Appraisal Media

Recognise™ Hands app for graded motor imagery training in chronic pain

https://itunes.apple.com/us/app/recognise/id470824372?mt=8

Recognise™ Hands is an app designed for both iPhone and iPad. It accurately measures the speed and accuracy of making left/right hand discrimination judgements, as part of a graded motor imagery (GMI) rehabilitation program. This app has been developed and released by the NOI Group™, and provides the option to vary the number of images and the length of time the user has to view each image. To increase complexity, the user can progress through 'Vanilla Hands', 'Context Hands' and 'Abstract Hands'.

While the app is a simple tool that allows the user to practise left/right discrimination judgements, a more detailed description of graded motor imagery is provided via the link to the NOI Group™ site (http://www.gradedmotorimagery.com). This site explains the process of graded motor imagery, and how to incorporate use of the Recognise™ Hands app for both left/right discrimination practice and explicit motor imagery training. Additionally, the site provides a reference list of relevant supporting research.

A recent systematic review of interventions aimed at reducing pain, disability, or both, in patients with complex regional pain syndrome (CRPS),[1] identified that GMI may be effective for pain and function when compared with usual care for this condition.

One of the most common triggers of CRPS is fracture: 44% of cases follow an upper limb fracture. Postmenopausal women are also at an increased risk of developing the disease.[2] In a recent prospective cohort study of 1549 participants with wrist fractures, Moseley et al[3] found that approximately 4% of those managed non-surgically develop CRPS within four months of the fracture. Further, they identified that a simple assessment of the average pain severity felt during the previous two days, which was assessed during the first week after wrist fracture, was a predictor of who would go on to develop CRPS. People with pain scores of $\geq$ 5/10 at this time had more chance of developing CRPS (eg, for scores of 5-6/10, positive likelihood ratio = 15, 95% CI 10 to 21).

Graded motor imagery is an approach used for the rehabilitation of patients with chronic pain; it aims to activate the cortical networks involved in sensory-motor processing.[4] While there is evidence that a six-week program of GMI rehabilitation for people with CRPS results in improved symptoms and function,[5] a recent multicenter prospective audit[4] investigating 'real-world' implementation of GMI failed to identify a reduction in pain intensity after treatment. One of the reasons proposed for the lack of improvement in pain relates to the lower frequency of practice, when compared with the published RCT by Moseley.[5] Johnson et al[4] did not report whether the patients in their study used Recognise™ Flash Cards, Recognise™ Online or the Recognise™ app to perform their left/right judgements. However, it could be assumed that encouraging patients to use the app might improve compliance with the GMI program.

The Recognise™ Hand app is simple to use. It also provides patients with the opportunity to alter the context and environment in which they complete their left/right judgements.[6] Alternatives include changing the length of display time for the images, the number of images, the context of images, the external environment, the time of day and the posture of the patient while completing the left/right judgement tasks. The default setting is for 20 images, with 5 seconds to view each image. However, the number of images is adjustable between two and 50, and the time is adjustable between 2 and 30 seconds per image. At the completion of the test, the scores for accuracy (% correct) and speed (seconds) are summarised as a tally of 'today's' scores, or 'all' scores – reflecting the total of all scores since results had been cleared. This allows the clinician to test a patient's performance in the clinic.

As a general guideline, left/right judgements are considered to be disrupted with slow response times ($>$ 2.5 seconds), side-to-side differences (difference $>$ 0.3 seconds), and reduced accuracy ($<$ 80%)[6] (p. 32). These guidelines are useful in determining which patient is likely to benefit from performing left/right judgement training. It may be that a patient with chronic arthritic pain at the base of his/her thumb demonstrates a delay in response time on the painful hand, as might someone with a crush injury to the fingertip. The reasons for this are complicated and beyond the scope of this review, but suffice to say that left/right judgements and the graded motor imagery program are useful for a number of diagnoses, not just CRPS.

Use of the Recognise™ Hand app allows regular training in left/right judgement tasks throughout the day while 'on-the-go'. If used in conjunction with Recognise™ Online, it provides a comprehensive and readily accessible tool to allow patients to undertake a graded motor imagery program as part of their rehabilitation for chronic pain.

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References

1. O'Connell NE, et al. *Cochrane Database Syst Rev.* 2013;4:CD009416.
2. de Mos M, et al. *Pain.* 2007;129:12–20.
3. Moseley GL, et al. *J Pain.* 2014;15:16–23.
4. Johnson S, et al. *Eur J Pain.* 2012;16:550–561.
5. Moseley GL. *Pain.* 2004;108:192–198.
6. Moseley G, et al. *The Graded Motor Imagery Handbook.* Adelaide, Australia: Noigroup Publications; 2012.