

Original Paper

Effect of neoprene dynamic orthosis on improvement of walking ability among children with spastic diplegic cerebral palsy

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Abstract

Background and Objective: Improving the ability to walk is often a key target for the treatment of abnormal gait in children with spastic diplegic cerebral palsy (CP). One of the goals of orthotic rehabilitation is to improve walking in this field. The aims of this study was to design and manufacture the dynamic neoprene orthoses and evaluate its impact on the gait parameters in children with cerebral palsy.

Materials and Methods: This quasi-experimental study was done on 12 children with spastic CP at University of Social Welfare and Rehabilitation, in Tehran, Iran during 2010-11. Initially neoprene dynamic orthosis is designed specifically for each subject, this neoprene dynamic orthosis was used for six weeks and 6-8 hrs daily. For evaluating the walking speed and the gait variation, 10 meter walking test and visual analogue scale have been used. Modified Ashworth's Scale and electro-goniometre were used to assess muscle spasticity and the flexion degrees of knee joint. Data were analyzed using SPSS-16, Kolmogorov-Smirnov and Paired t-tests.

Results: The alteration of knee flexion angle, walking speed and walking distance following dynamic orthosis were -18.31 ± 4.61 (degree), -0.50 ± 1.82 (meter) and 4.18 ± 1.51 , respectively. The improvement in knee joint angle and walking following dynamic orthosis was significant ($P < 0.05$), but the walking speed was not significant.

Conclusion: This study showed that neoprene dynamic orthosis can improve knee flexion angle and walking distance among children with spastic diplegic cerebral palsy.

Keywords: Spastic diplegic cerebral palsy, Neoprene dynamic orthosis, Walking, Knee flexion angle

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