

# Effects on the Passive Range of Motion and Spasticity after Dynamic Standing among Non-Ambulatory Children with Cerebral Palsy in the Lower Extremities

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Dynamic standing in the motorised device Innowalk  
Photo Katarina Lauruschkus

## CONCLUSION

- 30 minutes of dynamic standing increases passive range of motion and lowers the spasticity in the muscles around the joints in the lower extremities.
- 30 minutes of static standing does not alter passive range of motion or spasticity.



Static standing in a standing frame  
Photo Katarina Lauruschkus

## INTRODUCTION

The recommendations for non-ambulatory children with cerebral palsy (CP) include static standing in standing frames for 45-90 minutes daily. The motorised medical device Innowalk gives an opportunity to experience walking movements in an upright weight-bearing position, making dynamic standing possible. The aims were to describe the frequency of static and dynamic standing, and to compare the effects on passive range of motion and spasticity after static standing in standing frames and dynamic standing in the Innowalk.

## RESULTS

	Static standing in a standing frame	Dynamic standing in the Innowalk
Frequency <sup>1</sup>	63±32	83±27
Total time	3,651±4,080 minutes	3,734±2,370 minutes
PROM <sup>2</sup> before and after exercise testing	NS	Δ 7±6° p=0.001
PROM before and after exercise intervention period	NS	NS
Spasticity <sup>3</sup> before and after exercise testing	NS	Δ 1.7±1.1 p=0.001
Spasticity before and after exercise intervention period	NS	NS

## PATIENTS AND METHODS

Twenty children were included to this exercise intervention study with a cross-over design. The children with CP, GMFCS-E&R level IV and V, were aged 5-17 years (mean 11,6 +/- 3.6 years; 9 female). Each child performed four months of static standing and four months of dynamic standing, filling in logbooks during each exercise intervention period. At the beginning and end of each exercise period, passive range of motion and spasticity in the hips, knees and ankles were measured before and after a 30 minutes bout of static standing respectively dynamic standing.



Measurement of passive range of motion  
Photo Åsa Tornberg

<sup>1</sup> Number of occations during the exercise intervention period  
<sup>2</sup> Passive range of motion  
<sup>3</sup> Modified Ashworth Scale