REVIEW ARTICLE

Graded Motor Imagery Program – A Review

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Abstract

Graded Motor Imagery (GMI) is essentially a brain based treatment, targeting the activation of different brain regions in a graded manner. GMI is a three stage treatment programme comprising of Left Right discrimination training, Explicit Motor imagery and Mirror therapy. This review presents the background and evidence of Graded Motor Imagery and provides an overview of studies showing the effect of Left Right discrimination, Motor imagery, Mirror therapy and GMI. Graded motor imagery is used in the treatment of complex regional pain syndrome, phantom limb pain and chronic pain. Complex regional pain syndrome type 1, phantom limb pain and stroke show identical aspects of symptomatic presentation and pattern of cortical reorganisation. Although, supported evidence is available on the effect of Mirror therapy and Motor imagery on Stroke, there is need to explore the effectiveness of GMI in future experimental trials.

Keywords: Motor imagery program; Mirror therapy; Mental imagery.

Introduction

Motor Imagery can be defined as covert cognitive process of imagining a movement of your own body without actually moving your body.[1] Graded Motor Imagery (GMI) is a therapeutic strategy targeting the activation of different networks in a graded manner. Brain is the target organ of graded motor imagery. Graded motor imagery progressively engages the cortical neural networks in order to improve cortical reorganisation through neuroplasticity.[2] GMI is a three stage process comprising of Left/Right discrimination training (Implicit motor imagery), Explicit Motor imagery (Imagined movements) and Mirror therapy.[3]

The theoretical and scientific background behind GMI involves the Neuromatrix (Neurosignature, Neurotags) and Neuroplasticity. Neuromatrix, also called "Neuronal circuitry" of the brain. It changes all the time as glial cells and synapses change

activity. Neurotag is a cortical representation of the brain and Neurosignature is a pattern of activity in the neuromatrix. When a neurotag is activated it produces an output, the output defines the neurotag[2]. Neuroplasticity is a cortical reorganisation that occurs during development, regeneration or repeated activity across a synapse.[4] GMI works on the underlying mechanism that neural networks which are normally involved in movement planning and execution are also equally active during perception, perceptual reorganisation and imagined movement.[5]

Principle of Graded Motor Imagery and its Graded Exposure

GMI utilises the principle of Graded Exposure where a stage wise stimulus – response interrelationship is achieved through an ongoing training program incorporating the mechanisms of GMI. There are studies demonstrate that people with Complex regional pain syndrome (CRPS) and limb pain