

The Effect of Two Sports Drink Formulations on Muscle Stress and Performance

Ready, S. L.; Seifert, J. G.; Burke, E. (FACSM)*

Human Performance Lab, SCSU, St. Cloud, MN 56303. Dept. of Biology, UCCS, Colorado Springs, CO.

Creatine kinase (CK) level is frequently used as an indicator of muscle damage and stress. It is thought that CK leakage from cells occur because of a disruption in the cell membrane. The purpose of this study was to compare two formulations on post-exercise muscle stress and performance time in a moderate-intensity duathlon. Ten college age males and females ingested a 15% CHO/protein/electrolyte beverage (CP) in a formulation containing CHO:protein in a 4:1 ratio or a 6% CHO/electrolyte (CE) beverage in a double-blind, counterbalanced design. Subjects completed a 45-min run, rested in a 10-min transition, cycled for 90 min, and then performed a 90kJ time trial (TT). Each sports drink was ingested during the transition (360 ml) and 30 min into the bike segment (180 ml). Blood samples were collected and analyzed for CK, lactic acid (LA) and glucose (GL). Heart rate (HR), VO_2 , and RPE were also measured.

Results: The 90kJ TT was enhanced by an average of 27 sec for 7 of the 10 subjects in the CP group. However, an ANOVA revealed no statistical difference for the time trial between the two groups (CP=395 \pm 90sec; CE=409 \pm 78sec). GL was statistically increased in the CP group. No differences were observed for LA, HR, VO_2 , or RPE. In the CP group, there was a significant reduction of 36% for the 24-hr post exercise CK level.

Conclusions: These results suggest that CP, by providing additional CHO and amino acids, may reduce post exercise muscle stress as evidenced by a 36% decrease in 24-hr CK levels. A possible mechanism for this reduced stress could be through the maintenance of cell membrane integrity.

Medicine & Science in Sports & Exercise, May 1999 - Volume 31 - Issue 5 - p S119