Abstract

The first study will determine the secular changes in how obesity relates with health risks after accounting for various factors including diet, physical activity (PA), waist circumference (WC) and smoking. The second study will determine the importance of the commonly held bioelectrical impedance analysis (BIA) assumptions in the assessment of BIA measured body fat. Finally, the third study will explore the discrepancies between established counts per minute (CPM) values denoting different exercise intensity and individualized CPM values that correspond to individual’s perceived effort (%VO2 max) in populations with overweight/obesity.

For the first study, data from the National Health and Nutrition Examination Survey (NHANES) between 1988 and 2014 will be analyzed. Multivariable logistic regression analyses will be used to estimate the odds ratio of each health risk (i.e. high cholesterol, high blood pressure, type 2 diabetes and abdominal obesity). Main effects and interactions between body mass index (BMI), WC, total caloric intake, PA, smoking and time on the prevalence of these health risks will be examined.

For the second and third study, participants will be recruited from York University via posters. Body fat % in each of the conditions (water intake, dehydration, food intake, exercise, and non-bladder voiding) compared to the BIA control trial, and Sum of Skinfolds (SOS) and dual-energy absorptiometry (DXA) for each BIA machine (Tanita Model:BC-418, Tanita, Model TBF-314, Omron, Model: HBF-306CN) using repeated measures ANOVA within BMI categories and sex. Repeated measures ANOVA will be used to compare the differences between established, predicted and measured CPM thresholds.

The first study will determine whether the secular changes in how obesity relates with health may be accounted for by other health risk factors. The remaining studies may have important clinical implications for improving the measurement of body fat and PA in populations with obesity.