Augmenting Constraint Induced Movement Therapy with the Armeo®Spring Pediatric: A Comparative Study

Heather Roberts, OTR/L, PhD  
Nancy Clegg, BSN, MSN, PhD  
Linsley Smith, BS, RN  
Angela Shierk, OTR/L, PhD  
Mauricio R. Delgado, MD  
Texas Scottish Rite Hospital for Children and University of Texas Southwestern Medical Center, Dallas, Texas

BACKGROUND

Constraint Induced Movement Therapy (CIMT) involves restraining the non-involved upper limb for a specified period of time while a child engages in intensive training activities with the affected limb. CIMT is recognized as an intervention that offers promise in remediation of hand function and improved use of the upper limb in children with hemiparesis (CP). However, no published studies to date have examined the effectiveness of CIMT combined with the use of the Armeo®Spring Pediatric, a robotic device, or the pediatric CP population. The Armeo®Spring device combines virtual reality games with repetition-based and Constraint Therapy. The virtual reality games are aimed to increase motivation to complete the repetitive tasks required to improve upper limb function. The purpose of this study is to examine the effectiveness of traditional CIMT compared to augmented CIMT, which incorporated the use of the Armeo®Spring in the treatment protocol.

OBJECTIVES

- Examine the differences in hand function and participation of children who completed an augmented CIMT intervention in a camp-like setting with Armeo®Spring training to those who completed a traditional CIMT intervention who did not receive Armeo®Spring training.

METHODS

Study Participants/ Setting

22 children recruited from neurology clinic at a tertiary care facility - Texas Scottish Rite Hospital for Children (TSRHC) in Dallas, Texas.

Inclusion Criteria

- (1) diagnosis of hemiplegia between 5-12 years old  
- (2) classified MACS level I, II, or III

Exclusion Criteria

- (1) did not meet age range and criteria
- (2) significant visual impairment

Materials

- All subjects in both groups demonstrated improvements on all outcome measures
- Addition of Armeo®Spring Pediatric with mCIMT camp associated with significant improvements in bi-manual use on AHA
- This was not observed on the MUUL and may be due to increased intra-rater reliability of the AHA
- The AHA may be more sensitive to change

CONCLUSIONS

- First research addressing use of Armeo®Spring Pediatric in children with hCP
- Clinically and statistically significant changes in hand function with use of Armeo®Spring Pediatric

REFERENCES


