



Mid Atlantic Regional Chapter of the American College of Sports Medicine

45th Annual Scientific Meeting, November 4th- 5th, 2022
Conference Proceedings

International Journal of Exercise Science, Issue 9, Volume 11



Exercise Variety Associates with Low Adiposity and Better Emotional Wellbeing in Adults with Metabolic Syndrome

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Exercise is linked to low cardiovascular disease (CVD) risk, in part, through weight loss and enhanced insulin sensitivity. While these benefits are linked to time spent being physically active (PA), less is known about how exercise variety relates to favorable metabolic health and emotional well-being. **PURPOSE:** To test the hypothesis that greater exercise variety would associate with low adiposity, metabolic health, and emotional wellbeing. **METHODS:** Forty adults with obesity ($n=30F$; $54.7\pm 1.2y$; $36.6\pm 0.8kg/m^2$) were classified using the Minnesota Leisure Time PA Questionnaire (MLTPA) on variety. Those who completed walking for at least 10 min/wk of moderate-vigorous PA (MVPA) to 1 additional PA were classified LOW variety ($n=10$). However, those who completed 2+ PA above walking were classified Moderate(Mod)-HIGH ($n=30$). Total exercise energy expenditure was determined using the activity metabolic index (AMI), and activity intensity was defined as light, moderate, and heavy. PA pattern subgroup analysis was performed using 7-d accelerometry ($n=26$). A 120min euglycemic-clamp ($40mU/m^2/min$, $90 mg/dL$) assessed metabolic insulin sensitivity (glucose infusion rate (GIR)). The Pittsburgh Sleep Quality Index determined sleep quality and the Veterans Rand-36 assessed quality of life. Fasting leptin, body composition (DXA), and aerobic fitness (VO_{2max}) were also assessed. **RESULTS:** There were no differences in body fat, metabolic insulin sensitivity, PA patterns, or VO_{2max} between groups. However, Mod-HIGH participants were older (54.7 ± 1.2 vs. 49.6 ± 1.8 ; $P=0.01$) and tended to have lower body fat (42.7 ± 1.3 vs. $47.1\pm 1.8\%$; $P=0.07$) and better LDL/HDL ratios (2.6 ± 0.2 vs. 3.2 ± 0.3 ; $P=0.05$) than LOW. Further, Mod-HIGH had fewer role limitations due to emotional problems ($P<0.01$) and more normal social activities and social functioning ($P=0.01$) than LOW. Exercise variety related to lower LDL/HDL ($r=-0.34$, $P=0.04$) and leptin ($r=-0.62$, $P<0.01$). Lower leptin also related to heavy AMI ($r=-0.54$, $P=0.03$), higher VO_{2max} ($r=-0.50$, $P=0.04$) and lower body fat ($r=0.61$, $P=0.02$). **CONCLUSION:** Exercise variety related to better blood lipids, body fat and emotional well-being. More work is needed to understand if exercise variety impacts activity adherence and CVD risk reduction.

Supported by NIH RO1-HL130296

