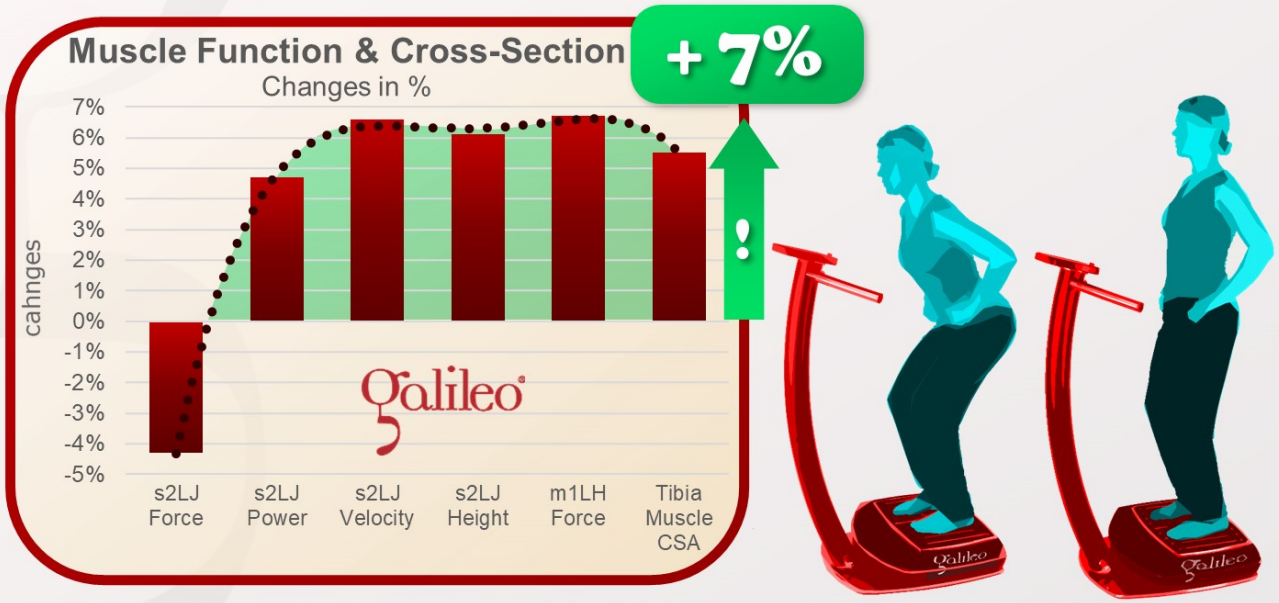
Can Galileo Therapy improve muscle function and cross-section in Cystic Fibrosis?

The answer is: YES

This study investigated the effects of 6 months of Galileo Therapy on muscle function and cross-section in Cystic Fibrosis patients (12Hz, 6min., 5/week (flexibility) + 26Hz 3/week (muscle power)). The Galileo group showed in average an improvement in muscle cross-section (+5,5%), muscle function (jump height +6,1%) as well as movement efficiency (decrease of used muscle force -4,3% but increase in muscle power +4,7%).



Roth J, Wust M, Rawer R, Schnabel D, Armbrecht G, Beller G, Rembitzki I, Wahn U, Felsenberg D, Staab D: Whole body vibration in cystic fibrosis - a pilot study; J Musculoskelet Neuronal Interact., 8(2):179-87, 2008; PMID: 18622087; GID: 1382

Galileo Research Fact Sheet #126 Therapy: Cystic Fibrosis, Muscle Function www.galileo-therapy.com

This pilot study documented the effects of 6 months of Galileo Therapy on muscle function and muscle cross-sectional area in Cystic Fibrosis patients.

The Galileo Therapy group received 5 times per week Galileo Therapy focusing on flexibility (6 minutes, 12Hz) and 3 times per week focusing on muscle power and muscle mass (6 minutes, up to 26Hz, up to 9kg additional load) –

So 48 minutes Galileo Therapy per week altogether. Primary focus was improvement of the flexibility of the very stiff upper body.

The results showed an average improvement of the muscle cross-section by 5.5%, an improvement of the maximum voluntary force (m1LH) by +6,7%, in improvement of muscle function (velocity +6,6%, jumping height +6,1%) and improved movement efficiency at the same time.

(reduction of the movement specific peak force by -4.2% and increase muscle power (+4,7%) and jumping height (+6,1%) at the same time)

This study is a good example for the fact that a decrease of movement specific peak force (in this case the peak force during lift-off of the counter movement jump) does not need to be a negative effect –

in this case the patients got more flexible allowing them a larger degree of counter-movement, therefore a longer counter-movement phase which enabled them to decrease the used force but increase the main movement outcomes (power, velocity, jumping height) and therefore allowing a *much* more efficient moment pattern.

J Musculoskelet Neuronal Interact. 2008 Apr-Jun;8(2):179-87.

Whole body vibration in cystic fibrosis--a pilot study.

Roth J[1], Wust M, Rawer R, Schnabel D, Armbrecht G, Beller G, Rembitzki I, Wahn U, Felsenberg D, Staab D.

INTRODUCTION:
In cystic fibrosis (CF), bone mass deficits as well as a lack of muscle mass and force have been described. The bone mass deficits are thought to be at least in part secondary to the reduced muscle mass.

Whole body vibration has recently been suggested as an effective technique to increase muscle force and power.

The aim of this pilot study was to evaluate the compliance and safety of a side-alternating, whole body vibration platform in patients with CF and to assess its effects on muscle force, muscle power, bone mass and lung function.

PATIENTS AND METHODS:
Eleven adult CF patients participated in a six-months home-based training program on a whole body vibration platform.
Muscle force and power were assessed with three standard maneuvers on a ground reaction force plate at regular intervals. Bone densitometry was performed at the spine, the radius and the tibia using quantitative computerized tomography.

RESULTS:
Regular cardiovascular monitoring did not show any critical drop in oxygen saturation or blood pressure. Lung function remained relatively constant with a median FEV1 change [% of norm] of -3.1% (range -7-20).

Trabecular density at the spine and parameters of bone density and geometry at the radius and tibia did not show consistent changes. A median decrease of -0.3% (-31.0-17.9) for muscle force and a median increase of 4.7% (-16.4-74.5) for muscle power and 6.6% (-0.9-48.3) for velocity was noted in the two-leg jump. In the one-leg jump, a median increase of 6.7% (-8.5-24.3) for muscle force was measured.

CONCLUSIONS:
Whole body vibration was well tolerated in the majority of the study participants. Most patients were able to increase peak force in the one-leg jump. In the two-leg jump, velocity and muscle power increased with equal or decreased muscle force.

This may indicate an improvement in neuromuscular and intramuscular co-ordination (and therefore efficiency) with less muscle force necessary to generate the same power.

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