Clinical Effectiveness of Motor Imagery Post-Stroke: An Evidence Based Review

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Clinical Effectiveness of Motor Imagery Post Stroke: An Evidence Based Review

Azzy Narimanimian, Amanda Reese, Karina Ryabo, Rachel Shepp, and Annalisa Synnestvedt

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OBJECTIVES:
- Understand the current evidence for motor imagery, as presented in an evidence-based review of 15 articles.
- Identify three clinical implications of this evidence in treatment for individuals post-stroke.
- Distinguish the unique role of occupational therapy using motor imagery to enhance occupational participation.
- Analyze supports and barriers to implementing the evidence for motor imagery to current practice settings through group discussion.

**What is the effectiveness of motor imagery to increase upper extremity function for daily activities for individuals post-stroke?**

Acute verses Chronic Stroke: Strong evidence supports the use of motor imagery for individuals with acute and chronic stroke to improve upper extremity function.
- Total time post-stroke: 12 days - 4.6 years
- Average time post-stroke: acute = 7.7 weeks/ chronic = 2.4 years
- Statistically significant results for use of motor imagery for patients
  - 6 articles with chronic stroke (3 Level I, 2 Level II, 1 Level III)
  - 5 articles with acute stroke (3 Level I, 1 Level II, 1 Level III)

Protocol: Perspective: Strong evidence supports a first-person perspective to improve upper extremity function; there is preliminary evidence for a third-person perspective and a combined perspective.
- First-Person Perspective: 9 articles (4 Level I, 3 Level II, 2 Level III)
- First Compared to Third-Person Perspective: 1 article (Level I) (not statistically significant)
- Combined First and Third-Person Perspectives: 1 article (Level II)

Protocol: Motor Imagery with Relaxation: Strong evidence supports the use of relaxation as the first step within a motor imagery protocol to improve upper extremity function.
- Relaxation, ranging from 2-5 minutes, was used as the first step of motor imagery

- This involves using motor imagery with gradually more complex tasks or environments (Timmermans et al., 2013)
- 7 articles (3 Level I, 2 Level II, 2 Level III) using this approach had statistically significant results

Delivery Method: Intervention: Strong evidence supports the use of audio delivered motor imagery to improve upper extremity function; moderate evidence supports the use of therapist delivered motor imagery; preliminary evidence supports the use of video & therapist delivered, video delivered & audio, video, therapist scripted delivery. Further research is needed to identify the most effective delivery method.
- Video Recording: 1 article (Level I)
- Audio Recording: 5 articles (3 Level I, 2 Level II)
- Therapist Delivered: 6 articles (2 Level II, 2 Level III, 2 Level II)
- Video, Audio, & Therapist Scripted: 1 article (Level II) (not statistically significant)
- Video & Therapist Delivered: 1 article (Level I) (not statistically significant)

Delivery Method: Duration, Frequency, Intensity: Preliminary evidence supports varied duration, frequency, and intensity of motor imagery intervention.
- Statistically significant outcomes were seen as early as 2 weeks with 5 sessions/week lasting 40 minutes each, and as late as 10 weeks with 3 sessions/week lasting 50 minutes each.
- Studies most frequently used 30 minute sessions (Ranged from 10-60 minutes)
- Studies used an average of 15.4 treatment sessions

Most Frequently Used Outcome Assessments:
- Fugl-Meyer Test of Sensorimotor Impairment: 7 articles (4 Level I, 2 Level II, 1 Level III)
- Action Research Arm Test: 6 articles (4 Level I, 2 Level II)
- Barthel Index of Activities of Daily Living: 2 articles (2 Level I)(not statistically significant)
References


Barclay-Goddard, R. E., Stevenson, T. J., Pohaha, W., & Thalman, L. (2011). Mental practice for treating upper extremity deficits in individuals with hemiparesis after stroke. Stroke, 42(11), e574-e575. doi: 10.1161/01.STR.0000385640.75051.63


* References marked with an asterisk indicate studies included in the evidence-based review

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