Impact of dietary nitrate dose on resistance exercise performance

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The purpose of this study was to assess whether various doses of BR supplementation can influence muscle performance during a battery of resistance exercises in healthy, resistance-trained males. In a double-blind, randomized crossover design, 18 males were randomly allocated to consume 4 x 70 ml of BR over four conditions: (1) 4 x 70 ml of nitrate-depleted BR for placebo (PL); (2) 1 x 70 ml of nitrate-rich BR and 3 x 70 ml of PL for a low nitrate dose (BR-LOW); (3) 2 x 70 ml of nitrate-rich BR and 2 x 70 ml of PL for a moderate nitrate dose (BR-MOD); and (4) 4 x 70 ml of nitrate-rich BR for an elevated nitrate dose (BR-HIGH). Participants reported to the laboratory 5 times over 5-wk. Following a 1 repetition max (1RM) and a familiarization to the exercise protocol, participants completed a warm up and then a protocol to assess explosive performance using a linear transducer and force plate during vertical countermovement jumps, and then back squat and bench press, in a randomized order. A resting blood sample was drawn for the determination of plasma nitrate and nitrite concentrations. A two way repeated measures ANOVA was used to determine statistical differences between blood and performance variables, and is currently in progress. 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. **(250 words)**

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

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Back squat: peak power in watts (W) (Day 1: condition A: 1716.44 ± 501.17 vs. condition B: 1718.33 ± 515.35, P>0.05), (Day 4: condition A: 1764.18 ± 455.26 vs. condition B: 1798.56 ± 543.23, P>0.05), mean power in watts (W) (Day 1: condition A: 678.08 ± 159.45 vs. condition B: 692.78 ± 145.36, P>0.05), (Day 4: condition A: 698.80 ± 142.99 vs. condition B: 674.19 ± 187.77, P>0.05), peak velocity in meters per second (m/s) (Day 1: condition A: 1.46 ± 0.15 vs. condition B: 1.58 ± 0.37, P>0.05), (Day 4: condition A: 1.49 ± 0.14 vs. condition B: 1.46 ± 0.21, P>0.05) mean velocity in meters per second (m/s) (Day 1: condition A: 0.75 ± 0.06 m/s vs. condition B: 0.76 ± 0.06, P>0.05), (Day 4: condition A: 0.76 ± 0.05 vs. condition B: 0.75 ± 0.07, P>0.05).

Bench Press: peak power in watts (W) (Day 1: COND A: 638.78 ± 109.10 vs. condition B: 670.67 ± 151.06, P>0.05), (Day 4: condition A: 690.79 ± 142.74 vs. condition B: 712.22 ± 190.64, P>0.05), mean power in watts (W) (Day 1: condition A: 398.42 ± 74.96 vs. condition B: 410.56 ± 87.35, P>0.05), (Day 4: condition A: 418.44 ± 89.50 vs. condition B: 427.00 ± 96.81, P>0.05), peak velocity in meters per second (m/s) (Day 1: condition A: 0.87 ± 0.14 vs. condition B: 0.89 ± 0.12, P>0.05), (Day 4: condition A: 0.91 ± 0.15 vs. condition B: 0.92 ± 0.13, P>0.05), mean velocity in meters per second (m/s) (Day 1: condition A: 0.59 ± 0.06 vs. condition B: 0.60 ± 0.06, P>0.05), (Day 4: condition A: 0.62 ± 0.06 vs. condition B: 0.62 ± 0.05, P>0.05).

There were no sig dif in peak power (SQUAT: cond a: mean +/- sd vs. COND B: same thing; BENCH: cond a vs cond b *P*>0.05)... for all variables