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**Dr. K Mohanraj**  
Professor, KG College of  
Physiotherapy, Coimbatore,  
Tamil Nadu, India

## **Effect of constraint induced movement therapy with conventional physiotherapy on upper extremities function in patients with stroke**

**Dr. K Mohanraj**

### **Abstract**

Stroke is the sudden loss of neurological function caused by an interruption of the blood flow to the brain. Constraint induced movement therapy is to reduce movement deficits, improve movement performance and improve real-world functional use of the hemiparetic upper extremity. Conventional physiotherapy follows the inhibitory and facilitatory techniques to reduce the impairments and minimize the disability.

**Methods:** 20 subjects were selected by simple random sampling and divided into two groups of 10 in each as Group A treated with constraint-induced movement therapy and Group B treated with conventional physiotherapy. Baseline data were assessed on the basis of upper limb motor function using wolf motor function test and pre and post test results were obtained after three weeks of treatment

**Results:** The results showed statistically that there was a significant difference between the effect of constraint induced movement therapy and conventional physiotherapy on upper limb function in patients with stroke

**Conclusion:** It has been concluded that constraint induced movement therapy with is more effective than conventional physiotherapy in improving upper limb function in patients with stroke.

**Keywords:** Constraint induced movement therapy, WOLF Motor assessment scale, stroke

### **Introduction**

Stroke is the sudden loss of neurological function caused by an interruption of the blood flow to the brain. Stroke is a leading cause of adult disability and although stroke can cause deficits in a number of neurological domains, the most commonly affected in the motor. Moreover, given the central role that hand movements normally play in human existence, much attention in rehabilitation research has been focusing on restoring hand motor function after stroke.

Constraint induced movement therapy is to reduce movement deficits, improve movement performance and improve real-world functional use of the hemiparetic upper extremity by providing repetitive practice of the affected arm and restraint of the unaffected arm. Conventional physiotherapy follows the inhibitory and facilitatory techniques to reduce the impairments and minimize the disability.

### **Method and methodology**

**Study design:** Two group pretest and posttest experimental group design.

**Study setting:** Department of physiotherapy, KG Hospital, Coimbatore

**Sample size:** 20 patients with stroke

### **Inclusion Criteria**

1. Ischemic stroke with more than six months.
2. Age between 40-60 years.
3. Both sexes.
4. Modified Ashworth scale score of more than 2.

**Correspondence**  
**Dr. K Mohanraj**  
Professor, KG College of  
Physiotherapy, Coimbatore,  
Tamil Nadu, India

**Exclusion Criteria**

1. No severe cognitive impairments
2. No excessive spasticity in the affected limb
3. Mentally retarded patients

**Outcome measure**

Upper extremity motor function

**Procedure**

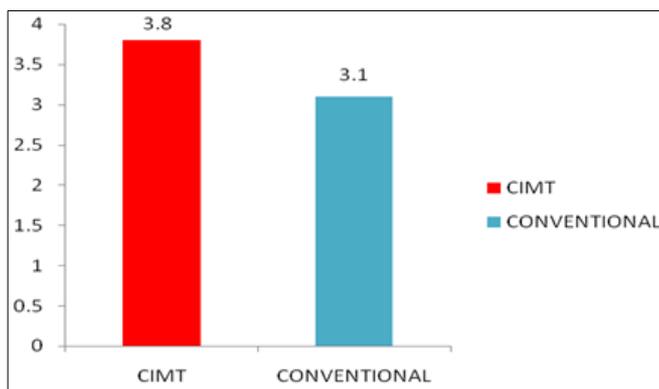
20 Patients with stroke as per inclusion criteria were taken up for the study and assigned to experimental and control group with 10 patients in each group. Patients in CIMT group received shaping skills and repetitive practice of Functional tasks were used during training sessions. Therapy concentrated on the affected limb use in functional tasks chosen by patients and treating therapist. Patients were instructed to perform functional tasks by wearing a resting hand splint on unaffected hand and wrist (6 hours per day) Shaping skills involved practicing 3 parts of tasks are grasping and releasing blocks, using a tablecloth to wipe a table with elbow flexion and extension, and opening and closing a clothespin. Each part of task was practiced for 20 to 30 minutes. In conventional physiotherapy group, the patients received neurodevelopmental principles, emphasizing stretching and weight bearing by the affected limb. Passive range of motion, stretching of the affected limb, or facilitatory and inhibitory techniques for 10 minutes. Unilateral and bilateral task training for 50 minutes each. Unilateral tasks involved moving the pegs on a vertical tower or putting chessman into the holes on a board. Bilateral tasks involved picking up cones with the hands clasped or scooping beans from a bowl with one hand while the other hand stabilized the bowl. Frequency of treatment Two hours per day, 5 times in a week Treatment duration 3 weeks

**Statistical analysis**

Upper limb function

Paired 't' test-wolf motor function test

Post test values of group A and group B



**Results and Discussion**

Statistical analysis using unpaired 't' test showed that there was a significant difference between the effect of constraint induced movement therapy with trunk restraint and conventional physiotherapy on upper limb function in patients with stroke. Paired 't' test concluded that there was a significant improvement on upper limb function in both constraint induced movement therapy with trunk restraint and conventional physiotherapy in patients with stroke. In this study, constraint induced movement therapy with trunk

restraint showed significant improvement on upper extremity function than conventional physiotherapy. This may be due to because of the possible mechanisms such as First, reinforcement of using the affected limb and aversive consequences for its non-use by constraining the unaffected hand may reduce the learned non-use behaviour. Second, repeated practice of functional tasks of ecologic significance to the patients may lead to increased reorganization of the brain after stroke.

**Conclusion**

This study concluded that constraint induced movement therapy with is more effective than conventional physiotherapy in improving upper limb function in patients with stroke.

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