Upper Limb Assessment & Treatment Guides

# 7: Mental imagery for the upper limb post stroke

## Introduction / Background / Purpose

The concepts of mental imagery or visualisation can be classified into visual, auditory, olfactory, somatosensory and motor imagery.

Motor imagery involves a person imagining skilled movement without actually completing the movement (Braun et al, 2008). This may be ‘first person imagery’ (as if looking through their own eyes) or ‘third person imagery’ (as if looking from a distance at oneself).

Studies have demonstrated that activation of the motor cortex during mental imagery of a movement is similar to that occurring during physical performance of that movement (Loporto et al. 2011). It is therefore suggested that mental imagery may enhance motor relearning post-stroke.

## Equipment required

No specific equipment is required. A quiet space to practice mental imagery is recommended. An audio device may be required if being used to guide the patient through a session.

Tools such as ‘The Kinesthetic and Visual Imagery Questionnaire’ and ‘The Movement Imagery Questionnaire’ have been described as methods of assessing the capacity of a patient to elicit a mental image (Carrasco & Cantalapiedra, 2016).

## Procedure

There is currently no universally accepted protocol for the implementation of Mental Imagery post-stroke.

Recent literature reports a variety of imagery techniques, time spent practicing and patient characteristics. Mental imagery is rarely used as a stand-alone therapy and is predominantly combined with conventional physiotherapy or occupational therapy techniques, including task oriented training and constraint-induced movement therapy (Carrasco & Cantalapiedra, 2016).

**A mental imagery framework developed by Braun et al. (2008):**

1. ***Assess mental capacity of the patient***

The therapist must use clinical judgement to decide if imagery is suitable. This may include assessment of memory, attention, perception and motivation.

1. ***Establish the nature of mental practice with the patient***

Explain what it is and how it may help. Relate this to patient’s own experiences. Explain that it is an adjunctive therapy rather than a stand-alone treatment. Ensure that tasks imagined are those that the patient wishes to improve and are potentially achievable.

1. ***Teach imagery technique***

Two aspects of the task selected are important:

1. The component actions of the task

Clarify that the patient has a clear understanding of the components of the action. They should be able to describe the movement sequence or place picture of the task in order. These can be practiced prior to implementing mental imagery.

1. Having vivid images of the task

This includes an awareness of what should be felt, seen and heard during the selected task.

1. ***Embed and monitor***

This may include mentally practicing components of the task, or the entire task. It should be regularly combined with actual limb movement if possible. The patient should be encouraged to practice outside of therapy sessions. An ‘imagery log’ may assist with motivation to practice.

1. ***Develop self-generated treatments***

Patients should be encouraged to introduce new imagery tasks to practice independently.



Braun et al (2008)

Most studies reported procedures including:

* An initial relaxation time for the patient to focus on the task ahead
* The patient performing a task mentally (usually using first-person imagery). This task is often one either recently practiced or is practiced following the imagery session.
* mental imagery sessions lasting a mean of 30 minutes
* Some studies used videos to explain the procedure, or audio to guide the patient through the session

(Carrasco & Cantalapiedra, 2016).

## Inclusion / Exclusion Criteria

Braun et al. (2008) suggest that patients should be able to follow three step commands and be able to participate in other therapies for at least 10 minutes in order to effectively use mental imagery.

## Precautions

Patients with cognitive issues or an inability to evoke mental imagery may be unsuitable for this intervention. No evidence of harm or side effects has been noted in the literature (Barclay-Goddard et al, 2011).

## Evidence

A recent Cochrane Review (2011) concludes that there is limited evidence that mental practice in combination with other treatments is more effective in improving upper limb function post-stroke than other treatment alone.

A meta-analysis by Kho et al (2014) reports that there is evidence supporting the use of mental imagery for motor rehabilitation of the upper extremity post-stroke. The majority of participants in the studies included in this review could move at least the wrist to some extent. Most studies also recruited participants in the sub-acute and chronic stages post-stroke. The results from this review should be interpreted with caution due to small sample sizes and low quality studies.

A systematic review by Carrasco & Cantalapiedra (2016) suggests that positive changes in upper limb function persist for at least three months post-intervention.

**References:**

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