

The Effects of Acute Beetroot Juice Ingestion on Exercise and Cognitive Performance in Female Athletes

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ABSTRACT

Nitrate-rich beetroot juice can enhance intense exercise performance which is attributed to enhanced skeletal muscle contractility. However, limited data exist in females and it is unknown whether dietary nitrate has an ergogenic effect in this population. **PURPOSE:** To investigate the potential effects of acute nitrate ingestion on a battery of exercise performance and cognitive tests before and after fatiguing intermittent running exercise. **METHODS:** Fifteen female team-sport athletes were assigned in a randomized, double-blind, crossover design to consume nitrate-rich beetroot juice (BR; 12 mmol of nitrate) and nitrate-depleted beetroot juice (PL; 0.10 mmol of nitrate) 2.5 h prior to performing the exercise protocol, with a washout period of 7 days between trials. Running 10 m and 20 m sprint split times, sprint reaction time, upper- and lower-body power, handgrip strength, and cognitive flexibility were measured before and after the Yo-Yo intermittent recovery level 1 (Yo-Yo IR1) test, during which performance and rate of perceived exertion were recorded. **RESULTS:** There were no significant differences in any performance outcome or cognitive flexibility ($P > 0.05$). **CONCLUSION:** These findings indicate that acute nitrate ingestion does not influence performance in sprints, intermittent running, power, strength, or cognitive function in young adult female team-sport athletes.