



# Applying Evidence Based Practice in Pediatric-Constraint Induced Movement Therapy (P-CIMT)

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## Background

### Cerebral Palsy (CP)

- Neurological disorder that occurs during infancy or early childhood due to stroke or traumatic brain injuries.
- Causes difficulty with body movement and muscle coordination.
- 2.3-3.6% of children in the US affected, 30% of whom have unilateral CP (cerebralpalsy.org)

### Pediatric-Constraint Induced Movement Therapy (P-CIMT)

- Combines (1) constraint of the less affected upper extremity with (2) high-intensity therapy that emphasizes:
  - Repetitive task practice
  - Reinforcement
  - Shaping
  - Feedback
  - Bimanual integration
- Improvements in **upper extremity function** during a study using a sling, worn only during treatment, for 6 hours per day for 10 days in a clinic setting (Gordon & Charles, 2005)
- Second course** of P-CIMT had significant increases over the first treatment (Charles & Gordon, 2007)
- DeLuca et al. (2012) found statistical significance in improvements in **both a 3 hour per day and 6 hour per day** clinic-based P-CIMT group.

Week One	Week Two	Week Three	Week Four
• Constraint	• Constraint	• Constraint	• Bilateral Therapy

Fig 1. P-CIMT Four Week Outpatient Camp Structure

### Significance of Motivation

- According to Eliasson et al. (2005) "Motivation to use the hemiplegic hand was considered to be the most important factor in guaranteeing intense practice and was achieved through the child's individual inner drive and motivation for play."
- One three hour intervention plan developed based on the groups strong interest in **Minions**
- These activities were intended to **gain interest and motivate** the children participating in the group

## Methods

### Design:

- Activities were designed to improve coordination, strength of grasp, and pinch of the child's affected hand with a variety of Minions-related activities
- Interventions followed a basic design used to structure all camp sessions (Fig. 2)

Fine Motor Warm-Up	Fine Motor Activity/Craft	Snack Time	Gross Motor Activity	Moving Activity	Wrap-Up
• Play-Doh • Sensory Bin	• Flubber minion craft activity	• Frosting Minion cookies	• Obstacle course to dress a minion	• Yoga • Dancing	• Shirts off • Casts off

Fig 2. Basic structure and outline of P-CIMT Camp day with Minions activities included.

### Setting and Population:

- Outpatient occupational therapy clinic
- 3 hours per day, 5 days per week, for 4 weeks
- Children ages 4-7 with unilateral cerebral palsy

### Activities:

- Fine Motor Activity/Craft:** Flubber Minions (Fig. 3)
- Sensory:** component focused on increasing tactile stimulation
- Strengthening:** of the intrinsic hand muscles through the mixture of the flubber and squeezing the glue to create the overalls on the jar
- Precision:** of pinch by picking up and gluing on the eyes and goggles to the jar
- Cognition:** is addressed by requiring the child to follow step by step directions (Fig. 4)



- Fig 4. Recipe for the liquid starch slime which each child put into a Minions jar.
- In one bowl mix 1/2 cup water and 1/2 cup glue (really mix to combine completely).
  - Add color, glitter or confetti!
  - In another bowl measure out 1/2 cup of liquid starch.
  - Slowly mix the glue/water mixture into the starch with a spoon, making sure to get all glue out of bowl.
  - Switch to mixing with hands for a few minutes until you feel it come together.
  - Put in a clean dry container or on a plate.



Fig 3. Flubber Minion jars created by campers.

- Snack Time:** Decorating Minion Cookies (Fig. 5)
- Lateral Pinch/Grasp:** is strengthened by having children use a popsicle stick to spread the frosting on their cookies
- Strengthening:** of the intrinsic hand muscles by squeezing the frosting tubes to make the overalls, eyes, and goggles
- Bilateral coordination:** is required to hold the cookie steady with one hand and frost the cookie with their affected hand



Fig 5. OT assisting a camper in using their affected arm to ice their Minion cookies.

- Gross Motor Activity:** Obstacle Course to Dress the Minion (Fig. 6)
- Reaching:** for missing pieces of clothing and reaching to put the clothes on to the Minion
- Lateral Pinch:** is strengthened by having the child carry each piece of clothing over to the Minion and place appropriately
- Strengthening:** of each child's arm muscles occurs by climbing and crawling through the obstacle course
- Cognition:** is addressed through the thought process of where the clothing articles belong on the Minion

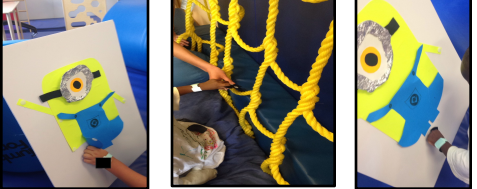


Fig 6. Campers participating in the obstacle course

## Conclusion

- The children in this group were **strongly motivated** by the Minion related group activities
- Children did seem to fatigue during the snack time activity
  - Could be due to so many fine motor activities during snack following the fine motor craft
- The children in this group would have benefited from engaging in the gross motor activity earlier
- Evidence for and interest in **multiple rounds** of CIMT
- Visit [go.osu.edu/cahre](http://go.osu.edu/cahre) for a copy of this poster and references