Static compared to dynamic supported standing for non-ambulatory children with cerebral palsy

A Pilot Study

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CONCLUSIONS

- The study design was feasible and the measurements were widely accepted by the children and their parents
- Static and dynamic supported standing gave different physiological response
- Dynamic standing may offer a new way to be physical active among non-ambulatory children with CP

Figure 1. Static standing (StS) in a standing frame

Figure 2. Dynamic standing (DyS) in the Innowalk

INTRODUCTION

Non-ambulatory children with cerebral palsy (CP) are little physically active and have much sedentary time which implies significant health risks. The standard care in Sweden includes static standing training (StS) in standing frames for 45-90 minutes daily.

Dynamic standing training (DyS):The motorised medical device Innowalk gives non-ambulatory children an opportunity to experience walking movement in an upright weight-bearing position. More knowledge about StS compared to DyS is needed in order to give the best recommendations.

AIMS

To evaluate the feasibility of the study design and any differences in the response to one 30 minutes bout of StS and DyS in metabolic response, blood pressure, temperature, muscle tone and joint mobility

PATIENTS AND METHODS

Seven non-ambulatory children with CP, aged 4-11 years, were recruited by the National association for disabled children in Sweden. The measurements were performed one day in their standing frame and another day in the Innowalk at the Health Sciences Lab, Lund University, Sweden.

RESULTS

- The measurements could be performed in this setting
- Both StS and DyS can be considered to be physical activities since the energy consumption was above 1.5 METs (2.2 ±1.3)
- During DyS in the Innowalk deeper breathing was demonstrated (Figure 3)
- The children were able to maintain and even increase the temperature at their feet (ΔTemperature @30 min 2.9 ± 2.5 °C) during DyS

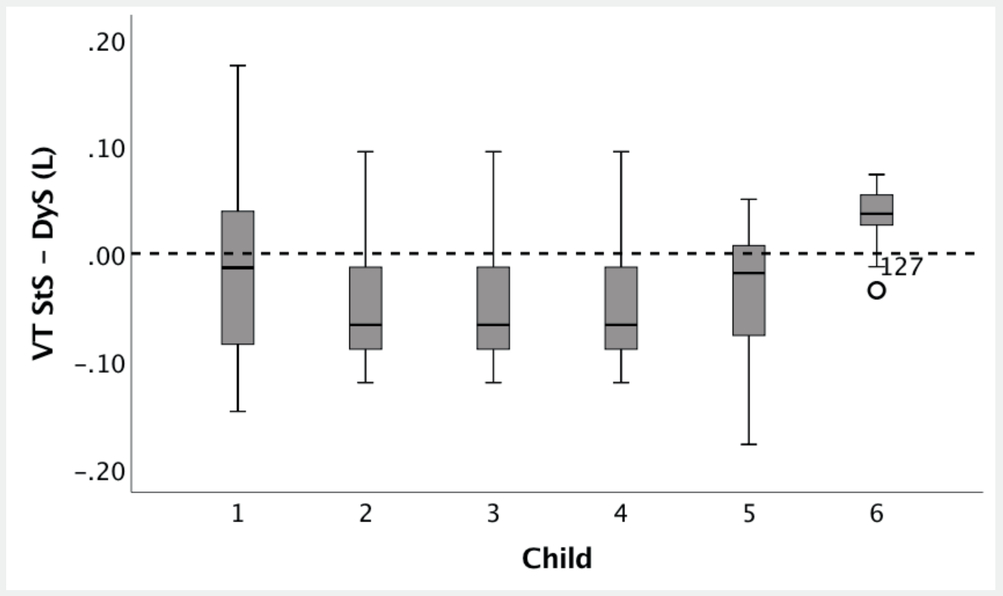

Figure 3. Shows boxplots of differences in breathing depth (VT=Tidal volume) between Static Standing (StS) and Dynamic Standing (DyS) for each child

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