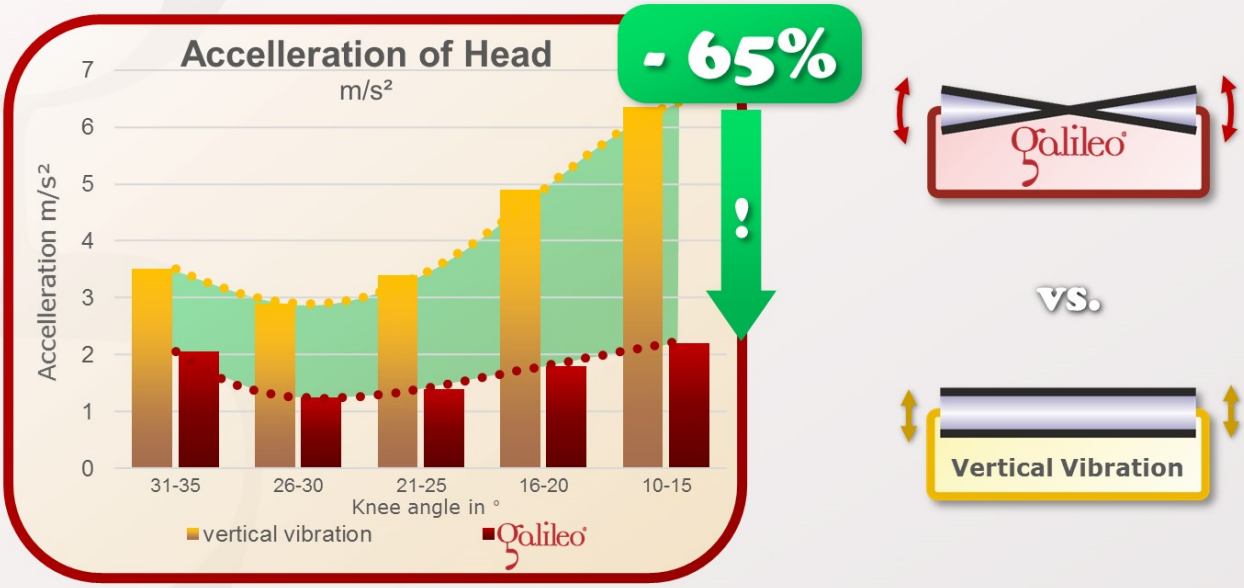
# Does Galileo Training transmit more vibration to the head than in vertical vibration?

## 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



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# Vibration exposure and biodynamic responses during whole-body vibration training

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## 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.