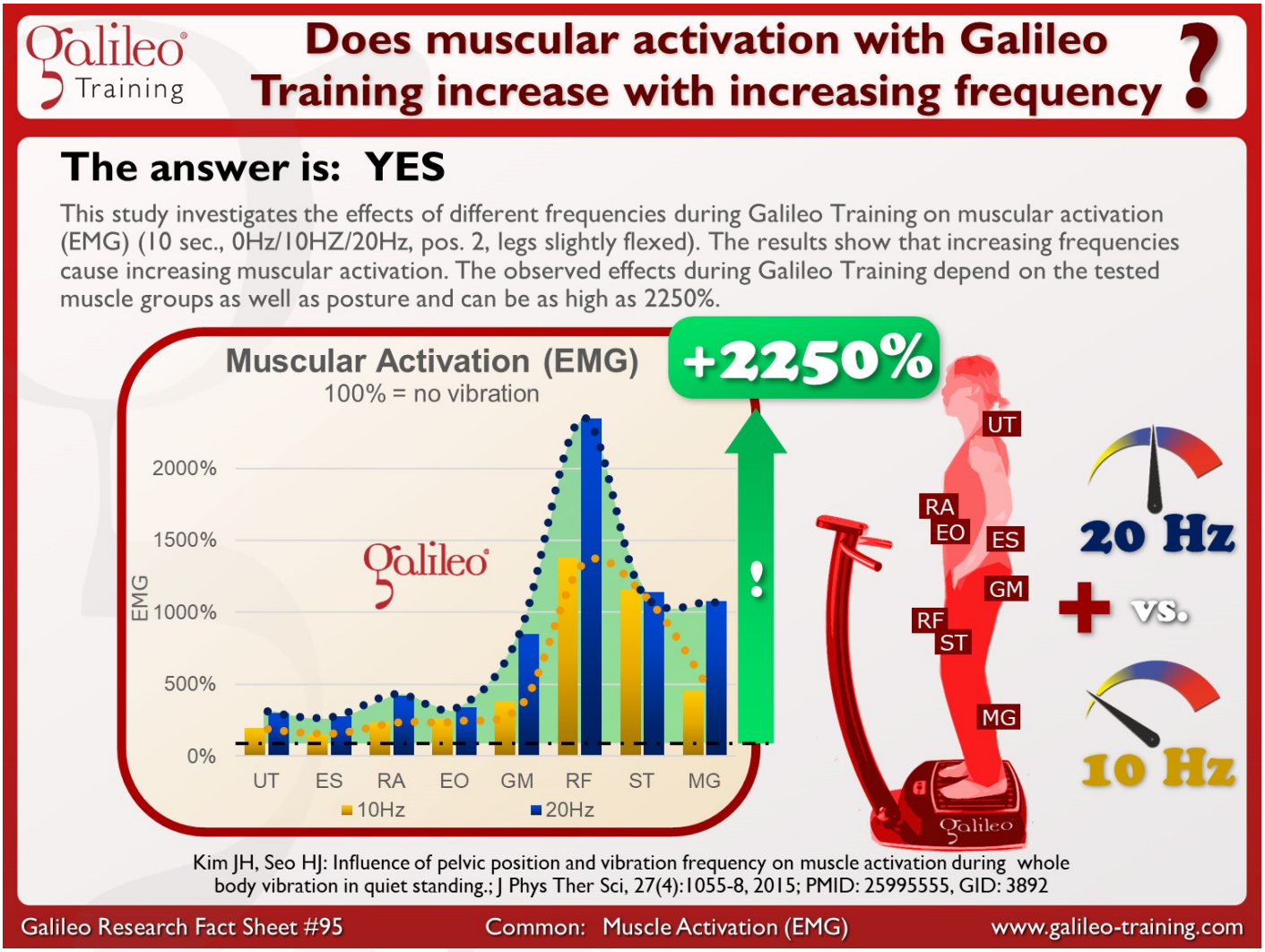

This study investigated the immediate effects of Galileo Training with different frequencies (no vibration, 10Hz and 20Hz) on the muscle activation of 8 different Muscle groups from calf to neck.

The measurement was done by EMG signals where the frequency range of 50 to 300Hz was analyzed. The individuals stood in almost upright position with slightly flexed knees and EMG signals where recoded over a period of 10 seconds.

The results showed a significant increase of muscle activation with increasing frequencies.

The effects strongly depend on the tested muscle groups and the posture with increases of up to 2250% (a 100% value was defines as EMG activation at identical posture but without vibration).

This study proves what everyone can feel while on the Galileo. However it even underestimates the increases due to Galileo Training since Ritzmann et.al (#GRFS32) showed that frequencies up to 30% and increasing amplitudes (pos. 3) can increase EMG even more.

Furthermore Ritzmann et.al. also showed that the elimination of the training frequency (in this case 10 and 20Hz) is not advisable since every movement of the platform causes a stretch-reflex and therefore a significant signal component at the training frequency.

Therefore it can be expected that using higher frequencies and amplitudes as well as optimizing the analysis algorithms would increase the measured muscle activation even more.

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Influence of pelvic position and vibration frequency on muscle activation during whole body vibration in quiet standing.

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Abstract

[Purpose] The purpose of this study was to investigate muscle activation related to postural stability depending on the pelvic position and frequency of whole body vibration (WBV) during quiet standing, and to identify the most effective training conditions that elicit the highest neuromuscular responses.

[Subjects and Methods] Eighteen healthy subjects voluntarily participated in this single-group, repeated-measures study in which surface electromyography (EMG) data for the upper trapezius, rectus abdominis, external oblique abdominis, erector spinae, gluteus maximus, rectus femoris, semitendinosus, and medial gastrocnemius were collected at three frequencies (0 Hz, 10 Hz, and 20 Hz) of WBV and three pelvic positions (neutral, anterior tilt, posterior tilt) for each subject during quiet standing.

[Results] The EMG activities of all the recorded muscles showed significant differences between the three frequencies of WBV and three pelvic positions during quiet standing.

[Conclusion] The study findings suggest that a higher WBV frequency (20 Hz) should be used to strengthen most muscles, and that using the posterior pelvic tilt during WBV is much more effective at strengthening and training muscles related to core stability.

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