

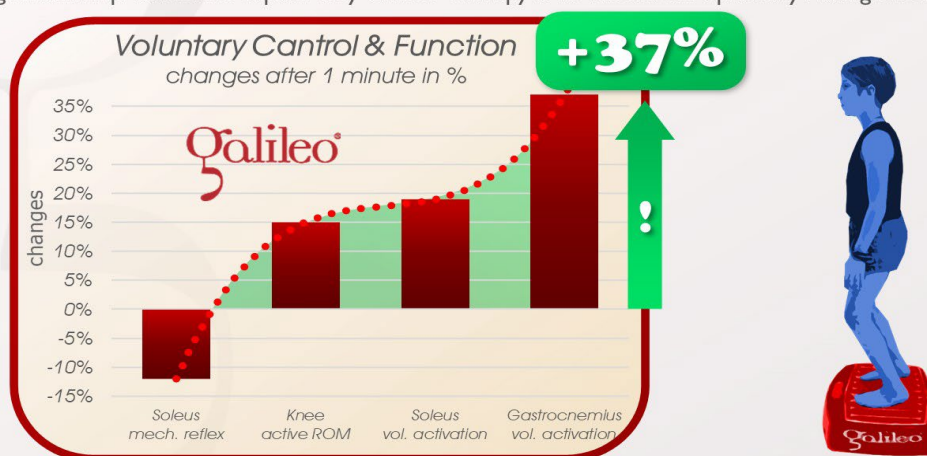
Galileo Research Fact Sheet #165: Can Galileo Therapy improve voluntary muscle activation in children with CP?



Can Galileo Therapy improve voluntary muscle activation in children with CP ?

The answer is : Yes

This study investigated short-term effects of Galileo Therapy (16-25Hz, pos. 1,5-3, 1 min., 10° knee angle, fore-foot stance) in children with spastic Cerebral Palsy (CP, GMFCS 2-4, 4-12 Jahre). The mechanical reflex (-12%), active Range of Motion (+15%) and the voluntary muscle activation (+17, +37%) was measured. The observed significant improvements explain why Galileo Therapy is so effective in Spasticity Management.



Krause A, Schonau E, Gollhofer A, Ritzmann R, et.al: Alleviation of Motor Impairments in Patients with Cerebral Palsy: Acute Effects of Whole-body Vibration on Stretch Reflex Response, Voluntary Muscle Activation and Mobility.; Front Neurol, 8:416, 2017; PMID: 28861038; GID: 4502

Galileo Research Fact Sheet #165

Kids Therapy: CP, Spasticity Management

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This very interesting study was done in cooperation of the group around Prof. Gollhofer (Sport Institute University of Freiburg) and the one around Prof. Schoenau (University Clinic of Cologne, Cologne Concept). It investigated the short-term effects of Galileo Therapy in children with Cerebral Palsy (CP, GMFCS 2-4, age 4-12 years) on reflexes, voluntary muscle activation and voluntary range of motion. The used exercise was very basic (16-25Hz, pos. 1,5-3, 1 min., almost upright standing on fore-feet, 10° knee angle). Outcome parameters were targeting muscle function (also see #GRFS166) like mechanical reflex intensity (sensitivity to external mechanical stimulus), active range of motion and voluntary muscle activation.

The results after only one minute of Galileo application were remarkable: Reduction of the reflex response (-12%) with simultaneous increase of voluntary muscle activation (+17% and +37%) – two well-known effects (also well established in sports science): A lack of voluntary muscle activation will cause an increased muscle tone (in extreme cases resulting in spasticity) and therefore increase contraction for a specific movement – this, on the one side is a simple and effective way to stabilize joints but has the disadvantage that it automatically limits functional outcomes: The higher the contraction to stabilize joints the more the functional muscle (e.g. in walking working against gravity) also has to work against the corresponding Antagonist. The higher this proportion the more decrease in functional outcome. In addition, contraction will limit the range of motion which can be seen in the results of this study: the decrease of contraction and increase of voluntary muscle activation also increased the active range of motion (aROM) by 15%. This study gives therefore important background for the short-term effects of Galileo and explains why Galileo Therapy can open up a therapeutic window which should be used for more specific Galileo exercises or also for other therapy types.

Kids Therapy - CP, Spasticity Management

#GRFS165 #GRF