Wrightington, Wigan and Leigh Teaching Hospitals
NHS Foundation Trust

Graded Motor Imagery

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What is Graded Motor Imagery?

Graded Motor Imagery (GMI) is a rehabilitation process that focuses on retraining your brain and nervous system. It is particularly effective for individuals experiencing chronic pain or movement problems.

The movement in your hand relies upon a constant ‘conversation’ between your brain and your muscles which is relayed through the nerves which connect them. This is called your sensorimotor system. After injury or when you experience pain, this system becomes altered, and this conversation becomes disrupted. This leads to an imbalance in the muscles and can cause some stabilising muscles to be ‘switched off’.

GMI relies on neuroplasticity. This is the brain’s ability to change and reorganise itself. Through consistent practise and repetition, this sensorimotor system can be stimulated and the ‘conversation’ between the brain and the muscles can be resumed.

This approach combines mental and physical exercises to help you regain control over pain and movement.

There are three stages to GMI as detailed below. Due to the brain’s requirement for repetition to reorganise its pathway, these activities are best carried out 2 or 3 times a day, for 5-10 minutes each time. They may be challenging or painful to begin with. If so, start with shorter periods, building up to 10-15 minutes each time.
Each stage should become easy and feel more natural to do before you move onto the next stage. If you find a stage particularly difficult, you may need to go back one stage. Discuss this with your therapist to find the right level for you.

These activities are the foundations of recovery and will make the physical exercises much easier when you start them.

The Three Stages of Graded Motor Imagery

Laterality

Research has shown that when you experience chronic pain or reduced use of a body part, it can become difficult to tell the difference between the left and right sides of the body. Being able to quickly recognise whether a body part is left or right is an important skill in recovery, as it helps restore normal movement patterns and reduce pain.

In this stage you will perform simple recognition tasks where you will try to identify images of the body as left or right as quickly as you can. This helps the map of your body within your brain to be restored, thereby reducing pain perception.

Activities:

- You can use images of parts of the body and see if you can work out if it is right or left
- You could look through a photo album or magazine and try to label left and right hands for example. You could also do this while watching videos or the television. Does someone turn to the left or the right? Do they use their left or right hand?
- 'Recognise' and 'Orientate' are two phone apps you can use to help you with this stage. If you are going to use them, select the option to use the joint closest to your affected area. This tests your speed of recognition so you can see if your speed improves over time. Try to use them daily as practise will make this easier.

Imagined Movement

In this stage, you will visualise pain free movements related to the affected part of your body. By imagining these movements, you can activate the same nerve pathways that are used during actual physical movement. This helps your brain rebuild accurate motor patterns and can reduce the perception of pain. This technique has been used by elite athletes for many years to enhance their performance and train their 'muscle memory'.

Activities:

- Start by imagining your hand in static positions, for example thumbs up, fingers spread, making a fist. Once you have practised this and ensuring it doesn't cause pain, move onto the next step.

- Now imagine your hand doing slow movements, for example writing, waving, pushing a door open, using cutlery, peeling an orange. It can be any activity you choose but imagine it slowed down.

- When you are with others or watching television, observe what people are doing with their hands. Now close your eyes and imagine yourself doing the same movement with your affected limb.

Mirror Therapy

Mirrors are used typically when one side of your body or one limb is affected. This step uses a mirror to reflect the image of your unaffected side, tricking your brain into perceiving less pain and better movement.

If you do not have a free-standing mirror, you can use a mirror on a wardrobe door or buy a mirror box. Your therapist will show you how to do this technique correctly.

Leave your affected limb out of your eyeline, behind the mirror. Now look at the reflection of your unaffected side. Moving the unaffected limb while looking into the mirror at the reflection will stimulate the same pathways that would be used if you were moving your affected side. In this way, the brain is getting the stimulation it needs without any movement needed from your affected side.



Start with simple movements and get used to looking into the mirror. Concentrate fully on the reflection and think about how it looks and feels. This can sometimes feel very strange, and you may need to start with very short periods of time. Try to build the time up to 10-15 minutes. As you get used to this you can move onto bigger movements or activities with the limb. If it is painful, stop and discuss with your therapist.

Your therapist will help you think of some activities to do which relate specifically to you.



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