

# A Comparative Study of Play Therapy and Child Friendly Constraint Induced Movement Therapy in Cerebral Palsy

K. Harini<sup>1</sup>, Gokila Raj<sup>2</sup>, Kannan Dhasaradharaman<sup>3</sup>, Ferdinand Robert<sup>4</sup>, M.P. Thenmozhi<sup>5</sup>

<sup>1</sup>BPT Student, <sup>2</sup>MPT Student, <sup>3,4,5</sup>Professors, JKKMMRF College of Physiotherapy, The Tamil Nadu Dr. M.G.R. Medical University, Chennai, Tamil Nadu, India.

Corresponding Author: Kannan Dhasaradharaman

DOI: <https://doi.org/10.52403/ijhsr.20220706>

## ABSTRACT

**Background:** Cerebral Palsy is a neuro developmental disorder caused by non-progressive lesion in the developing brain. The aim of the study was to compare the effect of constraint induced movement therapy vs play therapy in cerebral palsy.

**Method:** A sample of 20 patients within the age group of 4-8 years with cerebral palsy were randomly divided into two groups, Group A (n= 10) and group B (n= 10). The subjects in group A were treated with CIMT [Constraint induced movement therapy] and the subjects in group B was treated with Play therapy. The subject's improvement on hand functions was assessed by Box and Block test (BBT) and Motor Activity Log Scale (MAL) and pre and Post test results were analysed.

**Result:** The study concludes that there was statistically significant improvement of hand function in group A compared to group B in response to treatment

**Conclusion:** Based on the result, this study concluded that child friendly constraint induced movement therapy is effective in spastic hemiplegic cerebral palsy than play therapy in cerebral palsy.

**Key words:** CIMT, PLAY THERAPY, BBT, MAL

## BACKGROUND

Cerebral Palsy is a neuro developmental disorder caused by non-progressive lesion in the developing brain<sup>1</sup>. Cerebral palsy is the leading cause of childhood disability with an incidence of 2 in 1000 live births<sup>2</sup>. Cerebral palsy is increased among low birth weight infants, particularly those weighing less than 1000g at birth, primarily because of intracranial haemorrhage and Periventricular leukomalacia. Hemiplegia characterized by a clinical pattern of unilateral motor impairment is a common type of cerebral palsy<sup>3</sup>. Dysfunction of upper limb function result from abnormal sensation, weak grasp, loss of fine movements, speed of movement and motor

activities. The challenge to improve hand function in hemiplegic hand in cerebral palsy children has encouraged therapists to develop new forms of therapy. Recent evidence suggests that children with cerebral palsy are provide with those opportunities and is becoming increasingly popular in use or child friendly constraint induced movement therapy (CIMT) which is of applying a restraint to the normal upper limb. It includes concentrated designated practice with the elaborate limit and co appointment far in excess of their one-sided impedances.

## METHODS

This study was conducted in JKKMMRF College of physiotherapy, outpatient

department. A sample of 20 patients within the age group of 4-8 years with cerebral palsy were randomly divided into two groups, A total number of 20 subjects were selected by random sampling method after due consideration to inclusion criteria. They were divided into two groups. Group A and Group B with 10 subjects in each group. Group A received CIMT (Constraint induced movement therapy) in addition to selected Physiotherapy program<sup>4</sup>. Group B received Play therapy in addition to selected physiotherapy programme for a total duration of 12 weeks, 5 days per week, 1 session per day<sup>5</sup>. The parameter used for this study was Box and Block test<sup>6</sup> and Motor activity Log Scale (MAL)<sup>7</sup>. Both males and females are included in this study. Uncontrolled seizures, visual problems that could interfere with performing the intervention or tasks, modified Ashworth scale grade greater than 3, botulinum toxin A injection in upperlimb within 6 months prior to study, orthopaedic surgery on the involved upper extremity are excluded from the study<sup>8</sup>.

## PROCEDURE

### GROUP A (CONSTRAINT INDUCED MOVEMENT THERAPY)

Children in group A wore a bivalve plaster cast on the non-involved upper extremity from shoulder to finger tips for the entire time during the session lasting for 1 hour and the plaster cast was removed at the end of the session. This was done 5 days per week for 12 weeks. Repetitive task practice was achieved by making them to perform continuously for 10 min.

### GROUP B (PLAY THERAPY)

Group B consists of 10 subjects who received play therapy. The treatment program was conducted individually and adjusted to current needs and abilities of each of the patients. The therapeutic regime was same for all participants. The session lasted for 1 hour 5 days per week for 12 weeks.

## RESULTS

### BOX AND BLOCK TEST FOR GROUP A AND GROUP B

The comparative mean value, mean difference, standard deviation, and unpaired 't' value between pre and post-test value of Box and Block test in group A and group B.

S.NO		Box And Block Test Score			Unpaired t- value
		Mean difference	Mean difference Between group	Standard deviation	
01	Group A	17.20	6.10	3.03	4.03
02	Group B	11.10			

The tabulated T value which shows that there was a significant difference at 0.01 level between mean difference of group A and group B. The pre vs post test mean difference of group A and group B was 17.20. The mean difference of pre test vs post test mean of group B was 11.10 and mean difference of group A and group B was 6.10 which showed that there was statistically significant improvement in

cerebral palsy in response to treatment in group A when compared to group B.

### MOTOR ACTIVITY LOG SCALE FOR GROUP A AND GROUP B

The comparative mean value, mean difference, standard deviation and unpaired 't' value between pre and post test value of motor activity log scale between group A and group B.

S.NO		Motor Activity Log [MAL] Scale			Unpaired t- value
		Mean	Mean difference between group	Standard deviation	
01	Group A	14.90	9.70	2.39	7.55
02	Group B	5.20			

The tabulated T value which shows that there was a significant difference at 0.01 level between mean difference of group A.

The pre vs post test mean value of group A was 14.90. The mean value of pre test vs post test mean of group B was 5.20 and

mean difference of group A and group B was 9.70 which showed that there was statistically significant improvement in cerebral palsy in response to treatment in group A when compared to group B.

## DISCUSSION

The BBT is a wooden box with two compartments by a partition and 150 blocks<sup>9</sup>. Asking the subject to move one by one and maximum number of blocks from one compartment to another within 60 seconds. The box and subject should be checked and oriented in midline. The test begins with the unaffected upper limb and 15-second trial period is allowed additionally. Every trial the instructions are given to the subjects and advised, their fingertips should cross the partition when transferring the blocks and do not need to pick up the blocks which might fall outside of the box.

The Motor Activity Log (MAL) is a subjective measure of an individual's real life functional upper limb performance. The MAL is administered by semi-structured interview to determine (a) how much (Amount of Use-AOU), and (b) how well the individual uses his upper limb (Quality of Movement-QOM) in his own home<sup>10</sup>. Therefore, the present study was accepting the alternate hypotheses and rejecting the null hypotheses.

## CONCLUSION

Based on the result, this study concluded that the constraint induced movement therapy was effective in spastic hemiplegic cerebral palsy than play therapy in cerebral palsy.

**Acknowledgement:** We thank all subjects who were part of this study and supported

**Conflict of Interest:** None

**Source of Funding:** None

**Ethical Approval:** Approved

## REFERENCES

1. Vitrikas K, Dalton H, Breish D. Cerebral Palsy: An Overview. *Am Fam Physician*. 2020 Feb 15;101(4):213-220.
2. Wimalasundera N, Stevenson VL. Cerebral palsy. *Pract Neurol*. 2016 Jun;16(3):184-94.
3. Hoon, A. H., Jr, & Vasconcellos Faria, A. (2010). Pathogenesis, neuroimaging and management in children with cerebral palsy born preterm. *Developmental disabilities research reviews*, 16(4), 302-312.
4. Jamali AR, Amini M. The Effects of Constraint-Induced Movement Therapy on Functions of Cerebral Palsy Children. *Iran J Child Neurol*. 2018 Fall;12(4):16-27.
5. Buddhadev, D. N. P., & Arya, D. B. (2012). Effectiveness of Play Therapy over Conventional Physiotherapy in Spastic Diplegic Cerebral Palsy Children: Effectiveness of Play Therapy over Conventional Physiotherapy. *National Journal of Integrated Research in Medicine*, 3(2), 137-139.
6. Mathiowetz V, Volland G, Kashman N, Weber K. Adult norms for the Box and Block Test of manual dexterity. *Am J Occup Ther*. 1985 Jun;39(6):386-91.
7. Ashford S, Slade M, Malaprade F, Turner-Stokes L. Evaluation of functional outcome measures for the hemiparetic upper limb: a systematic review. *J Rehabil Med*. 2008 Nov;40(10):787-95.
8. Kaji, R., Osako, Y., Suyama, K., Maeda, T., Uechi, Y., Iwasaki, M., & GSK1358820 Spasticity Study Group (2010). Botulinum toxin type A in post-stroke lower limb spasticity: a multicenter, double-blind, placebo-controlled trial. *Journal of neurology*, 257(8), 1330-1337.
9. Hoare BJ, Wallen MA, Thorley MN, Jackman ML, Carey LM, Imms C. Constraint-induced movement therapy in children with unilateral cerebral palsy. *Cochrane Database Syst Rev*. 2019 Apr 1;4(4):CD004149.
10. Brown SH, Lewis CA, McCarthy JM, Doyle ST, Hurvitz EA. The effects of Internet-based home training on upper limb function in adults with cerebral palsy. *Neurorehabil Neural Repair*. 2010 Jul-Aug;24(6):575-83.

How to cite this article: K. Harini, Gokila Raj, Kannan Dhasaradharaman et.al. A comparative study of play therapy and child friendly constraint induced movement therapy in cerebral palsy. *Int J Health Sci Res*. 2022; 12(7):48-50. DOI: <https://doi.org/10.52403/ijhsr.20220706>

\*\*\*\*\*