The Effectiveness of a 5-Day Modified Constraint Induced Movement Therapy Camp in a Pediatric Setting

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Introduction

Due to insufficient findings in the literature, this study was conducted to determine if children with arm dysfunction on one side as a result of neurological conditions would benefit from a 3-hour per day modified constraint induced movement therapy (mCIMT) protocol, using a week long day camp model.

A convenience sample of four children participated in a mCIMT day camp that included a variety of themed activities to promote increased functional use of the impaired arm. While participating, the child's unaffected arm was constrained, thus encouraging them to use their affected arm.

Research Question

Is a 5-day intensive modified constraint induced movement therapy camp an effective dosage for improving occupational performance in 3-6 year old children with hemiplegia?

Literature Review

Dosage:

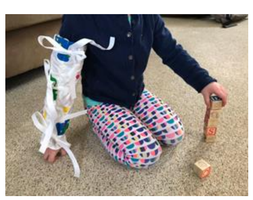
- One study showed that a 2-week "day camp model" with participation of 7 hours of intervention per day and yielded significant results in grasp and protective extension (Thompson et al., 2015)
- Another study suggested moderate intensity and shortened constraint time increased effectiveness and compliance of clients and caregivers during mCIMT (Chen et al., 2014).

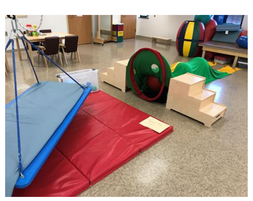
Age:

- Multiple studies of children between the ages of 3 and 6 resulted in statistically significant improvements in upper extremity function (DeLuca, Case-Smith, Stevenson, and Ramey, 2011).

Social and Environmental Factors:

- Multiple studies have found significant results in upper extremity function along with social benefits through the implementation of mCIMT in clinical and home settings (Thompson et al., 2015; Psychouli & Kennedy, 2016).





Procedures

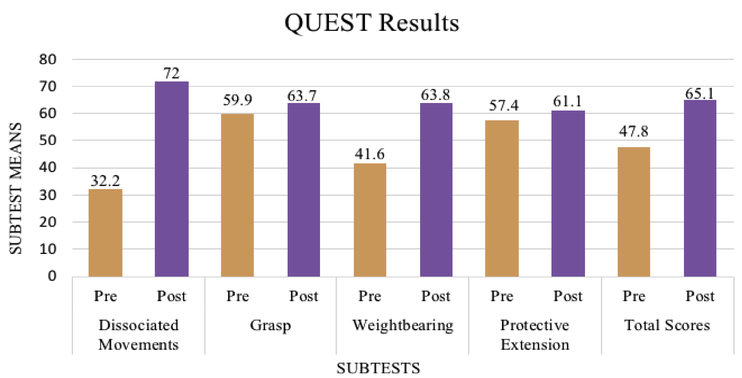
Participants

- Four children ages 3-6 with hemiplegia, who were able to follow verbal and visual cues.

Methods

- Participants received intervention for 3 hours per day, for 5 consecutive days.
- Participants were required to wear a DeRoyal pediatric elbow immobilizer on his/her unaffected upper extremity during intervention to encourage use of the less functional arm and hand.
- Intervention included gross motor, fine motor, unilateral, and bilateral activities that were adapted to fit each participant's age and skill level.
- Pre- and post-assessment data was collected using the QUEST, GAS, and PEDI measures.

Data Analysis & Results



GAS Results				
Participants	A	B	C	D
Scores *-2 to 0 to 2+ scale	**1+**: Child used affected extremity to assist with daily tasks, 25% of the time	**1+**: Child initiated the use of his affected upper extremity in dressing tasks.	**2+**: Child held plate with both upper extremities independently	**1+**: Child attempted to use both upper extremities to pull up pants.

- SPSS data analysis of paired sample t-tests determined the statistical significance between pre and post assessment data.
- Clinical significance was found for the QUEST data using the MCID.
- Clinical observations and GAS results showed improvements in spontaneous use and increased awareness of the affected upper extremity during motivating activities.
- No statistically significant differences were found on the PEDI or QUEST assessments.

Discussion

- Participants made significant clinical progress toward their goals in the clinical environment.
- An intensive day camp is an effective environment for mCIMT intervention with children.
- Caregiver reports indicated that functional improvements were carried over to the home environment as a result of intervention. Parents gave positive feedback regarding camp effectiveness:

"Definitely more aware and more willing to use left arm."

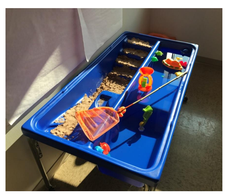
"During dinner, we discussed camp and how proud we were of all his hard work this week. Then our child began to use the fork with the affected hand for more practice."

"Noticed improved strength and flexibility along with better awareness."

- This study suggests that occupational therapy practitioners may implement a mCIMT day camp model intervention to yield clinically significant results with a reduced rate of non-compliance compared to more intensive protocols.
- This study also suggests that this dosage may be more easily implemented into various pediatric occupational therapy settings than previously understood.

Conclusion

- This study suggests that a 5-day mCIMT day camp model intervention yields clinically significant results.



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