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Original Research

A Comparison of Whole-Body Vibration and Resistance Training on Total Work in the Rotator Cuff

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Abstract

Context: Whole-body vibration machines are a relatively new technology being implemented in the athletic setting. Numerous authors have examined the proposed physiologic mechanisms of vibration therapy and performance outcomes. Changes have mainly been observed in the lower extremity after individual exercises, with minimal attention to the upper extremity and resistance training programs.

Objective: To examine the effects of a novel vibration intervention directed at the upper extremity as a precursor to a supervised, multijoint dynamic resistance training program.

Design: Randomized controlled trial.

Setting: National Collegiate Athletic Association Division IA institution.

Patients or Other Participants: Thirteen female student-athletes were divided into the following 2 treatment groups: (1) whole-body vibration and resistance training or (2) resistance training only.

Intervention(s): Participants in the vibration and resistance training group used an experimental vibration protocol of 2 × 60 seconds at 4 mm and 50 Hz, in a modified push-up position, 3 times per week for 10 weeks, just before their supervised resistance training session.

Main Outcome Measure(s): Isokinetic total work measurements of the rotator cuff were collected at baseline and at week 5 and week 10.

Results: No differences were found between the treatment groups ($P > .05$). However, rotator cuff output across time increased in both groups ($P < .05$).

Conclusions: Although findings did not differ between the groups, the use of whole-body vibration as a precursor to multijoint exercises warrants further

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investigation because of the current lack of literature on the topic. Our results indicate that indirectly strengthening the rotator cuff using a multijoint dynamic resistance training program is possible.

Keywords: [isokinetic testing](#), [shoulder](#), [upper extremity](#)

Jason Hand, MS, ATC, contributed to conception and design; acquisition and analysis and interpretation of the data; and drafting and critical revision of the article. Susan Verscheure, PhD, ATC, contributed to conception and design and critical revision and final approval of the article. Louis Osternig, PhD, ATC, contributed to conception and design, analysis and interpretation of the data, and critical revision and final approval of the article.

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