

# The Effectiveness of Constraint-Induced Movement Therapy on Motor Function of Stroke Patients

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## Background

Stroke patients over the age of 55 are most at risk of struggling to regain motor function due to natural deterioration.<sup>1,2</sup> Patients suffering with limb impairment and paralysis, resulting from a stroke, struggle to rehabilitate and regain motor function.<sup>2</sup> Constraint induced movement therapy (CIMT) has been shown to have positive effects on limb usage.<sup>1,3</sup>

## PICOT Question

In stroke patients with motor impairments of their limbs, what is the effect of constraint-induced movement therapy on motor function compared with standard motor rehabilitation therapy?

## Literature Search

**Key terms:** Stroke, CIMT, Constraint-Induced Movement Therapy, Central Nervous System, Neurorehabilitation, Standard Motor Therapy, Motor Impairment, Motor Function.

**Databases:** Google Scholar, JSTOR

## Methods

- Initial studies resulting from database search (n=20)
- Potential studies appropriate for review (n=10)
- Studies retained for review in (n=7)
- Published between 2018-2022
- Published in English.
- Study included stroke patients over the age of 60.
- Published in scholarly journal.



## Synthesis of Findings

- CIMT enhances and facilitates neuronal cell homeostasis. The effects are more significant when CIMT is initiated early post stroke CIMT increases several neurological biomarkers.<sup>1</sup>
- Modified constraint-induced movement therapy (mCIMT) has been shown to be an effective treatment method for patients who experienced a stroke in improving paretic extremity strength and quality of life (QoL) aspects related to their health.<sup>2,5</sup>
- Early rehabilitation, within the first 24-hr post stroke, have shown successful outcomes in improvement towards functional independence.<sup>1,4</sup>
- Functional independence can be improved after a stroke by applying constraint induced movement therapy in a collective modality for three hours a day over ten days.<sup>3-5</sup>
- CIMT is shown to promote improvements in extremities largely focusing on the effect of independence on daily activities.<sup>2,5</sup>
- Positive effects on balance using were found in three studies and equal effects were found in five studies compared to the more typical control group interventions, such as conventional physical therapy.<sup>1-7</sup>

## Decision to Change

- Constraint induced movement therapy (CIMT) when compared to standard motor rehabilitation therapy has had some beneficial outcomes in recovery of stroke patients with motor impairments of their limbs.
- CIMT is an option that we would like to implement to help in these circumstances to give patients a different approach such as granted more mobility through guided movements by the affected arm, which has had success in being the primary intervention in rehabilitation.
- Constraint induced movement therapy has had promising results in several recent studies. Typically, standard therapy has been implemented in the recovery of stroke patients, although, if the patient has limited movement, progress can be slowed, and the window of recovery shortens resulting in loss of critical time for the body to improve any motor impairment. CIMT also showed positive improvements on a variety of neurological biomarkers.

## Evaluation

- “By the end of the 6-month implementation period, CIMT in patients recovering from a stroke over the age of 60 will increase the motor function of the affected limb by 5%”
- Scoring system used: Provider facilitated observations, Motor Activity Log-30 (MAL-30) Action Research Arm Test (ARAT), Wolf Motor Function Test, Action Research Arm Test, and quality of life (Stroke-Specific Quality of Life, modified Ashworth scale (MAS)

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