

34. SWACSM Abstract

A Comparison of High-intensity Interval and Moderate Intensity Continuous Training on Glucose Regulation in Sedentary, Obese Individuals

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ABSTRACT

It is well known that exercise is beneficial in the prevention of type 2 diabetes (T2D) but the ideal type of training is not clear. **PURPOSE:** To compare the effects of high-intensity interval training (HIIT) and moderate-intensity continuous training (MICT) on blood glucose regulation in sedentary, obese adults. **METHODS:** 22 sedentary, obese individuals were randomized into either HIIT or MICT. Each group exercised on a cycle ergometer 3 times/wk for 8 wks. The HIIT group performed 10, 1 min intervals at 90-95% HR_{max} with 1 min rest intervals in between. The MICT group performed 30 min of continuous work at 70-75% HR_{max}. Pre- and post-intervention testing consisted of 24-hour continuous glucose monitoring (CGM), VO_{2max}, and anthropometric measurements. Glucose variability was calculated by multiple methods. Linear mixed models and 2-way ANOVA were used to measure differences between groups over time in the CGM values and glucose variability measures. **RESULTS:** Fifteen subjects finished the study, (8 = HIIT; 7 = MICT). There was a significant increase in VO_{2max} (P = 0.01) and decrease in body fat percentage (P < 0.01) but no group x time interactions. There were no significant changes in variability measures, but a significant group x time interaction was found with the mixed models in blood glucose showing a greater effect of HIIT (P = 0.002). When the two-way ANOVA was run including only subjects with a baseline average 24-hour glucose level above 100 mg/dL (HIIT = 5; MICT = 4), there were significant differences (p < 0.05) found between pre-training and post-training, but not between training groups in the variability measurements (CONGA, J-Index, HBGI, M Value). In this same subset of subjects the mixed model analysis showed a significant group x time interaction for glucose demonstrating that HIIT improved glycemic control more than MICT (P < 0.001). **CONCLUSION:** Both HIIT and MICT can improve glycemic control with a potentially more powerful effect in response to HIIT in individuals with a higher 24-hour average blood glucose. This implies that HIIT may provide a time-efficient way to reduce glycemic control and slow the progression of disease especially in individuals who are farther along in the progression of type 2 diabetes.