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Abstract

The Addition of High-Load Resistance Exercises to a High-Intensity Functional Training Program Elicits Further Improvements in Body Composition in Trained Healthy Adults †

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Abstract: AIM: The aim of this study was to examine whether the addition of high-load resistance exercises to a high-intensity functional training (HIFT) program elicits further improvements in physical fitness-related parameters and body composition. **Material & Method:** Twenty recreationally active volunteers (8 male, 12 female; age, 30 ± 4 y; body mass, 65.8 ± 12.7 kg; height, 167 ± 7 cm) were randomly assigned to a HIFT-control (HIFT-C, $n = 10$) or HIFT-power group (HIFT-P, $n = 10$) and trained 3 times per week for 8 weeks. The HIFT-C protocol consisted of four rounds of an 8-exercise circuit (30:15 s work:rest, 2 min rest after round 2), which included clean-and-press jump box, TRX chest press, wall ball throws, burpees, repeated 10 m sprints, sumo squat-and-upright row (at 65% 1RM), and abdominal crunches. The HIFT-P group replaced the TRX chest press with bench chest press and the squat-and-upright row with squat at 80% 1RM. Before and after training, participants underwent evaluation of body composition, cardiorespiratory fitness (VO_2max), vertical jump, 1RM bench press, and maximum number of abdominal crunches in 1 min. Two-way repeated-measures ANOVA was used to analyze results. Statistical significance was set at $p < 0.05$. **Results:** After 8 weeks the following parameters improved in both groups: VO_2max (5.2 ± 5.4%, $p = 0.003$), squat jump (10.9 ± 9.8%, $p < 0.001$), countermovement jump (8.0 ± 6.0%, $p < 0.001$), bench press 1RM (18.6 ± 19.6%, $p < 0.001$), and body fat mass (0.82 ± 1.65 kg, $p < 0.001$). However, muscle mass increased only in HIFT-P (3.3 ± 2.3%, $p = 0.002$) and abdominal muscle endurance improved only in HIFT-C (16.2 ± 12.2%, $p = 0.002$). **Conclusions:** Short-term HIFT resulted in improvements in whole-body cardiorespiratory and neuromuscular fitness and reduction of body fat. The addition of high-load resistance exercises to a HIFT training program was well tolerated and resulted in increased muscle mass.

Keywords: body composition; high-intensity functional training; strength; VO_2max