Changes in Reach to Eat Movement Control After Intensive Training for Children with Unilateral Cerebral Palsy

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Changes in Reach to Eat Movement Control After Intensive Training for Children with Unilateral Cerebral Palsy.

By


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Abstract

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Changes in Reach to Eat Movement Control After Intensive Training for Children with Unilateral Cerebral Palsy.

Purpose: The current study compares the effects of an intervention on children with Congenital Hemiplegia during a simple eating task using kinematic analyses. Previous studies looked at simple bimanual tasks such as opening a drawer; no studies examined the effects of intensive training on unimanual reach, grasp, and eat movement control.

Methods: 20 children with Unilateral Spastic Cerebral Palsy (USCP) ages 4-10 MACS Level I-II were assigned to one of two groups, Hand-Arm Bimanual Intensive Training (HABIT) or Constraint-Induced Movement Therapy (CIT). They were asked to perform the task of reaching out, grasping, and eating using their more affected hand. 3-D kinematic analyses were used to further identify three specific movement stages: Reaching, Grasping, and Eating. Assessments were given before and after the 90 hour program of 6 hours per day for 15 days. (2)(3)(4)(6) One way repeated measures ANOVA with p=0.05 to determine statistical significance.

Results: (Continued)

Reach time (P=0.005), Grasping time (p=0.004), Eating time (p=0.034). In addition, shoulder displacement was decreased decreases in movement times after training for both groups: Reach time it took to reach for the cookie placed in front of them, we noticed the greater changes in Reaching time; that is the HABIT group would show the greatest reductions in changes of reach to eat movement control. However, studying the data we noticed the greater changes in Reaching time; that is the time it took to reach for the cookie placed in front of them, for the CIT group; a reduction from 1.25s to approximately 0.85s with a P=0.006. Grasping time for the affected hand was also significantly decreased in both groups 0.72s to 0.48s CIT and 0.65s to 0.45s with a P value of 0.004. The overall eating time was particularly interesting, both groups started at a similar time approximately 1.9s with a significant decrease 1.25s and 1.16s respectively with a P=0.043.

Discussion

Our hypothesis was: That based on the treatment protocol that both HABIT and CIT would show improvements but, the HABIT group would show the greatest reductions in changes of reach to eat movement control. Our hypothesis was partially supported. Studying the data we noticed the greater changes in Reaching time; that is the time it took to reach for the cookie placed in front of them, for the CIT group; a reduction from 1.25s to approximately 0.85s with a P=0.006. Grasping time for the affected hand was also significantly decreased in both groups 0.72s to 0.48s CIT and 0.65s to 0.45s with a P value of 0.004. The overall eating time was particularly interesting, both groups started at a similar time approximately 1.9s with a significant decrease 1.25s and 1.16s respectively with a P=0.043.

Conclusions

Based on our statistical findings we can conclude that our model for the 90 hour intensive training 6 hours per day for 15 days can play a very important role as a treatment tool for improving unimanual movement control. Providing clinicians with an important therapy tool to aid in the treatment of those with USCP.

References