

Associations of Objectively Measured Light-Intensity Activity on Metabolic Risk Factors in Adult Females

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ABSTRACT

Metabolic syndrome (MetSy) has been defined as a collection of metabolic irregularities that increase the risk of cardiovascular disease, type 2 diabetes, and all-cause mortality. Women are at an even greater risk for developing MetSy when compared to men with prevalence increasing with age. Moderate to vigorous physical activity (MVPA) has shown consistent association with decreases in risk of MetSy; however, light physical activity (LPA) has been studied less often in comparison. **PURPOSE:** The purpose of this study was to examine relationships between accelerometer-determined LPA and MetSy risk factors (waist circumference (WC), glucose, high density lipoprotein (HDL), triglycerides, systolic blood pressure (SBP), and diastolic blood pressure (DPB)) across women of different age groups. **METHODS:** A cross-sectional study design was used to examine 68 female participants, ages 20-65, employed in sedentary careers working in an urban area in the south central United States. Venous blood samples were taken from the antecubital area of the arm from all participants who had fasted at least eight hours prior to their scheduled appointment times. Physical activity data was collected for seven days via hip-worn accelerometers with LPA being measured based on Freedson cut-points (100-1951 counts per minute). MetSy was diagnosed based on the criteria set forth by the National Cholesterol Education Program in 2002. Data were analyzed using regression analysis with SPSS version 20.0. Between-subject analysis was conducted for four age groups (group1=20-35; group2=36-45; group3=46-55; group4=55 and older) using LPA, WC, glucose, HDL, triglycerides, SBP, and DPB. **RESULTS:** Between-subject regression analysis showed HDL as a significant MetSy risk factor in a full model ($p=0.02$) and a model with age groups as the only independent variable ($p=0.00$). Post-hoc Tukey tests showed significance differences in HDL among groups 4 and 2 (confidence interval (CI): 4.03, 35.92; $p=0.00$), and groups 4 and 3 (CI: 6.06, 39.63; $p=0.00$). Significance dropped below the apriori level of 0.05 in a model based on LPA. Post-hoc Tukey tests revealed non-significant ($\alpha>0.05$) associations between LPA levels (high, medium, low) and all MetSy values. **CONCLUSION:** The relationship between LPA and MetSy risk factors has been studied less frequently than MVPA in relation to MetSy risk factors. Based on these findings LPA is not significantly related with these risk factors. Future studies should continue to explore the relationship between LPA and MetSy risk factors among both men and woman, and in different settings.