

(fasting and post-glucose load) and daily activity (Actigraph™ and Actilife™ software). We measured 31-P and 1-H magnetic resonance spectroscopy (MRS) and assessed intra-hepatic lipid (IHL) content and phospho-creatine recovery after standardised exercise within the MR scanner.

**Results** IHL was associated with increases in body mass and fat mass index (% body fat/height<sup>2</sup>). There was a weak association between glucose levels and muscle recovery time with increased IHL. Recovery from exercise was correlated with % time spent in daily moderate-to-vigorous physical activity (MVPA) and sedentary activity. Only 5 children achieved an activity time within 10% of the recommended 60 minutes or more of MVPA per day (mean:39 minutes).

**Conclusions** Children born preterm have evidence of adverse metabolic outcomes in later life. IHL deposition is related to overall fatness, and may be significant in adverse metabolic processes. Measured physical activity correlates with the ability of muscle to recover from a defined exercise. Improving MVPA may result in health benefits.

1438 **EVALUATION OF THE “FREGGIE FRIDAY” PROGRAM TO PROMOTE FRUIT AND VEGETABLE CONSUMPTION IN CANADIAN ELEMENTARY SCHOOL-AGED CHILDREN**

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<sup>1,2</sup>KB Adamo, <sup>1</sup>C Colapinto, <sup>1</sup>A Harvey, <sup>1</sup>KP Grattan, <sup>3</sup>N Barrowman, <sup>1,4,5</sup>GS Goldfield. <sup>1</sup>Healthy Active Living and Obesity Research Group, Children's Hospital of Eastern Ontario (CHEO), Research Institute; <sup>2</sup>Human Kinetics, University of Ottawa; <sup>3</sup>Children's Hospital of Eastern Ontario (CHEO), Research Institute; <sup>4</sup>Human Kinetics and Psychology, University of Ottawa; <sup>5</sup>Psychology, Carleton University, Ottawa, ON, Canada

**Background** While Canada is one of the world's most prosperous nations, the health of our children is dismal, with obesity rates amongst the highest in the world. A healthy diet, including at least 5 to 6 daily servings of fruit and vegetables, is of profound importance to child health.

**Aim** To evaluate the efficacy of a fruit and vegetable program 'Freggie Fridays' developed to encourage Canadian elementary school children (grades 1 to 6) to eat the recommended number of fruit and vegetable servings each day.

**Methods** A prospective quasi-experimental trial compared schools receiving the "Freggie Friday" curriculum as the intervention (n= 8) to those not receiving the curriculum as control (n=6). The primary outcome measure was the difference in levels of fruit and vegetable consumption as measured by a food frequency questionnaire. Information on attitudes and knowledge of fruit and vegetable consumption was attained using an adapted version of the validated Pro-Children study questionnaire.

**Results** A total of 807 of the 942 children who completed the baseline questionnaires completed the follow-up questionnaires (450 intervention and 357 control). A mixed effects regression model indicated no significant intervention effects on fruit or vegetable consumption, snack food consumption, or knowledge or attitudes relating to fruit and vegetable consumption.

**Conclusions** Despite clear messaging and a sound program, it appears that adding a nutritional program, which expects busy teachers to add this to their educational curriculum, may not be the most efficacious method of eliciting healthy dietary behaviour change in Canadian elementary school-aged children.

1439 **OBESITY STRUCTURAL LINK: PARENTING STRESS, FEEDING AND EATING IMPACT ON CHINESE YOUNG CHILDREN WEIGHT OUTCOMES IN HONG KONG**

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CMS Chan, JHM Lam. *Department of Psychological Studies, The Hong Kong Institute of Education, Hong Kong, Hong Kong S.A.R.*

**Aims** The aims of this study were to explore the interrelationship between parenting stress, parental feeding and children eating behaviour and weight outcomes in order to tackle the rapid increased childhood obesity in Hong Kong.

**Methods** 336 Chinese parents of young children aged 2–7 years from 27 kindergartens were recruited for a cross sectional study. The Parental Feeding Style Questionnaire (PFSQ), Child Eating Behaviour Questionnaire (CEBQ) and Parenting Stress Index (PSI-SF) were employed. Young children's BMI were classified by the IOTF. Path analyses were used for data analysis.

**Results** Several path models were attempted. The first model indicated that higher parenting stress significantly predicted higher children food responsiveness (Standardized  $\beta$ -coefficient = 0.195,  $p < 0.001$ ) which predicted higher weight status (Standardized  $\beta$ -coefficient = 0.249,  $p < 0.001$ ). Higher parenting stress also predicted higher instrumental feeding (Standardized  $\beta$ -coefficient = 0.294,  $p < 0.001$ ) which predicted lower weight status (Standardized  $\beta$ -coefficient = -0.204,  $p < 0.001$ ). Food responsiveness and instrumental feeding were weakly correlated ( $r = 0.288$ ,  $p < 0.001$ ). The standardized indirect effects of parenting stress on children's weight status via food responsiveness (Standardized Sobel's  $Z = 2.799$ ,  $p < 0.01$ ) and instrumental feeding (Standardized Sobel's  $Z = -3.015$ ,  $p < 0.01$ ) were significant. The second model showed higher parenting stress predicted higher emotional feeding (Standardized  $\beta$ -coefficient = 0.242,  $p < 0.001$ ) which predicted higher weight status (Standardized  $\beta$ -coefficient = 0.249,  $p < 0.001$ ).

**Conclusions** These findings could suggest directions to childhood obesity interventions.

1440 **USING NEW CHILD GROWTH STANDARDS OF WORLD HEALTH ORGANIZATION FOR ESTIMATION OVERWEIGHT AND OBESITY IN PRE-SCHOOL CHILDREN, AHWAZ, IRAN**

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<sup>1</sup>S Noughjah, <sup>2</sup>M Karandish, <sup>3</sup>R Malih. <sup>1</sup>Social Determinants of Health Research Center, Department of Public Health, Ahwaz Jundishapur Medical Sciences University; <sup>2</sup>Diabetes Research Center, Department of Nutrition; <sup>3</sup>Department of Nutrition, Jundishapur Medical Sciences University, Ahwaz, Iran

**Background and Aims** Childhood obesity as a global health problem is associated with increased risk of mortality and morbidity. A few studies are focused on prevalence of children obesity based on new WHO growth standards in Iran. The aim of this study was to determine prevalence of overweight and obesity in children attending health centers based on new world health organization growth standards.

**Methods** In a descriptive study 1035 children aged 24–60 months, attending urban public health centers for receiving routine children health care were surveyed in 2009. Interview with mothers, filling a questionnaire by trained questioner were used for data collection. Software of WHO for PL (WHO Anthro beta version, 17 February 2006) used for data analysis after entrancing data in SPSS software. Overweight and obesity was defined based on Body Mass Index/age above +2SD and +3SD of median Z score.

**Results** Overall, 15% of the children were overweight. Highest prevalence of overweight was observed in the 24–35 month age group (19.4%). In different age groups of boys and girls, the prevalence of overweight and obesity was calculated 16.7% and 13.3% respectively. Overall prevalence of obesity was 7.3%. Highest prevalence of obesity in the 24–35 month age group (10.4%) was observed. Prevalence of obesity in boys and girls was 9% and 5.6% respectively.

**Conclusion** Overweight and obesity in 2–5 years children has reached alarming proportion in Ahwaz. Urgent interventional health programs are needed to prevent childhood obesity.