

Whole-Body Vibration Training in Multiple Sclerosis patients - a Pilot Study.

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INTRODUCTION: The purpose of this pilot study was to examine whether a Whole-Body Vibration device (Power Plate) leads to strength and balance increase, endurance improvement, and improved functional performance in daily life, in Multiple Sclerosis patients.

DESIGN: Pilot Clinical Trial Study

SETTING: Outpatient of a physiotherapy clinic in Malmo, Sweden

SUBJECTS: Ten Multiple Sclerosis patients with moderate to severe disability (Kurtzke's Expanded Disability Status Scale 4.0 – 6.5) were included in the study.

INTERVENTION: A Whole-Body Vibration (WBV) at low frequency (30 Hz oscillations at Low amplitude (18 m/s²)) in 10 series of 30 seconds, with 30 break pause in-between the series. The WBV was administered twice a week for a period of 12 weeks. Variations of squats and lunges as well as upper body and stretching exercises were used as exercises and positions on the WBV-device.

MAIN OUTCOME MEASURES: Timed Get Up and Go Test, Timed 10 Meter Walk, Timed 20 Meter Walk (including turn around after 10 meter), Six-minute Walk, Timed Rise Up from a Chair and Sit Down on a Chair Ten Times, Nine Hole Peg Test (left & right). The pre-test was performed 1 week before the intervention and the post-test one week after the 12 week program.

RESULTS: All 10 patients finished the 12 weeks intervention program. A one tailed T-test showed a significant group effect for the Timed Get Up and Go Test ($p < 0.05$) and for the Nine Hole Peg Test for both the right and the left hand ($p < 0.05$). After correcting for outliers (two SD's from the mean) a significant effect was found for the Rise and Sit Down 10 Times Test ($p < 0.05$). The other tests didn't show a significant increase for the group. However, most individual patients increased a little in performance or stayed at a similar level. With the 10 Meter Walk Test seven out of nine patients improved or stayed at the same level (one outlier). On the Six Minutes Walk and the 20 Meter Walk Test six out of nine patients were able to maintain or improve their performance (1 outlier).

CONCLUSION: The results of this pilot study indicate that whole-body vibration with the Power-Plate may positively influence postural control, balance, mobility,

strength, and endurance in Multiple Sclerosis patients. Short tasks where explosive strength and coordination was required (Get Up and Go, Rise and Sit Down, and Nine Hole Peg Test) showed a significant improvement. While the longer test (20 meter walk, 6 minute walk) didn't show significance increase post intervention. Results from other studies reveal a similar finding, indicating that whole-body vibration influences power and explosive strength, although exercises are not performed explosively, often even statically.

In a degenerative disease like Multiple Sclerosis maintaining function and performance is a major goal of therapy. For most people, being independent for longer is a huge increase in quality of life, and will reduce the need for professional help and support significantly. The results in this pilot study showed that most of the patients maintained their level of performance which indicates the positive benefits that could be gained with a whole-body vibrating program. Further research with a control group need to be done in order to find out if - and how- a whole-body vibration program is a valuable training program for Multiple Sclerosis patients.

February 2007