

Postresistance Exercise Ethanol Ingestion and Acute Testosterone Bioavailability

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Abstract

Introduction Alcohol (ethanol) and resistance exercise can independently affect circulating bioavailable testosterone concentration.

Purpose The purpose of this study was to examine the testosterone bioavailability and the anabolic endocrine milieu in response to acute ethanol ingestion after a bout of heavy resistance exercise.

Methods Eight resistance-trained men (mean \pm SD: 25.3 \pm 3.2 yr, 87.7 \pm 15.1 kg, 177 \pm 7 cm) completed two identical acute heavy resistance exercise tests (AHRET: six sets of 10 repetitions of Smith machine squats) separated by 1 wk. Post-AHRET, participants consumed either 1.09 g of grain ethanol per kilogram lean mass (EtOH condition) or no ethanol (placebo condition). Blood samples were collected immediately before exercise (PRE), immediately after exercise (IP), and every 20 min postexercise for 300 min. Samples after IP were pooled into phases (20–40 min, 60–120 min, and 140–300 min after exercise) and analyzed for total testosterone (TT) and free testosterone (FT), sex hormone-binding globulin (SHBG), cortisol, and estradiol.

Results Peak blood ethanol concentration (0.088 \pm 0.015 g·dL⁻¹) was achieved 60–90 min postexercise. TT and FT were elevated significantly ($P \leq 0.05$) at IP for both conditions. At 140–300 min postexercise, TT, FT, and free androgen index were significantly higher for EtOH (TT: 22.5 \pm 12.5 nmol·L⁻¹; FT: 40.5 \pm 7.6 pmol·L⁻¹) than for placebo (TT: 13.9 \pm 6.8 nmol·L⁻¹; FT: 22.7 \pm 10.0 pmol·L⁻¹). No differences between conditions were noted for SHBG, cortisol, or estradiol.

Conclusion Postexercise ethanol ingestion affects the hormonal milieu including testosterone concentration and bioavailability during recovery from resistance exercise.