

BALANCE & STABILITY



ABSTRACT 3a

B **ACKGROUND AND OBJECTIVE:** Whole body vibration (WBV) training is a new approach which is currently discussed in the context of reducing the risk of osteoporotic fractures. The study was undertaken to determine the effect of one-year WBV exercise on bone mineral density (BMD) and the number of falls.

METHODS:

151 postmenopausal women (68.5 +/- 3.1 years) were randomly assigned to three groups: (1) conventional (multifunctional) training (TG); (2) multifunctional training including WBV (VTG); (3) wellness-control group (CG). The training groups performed multifunctional training twice weekly (60 min; dancing aerobics, balance training, functional strength training). In the last 15 min of each session, leg strength exercises on vibration platforms were performed. The plates were switched on only in the VTG. The CG performed a low intensity gymnastic and relaxation programme (4 x 10 sessions of 60 min). BMD was measured at the hip and lumbar spine at baseline and after 12 months with the DXA method. Falls were recorded daily with the calendar method in a fall log.

RESULTS:

An increase in BMD at the lumbar spine was measured after one year in both training groups (VTG: + 1.17 +/- 2.4 % vs. TG: + 1.73 +/- 2.4 %). The difference between the TG and the CG was significant ($p < .05$). Regarding the hip region a loss was noted in the CG (- 0.9 +/- 2.5), whereas the BMD stayed stable in the training groups (TG: - 0.3 %; VTG: + 0.1 %). **The fall rate was significantly lower in VTG compared to CG (0.43 falls/person/year (VTG) vs. 1.14 (CG)).**

CONCLUSION:

The multifunctional training resulted in a gain of BMD at the lumbar spine. Vibration training did not enhance the effect on bone **but significantly reduced falls.**



von Stengel, S., et al. (2009). "Effect of whole body vibration exercise on osteoporotic risk factors." *Dtsch Med Wochenschr* 134(30): 1511-1516.

ABSTRACT 3b

Normal aging processes result in losses of functional flexibility and muscular strength, which increase seniors' fall risk and dependence on others. A relatively new intervention to reduce and/or reverse the adverse effects of aging is whole-body vibration (WBV) exercise. The purpose of this article is to review the established effects of WBV exercise exclusively with the aging population. A systematic search utilizing PubMed and Sport Discus databases uncovered journal articles specific to seniors and whole-body vibration. An extensive hand search supplemented the database results to find other relevant articles. Twenty-seven articles were obtained; all articles have been published in the past 8 years, reflecting the recent and growing interest in this area. **Researchers have determined that WBV training can reduce fall risk and improve postural control in seniors. It has also been determined that WBV training can be as effective a conventional resistance training to improve seniors' lower body strength.** However, little is known about the effect of WBV exercise on flexibility and upper body strength in the aging population. More research is required to establish how effective WBV training is on these specific components and how it may affect seniors' quality of life.



Lachance, C., et al. "Is whole-body vibration beneficial for seniors?." *Eur Rev Aging Phys Act* 9.1 (2012): 51-62.