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

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Dietary nitrate supplementation, administered per beetroot juice (BR), has been shown to enhance performance while cycling and running. BR has enhanced skeletal muscle contraction and blood flow within type II fibers which are recruited during high-velocity and high-power contractions. However, it is unknown whether BR influences alternative forms of exercise, such as resistance exercise. The purpose of this study is to assess whether BR supplementation influences neuromuscular performance (muscle power and speed), and repetitions-to-failure in healthy, recreationally active men. In a double-blind, randomized crossover design, 14 males will be recruited to complete two 4-day supplementation periods in which they consume 2 x 70mL nitrate-depleted placebo (PL) or nitrate-rich BR per day. Subjects will report to the lab 5 times over a 3-to 4-wk period. Subjects will complete a 1 repetition max (1RM) test and familiarization to the protocol. On experimental days subjects will complete a warm up and then a protocol to assess explosive performance, consisting of 2 sets x 2 repetitions of back squat at 70% 1RM using a cadence that emphasizes an explosive concentric phase. Skeletal muscle oxygenation will be measured using near-infrared spectroscopy and neuromuscular performance will be measured during exercise using a linear transducer. Following a 5-min recovery period, subjects performed 1 set x repetition-to-failure at 60% 1RM to determine muscular endurance. This protocol will be repeated in the bench press exercise. Data was analyzed in a subset of n = 9. There were no significant differences in resistance exercise performance between conditions; however, data collection is ongoing and results are currently underpowered. These data could provide insight for dietary nitrate as an ergogenic aid and inform both supplementation guidelines and recommendations for enhancing resistance training performance in men. **(287 words)**

Keywords: beetroot, ergogenic aid, dietary nitrate, nitric oxide, resistance training