

EFFECTS OF GAIT TRAINING WITH TREADMILL AND SUSPENSION IN CHILDREN WITH SPASTIC CEREBRAL PALSY

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INTRODUCTION

Independent ambulation is a big concern for the family of the children with cerebral palsy (CP). How to improve the children's ambulatory ability is considered the primary focus of most therapeutic interventions. The purpose of the study was to examine the effect of a 12-week gait training with treadmill and suspension on the gross motor function measure and gait performance in children with spastic CP.

METHODS

Eight children with spastic CP met the inclusion criteria and participated in the study. Children were pair matched based on their functional category with Gross Motor Function Classification System and then randomly divided between two groups AB and BA. Children in the AB group first received regular therapeutic exercises except gait training for 12 weeks then received treadmill and suspension gait training for another 12 weeks. The sequence of treatment program was reversed for children in the BA group.

A commercial treadmill (Trackmaster TM210AC) capable of slow speeds with a minimum speed of 0.1 m/s and able to increase its speed with an increment of 0.1 m/s was used for gait training in this study. Suspension was achieved with LiteGait (LiteGait, Scottsdale, AZ). A harness was provided to subjects for weight suspension and safety during gait training. One therapist sat behind the child and corrected for foot placement during gait training. The regular therapeutic exercises were based on traditional pediatric exercises. The treatment duration of treadmill gait training or therapeutic exercises was 2-3 times a week and 30 minutes a time.

Gaitrite electronic walkway system (GAITrite, CIR. Systems Inc. Clifton, NJ 07012) was used to measure the gait temporal-spatial characteristics of the subjects in the study. Other than temporal-distance parameters of gait, muscle tone, selective motor control, gross motor function measure were assessed and measured three times: before treatment (baseline), after the first phase of treatment and after the whole session of treatment.

RESULTS AND DISCUSSION

The gait performance of each subject at three measurement times is presented at Figure 1. The results showed that gait velocity, and stride length improved after gait training with treadmill and suspension. No change of cadence was noted. As the gross motor function measure was concerned, the treadmill gait training effect was significant on the sub-scores of standing, walking and the total score. The effect on sitting sub-score was only marginal ($p = 0.0587$).

Our results are consistent with previous preliminary studies or

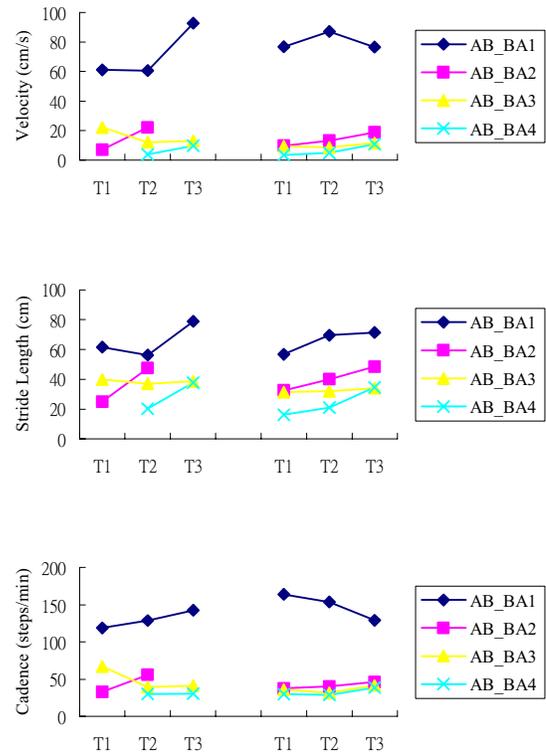


Figure 1: Gait performance of each subject at three measurement times

case reports of nonambulatory patients [1-3], showing that the task-oriented gait training is a promising treatment program.

CONCLUSIONS

Children with spastic CP benefit from gait training with treadmill and suspension with partial weight support in stride length, gait velocity and certain gross motor functions. It is suggested that gait training with treadmill and suspension with partial weight support is a promising treatment for children with spastic CP.

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