

## **Comparison between two methods of variable resistance training on body composition, muscular strength and functional capacity among untrained males**

### **ABSTRACT**

Several studies have shown a positive association between variable resistance training (VRT) and improvements in muscular performance. However, the effects of VRT on body composition among untrained individuals remain unclear. The objective of this study was to examine the comparison between methods of VRT on body composition, muscular strength and functional capacity among untrained male adults. Fifty healthy untrained males (age:  $21.5 \pm 1.95$  years) were selected randomly and assigned into three groups: combined weight and chain (WC), combined weight and elastic band (WE), and free-weight (CG). All three groups completed 12 weeks of high intensity resistance training (70-80% of one-repetition maximum) with three sets of 8-12 repetitions two times per week. Approximately 65% of the whole resistance was provided by free-weights, while the other 35% of the resistance was provided by chains and elastic bands for the WC and WE groups, respectively. Dependent variables including body composition, muscular strength and functional capacity using bioelectrical impedance analyzer, one-repetition maximum and maximum repetitions to muscular fatigue were measured, respectively in pre-test, post-test 1 (week 6) and post-test 2. Significance level was set at  $P < 0.05$ . No differences existed among all groups at baseline for depended variables. A mixed model ANOVA with repeated measurements analysis revealed that although there were not significant differences in body composition among the groups ( $P > 0.05$ ), all groups showed a significant reduction in fat mass and significant increase in fat-free mass during and after the intervention ( $P = 0.0001$ ), and these differences were insignificantly greater in WE and WC groups compared with CG group. Furthermore, all three groups showed significant improvements in muscular strength and functional capacity during and after intervention ( $P = 0.0001$ ), and muscular strength and functional capacity were greater in WE and WC groups compared with the CG group, but there were not significant differences in muscular strength and functional capacity between WE and WC groups. However, the WE group showed insignificantly more improvement in muscular strength and functional capacity compared with the WC group during and after the intervention. The results of this study show that VRT has a slightly better effect than free-weight to improve body composition during and after 12 weeks intervention. Also, WE training had a slightly better effect than WC training in improving muscular strength and functional capacity during and after 12 weeks of VRT among untrained male adults.

**Keyword:** Bioelectrical impedance analyzer; Combined weight and chain; Combined weight and elastic band; Maximum repetitions; One-repetition maximum; Variable resistance training