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The Effects of Pedometers on Body Weight and Metabolic Factors in Patients with Prediabetes

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Sedentary behavior, increased total body weight, elevated blood glucose levels and hyperlipidemia increase the risk of prediabetes. Individuals diagnosed with prediabetes (fasting blood glucose (FBG) between 100-125mg/dL) are recommended to perform a minimum of 150 minutes of physical activity (PA) per week and decrease total body weight by 7% to reduce the likelihood of developing type 2 diabetes. However, there is little known about the role of pedometers with regards to a Diabetes Prevention Program (DPP)

PURPOSE: To determine if pedometer use could aid in the reduction of total body weight, cholesterol, and blood glucose levels as a part of the Centers for Disease Control National DPP. **METHODS:** Body weight, FBG and lipids (total cholesterol, high-density lipoproteins (HDL) and low-density lipoproteins (LDL)) were measured prior to the start of the DPP and 16 weeks following the intervention. All participants were either diagnosed as prediabetic or at risk for prediabetes based on the CDC screening tool. The pedometer group (PG) (n=9) received pedometers and the control group (CG) (n=8) did not. All participants received the same educational sessions that explained dietary changes and strategies to increase PA. The PG was asked to wear a pedometer on their belt for all waking hours of the day, seven days a week, for sixteen weeks. At each weekly DPP meeting, step counts from pedometers were recorded and pedometers were reset and returned to the participants. A 2x2 ANOVA was performed to examine differences. **RESULTS:** The PG experienced significant ($p < 0.05$) weight loss from pre to post-test ($186.2\text{lbs} \pm 9.7$ to 180.7 ± 8.9) while the control group did not ($191.3\text{lbs} \pm 16.8$ to 190.1 ± 17.0). Interestingly, HDL significantly decreased from pre to post-test ($p > 0.05$) in the PD group ($58.1\text{mg/dL} \pm 4.0$ to $54.1\text{mg/dL} \pm 3.6$) while the CG remained unchanged ($50.9\text{mg/dL} \pm 5.1$ to $50.5\text{mg/dL} \pm 4.8$). There were no differences between any other variables. **CONCLUSIONS:** It appears that the addition of pedometers into the DPP can contribute positively to weight loss. It is possible participants experienced a sense of greater accountability due to the added tracking tool. Further research and a larger participation population is needed to elucidate the mechanisms that contribute to the changes in body weight and lipid profile.