

ASSOCIATION BETWEEN WEIGHT LOSS AND PHYSICAL ACTIVITY ON CHANGE IN BLOOD PRESSURE IN OVERWEIGHT ADULTS

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Obesity and physical inactivity are associated with higher levels of resting blood pressure (BP). Physical activity (PA) contributes 1-3 kg of additional weight loss compared to what is achieved with diet alone and this added weight loss can further contribute to a decrease in cardiovascular disease risk. However, there is controversy as to whether weight loss or physical activity has a greater influence on changes on resting systolic (SBP) and diastolic (DBP) BP. **PURPOSE:** To examine the association between weight loss and objectively measured PA on changes in resting blood pressure in response to a behavioral weight loss intervention (BWL). **METHODS:** Subjects were 222 adults (age: 43.1±9.2 yrs; BMI: 32.6±3.5 kg/m²; SBP: 118.4±12.9 mmHg; DBP: 77.0±8.7 mmHg) participating in an 18-month BWL. BWL included recommendations to decrease energy intake to 1200-1800 kcal/d and PA progressed to 300 min/wk. Weight, BP, and physical activity were assessed at 0 and 18 months. PA was assessed objectively using an armband that provided minute-by-minute data for a period of 7 days. Moderate-to-vigorous PA (MVPA) was defined as periods of ≥10 continuous minutes at ≥3 metabolic equivalents (METs). **RESULTS:** After 18 months, weight decreased 8.8±8.0 kg (9.6±8.5% weight loss) and MVPA increased to 227.5±202.7 min/wk. SBP and DBP decreased 7.7±11.2 and 4.0±7.5 mmHg, respectively. Percent weight loss was significantly associated with decreased SBP (r=0.25, p<0.001) and DBP (r=0.33, p<0.001). MVPA was associated with decreased DBP (r=0.22, p=0.001), but not SBP (r=0.09). When both percent weight loss and MVPA were included in regression analysis, only percent weight loss remained a significant predictor of decreased SBP (β=0.26, p<0.001) and DBP (β=0.28, p<0.001). **CONCLUSION:** Weight loss and MVPA appear to improve BP in obese non-hypertensive adults, which may reduce cardiovascular disease risk. When considered in combination, weight loss appears to have a greater influence than MVPA on long-term changes in BP in this population. However, MVPA has been shown to improve long-term weight loss, and therefore interventions to reduce risk should focus on weight loss in combination with MVPA.

Support by the NIH (HL008840).