

## The Mollii-suit® - A novel method using reciprocal inhibition on children with cerebral palsy, GMFCS IV-V. A 6 month prospective study.

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### **Background:**

Spasticity is a common characteristic in children with cerebral palsy (CP). Treatment for spasticity consists of surgery, exercise and spasticity relieving drugs, which might not always be effective. This warrants new treatment for relieving and modifying their spasticity, without further impact on other daily activities. The objective of this study was to assess the effectiveness of an assistive technology; Mollii® is a two pieces suit with integrated electrodes for multifocal transcutaneous electrical stimulation (TENS) computed by personalized evaluation and utilizing the concept of reciprocal inhibition.

### **Materials & Methods:**

Participants were recruited from three schools with disabled children in the isle of Zealand, Denmark. Thirty-one participants, 19 boys (7y-17y) and 12 girls (7y-16y), with predominantly spastic disease were included in the study and twenty completed. The participants wore the suit for one hour in school or at home every second day in a trial period of 6 months. Measurements were performed before and 4, 12, and 24 weeks after the treatment was started. Passive range of motion (pROM) were measured using a goniometer. Spasticity by the modified Ashworth scale and tardieu were tested in all treated joint and muscles. Furthermore, the goal attainment scale (GAS) were completed by primary physiotherapist and occupational therapist. A one sample Wilcoxon Signed Ranks test were performed for GAS, pROM and spasticity (SPSS Ver.22).

### **Results and Conclusions:**

A statistical significantly decreased change in spasticity was measured in m. biceps femoris and m. semitendinosus (p: 0,015 and 0,014), and in m. quadriceps femoris (p: 0,046). A significant

increased tardieu was measured in m. biceps femoris and m. semitendinosus (p: 0,002) and in m. flexor carpi radialis, m. palmaris longus and m.flexor carpi ulnaris (p:0,041). The pROM was not statistically significantly different in any of the treated muscles. Individualized goals(GAS) related to function and mobility improved significantly throughout the intervention (p: 0,004). In conclusion, the results of this study indicate the Mollii®-suit may affect spasticity in the individualized treated muscles, and have a positive effect on personalized therapeutic goals related to function and mobility.