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Acute effects of taurine ingestion on maximal middle-distance running performance

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Although repeated taurine administration has been shown to benefit endurance performance in trained athletes (Lee et al., 2003: *Korean Journal of Nutrition*, 36, 711–719), little research exists on its acute effects. The present study aimed to investigate the acute effect of taurine on maximal 3 km performance in well-trained, middle-distance runners.

Eight male competitive middle-distance runners (age: mean 19.9, s = 1.2 years; 800 m personal best times: mean 121.74, s = 5.01 s) participated in a randomised, double blind, crossover study approved by the Institutional Ethics Committee. Taurine (1000 mg) or placebo was ingested 2 h prior to testing. Following a standardized warm-up, a self-paced maximal 3 km time trial on a treadmill was completed. Three kilometre time and 500 m split times were recorded. Capillary blood lactate was measured pre- and post-3 km. EMG activity of the right rectus femoris, biceps femoris and gastrocnemius was recorded at 500 m intervals. Pairwise comparisons were conducted for overall 3 km time. Repeated measures ANOVA examined for differences in 500 m split times, blood lactate and EMG activity, followed by pairwise comparisons where necessary.

No difference ($P > 0.05$) in 3 km time (taurine mean 645.5, s = 52.9 s; placebo mean 653.38, s = 60.75 s) 500 m splits or blood lactate was found between conditions. EMG activity did not significantly increase with taurine ($P > 0.05$) for rectus femoris (taurine collapsed data: mean 227.6, s = 15.7 μV ; placebo mean 194.7, s = 11.4 μV) and GC (taurine collapsed data: mean 269.0, s = 13.9 μV ; placebo mean 238.9, s = 31.7 μV). However, bicep femoris EMG activity was significantly greater at 500 m ($P = 0.011$; taurine mean 396.3, s = 163.4 μV ; placebo mean 200.5, s = 103.4 μV), 1500 m ($P = 0.016$; taurine mean 320.8 s = 130.5 μV ; placebo mean 177.6, s = 53.9 μV) and 2000 m ($P = 0.015$; taurine mean 315.0, s = 139.6 μV ; placebo mean 166.4, s = 43.2 μV).

The current findings suggest that acute taurine ingestion in well-trained, middle-distance runners does not improve 3 km running performance. Despite the importance of the bicep femoris in running, increased EMG activity with taurine did not affect performance, suggesting unaffected muscle taurine concentration (Galloway et al., 2008: *Journal of Applied Physiology*, 105, 643–651). Further research is warranted to examine potential effects of different taurine dosages on endurance performance of different duration.