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A study to find out the effect of task oriented training program in the management of step length cadence and speed in gait among child with spastic Diplegic cerebral palsy

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Abstract

Cerebral palsy (CP) is a non-progressive disorder characterized by impairment of motor function secondary to injury of the immature brain. Lower limbs are most important for activities of daily living which include walking, running, jumping etc. Most people with spastic Diplegia have spasticity and have difficulty with balance and coordination. The child with Diplegia typically has spasticity in the hip flexors, the hamstrings, and the ankle plantar flexors. Step length, cadence and gait speed have been measured by various methods, including paper-and pencil tests, electronic foot switches, and video-based analysis. Most methods are labor-intensive, time-consuming, and otherwise inefficient for collecting valid and reliable data. Paper-and-pencil methods require therapists to chalk or ink patients' soles and heels to make an imprint as they walked along a paper walkway. Footfall imprints are subsequently measured with a measuring tape.

Keywords: Spastic Diplegic, gait speed cadence

Introduction

Study Purpose: The purpose of the study is to find out the effects of Task oriented training program in improving step length cadence and gait speed among the spastic Diplegic cerebral palsy children.

Study Design: Pre and Post-test, randomized control study

Method: The training program lasted for 4 weeks, and consisted of six training sessions a week. Each session lasted 45 minutes. The remaining time was used to provide information and to explain the purpose of the training that was ahead. In the following 5 minutes passive stretching exercise and different activities/games were used to get the children warmed-up. In the most important training-part were 7 standardized TASK-Oriented Training Program, which were based on walking activities, such as

- Standing and reaching in different direction
- Sit to stand
- Stepping forward and backward
- Stepping side ways
- Step up on stairs
- Step up and weight shifting
- Heel raise

Step length, cadence and speed are measured during the "10 Meter walk test" and "Timed up and Go test". Gait parameter was measured for the baseline outcome. The subject was made to do the Task oriented gait training for 6 days per week for 4 weeks. Post-test was taken at the end of 4th week including step length, cadence and gait speed. The collected data were analyzed by paired 't' test to find out the significant difference between pre and post-test values of experimental designs.

Results

Analysis of dependent variable step length in children with spastic diplegic cerebral palsy: The calculated paired 't' value of step length is 20.99, and the table 't' value is 3.250 at 0.005 level of significance. Hence, the all calculated 't' value is greater than the table 't' value, there is significant difference in step length following Task oriented exercise training in children with spastic diplegic cerebral palsy.

Analysis of dependent variable cadence in children with spastic Diplegic cerebral palsy: The calculated Paired 't' value of cadence is 21.33, and the Table 't' value is 3.250 at 0.005 level of significance. Hence, the all Calculated 't' value is greater than the table 't' value, there is significant difference in cadence following Task oriented exercise training in children with spastic Diplegic cerebral palsy.

Analysis of dependent variable gait speed in children with spastic Diplegic cerebral palsy: The calculated paired 't' value of gait speed is 12.24, and the table 't' value is 3.250 at 0.005 level of significance. Hence, the all calculated 't' value is greater than the table 't' value, there is significant difference in gait speed following Task oriented exercise training in children with spastic diplegic cerebral palsy.

Conclusion

From the statistical results, it can be concluded that Task oriented training program is effective on improving step length, cadence and speed on children with spastic diplegic cerebral palsy.

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