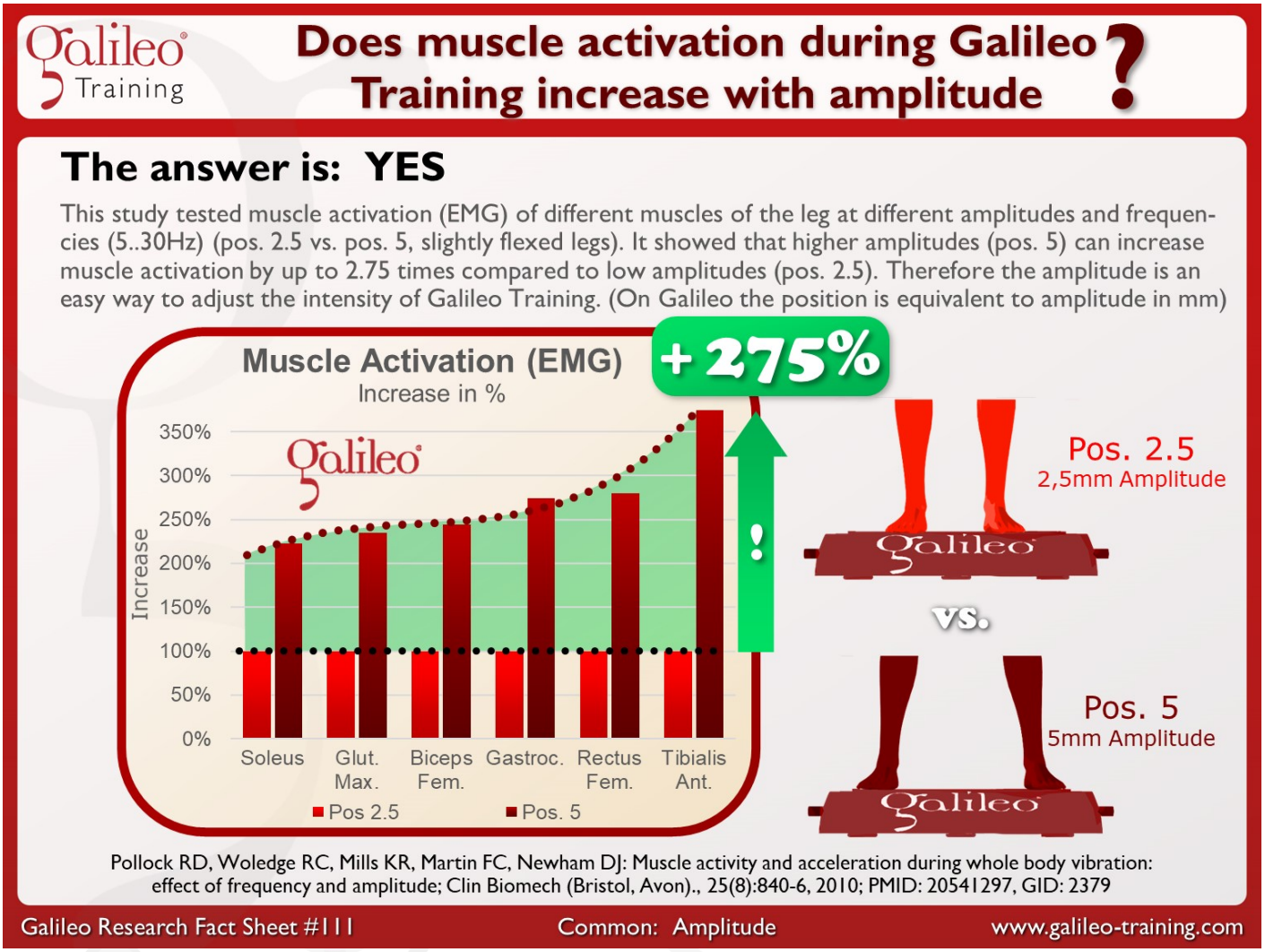

One of the very basics of Galileo Training: Higher amplitudes during Galileo Training cause more intensive muscle activation and therefore increase training intensity.

This has also been showed in #GRFS32end #GRFS21.

This study investigates immediate effects of Galileo Training at different frequencies (5Hz to 30Hz) on muscle activation (EMG) at foot position 2.5 vs. position 5.

(the position on Galilee devices are equivalent to the amplitude in mm – therefore at position 2.5 the plate moves 2.5mm from the center position in both direction, which means a way of travel of 5mm – these two parameters are quite often confused).

The amplitude is therefore one of the easiest ways to set the intensity of Galileo Training. The frequency however is mainly used to set the training goals (see also #GIS1).

Clin Biomech (Bristol, Avon). 2010 Oct;25(8):840-6. doi: 10.1016/j.clinbiomech.2010.05.004. Epub 2010 Jun 11.

Muscle activity and acceleration during whole body vibration: effect of frequency and amplitude.

Pollock RD[1], Woledge RC, Mills KR, Martin FC, Newham DJ.

BACKGROUND:
Whole body vibration may improve muscle and bone strength, power and balance although contradictory findings have been reported. Prolonged exposure may result in adverse effects.

We investigated the effects of high (5.5 mm) and low (2.5mm) amplitude whole body vibration at various frequencies (5-30 Hz) on muscle activity and acceleration throughout the body.

METHODS:
Surface electromyographic activity was recorded from 6 leg muscles in 12 healthy adults (aged 31.3 (SD 12.4) years). The average rectified acceleration of the toe, ankle, knee, hip and head was recorded from 15 healthy adults (36 (SD 12.1) years) using 3D motion analysis.

FINDINGS:
Whole body vibration increased muscle activity 5-50% of maximal voluntary contraction with the greatest increase in the lower leg. Activity was greater with high amplitude at all frequencies, however this was not always significant ($P<0.05$-0.001).

Activation tended to increase linearly with frequency in all muscles except gluteus maximus and biceps femoris. Accelerations throughout the body ranged from approximately 0.2 to 9 g and decreased with distance from the platform.

Acceleration at the head was always < 0.33 g. The greatest acceleration of the knee and hip occurred at approximately 15 Hz and thereafter decreased with increasing frequency.

INTERPRETATION:
Above the knee at frequencies > 15 Hz acceleration decreased with distance from the platform. This was associated with increased muscle activity, presumably due to postural control and muscle tuning mechanisms.

The minimal acceleration at the head reduces the likelihood of adverse reactions. The levels of activation are unlikely to cause hypertrophy in young healthy individuals but may be sufficient in weak and frail people.

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