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Acute hepatic response to diet modification and exercise-induced endotoxemia during a laboratory-based duathlon

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Biol Sport 2010; 27 (2):

ICID: 913077

Article type: Original article

IC™ Value: 9.38

Abstract provided by Publisher



The purpose of the study was to compare the acute hepatic response to diet modification and exercise-induced endotoxemia, and to determine if associations exist between liver damage markers, body core temperature, and IL-6 responses to a laboratory-based duathlon. Eleven moderately-trained healthy males followed a low-carbohydrate (CHO) and a high CHO diet to change their glycogen stores two-days before completing a duathlon. Blood samples were obtained at rest, immediately after and 1- and 2-h following the duathlon for determination of endotoxin-lipopolysaccharide binding protein (LPS-LBP) complex, IL-6, and liver integrity markers AST, ALT, and AST/ALT ratio. Hydration status and body core temperature were assessed at rest, during, and after the duathlon. Athletes were more dehydrated and had higher AST/ALT ratios in the low- compared to the high-CHO diet trial regardless of the measurement time ($p < 0.05$). IL-6 increased from resting to immediately after, 1- and 2-h following duathlon regardless of the diet ($p < 0.05$). A higher LPS-LBP complex concentration was observed from rest to immediately after the duathlon. No significant correlations were found between LPS-LBP complex levels and body core temperature. In conclusion, athletes on a low-CHO diet showed higher hepatic structural damage and finished more dehydrated compared to athletes on a high-CHO diet. Body core temperature and LPS-LBP complex levels were unrelated beyond the increase in body core temperature explained by exercise. No significant associations were found between body core temperature, IL-6 and LPS-LBP complex concentrations.

ICID 913077

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