

Effects of vibration and resistance training on neuromuscular and hormonal measures.

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Abstract

The aim was to study whether whole body vibration (WBV) combined with conventional resistance training (CRT) induces a higher increase in neuromuscular and hormonal measures compared with CRT or WBV, respectively. Twenty-eight young men were randomized in three groups; squat only (S), combination of WBV and squat (S+V) and WBV only (V). S+V performed six sets with eight repetitions with corresponding eight repetition maximum (RM) loads on the vibrating platform, whereas S and V performed the same protocol without WBV and resistance, respectively. Maximal isometric voluntary contraction (MVC) with electromyography (EMG) measurements during leg press, counter movement jump (CMJ) measures (mechanical performance) including jump height, mean power (P_{mean}), peak power (P_{peak}) and velocity at P_{peak} (V_{peak}) and acute hormonal responses to training sessions were measured before and after a 9-week training period. ANOVA showed no significant changes between the three groups after training in any neuromuscular variable measured [except P_{mean}, S higher than V (P<0.05)]. However, applying t tests within each group revealed that MVC increased in S and S+V after training (P<0.05). Jump height, P_{mean} and P_{peak} increased only in S, concomitantly with increased V_{peak} in all groups (P<0.05). Testosterone increased during training sessions in S and S+V (P<0.05). Growth hormone (GH) increased in all groups but S+V showed higher responses than S and V (P<0.05). Cortisol increased only in S+V (P<0.05). We conclude that combined WBV and CRT did not additionally increase MVC and mechanical performance compared with CRT alone. Furthermore, WBV alone did not increase MVC and mechanical performance in spite of increased GH.

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