

ACUTE EFFECTS OF A SINGLE-BOUT OF RESISTANCE-TRAINING OR PLYOMETRICS ON MARKERS OF BONE TURNOVER AND HORMONES IN MEN

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ABSTRACT

Weight-bearing exercise positively affects bone mineral density (BMD) and bone strength, presumably by altering the balance between bone formation and resorption. The purpose of the present study was to determine the acute response of markers of bone turnover and hormones to a single-bout of resistance-training or plyometrics. Twelve recreationally active males, aged 24-63 years, participated in this partially randomized cross-over study, which included five trials: PLY (fed/fasted), RT (fed/fasted), and a no-exercise, fed control trial (CON) (n=6). Blood was drawn immediately prior to exercise (PRE), immediately following exercise (POST), and 15, 30, 60, 120 min, and 24 hr following PRE. Total testosterone (T), intact parathyroid hormone (PTH), and cortisol (COR) concentrations in serum were determined. Serum bone-specific alkaline phosphatase (BAP) (bone formation marker) and tartrate-resistant acid phosphatase, isoform 5b (TRAP5b) (bone resorption marker) were measured. The results of the present study suggest favorable changes in bone formation and bone resorption as assessed by bone turnover markers (BAP and TRAP5b) following a single-bout of RT or PLY. The decrease in PTH following plyometrics and resistance-training positively correlated with a decrease in TRAP5b, suggesting that PTH may mediate the exercise-induced changes in osteoclast activity.