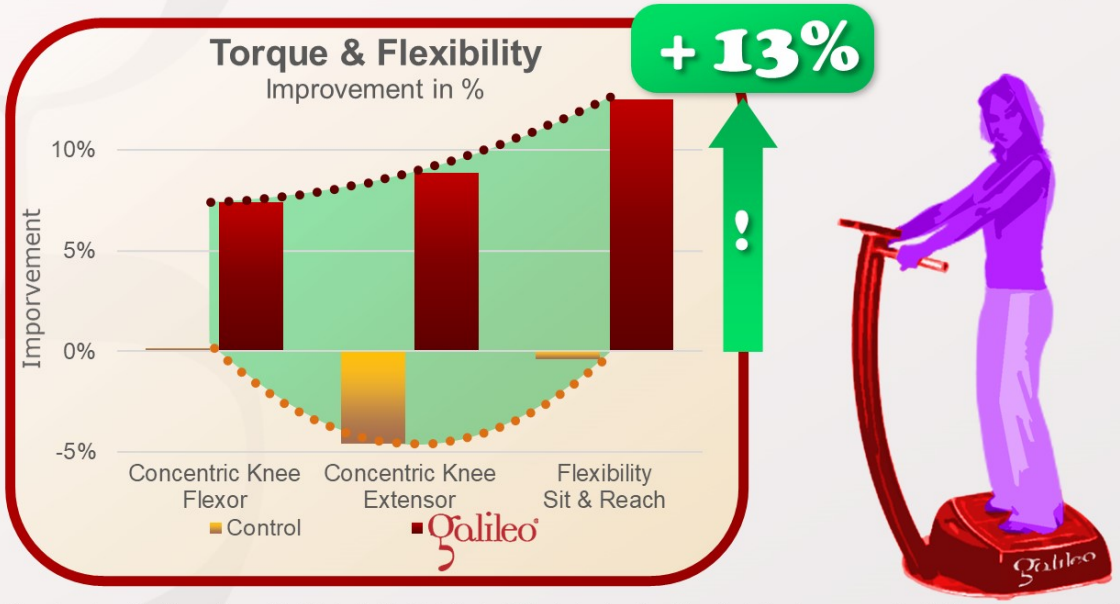
Can Galileo Training improve trunk flexibility and torque of the knee?

The answer is: YES

This study documented the effects of Galileo Training on flexibility and concentric knee torque in physical active young women (25Hz, pos.3, 2*5 min., 10° flexed legs, 5/week, 3 weeks). The control group continued their weekly training. The Galileo group received Galileo Training only and no other training. The Galileo group could improve concentric knee torque by up to 8% and flexibility (Sit & Reach Test) by 13%.



Karatrantou K, Gerodimos V, Dipla K, Zafeiridis A: Whole-body vibration training improves flexibility, strength profile of knee flexors, and hamstrings-to-quadriceps strength ratio in females.; J Sci Med Sport, 16:477–481, 2013; PMID: 23253266; GID: 3074

Galileo Research Fact Sheet #115 Home & Wellness: Flexibility, Knee Torque www.galileo-training.com

This study documented the effects of 3 weeks of Galileo Training in physical active young women on flexibility and concentric maximum knee torque.

The control group continued their weekly exercises (2 to 3 times per week) while the Galileo group only received the Galileo Training (plus 10 minutes warm-up per session)

(25Hz, position 3, slightly flexed legs (10°), 2*5 minutes, 5 times per week over 3 weeks).

While the control group showed no significant changes the Galileo group could show significant improvements in concentric maximum knee torque in flexor as well as in extensor of up to 8% and an improved flexibility (Sit & Reach Test) by 13%.

Considering that that a fairly high frequency of 25Hz was used and that other research (#GRFS59) could show that mid frequencies (10-20Hz) in Galileo Training can be even more effective as high ones (>20Hz) exercises focusing on stretching at 16 to 18 Hz for example could have been even more effective.

In addition for knee torque even higher frequencies (30 to 33Hz) and probably lower amplitudes (smaller foot position) could have been more effective on the knee torque (#GRFS4, #GRFS3).

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Whole-body vibration training improves flexibility, strength profile of knee flexors, and hamstrings-to-quadriceps strength ratio in females.

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OBJECTIVES:
Short-term whole-body vibration training (WBVT) has emerged as an exercise method for improving neuromuscular performance and has been proposed for injury prevention and rehabilitation. This study investigated the effects of a short-term (≤2 months) WBVT program using a side-to-side vibration on:

(i) strength profile of knee extensors (KE) and flexors (KF), (ii) "functional" hamstrings-to-quadriceps ratio (ECCKF/CONKE), (iii) flexibility and (iv) vertical jumping performance (VJ).Furthermore, we explored the retention of performance gains 21 days following WBVT.

DESIGN:
Randomized-controlled trial.

METHODS:
Twenty-six moderately active females (20.40±0.27 years) were assigned to a vibration (VG) or a control group (CG). The short-term WBVT program consisted of sixteen-sessions on a side-to-side vibration platform (frequency: 25Hz, amplitude: 6mm, 2 sets×5min).

Isokinetic and isometric peak torque of KE and KF, ECCKF/CONKE, flexibility, and VJ were measured pre, 2 days post, and 21 days following the cessation of WBVT.

RESULTS:
Post-training values of flexibility, isokinetic and isometric peak torques of KF and ECCKF/CONKE ratio were higher than pre-training values in VG ($p<0.05$); however, they remained unchanged in CG. Post-training values were greater in VG vs. CG ($p<0.05$).

Twenty-one days following WBVT, post-training values were no longer significantly different than pre-training values. The short-term WBVT program had no effect on strength profile of KE and on VJ.

CONCLUSIONS:
A short-term side-to-side WBVT program improved flexibility, the strength profile of knee flexors, and the "functional" hamstrings-to-quadriceps ratio in moderately active females.

Coaches and clinical practitioners should consider this type of training as an effective exercise mode for improving the strength asymmetry of reciprocal muscles at the knee joint.

KEYWORDS:
Eccentric muscle contraction; Isokinetic torque; Isometric torque; Knee injury; Reciprocal muscles; Vibration exercise

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