


## The Effect of Whole-Body Vibration Frequency and Amplitude on the Myoelectric Activity of Vastus Medialis and Vastus Lateralis

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### ABSTRACT

The aim of this study was to evaluate the efficiency of training protocols for whole body vibration (WBV) training through the modulation of the frequency and amplitude of vibration. Despite the large number of studies regarding effects of such training, there is still lack of knowledge regarding optimum training protocols. The study analyzed the influence of whole-body vibration parameters (i.e., the frequency and amplitude) on the myoelectric activity of vastus lateralis and vastus medialis in 29 females with the use of electromyography (EMG). The first and second of the eight consecutive trials were performed without vibrations; the remaining six trials were performed in a randomized order on a platform vibrating at different amplitude (2mm and 4mm) and frequency (20 Hz, 40 Hz and 60 Hz) combinations. The results revealed significantly higher EMG amplitude of both muscles during the vibration as compared with the non- vibrated trials (trial 1 and 2). Furthermore, the EMG activity significantly increased both with the amplitude and frequency, being the highest when the frequency and amplitude of reached 60 Hz and 4 mm, respectively. The study aims to determine the optimal vibration parameters in the aspect of purposeful stimulation of chosen leg muscles. Based on the results of the presented investigation, sports trainers and physiotherapists may be able to optimize training programs involving vibration platforms.

**Key words:** EMG, vibration training, whole body vibration (WBV), muscle activity

## Key Points

- The observed vibration effect significantly increases both with the amplitude and frequency.
- Certain frequency/amplitude combinations of mechanical vibrations cause the same level of myoelectric muscle activity.

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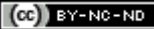
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