PREVALENCE OF OVERWEIGHT AND DETERMINANTS OF PHYSICAL FITNESS IN 7 YEAR OLD ICELANDIC CHILDREN

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BACKGROUND: Childhood obesity and other lifestyle-related health problems have been on the rise in Iceland over the past two decades, as in many other western countries.

OBJECTIVES: The aim of this study was to investigate the prevalence of overweight in seven year old school children in Iceland, to estimate physical fitness and to search for important biological determinants of physical fitness at this age.

METHODS: The study population was comprised of all primary school children in second grade from the six participating schools. Informed consent was obtained from parents of 261 participants (82%). Physical characteristics were measured for all participants and were conducted from September to December 2006. Physical fitness was assessed by graded maximal cycle ergometer test. Each participant pedaled for as long as he/she could last, while at each three minute interval the intensity of the test bike increased by 20 watts (for participants less than 30 kg) or 25 watts (for participants weighing more than 30 kg). Phlebotomy was performed on 157 participants and of those 149 also underwent DEXA scan measurements. Multivariate regression analysis was used to determine predictors of physical fitness.

RESULTS: Approximately 14% of the participating children were classified as overweight. This prevalence is similar to what has previously been reported by childhood studies from Iceland. Boys (n=70) had a higher fitness score on average compared to girls (n=79); 3.05 vs. 2.82 watts/kg, respectively. Multivariate regression model controlling for percent body fat, cholesterol (total and HDL), triglycerides, glucose, insulin and blood pressure explained 33.1% (adjusted) of the variance in fitness. However, body fat percent (stdzd beta = -0.55, partial r-square = 0.32, p < 0.0001) and systolic blood pressure (stdzd beta = -0.15, partial r-square=0.02, p = 0.043) were the only significant predictors.

CONCLUSION: Excess body fat at age seven has negative effects on physical fitness. Higher systolic blood pressure has little weight in determining fitness at this age and classic blood measures do not seem to be significantly associated with fitness at this age. These results indicate that overweight is a health problem in young Icelandic children and emphasize the importance of good lifestyle habits early on to prevent obesity related diseases later in life.