

TITLE: Effects of resistance training induced acute hormonal increases on chronic muscle hypertrophy

Researcher: Fink Julius

AIM: We investigated the effects of low load resistance training (RT) to failure performed with different rest intervals on hormonal responses, chronic muscle hypertrophy and strength gains.

METHODS:

Experiment 1: Participants were assigned to either a short rest (S, 30 s or long rest (L, 150 s) RT protocol. Both groups performed 40% one-repetition maximum (1RM) RT to failure. Blood samples were taken before and after (0, 15, 30 and 60 min) workout.

Experiment 2: Same RT protocol as experiment 1 was performed 2 times/week for 8 weeks.

RESULTS:

Experiment 1: Both groups showed significant ($p < 0.05$) increases compared to before values in growth hormone (GH), insulin-like growth factor 1 (IGF-1) and testosterone (T) immediately post workout. No significant differences could be observed among groups for each hormone.

Experiment 2: The S group's triceps cross-sectional area (CSA) increased $9.8 \pm 8.8\%$ ($p < 0.05$) compared to $10.6 \pm 9.6\%$ ($p < 0.05$) for the L group. The thigh CSA changed $5.7 \pm 4.7\%$ ($p < 0.05$) in the S group compared to $8.3 \pm 6.4\%$ ($p < 0.05$) in the L group. No significant differences among groups could be observed. 1RM significantly increased for the bench press (S: $9.9 \pm 6.9\%$, L: $6.5 \pm 5.8\%$, $p < 0.05$) and back squat (S: $5.2 \pm 6.7\%$, L: $5.4 \pm 3.5\%$, $p < 0.05$).

CONCLUSION: We conclude that acute hormonal responses, chronic CSA and strength increases in low load RT to failure are independent of the rest interval length between sets.

Keywords: hormonal responses, cross-sectional area, one-repetition maximum, bench press, back squat