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Research article

Hormone Responses to an Acute Bout of Low Intensity Blood Flow Restricted Resistance Exercise in College-Aged Females

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ABSTRACT

The purpose of this study was to determine whether the acute hormone response to exercise differed between low intensity blood flow restricted resistance exercise and traditional high-intensity resistance exercise in college-aged women. A total of 13 healthy women (aged 18-25 yrs), who were taking oral contraceptives, volunteered for this randomized crossover study. Subjects performed a session of low intensity blood flow restricted resistance exercise (BFR) (20% of 1-RM, 1 set 30 reps, 2 sets 15 reps) and a session of traditional high intensity resistance exercise without blood flow restriction (HI) (3 sets of 10 repetitions at 80% of 1-RM) on separate days. Fasting serum cortisol and growth hormone (GH) and blood lactate responses were measured in the morning pre and post exercise sessions. GH (Change: HI: 6.34 ± 1.72; BFR: 4.22 ± 1.40 ng·mL^{-1}) and cortisol (Change: HI: 4.46 ± 1.53; BFR: 8.10 ± 2.30 ug·dL^{-1}) significantly ($p < 0.05$) increased immediately post exercise for both protocols compared to baseline and there were no significant differences between the protocols for these responses. In contrast, blood lactate levels (HI: 7.35 ± 0.45; BFR: 4.02 ± 0.33 mmol·L^{-1}) and ratings of perceived exertion were significantly ($p < 0.01$) higher for the HI protocol. In conclusion, acute BFR restricted resistance exercise stimulated similar increases in anabolic and catabolic hormone responses in young women.

Key words: Growth Hormone, Cortisol, blood flow restriction

Key Points

- Growth hormone and cortisol levels significantly increased after a single bout of low intensity blood flow restricted resistance exercise in young women.
- There were no significant differences in hormone responses between the low intensity blood flow restricted protocol and the traditional high intensity higher total workload protocol.
- Low intensity blood flow restricted resistance exercise provides a sufficient stimulus to elicit anabolic and catabolic hormone responses in young women.

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