

## Whole Body Vibration Therapy Increases Bone Strength

June 17, 2013 — A treatment known as whole body vibration therapy significantly increases bone strength among adolescents with cerebral palsy, a new clinical trial from New Zealand shows.

The results were presented Saturday at The Endocrine Society's 95th Annual Meeting in San Francisco.

Cerebral palsy affects more than half a million people in the United States. Caused by brain damage around the time of birth, the disorder affects muscle tone and movement, which can severely decrease the quality of life by making walking and other daily activities difficult. As movement becomes impaired, disuse weakens both the muscles and bones.

Although few therapies have proven successful at increasing bone and muscle strength among people with cerebral palsy, one promising approach is whole body vibration therapy, or WBVT. This method, as its name implies, involves standing on a machine that moves the body, causing a tilting movement of the pelvis similar to the motion of walking but much more frequently. Previous research among healthy adults, including post-menopausal women, has demonstrated that whole body vibration therapy can promote bone and muscle health.

To see if these beneficial effects occur in adolescents with cerebral palsy, researchers measured bone-mineral density and muscle mass after a course of whole body vibration therapy. They found that leg and spine bone-mineral density increased after the therapy, although total bone-mineral density did not change. Muscle mass in the legs also increased.

In terms of walking ability, whole body vibration therapy significantly increased the distance that study participants could walk for six minutes. Compared to the distance they walked at the beginning of the study, participants increased their distance by about 10 percent after receiving the whole body vibration therapy. Specifically, at the study's start, the average distance walked was 286 meters, or 938 feet; by the end of the study, this average was 314 meters, or 1,030 feet.

"By maintaining or improving muscle and bone health during growth, WBVT can maximize mobility and bone strength into adult life, improving both mobility and quality of life," said the study's lead author Silmara Gusso, PhD, post-doctoral research fellow at the University of Auckland-Liggins Institute in New Zealand. "This extremely encouraging initial data strongly suggest WBVT will become a mainstay of treatment in children with loco-motor disability and justify the introduction of a completely novel and innovative treatment modality into pediatric health care."

To assess the effects of whole body vibration therapy, researchers recruited 13 adolescents with cerebral palsy to receive the therapy for nine minutes per day for 20 weeks. Study participants included eight girls and five boys. Their average age was 17 years, and all had moderate cerebral palsy. Researchers used special X-ray tests to measure bone-mineral density and muscle mass before and after the whole body vibration therapy.

Jubilee Crippled Children's Foundation Trust, the David Levene Foundation, the Australasian Paediatric Endocrine Group and the Maurice and Phyllis Paykel Trust provided funding for the study.

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