Blood Lactate Levels and the Effects of Recovery Methods on Repeated Sprint Performance

Todora, J., Augustine, B., Jendrzejewski, N., Price, Z., Smith, B., Paulson, S., Braun, W. (FACSM) Shippensburg University, Shippensburg, PA

A drop in muscle pH associated with lactate accumulation during short-term, high-intensity exercise may be a cause for local muscle fatigue. Lactate removal occurs naturally within the body; however, it is unclear if certain recovery modalities might be used to enhance lactate clearance and subsequent performance. **PURPOSE:** To examine the difference in effects of cold water immersion (CWI), active recovery (AR), and passive recovery (CON) on blood lactate levels after successive bouts of sprinting.

**METHODS:** Eight active healthy male university students participated in this study. The subjects had a mean age of 21.5 ± 1.31 years, mean mass of 81.25 ± 15.39 kg, and mean height of 181.45 ± 9.68 cm. Resting measurements for blood lactate and heart rate (HR) were taken after 10 minutes of seated rest. Subjects then performed a 400m sprint at maximal effort. HR and blood lactate were then recorded again. Each subject was required to test three different days, each day consisting of a random recovery modality. HR was taken every five minutes during each 20 minute recovery period. Blood lactate was taken within three minutes after the recovery period and after a 35 minute rest period for all three conditions. Subjects completed a 200 m sprint and HR and lactate were taken upon completion. A two-way ANOVA with repeated measures was used to determine any significant differences in blood lactate or HR between the three recovery modalities. A one-way ANOVA with repeated measures was used to determine any significant difference in sprint performance times after each recovery method. **RESULTS:** There was no significant difference shown between the recovery modalities on all 3 variables: lactate ($p = .21$), HR ($p = .70$), and 200 m performance time (CON: 32.13±1.34 s; AR: 33.56±1.95 s; and CWI: 32.91±1.75 s) ($p = .30$). **CONCLUSION:** The results of this study do not support an advantage for blood lactate clearance or an impact on 200 m sprint performance time between the three recovery modalities.

Supported by *Shippensburg University-UGR grant #2014/2015-30.*