research Day – CHEO Research Institute (Ottawa)
- 30th Annual Research Day of the University of Ottawa, Department of Psychiatry (Ottawa)

Dr. Meghann Lloyd

- International Association for the Scientific Study of Intellectual Disabilities Roundtable: International Collaboration to Improve the Health of Individuals with Intellectual Disabilities (ICID)(Kingston)
- Children's Hospital of Eastern Ontario- Clinical Research Day (Ottawa)
- The International Symposium of Adapted Physical Activity (Gavle, Sweden)
- Physical and Health Education Conference: Moving Mountains (Banff)

Dr. Stasia Hadjiyannakis

CME Courses attended:

- Endocrine Society Annual Meeting
- Childhood and Adolescent Obesity Conference (Vancouver)
- Network of Ontario Pediatric Diabetes Programs

Jane Rutherford

- Pre and Post Natal Strength Training (Ottawa)

PROFESSIONAL DEVELOPMENT ACTIVITIES *(continued)*

Dr. Mark Tremblay

Attended the following conferences, symposia and workshops:

- CAMBIO 2nd Annual Course in Childhood Obesity (Cuernavaca, Mexico)
- Coalitions Linking Action and Science for Prevention (CLASP) Social Behavioural Consultation Workshop (Toronto)
- Canadian Pediatric Endocrinology Group Annual Scientific Meeting (Ottawa)
- University of Alberta "Obesity: Why the Weight?" Symposium (Edmonton)
- Annual Meeting of the Joint Consortium for School Health (Banff)
- 75th Annual Physical and Health Education Canada Conference (Banff)
- Canadian National Obesity Summit (Kananaskis)
- Canadian Obesity Network *Management of Obesity in Primary Care Workshop* (Kananaskis)
- Wellcome Trust Frontiers Meeting on Environmental and Behavioural Determinants of Childhood Obesity (Hinxton, England)
- Canadian Obesity Network Obesity Summer Boot Camp (Quebec City)
- Saskatchewan in *motion* Report Card Partnership Workshop (Regina)
- European Pediatric Work Physiology Meeting (Le Touquet, France)
- Annual CHEO Clinical Research Day (Ottawa)
- U.K. Physical Activity Guidelines Consensus Conference (Marlow, U.K.)
- Ontario Society for Health and Fitness Professional Development Day (Toronto)
- Canadian Society for Exercise Physiology Annual Scientific Conference (Vancouver)
- International Conference on Child Rights (Ottawa)

ACADEMIC APPOINTMENTS

Dr. Kristi Adamo

- Assistant Professor, Faculty of Medicine, Pediatrics, University of Ottawa
- Cross appointed Assistant Professor, Faculty of Health Sciences, School of Human Kinetics, University of Ottawa
- Faculty appointment in Ph.D. Program in Population Health, University of Ottawa
- Research Scientist, Children's Hospital of Eastern Ontario Research Institute

Dr. Rachel Colley

- Assistant Professor, Faculty of Medicine, Pediatrics, University of Ottawa
- Junior Research Scientist, HALO, Children's Hospital of Eastern Ontario Research Institute

Dr. Gary Goldfield

- Assistant Professor, Department of Pediatrics, Faculty of Medicine, University of Ottawa
- Cross appointment as Assistant Professor to School of Human Kinetics, Faculty of Health Sciences, University of Ottawa
- Cross Appointed as Assistant Professor, Department of Psychology, Faculty of Social Sciences, University of Ottawa
- Adjunct Professor, Department of Psychology, Carleton University
- Clinical Scientist, HALO, Children's Hospital of Eastern Ontario Research Institute

Dr. Meghann Lloyd

- Assistant Professor, Faculty of Medicine, Department of Pediatrics, University of Ottawa
- Cross appointment as Assistant Professor, Faculty of Health Sciences, School of Human Kinetics, University of Ottawa
- Junior Research Scientist, HALO, Children's Hospital of Eastern Ontario Research Institute

Dr. Stasia Hadjiyannakis

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

Dr. Mark Tremblay

- Full Professor, Department of Pediatrics, Faculty of Medicine, University of Ottawa
- Cross-appointed to Department of Epidemiology and Community Medicine, University of Ottawa
- Cross-appointed to Department of Human Kinetics, University of Ottawa
- Faculty appointment in Ph.D. Program in Population Health, University of Ottawa
- Senior Research Scientist, Children's Hospital of Eastern Ontario Research Institute
- Adjunct Full Professor, Faculty of Kinesiology, University of Saskatchewan
- Adjunct Professor, School of Graduate Studies, University of Toronto
- Adjunct Professor, Kenyatta University, Nairobi, Kenya

SUPERVISION AND TRAINING

Dr. Kristi Adamo

- Zach Ferraro – Exploring the role of the insulin-like growth factor axis in overweight/obese mothers undergoing a lifestyle intervention (Ph.D. candidate)
- Peter Breithaupt – Validation of Cardiovascular Fitness and Body Composition Assessment Methodologies in the Overweight/Obese Pediatric Population (M.Sc. Candidate)
- Cici Zhu – Appetite signaling, MOM trial, Health Active Living Hospitals (2nd year Medical Student)
- Marie-Eve Rioux – School of Human Kinetics – Ph.D. comprehensive exam committee
- Angela Alberga – School of Human Kinetics – Ph.D. comprehensive exam committee
- Palavia Gupta – "Lamin A/C mutations and heart: nuclear envelope damage or disruption of transcription?" – M.Sc. defence committee 2009

Dr. Rachel Colley

- Peter Breithaupt – M.Sc. Candidate, HALO
- Travis Saunders – Ph.D. Candidate, HALO
- Richard Larouche – Ph.D. Candidate, HALO

Dr. Gary Goldfield

- Marissa Murray – Research Practicum Student, Psychology, Carleton University – Title: Family dinners as a protective factor against child obesity
- Stephanie Leclair – (Ph.D. Co-Supervisor) Delivering behavioural treatment for child obesity via Internet
- Laura Peters – Research Volunteer – Delivering behavioural treatment for child obesity via Internet
- Andrea Byrne (Staff Therapist) – Delivering behavioural treatment for child obesity via Internet
- Clinical Psychology supervision in the community

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
- Angela Algebra – M.Sc. Candidate, School of Human Kinetics Advisory Committee
- Pamela Martino – M.Sc. Candidate, School of Human Kinetics Advisory Committee
- Organizing committee for curriculum development of *Obesity Week* – for 2nd year medical students

Dr. Meghann Lloyd

- Heather Huggins-Slack – 4th year University of Ottawa student for CHEO Research Institute summer studentship
- Taught: APA6908 Examination of Biophysical Literature – Psycho-motor section, University of Ottawa, School of Human Kinetics. (Graduate level course)

SUPERVISION AND TRAINING *(continued)*

Dr. Mark Tremblay

- Richard Larouche – Ph.D. Supervisor (2009-2013), Obesity Prevention and Activity Promotion Through Increased Active Transportation and Lifestyle Activities (CIHR Scholarship)
- Travis Saunders – Ph.D. Supervisor (2009-2013), Obesity Prevention and Activity Promotion Through Increased Lifestyle Activities (CIHR Scholarship)
- Fabiola Tatone-Tokuda, M.Sc. Examiner (2009), Examining the association between sleep duration, diet and body mass index in Quebec children
- Dr. Vincent Onywera, Visiting Professor (Kenya) – Supervisor (2009), Childhood Physical Activity and Obesity Measurement, Promotion and Advocacy
- Pilar Rodriguez (Mexico) – Fellowship Supervisor (2009), Childhood Physical Activity Promotion and Advocacy (funding award through CAMBIO project)
- Samantha Stephens – Ph.D. Committee (2008-2011), Accelerometry assessments in children with chronic conditions
- Megan Carter – Ph.D. Co-supervisor (2008-2011), Neighbourhood and social environment influences on adiposity patterns (BMI, overweight, and obesity) over time
- Stephanie Prince-Ware – Ph.D. Co-supervisor (2006-2011), Physical Activity, Obesity, Built and Social Environments and Population Health (SSHRC Doctoral Scholarship, Ontario Graduate Scholarship, University of Ottawa Doctoral Research Award and University of Ottawa Excellence Scholarships)
- Cynthia Colapinto – Ph.D. Supervisor (2008-2011), Examining the folate status of Canadians (CIHR Fellowship in Public Health; Statistics Canada Tom Symon's Ph.D. Fellowship)
- Dale Esliger – Ph.D. Supervisor (2002-2009), Expanding the Utility of Accelerometry-Based Physical Activity Assessment (NSERC Scholar)

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
- Canada – Mexico Battling Childhood Obesity (CAMBIO)
- Canadian Fitness and Lifestyle Research Institute
- Canadian Society for Exercise Physiology
- Carleton University
- Champlain Cardiovascular Disease Prevention Network
- CHEO Foundation
- CHEO Research Institute
- Kenyatta University, Nairobi, Kenya
- National Capital Region YMCA/YWCA
- The Ottawa Hospital
- Ottawa Public Health
- ParticipACTION
- Treatment and Research of Obesity in Pediatrics in Canada (TROPIC)
- University of Ottawa
- University of Ottawa Institute of Mental Health Research (IMHR)

PROFESSIONAL MEMBERSHIPS

Dr. Kristi Adamo
- Children's Hospital of Eastern Ontario Research Institute
- Canadian Society for Exercise Physiology (CSEP-CEP)
- Obesity Society (NAASO)
- North American Society for Pediatric Exercise Medicine (NASPEM)
- Canadian Obesity Network (CON)

Dr. Rachel Colley
- International Association for the Study of Obesity (Member)
- Canadian Society for Exercise Physiology (Member and Certified Exercise Physiologist)
- Canadian Obesity Network (Member)

Dr. Gary Goldfield
- Children's Hospital of Eastern Ontario Research Institute
- Member of the College of Psychologists of Ontario (Registered Psychologist)
- Ottawa Academy of Psychologists
- Canadian Psychological Association
- The Obesity Society (North American Association for the Study of Obesity)
- Canadian Obesity Network (Member)

Dr. Meghann Lloyd
- Children's Hospital of Eastern Ontario Research Institute
- University of Ottawa Interdisciplinary Research Group on School Health (proposal submitted)
- International Federation of Adapted Physical Activity
- North American Federation of Adapted Physical Activity
- International Society for Physical Activity and Health
- International Association for the Scientific Study of Intellectual Disabilities
- Canadian Association for Research and Education in Intellectual Disabilities
- Physical and Health Education Canada (formerly Canadian Association for Health Physical Education and Dance)
- Ontario Physical and Health Education Association

Dr. Stasia Hadjiyannakis
- Children's Hospital of Eastern Ontario Research Institute
- 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

PROFESSIONAL MEMBERSHIPS *(continued)*

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
- Canadian Obesity Network
- Physical and Health Education Canada
- Children's Hospital of Eastern Ontario Research Institute

CONTACT US

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