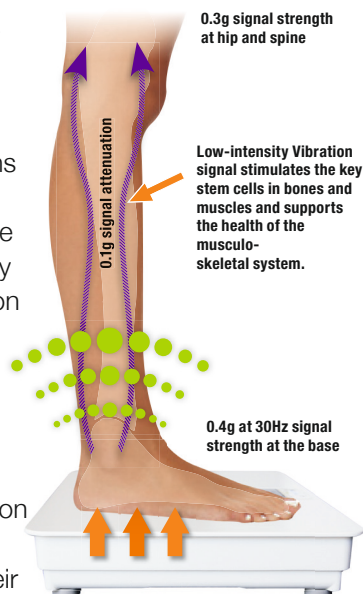


Low-intensity Vibration (LiV) can maintain and increase bone density in children and young people

Bone loss in children and young people caused by metabolic or genetic problems, physical disability or disease treatments can result in poor bone development and accrual. These children are at more likely to experience fractures and are at a higher risk of developing osteoporosis in adulthood. Scientific research has demonstrated that Low-intensity Vibration (LiV) can support the growth of healthy bone in children and young people, benefitting musculoskeletal health.

Achieving peak bone mass is a critical determinant of life-long skeletal health. Bone mass develops from birth to around the age of 30; after that it begins to slowly decline. Finding therapies to increase peak bone mass in children is critical if they have a disease or other limitation that prevents them from being active.

Scientific evidence has established that LiV is a safe, non-pharmacological intervention for children and young people with conditions that impede their normal bone accrual, such as Duchenne muscular dystrophy, cerebral palsy, eating disorders or medications such as corticosteroids.



Another study, involving children with cerebral palsy, compared the results of six months of LiV with standing. Researchers recorded increases in cortical bone strength after six months of LiV use – an important component of reducing fracture risk (Wren et al., 2010).

In a placebo-controlled study of ambulant boys with Duchenne muscular dystrophy, significant treatment improvements were observed in bone density (spine +10.8%, total body +10.7% and femoral neck +14.5%) from LiV use over 12 months (Bianchi et al., 2013).

A review of research into vibration as a treatment for children with disabilities concluded that LiV appears safe and efficient to use (Matute-Llorente et al., 2014).

Another study into girls with adolescent idiopathic scoliosis, found that using LiV for 12 months resulted in significant bone mineral density increases in the femoral neck as well as an increase in lumbar spine bone among participants (Lam et al., 2013).

A more recent study of childhood cancer survivors five years from diagnosis, found that whole body bone mineral density and tibial trabecular bone increased significantly over 12 months after using a LiV device compared to a placebo device (Ness et al., 2015).

THE RESEARCH

After reviewing the current available research, scientists published a definitive paper in the prestigious scientific journal Nature, stating that: “extremely small mechanical signals, induced at high frequency using Low-intensity Vibration, are anabolic to bone” (Pagnotti et al., 2019). Building on a growing body of evidence, the authors conclude that LiV is effective at building bone density in children and adults.

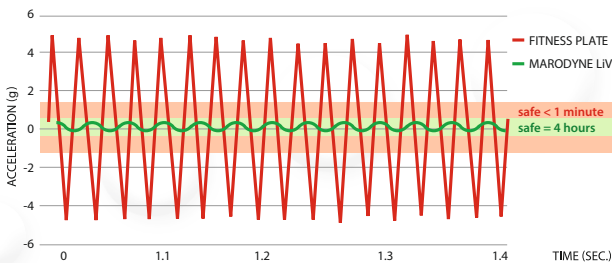
In one placebo-controlled study of children that were unable to walk normally, LiV was used for six months. The LiV group showed an 18% benefit in proximal tibial trabecular bone quality compared to the placebo control group (Ward et al., 2004).

CONCLUSION

In children that still have high anabolic capacities the opportunity to improve peak bone mass is proven to be possible with LiV. The extra mechanical stimulus can compensate for the loss they had during disease or treatment. The Marodyne LiV is the world's first medically approved, commercially available Low-intensity Vibration device available to increase bone density in children.

SAFE TO USE

Safety limits from ISO 2631: Mechanical vibration and shock "Evaluation of human exposure to whole-body vibration".



Shown above: the plot of surface accelerations of whole body vibration platform (red) and Marodyne LiV (green). Threshold lines for 1 hour and 1 minute are drawn onto the chart for reference; exposure greater than 1 minute must have accelerations inside the 1 minute band.



BENEFITS OF LOW-INTENSITY VIBRATION (LiV)

Fully approved

- No side effects
- Drug-free treatment

Safe to use

- LiV is safe to use by all, including children, those with osteoporosis and the elderly
- LiV can be used to slow deconditioning in the fit and healthy

Indications for use

- A safe and effective treatment of osteoporosis
- Maintains and increases bone mineral density
- Builds muscle strength and muscle mass in the legs
- Stimulates blood circulation and lymphatic flow
- Improves balance, postural reflexes and coordination

Just 10 minutes of LiV daily is proven to have a positive effect on your bones, muscles and circulation.

LiV is a safe, drug-free, scientific and research-based solution for improving musculoskeletal health and wellness.

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