The effects of acute L-carnitine supplementation on endurance performance of athletes

Orer GE¹, Guzel NA.

Author information

- ¹1School of Physical Education and Sports, Aksaray University, Aksaray, Turkey; and
  2Department of Physical Therapy and Rehabilitation, Faculty of Health Sciences, Gazi University, Ankara, Turkey.

Abstract

This study examined the effect of acute L-carnitine loading on the endurance performance of footballers. Measurements were performed on 26 candidate professional footballers who volunteered to take part in the study. Athletes were given a glass of fruit juice 1 hour before applying L-carnitine with the double-blind method. Then, 12 participants were given 3 g of L-carnitine (LK-3) and the remaining 14 were given 4 g (LK-4). Athletes began the exercise test at a running speed of 8 km·h⁻¹ and then continued at 10 km·h⁻¹. The speed was increased 1 km·h⁻¹ every 3 minutes, and the test continued until the subject chose to quit. Heart rate was registered using a portable telemetric heart rate monitor during the test. Blood samples were taken from the earlobes of the footballers both before the test and before the speed increase (during the 1-minute interval), and the lactate (La) concentration was measured electroenzymatically. The test was repeated after 1 week as a group of placebos (P-3 and P-4). The result showed that the running speeds corresponding to specific La concentrations were increased, and La and heart rate responses to the running speeds were decreased in both supplemented groups compared with placebos (p ≤ 0.05). A significant reduction in heart rate was found in LK-4 and P-4 (p ≤ 0.05). When the Borg responses to the running speeds were analyzed, a significant difference was found in both supplemented groups (p ≤ 0.05). The results show that 3 or 4 g of L-carnitine taken before physical exercise prolonged exhaustion.