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Effects of Whole-Body Vibration on Resistance Training for Untrained Adults

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ABSTRACT

Although resistance training (RT) combined with whole-body vibration (WBV) is becoming increasingly popular among untrained adults, the additional effects of WBV on muscle fitness are still not well understood. The aim of the present study was to evaluate the effects of WBV on muscle strength, muscle power, muscle endurance, and neuromuscular activities compared with the identical RT without WBV. Thirty-three individuals (6 males and 27 females; 22-49 years old) were randomly assigned to a training program using slow-velocity RT coupled with WBV (RT-WBV group, n = 17) or an identical exercise program without WBV (RT group, n = 16). Participants performed eight exercises per 60 min session on a vibration platform (RT-WBV group, frequency, 35 Hz; amplitude, 2 mm) twice weekly for seven weeks. To evaluate the effects of WBV, the maximal isometric and isokinetic knee extension strength, maximal isometric lumbar extension strength, countermovement-jump, and the number of sit-ups were measured before and after the trial. Significantly higher increases were observed in the maximal isometric and concentric knee extension strength (p = 0.02, p = 0.04, respectively), and maximal isometric lumbar extension strength at 60 degrees of trunk flexion (p = 0.02) in the RT-WBV group (+36.8%, +38.4%, +26.4%, respectively) in comparison to the RT group (+16.5%, +12.8%, +14.3%, respectively). A significant difference was also observed between the RT-WBV group (+8.4%) and the RT group (+4.7%) in the countermovement jump height (p = 0.02). In conclusion, the results suggest that significant additional increases in maximal isometric and concentric knee extension and lumbar extension strength, and countermovement jump height can be achieved by incorporating WBV into a slow-velocity RT program during the initial stage of regular RT in untrained healthy adults.

Key words: Vibration, novice, adults, exercise, strength, power

Key Points

- A randomized controlled trial was conducted to investigate the effects of slow velocity resistance training combined with whole-body vibration on maximal muscle strength, power, muscle endurance, and neuromuscular activities in healthy untrained individuals.

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