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Published

2006

Conference Title

11th Annual Congress of the European College of Sports Science. Book of Abstracts

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## Awareness and use of caffeine by athletes competing at the 2005 Ironman® Triathlon World Championships.

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Despite its legality, caffeine remains on WADA's monitoring program, which results in the drug be placed under heightened scrutiny for further tracking of trends in use and possible abuse for future prohibition list consideration<sup>1</sup>. This study assessed the knowledge and prevalence of caffeine use by athletes completing at the 2005 Ironman Triathlon World Championships.

Caffeine-related questionnaires were administered to 140 (105 male and 35 female, 40.3±10.7 years) athletes (8% of all participants) from 16 countries throughout race registration. 50 of these athletes further consented to immediate post-race blood samples for analysis of plasma caffeine and paraxanthine using HPLC.

100 (71%) athletes correctly identified caffeine as being unrestricted in triathlon. Only 15 (11%) athletes were not planning on using a caffeinated substance immediately prior to or throughout the race. Cola (78%), Caffeinated Gels (42%), Coffee (usually pre-race) (37%), Energy Drinks (13%), and No Doz Tablets (9%) were the most popular caffeinated choices. More than half the athletes (52%) stated that they did not know an optimal caffeine dose for their sport. The most common sources for information on caffeine were reported as self researched/experimentation (44%), fellow athletes (42%), magazines (38%) and journal articles (33%). Mean±SD (and range) post race plasma caffeine and paraxanthine levels were 22.3 ± 20 µmol/L (1.7-98.4) and 9.4 ± 6 µmol/L (1.8-28.9) respectively. Seven athletes (14%) finished with plasma caffeine levels ≥ 40 µmol/L. Plasma values from elite athletes did not differ from age group competitors.

Caffeine is popularly targeted as a potential ergogenic aid by endurance triathletes. Surprisingly, despite the prevalence of its consumption and the training experience of this athletic group many participants remained either confused or misinformed of its legality. Levels of plasma caffeine and paraxanthine taken immediately post race indicate that athletes completing in ironman races often finish the race with quantities of caffeine that have been shown to improve endurance performance (i.e. ≈ 20µmol/L or a dose of ≥ 3 mg/kg bw)<sup>2,3</sup>. Average paraxanthine levels would indicate that the initiation of caffeine ingestion was typically ≥3-4 hrs prior to race completion.<sup>4</sup> The widespread use of caffeine by ironman athletes appears largely the result of self research and peer experimentation rather than by consultation with qualified professionals.

1. World Anti-Doping Agency Press Release "WADA Executive Committee: Approves the 2006 Prohibited List" Dated: September 20, 2005.
2. Graham, T., & Spreit, L. (1995). Metabolic, catecholamine, and exercise performance responses to various doses of caffeine. *Journal of Applied Physiology*, 78(3), 867-874.
3. Cox, G., Desbrow, B., Montgomery, P., Anderson, M., Bruce, C., Macrides, T., et al. (2002). Effect of different protocols of caffeine intake on metabolism and endurance performance. *Journal of Applied Physiology*, 93, 990-999.
4. McLean, C., & Graham, T. (2002). Effects of exercise and thermal stress on caffeine pharmacokinetics in men and eumenorrheic women. *Journal of Applied Physiology*, 93, 1471-1478.