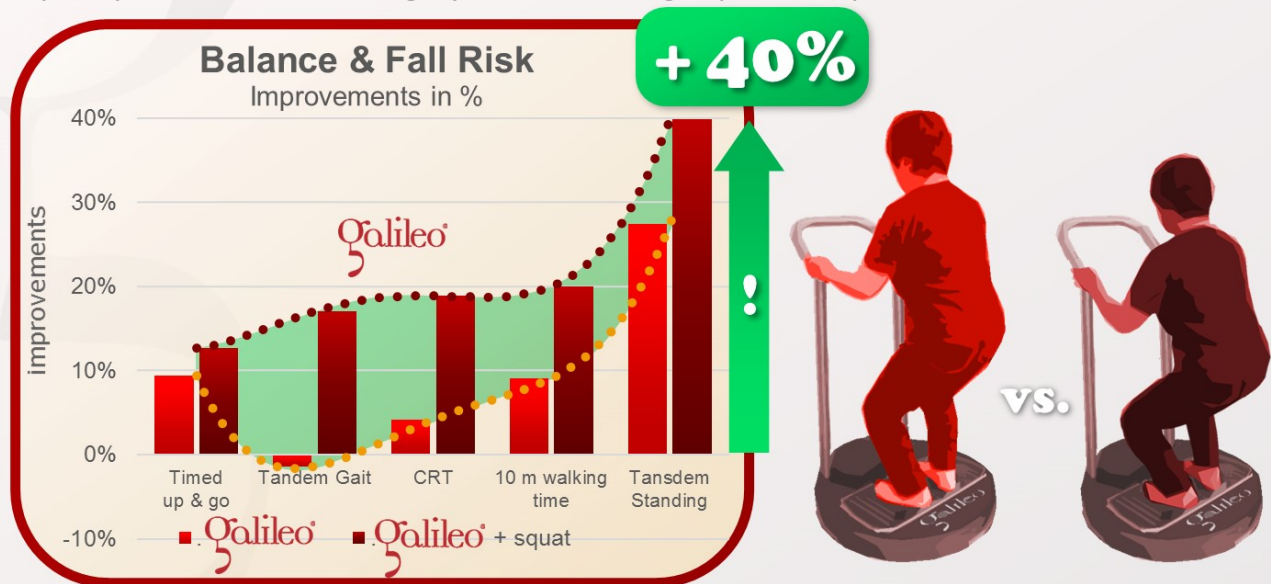


Galileo Training Is Galileo Training using deep squats effective to reduce fall risk and improve balance in elderly?

The answer is: YES

This study reports the effect of 6 months of Galileo Training with and without deep squatting on balance, gait and fall risk in 68 – 79 year old (20Hz, 4 min., 2/week, 6 months). Both groups received Galileo Training, group 1 using static squats at 45° knee angle, group 2 used slow dynamic squats between 45° and 60°. Group 2 improved function in average by 30% more than group 1 with improvements in Balance of 40%.



Osugi T, Iwamoto J, Yamazaki M, Takakuwa M: Effect of a combination of whole body vibration exercise and squat training on body balance, muscle power, and walking ability in the elderly.; Ther Clin Risk Manag, 10:131-8, 2014; PMID: 24591837; GID: 3505

Galileo Research Fact Sheet #54

Home & Wellness: Balance & Fall Risk

www.galileo-training.com

This study shows that deep squats on Galileo is an ideal exercise to decrease fall risk, because it addresses all the neuromuscular aspects which are typically compromised by aging; 1) Muscles of the upper leg and Glutes (both essential for getting up from a chair & climbing stairs); 2) Tibialis Anterior (lifting muscles of the foot to get the foot up from the floor to prevent tipping over); 3) Muscle Power of the legs (faster walking w/ larger steps); and, 4) balance. Many Galileo studies show that even static standing w/ slightly bent knees show significant effects in the deconditioned (#GRFS49, #GRFS42, #GRFS41, #GRF32) and it can even increase bone mass (#GRFS46). Even more effective is the deep squat (group 2 in this study) because it exhausts the body much faster (#GRFS4) and in a shorter training time.

This study shows when using an identical set-up by just increasing the knee angle from 45° to a moderate 60° significantly increases the training effects in 68 - 79 year old participants even though only 20Hz was used. The training would have been even more effective at 30Hz (between 20Hz and 30Hz Galileo Training doubles the muscle activation GRFS3); foot position 1mm; deep squatting (Exercises 22, 23, 41 or 44) are the simplest yet very demanding exercises to minimize fall risk and to train the muscles of the legs at the same time. Shift body weight to the heels, try not to hold on to the handrail, use 25Hz-33Hz, start with (low amplitudes) foot position 1mm. To make the exercise harder: squat deeper (upper leg parallel to ground) use additional weight in hands w/straight arms, increase frequency, and increase amplitude/foot position from 1mm to 2.5mm. This exercise looks simple but it's very demanding training of the upper legs, glutes and back extensor muscles. When shifting more weight to the heels the exercise gets more effective and trains tibialis anterior (lifting the foot) and because the supporting area beneath the feet gets much smaller it is also very nice balance training. The optimal setting for the exercise (knee angle, additional weights, frequency, foot position) is to exhaust the muscles in less than 60 seconds. – Deep Squats on the Galileo - So simple but so much to gain!



[Ther Clin Risk Manag](#). 2014 Feb 20;10:131-8. doi: 10.2147/TCRM.S57806. eCollection 2014.

Effect of a combination of whole body vibration exercise and squat training on body balance, muscle power, and walking ability in the elderly.

Osugi T¹, Iwamoto J², Yamazaki M¹, Takakuwa M³.

Abstract

A randomized controlled trial was conducted to clarify the beneficial effect of whole body vibration (WBV) exercise plus squat training on body balance, muscle power, and walking ability in the elderly with knee osteoarthritis and/or spondylosis.

Of 35 ambulatory patients (14 men and 21 women) who were recruited at our outpatient clinic, 28 (80.0%, 12 men and 16 women) participated in the trial. The subjects (mean age 72.4 years) were randomly divided into two groups (n=14 in each group), ie, a WBV exercise alone group and a WBV exercise plus squat training group. A 4-minute WBV exercise (frequency 20 Hz) was performed 2 days per week in both groups; squat training (20 times per minute) was added during the 4-minute WBV training session in the WBV exercise plus squat training group. The duration of the trial was 6 months.

The exercise and training program was safe and well tolerated. WBV exercise alone improved indices of body balance and walking velocity from baseline values.

However, WBV exercise plus squat training was more effective for improving tandem gait step number and chair-rising time compared with WBV exercise alone.

These results suggest the benefit and safety of WBV exercise plus squat training for improving physical function in terms of body balance and muscle power in the elderly.

PMID: 24591837 PMCID: [PMC3934664](#) DOI: [10.2147/TCRM.S57806](#)