

SIX MONTHS OF RESISTANCE TRAINING OR PLYOMETRICS EXERCISE POSITIVELY AFFECTS BONE MINERAL DENSITY AND BONE TURNOVER MARKER RATIOS IN MEN WITH OSTEOPENIA

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ABSTRACT

Weight-bearing exercise that is high-impact and dynamic positively affects bone mineral density (BMD), and regular participation in this type of activity is recommended to preserve bone health in adults. However, there are limited data on the long-term effects of weight-bearing exercise on BMD in adult males, particularly in men with osteopenia. **PURPOSE:** To 1) determine the effects of six months of resistance training (RT) or plyometrics (PLYO) exercise on changes in BMD in males with osteopenia; and 2) determine the effects of six months of RT or PLYO exercise on changes in bone turnover in males with osteopenia. **METHODS:** Twenty-one recreationally active (>4 h/wk of activity) healthy males (25-55 y) with osteopenia in the hip or lumbar spine (L1-L4) were randomized into a 6-mo RT (N = 9) or PLYO (N = 8) exercise program. Dual energy X-ray absorptiometry was used to measure bone area, BMC, and BMD of the lumbar spine (L1-L4), total left hip, and whole body (WB). Serum concentrations of osteocalcin (OC), bone-alkaline phosphatase (BAP), tartrate-resistant acid phosphatase isoform 5b (Trap5b) and carboxyterminal telopeptide of type I collagen (CTX) were measured determine bone turnover activity. **RESULTS:** Two-factor repeated measures ANOVA showed that WB BMD increased after the 6-mo exercise interventions ($p=0.070$) with no differences between RT and PLYO groups (+1.32 and 0.52 %, respectively). Although there were no statistically significant changes in bone turnover markers, the BAP/CTX ($p=0.036$) and OC/CTX ratios ($p=0.077$) were significantly increased after the exercise intervention with no differences between RT and PLYO. **CONCLUSION:** We are the first to show that participation in 6 mo of RT or PLYO can improve WB BMD and bone turnover ratios in osteopenic men.