

研究課題名 Effects of drop sets on muscle hypertrophy and strength

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BACKGROUND:

We investigated the effects of 2 different resistance training (RT) protocols on muscle hypertrophy and strength. The first group (n = 8) performed a single drop set (DS) and the second group (n = 8) performed 3 sets of conventional RT (normal set, NS).

METHODS:

Eight young men in each group completed 6 weeks of RT. Muscle hypertrophy was assessed via magnetic resonance imaging (MRI) and strength via 12 RM tests before and after the 6 weeks. Acute stress markers such as muscle thickness (MT), blood lactate (BL), maximal voluntary contraction (MVC), heart rate (HR) and rating of perceived exertion (RPE) before and after one bout of RT.

RESULTS:

Both groups showed significant increases in triceps muscle cross-sectional area (CSA) ($10.0 \pm 3.7\%$, effect size (ES) = 0.47 for DS and $5.1 \pm 2.1\%$, ES = 0.25 for NS). Strength increased in both groups ($16.1 \pm 12.1\%$, ES = 0.88 for DS and $25.2 \pm 17.5\%$, ES = 1.34 for NS). Acute pre/post measurements for one bout of RT showed significant changes in MT ($18.3 \pm 5.8\%$, $p < 0.001$) and MVC (-13.3 ± 7.1 , $p < 0.05$) in the DS group only and a significant difference ($p < 0.01$) in RPE was observed between groups (7.7 ± 1.5 for DS and 5.3 ± 1.4 for NS).

CONCLUSIONS:

Superior muscle gains might be achieved with a single set of DS compared to 3 sets of conventional RT, probably due to higher stress experienced in the DS protocol.