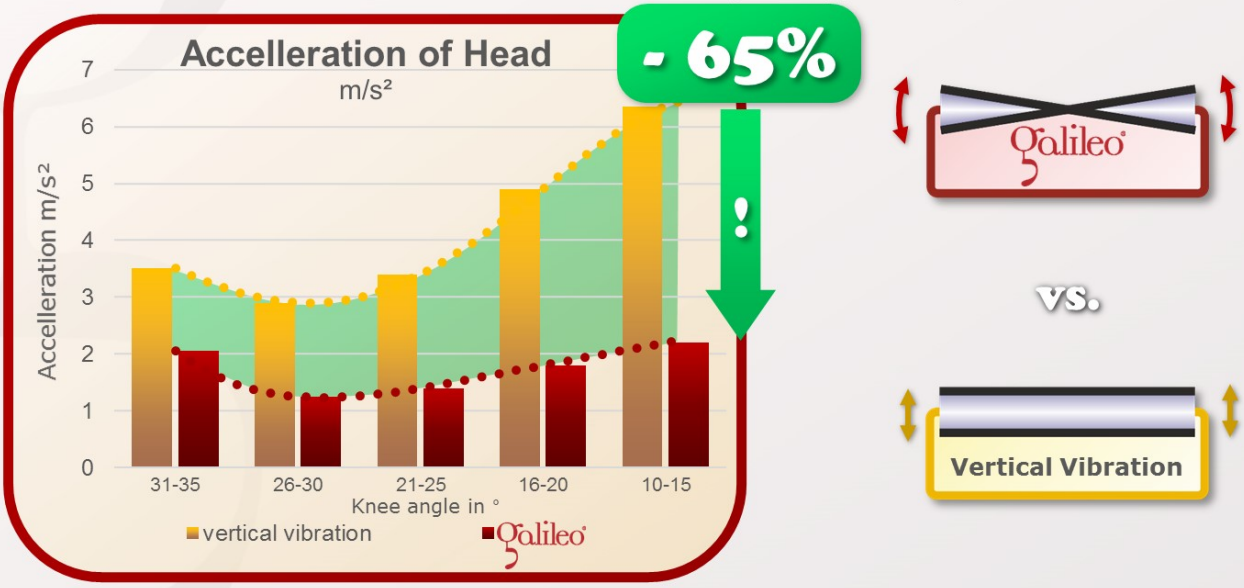
Does Galileo Training transmit more vibration to the head than in vertical vibration?

The answer is: NO

This study compares vibration transmission to the head at different knee angles for Galileo Training compared with vertical vibration (30Hz, pos. 2, standing, knee angle between 10° and 35°). For identical stimulation parameters (30Hz, pos. 2) vibration transmission to the head for Galileo Training is between 40% and 65% smaller than in vertical vibration. For this reason Galileo Training also supports frequencies below 20Hz.



Abercromby AF, Amonette WE, Layne CS, McFarlin BK, Hinman MR, Paloski WH: Vibration exposure and biodynamic responses during whole-body vibration training; Med Sci Sports Exerc., 39(10):1794-800, 2007; PMID: 17909407; GID: 169

Galileo Research Fact Sheet #18 www.galileo-training.com

As this study shows, this is in fact not the case. You can test and feel the difference using your Galileo device right away: Stand with straight legs symmetrically on position 2 at 18Hz.

The transmission of the vibration to the head is very low in this position. Now turn 90° (both heels are now on one side of the platform at position 2) and shift you weight on the heels.

Now there is a massive vibration transmission to the head (Please don't try this when you have any back-issues and if not only try it for a very short time!!!). Why does this make such a difference?

The answer is simple geometry: Due to the side-alternation of the Galileo plate one leg is lifted while the other can drops – therefore the spine can stay at its position in space and the hip tilts around the pivoting point of the spine (the feet are not lifted at the same time as in vertical vibration).

At the same time this side-alternation which mimic human gait stimulates the muscles of the back, because at mid and high frequencies (#GIS1) they try to stabilize the tilting hip. This is one of the reasons why Galileo Training can be so effective in relaxation of the back (#GRFS9, #GRFS16, #GRFS38).

By the way: even at identical parameters (frequency, amplitude) Galileo Training causes higher muscle activation (#GRFS2) and at the same time lower joint force (#GRFS6) as in vertical vibration

Med Sci Sports Exerc., 2007; 39(10): 1794-800, PMID: 17909407

Vibration exposure and biodynamic responses during whole-body vibration training

Abercromby AF, Amonette WE, Layne CS, McFarlin BK, Hinman MR, Paloski WH
Wyle Laboratories, Inc., Houston, TX 77058, USA. andrew.abercromby-1@nasa.gov

Abstract

PURPOSE:
Excessive, chronic whole-body vibration (WBV) has a number of negative side effects on the human body, including disorders of the skeletal, digestive, reproductive, visual, and vestibular systems. Whole-body vibration training (WBVT) is intentional exposure to WBV to increase leg muscle strength, bone mineral density, health-related quality of life, and decrease back pain. The purpose of this study was to quantitatively evaluate vibration exposure and biodynamic responses during typical WBVT regimens.

METHODS:
Healthy men and women (N = 16) were recruited to perform slow, unloaded squats during WBVT (30 Hz; 4 mm(p-p)), during which knee flexion angle (KA), mechanical impedance, head acceleration (Ha(rms)), and estimated vibration dose value (eVDV) were measured. WBVT was repeated using two forms of vibration: 1) vertical forces to both feet simultaneously (VV), and 2) upward forces to only one foot at a time (RV).

RESULTS:
Mechanical impedance varied inversely with KA during RV (effect size, eta(p)(2): 0.668, $P < 0.01$) and VV (eta(p)(2): 0.533, $P < 0.05$). Ha(rms) varied with KA (eta(p)(2): 0.686, $P < 0.01$) and is greater during VV than during RV at all KA ($P < 0.01$). The effect of KA on Ha(rms) is different for RV and VV (eta(p)(2): 0.567, $P < 0.05$). The eVDV associated with typical RV and VV training regimens (30 Hz, 4 mm(p-p), 10 min.d(-1)) exceeds the recommended daily vibration exposure as defined by ISO 2631-1 ($P < 0.01$).

CONCLUSIONS:
ISO standards indicate that 10 min.d(-1) WBVT is potentially harmful to the human body; the risk of adverse health effects may be lower during RV than VV and at half-squats rather than full-squats or upright stance. More research is needed to explore the long-term health hazards of WBVT.