

ABSTRACT

RESEARCH PAPER: THE INFLUENCE OF WHOLE-BODY-VIBRATION ON LEG STRENGTH AND MUSCLE ACTIVATION

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Whole body vibration (WBV) has been proposed as a potential alternative protocol that could elicit post activation potentiation and has been shown to elicit increases in physical. The purpose of this study was to assess changes in motor unit activity in response to repeated exposures to WBV stimuli. By utilizing sEMG decomposition techniques the current study assessed changes in motor unit activity during maximal and submaximal muscle actions (concentric and eccentric isokinetic muscle actions) both before and following a series of WBV exposures. Fifteen, apparently healthy adults aged 18-35 participated in this study. Subjects were excluded from this study if they reported a history of joint replacement, or recent constructive surgery, acute or chronic injury within the last 60 days.

Each participant was assessed on two experimental test sessions separated by 3-7 days. To standardize data collections, all participants wore compression clothing and standard laboratory neutral cross-trainer shoes. The two experimental sessions consist of standing on a WBV platform under either a vibration condition (vibration) or a SHAM condition (control) where the vibration was not administered.

Anthropometric measurements recorded included height and weight. Trigno Avanti surface electromyography (EMG) electrodes were placed near the middle portion of the muscle belly on the vastus medialis on the dominant side and on Cybex dynamometer arm. Additionally, Trigno Galileo sensors were placed in the middle of the muscle belly on the vastus medialis and rectus femoris. The current study observed one statistically significant measure, it should be noted that, results with moderate effect sizes were also observed in some of our parameters, mainly, phase*contraction and

vibration*contraction. These differences suggest that potential changes in muscle activation patterns may be altered following WBV, but further investigations are needed to determine the overall effect more clearly.