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ASSOCIATIONS BETWEEN PHYSICAL ACTIVITY AND RISK FACTORS FOR TYPE II DIABETES IN PREDIABETIC ADULTS

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Abstract

Diabetes is a national healthcare crisis related to both macrovascular and microvascular complications. We hypothesized that higher levels of physical activity are associated with lower total and visceral fat mass, lower systolic blood pressure, and increased insulin sensitivity. Participant inclusion criteria: 21-50 years old, BMI ≥ 30 kg/m², hemoglobin A1C 5.7-6.4, fasting glucose 100-125 mg/dL, and HOMA IR ≥ 2.5 . Exclusion criteria: history of diabetes, hypertension, HIV, renal disease, hearing loss, alcoholic intake over four drinks daily, use of organic nitrates or PDE5 inhibitors, and decreased cardiac function. Total physical activity was measured using accelerometers, body composition using DXA, and insulin resistance via fsIVGTT. Clinical and biochemical cardiometabolic risk factors, blood pressure and heart rate obtained using a calibrated sphygmomanometer. Anthropometric measures, fasting glucose, insulin, lipid profile, C-reactive protein, and BMP analyzed using standard procedures. Within our study, we found correlations between levels of physical activity in a heterogenous group of prediabetic adults. Patients with more physical activity had a higher degree of insulin sensitivity, lower blood pressure, total visceral adipose tissue, and overall lower total mass. Total physical activity levels showed small, but significant correlations with systolic blood pressure, visceral fat, lean mass and insulin sensitivity. After normalizing for race, age, and gender using multiple regression, these associations were no longer significant considering our small sample size. More research into prediabetes will decrease the population of diabetics overall. In the future we could increase sample size and conduct cross sectional and longitudinal studies in various populations with prediabetes.

Keywords: diabetes, endocrine, insulin, prediabetes

Funding and Conflicts of Interest

None