

SAT-575: Association Between Baseline Fitness and Changes in Physical Activity and Weight Loss in an 18-Month Behavioral Weight Loss Program

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Background: Baseline cardiovascular fitness may be a significant predictor of future success in a comprehensive behavioral weight loss program (BWLP). Yet, few studies have examined the association between baseline fitness and future weight loss.

Purpose: To determine the association between baseline fitness and changes in body weight and device-measured levels of moderate-to-vigorous physical activity (MVPA) during a BWLP.

Methods: Adults (n=85) were enrolled in an 18-month BWLP combining a calorie-restricted diet, group-based behavioral support, and 6 months of supervised exercise (progressing to 300 min/wk of moderate-intensity) followed by 12 months of unsupervised exercise. Data from 60 completers (age 41.0±9.5 years, BMI 34.6±4.2 kg/m², 80% female) were used in this analysis. MVPA was measured over 1 week with the Sensewear Armband at months 0, 6, 12, and 18. Fitness (VO₂max) was measured on a treadmill using indirect calorimetry and categorized based on published age and sex norms (Physical Fitness Specialist Certification Manual, 1997). A linear mixed effects model with unstructured covariance was used to examine the association between baseline fitness category and changes in body weight, total MVPA, and MVPA in bouts ≥10 min at the four time points.

Results: Of the 60 completers, 33% (n=20) were classified as having very poor fitness, 45% (n=27) poor, 18% (n=11) fair, 3% (n=2) good, and 0% (n=0) excellent or superior. Due to the low proportion of participants categorized as having fair or better fitness, we created a binary fitness variable (very poor vs. poor or better). Baseline BMI was higher in those in the very poor category compared to those in the poor or better category (36.2±4.2 vs 33.7±4.0, p=0.03). There were no significant differences between the two fitness categories in weight change at 6 or 12 months. However, at 18 months, mean weight loss was 4.3±1.7 kg in those in the very poor category and 8.2±1.2 kg in those in the poor or better category, with a marginally significant between-group difference (p=0.07). There were no differences in changes in total or bout MVPA. However, those with very poor fitness had lower bout MVPA at baseline vs. those with poor or better fitness (16±20 vs 33±31 min/d, p=0.03). At 18 months, both groups increased bout MVPA, however bout MVPA remained lower in the very poor vs. poor or better group (24±29 vs 42±29 min/d, p=0.03). Total MVPA showed a similar pattern.

Conclusion: Baseline fitness may moderate 18-month weight loss, as those with very poor fitness lost less weight compared to those with poor or better fitness levels. Those with poor or better fitness at baseline achieved significantly higher mean levels of MVPA at 18 months compared to those with very poor fitness. Participants with very poor fitness at baseline may require additional exercise support during a BWLP to achieve the high levels of MVPA recommended for weight loss maintenance.