

ORIGINAL RESEARCH

THE EFFECT OF WHOLE BODY VIBRATION ON ANKLE RANGE OF MOTION AND THE H-REFLEX

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ABSTRACT

Background and Purpose. Limited research suggests that an effect of whole body vibration (WBV) on the central nervous system (CNS) is suppression. An indirect measure used to assess CNS level of activation is the Soleus H-reflex. If true suppression does occur, other factors such as range of motion may be impacted. The purpose of this study was to examine the impact of WBV on H-reflex amplitude and passive ankle dorsiflexion.

Subjects and Methods. Twenty-seven healthy volunteers between the ages of 21-41 participated. Subjects were randomly assigned to a control group (n=13) or WBV group (n=14). H-reflex and ankle dorsiflexion measures were assessed before and after a three minute WBV perturbation (40 μ Hz, amplitude 2-4 mm). These measurements were repeated every five minutes up to twenty minutes following the intervention.

Results. The H-reflex amplitude showed a significant decrease ($p < .05$) between pre-test and initial post-test for both groups. The H-reflex returned to baseline within five minutes following the intervention. The dorsiflexion range of motion showed significant interaction ($p < .05$). All changes were less than 5 degrees; therefore, no clear clinical impact was evident.

Results. The observed decrease in H-reflex amplitude immediately following WBV agreed with previous research indicating a lower level of CNS activation. However, since the control group also showed this change, WBV does not appear to be a key cause of suppression. Range of motion was not clinically significant for either group.

Key Words. Whole body vibration, H-reflex, Soleus muscle

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