

The effects of acute beetroot juice ingestion on upper and lower body muscular power during weightlifting exercise in men

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Nitrate-rich beetroot juice (BR) supplementation improves movements with high-velocity and high-power muscle contractions which may be due to enhanced blood flow, oxygenation and contractile function in type II muscle fibers. The literature has focused predominantly on the effects of BR supplementation running and cycling performance, but its efficacy in resistance exercise, a modality that relies on type II muscle fibers, has limited data. Furthermore, it is unknown how supplementation strategies impact the physiological and ergogenic effects of BR during exercise. Therefore, the purpose of this study is to assess whether single or multi-day nitrate ingestion will improve performance and muscle oxygenation during resistance exercise. In a double-blind, randomized crossover design, 14 healthy recreationally active men will report to the laboratory for five occasions over a 4-wk period. On the first visit, participants will undergo a 1 repetition-max (1RM) test for back squat and bench press. Subsequently, participants will complete two 4-day experimental trials where they will consume 2 x 70mL doses per day of either nitrate-depleted placebo (PL) or concentrated nitrate-rich BR. On experimental days of each supplementation period (day 1 and 4), subjects will consume 140 mL of their allocated beverage 2.5-h before exercise. On day 2 and 3 of the supplementation period, participants will consume one 70 mL beverage in the morning and one in the evening. On experimental days, participants performed a power protocol, consisting of 2 sets x 2 repetitions of back squats and bench press at 70%1RM followed by repetition-to-failures at 60%1RM. Muscle oxygenation, power and velocity were assessed during exercise using near infrared spectroscopy and a linear transducer, respectively. A subset of data has been collected (n=9) and data collection is ongoing.

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