

**Success is the Sum of Repeated Efforts:  
 An Evaluation of Repeated Trials in a  
 Modified Constraint Therapy Group for  
 Children with Acquired Brain Injury (ABI)**

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**Background**

- Constraint-Induced Movement Therapy (CIMT) mitigates the effects of learned non-use by practicing repetitive movements using the affected upper extremity (UE), while the unaffected UE is restrained by a cast or splint
- CIMT has been modified for children by **decreasing the practice intensity** and using a cast or splint worn for a **few hours daily**
- **Helping Hand** is a group-based modified CIMT (mCIMT) program at Holland Bloorview
- There is evidence supporting the use of group-based mCIMT in children with ABI to achieve functional goals in the areas of **occupational performance and UE function**
- To date, the effectiveness of repeated annual group-based CIMT intervention for children with ABI has not been studied

**Objectives**

*Examine the effect of repeat participation in Helping Hand on UE function and occupational performance in children/youth with hemiplegia following an ABI*

**Methods**

- **Study design:** Pre-test, post-test retrospective design
- **Intervention:** 2 week program, 4 hours daily, constraint on the unaffected UE; program content emphasizes shaping and repetitive task practice through play and self-care activities



**Assessments:**

**Upper Extremity Function**

- Hand grip strength (**hand dynamometer/modified sphygmomanometer**)
- The Assisting hand Assessment (**AHA**): assesses bilateral arm and hand use in play-based activities
- The Quality of Upper Extremity Skills Test (**QUEST**): evaluated quality of UE function including dissociated movement, grasp, weight-baring and protective extension

**Occupational Performance**

- Canadian Occupational Performance Measure (**COPM**): a semi-structured interview to identify occupational performance issues

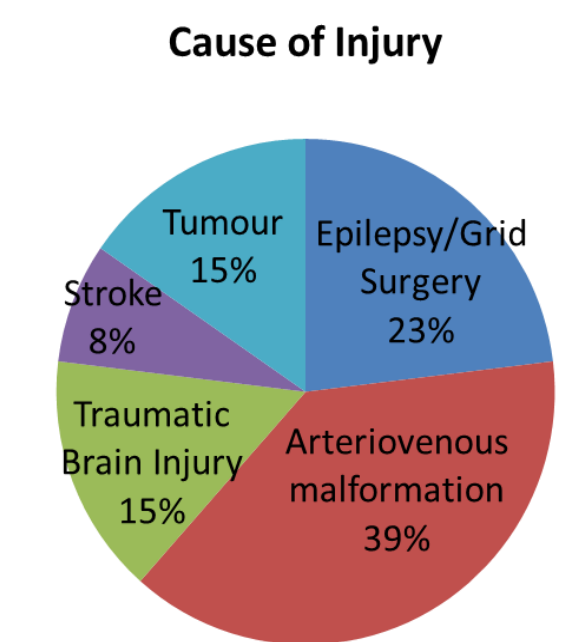
# Repeated participation in arm constraint movement therapy group supports positive changes in children with one sided paralysis as a result of an acquired brain injury



**Results**

**Participant characteristics:**

- 13 participants (8 male, 5 female)
- Mean age 6.8 years (age range 3.8 to 13.1 years)
- Mean months post injury to first trial of program is 14  
 → range is 3 to 34 months



**GRIP STRENGTH**

**Significant improvement:** pre-post intervention (year 1 and year 2), *and* after repeat participation (pre year 1 to post year 2)

**AHA**

**Significant improvement:** pre-post intervention (year 1 and year 2), *and* after repeat participation (pre year 1 to post year 2)

**Significant decline:** decreased performance when not participating in program (post year 1 to pre year 2)

**QUEST**

**Significant improvement:** pre-post intervention (year 1), *and* year 1 pre to year 2 pre, *and* after repeat participation (pre year 1 to post year 2)

**COPM**

**Significant improvement:** pre-post intervention (year 1 and year 2), *and* after repeat participation (pre year 1 to post year 2)

**Significant decline:** decreased performance when not participating in program (post year 1 to pre year 2)

**Discussion**

- Preliminary evidence supporting **repeat participation** in group-based mCIMT for children with hemiplegia following ABI
- Performance (UE and activities of daily living) is declining year to year when not participating in the program; **with repeat participation, performance continues to improve**
- Other **factors may contribute to the positive outcomes** of this study including age, time post injury at time of participation, specific diagnosis
- **Next steps** include exploring outcomes for participants considering the effects of timing, age, type of acquired brain injury and participants who participate more than twice
- **Limitations of study** include a small sample size, non-blinded assessors, no control group and limited follow-up data

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