ABSTRACT

**THESIS:** The Acute Effect of Whole-Body Vibration on Gait Parameters in Adults with Cerebral Palsy

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**DATE:** December 2011

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As more adults with cerebral palsy (CP) are surviving longer (1) an intervention is needed to help reduce spasticity and increase overall strength to improve mobility, and therefore life quality. Adults with CP are lacking a form of independent exercise that allows them to maintain or improve their ambulation skills (1, 2). A new approach to increase muscle strength and flexibility is called whole-body vibration (WBV). The goal of the current study was to determine the acute effects of using an individualized frequency (I-Freq) approach to WBV therapy on gait in adults with CP. In this study, eight adults with CP (age 20-51 years, six men, two women) participated in two sets of testing: the first set was used to determine their I-Freq and the second set to perform a 3D gait analysis before and after a WBV treatment. The WBV was administered in five sets of one minute of vibration followed by one minute of rest. The gait analyses included collection of kinematic and EMG data. Subjects experienced a significant increase in walking speed ($P=0.047$), stride length ($P=0.017$) and dynamic ankle range of motion ($P=0.042$) after the acute bout of WBV. These data show that WBV treatments at I-Freq could help adults with CP maintain their range of motion and overall mobility through an independent and cost effective means.