TACSM Abstract

Acute Responses to High Intensity Interval Exercise and Moderate Aerobic Exercise on Anaerobically and Aerobically Trained Athletes

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ABSTRACT

High Intensity Interval Training (HIIT) is emerging as the popular method of training recently for its ability to deliver an exercise that still elicits almost the same health benefits, when compared to traditional methods of training. Those who are trained possess higher lactate thresholds than those who are not trained. However, there is little research on males whom are trained as anaerobically or aerobically, and their differences on lactate or blood glucose recovery. **PURPOSE:** The purpose of this study is to compare the acute effects of high intensity interval exercise and moderate aerobic exercise on lactic acid and blood glucose levels on athletes who are either anaerobically trained or aerobically trained. **METHODS:** Males (20± 2.774) of average cardiorespiratory fitness (VO2max =35 ±5.95 $ml°kg^{-1}°min^{-1}$) participated in a high intensity interval exercise (HIIE) and a moderate aerobic trial in a balanced cross-over design in which the subject was randomized and assessed for changes in blood lactate levels and glucose levels during exercise. The HIIE is a 4 x 4 trial in which the subject pedaled on a cycle for four intervals of 4 minutes at 90-95% of maximal aerobic capacity (VO2max), interspersed with 3 minutes of active recovery at 60% VO2max. The subjects were assessed for blood lactate and blood glucose via finger stick prior to exercise, at minute 4, 13, 24, 32 and every 10 minutes post-exercise up to 30 minutes following the cessation of the exercise bout. The subjects also participated in a moderate aerobic trial at 60% of VO2max. The subjects were assessed for blood lactate and blood glucose via finger stick however time points are varied per subject due to variations in total work outputs. **RESULTS**: The main effect for recovery was not significant in lactate when comparing training status across both HIIE/Mod (Ana=5.7± 4.3, Aer=8.3± 4.7) (p=0.3470). The main effect for glucose was also not significant when comparing training status across both HIIE/Mod (Ana=93± 12.5, Aer=102.7± 12.5) (p=0.2350). The main effect for lactate when comparing training (Aer/Ana) across intensity (HIIE/Mod) was not significant (AnaHi=4.6± 1.2, AnaMod=6.9± 8.2, AerHi=5.7± 1.3, AerMod=10.9± 9.0) (p=0.5620). The main effect for glucose when comparing training (Aer/Ana) across intensity (HIIE/Mod) was also not significant (AnaGlucHi=93.5± 20.1, AnaGlucMod=92.5± 13.6, AerGlucHi=112.8± 20.1, AerGlucMod=92.6± 13.6) (p=0.2100) **CONCLUSIONS**: Although lactate nor glucose were statistically significant in this study, when comparing the values, anaerobically trained males buffered lactic acid more efficiently than those who are aerobically trained. This might suggest that those whom are anaerobically trained possess higher lactate threshold than those who are aerobically trained.