

## The Effects of Whole-Body Vibration and Weighted Vest on Vertical Jump Power and Flexibility

OSCAR GOMEZ, LUIS MACIAS, JONATHAN GONZALEZ, and MURAT KARABULUT

Neuromuscular Performance Laboratory; Department of Health and Human Performance; The University of Texas Rio Grande Valley; Brownsville, TX

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*Category: Undergraduate*

*Advisor / Mentor: Karabulut, Murat (murat.karabulut@utrgv.edu)*

### ABSTRACT

**PURPOSE:** The purpose of this study was to assess the effects of the combination of weighted vest and full body vibration platform on jump height and flexibility. **METHODS:** A total of 29 subjects (15 males and 14 females) completed the study. Upon completion of the paperwork, anthropometric measurements were recorded, and the subjects were familiarized with the protocol. The four randomized conditions were as follows: Combination of whole-body vibration platform and weighted vest (WBV+WV), whole-body vibration platform (WBV), weighted vest (WV), or body weight only (BW). Each experimental session was preceded by a 5-minute warmup on a cycle ergometer at 50 rpm with 1.0 kg and 1.5 kg resistance for females and males, respectively. To determine optimal cycle seat height, the seat was aligned to the subject's greater trochanter. For each condition, the subjects were required to perform a dynamic squat exercise, where a complete repetition was defined as movement from almost standing straight to 120° knee flexion. A metronome was used to maintain squat tempo consistent throughout the study, and a full repetition was complete at 4 seconds: 2 seconds flexion and 2 seconds extension. Immediately following completion of the exercise, vertical jump power, flexibility, heart rate, and blood pressure were assessed. Sessions were separated with a minimum of 48 hours. **RESULTS:** Significant condition main effects were detected for jump height between WBV+WV and BW ( $p < .03$ ), and WBV and BW ( $p < .02$ ). There were significant time main effects for mean sit-and-reach ( $p < .01$ ), systolic blood pressure ( $p < .01$ ), and diastolic blood pressure ( $p < .01$ ) values. **CONCLUSION:** WBV alone or combined with WV could be causing one or several warm up-related physiological changes such as greater activation of enzymes, lowered muscle viscosity, neurological activation, and enhanced metabolic reactions resulting in better jump performance. Future studies should investigate the effects of WBV+WV and WBV warm up protocols on performance for events that require a greater explosive power in athletes.