



Graded Motor Imagery (GMI)

Information for patients from the Orthopaedic Hand Service

Graded Motor Imagery exercises are not suitable for patients who have dyslexia or for children

You have been referred to the Hand Therapy Service as you are feeling pain when you move. After discussing your symptoms with you, your therapist has suggested that Graded Motor Imagery (GMI) may be able to help you.

This leaflet explains what Graded Motor Imagery is and the stages involved. If after reading this leaflet you have any further questions, please speak to your hand therapist at your next appointment.

Why have I been referred for Graded Motor Imagery (GMI)?

If your therapist has suggested that you do GMI exercises it is because your pain response is stronger than we would expect; this is known as Complex Regional Pain Syndrome (CRPS) (/complex-regional-pain-syndrome-crps). For example, you have pain caused by simple joint movement or pain from a light touch. With CRPS pain continues after the original injury has healed.

With CRPS two things are happening to your body.

1. The nerves in your painful limb (arm or leg) are being overactive or sensitised; and
2. The 'sensory-motor' area in your brain that deals with how your body feels when it is moved or stimulated, is altered causing a 'mismatch' in information. This is called central sensitisation.

More information is available in the leaflets: Complex Regional Pain Syndrome (CRPS) (/complex-regional-pain-syndrome-crps) and Pain, Allodynia and Desensitisation (/pain-allodynia-and-desensitisation-therapy).

What is central sensitisation?

Pain is an unpleasant feeling that your brain produces to prevent or lessen damage to your body. Central sensitisation can be thought of as your brain trying to protect your limb but unnecessarily, creating excessive pain as it mistakenly believes your body is at risk of damage.

You might be interested to know that in people affected by CRPS, the brain's over-reaction to touch and movement and the changes in the sensory-motor area can actually be seen on brain scans during special

studies. This shows that CRPS pain is real.

What are the symptoms of central sensitisation?

Central sensitisation can include some or all of the following symptoms. Remember everyone is different, so you may have other signs as well.

- Pain triggered by the idea of movement and touch.
- Feeling detached from your limb (your limb is not part of your body).
- Feeling that your limb is not the shape and size it actually is (it feels swollen when it's not).
- Having strong negative feelings towards your limb.
- Skin discolouration.
- Increased swelling and stiffness, plus one or more of the symptoms listed above.

Any of these symptoms are worrying. However, studies have shown that Graded Motor Imagery exercises can help you correct the changes in your sensory-motor area, even after many years of suffering from the problem.

What is Graded Motor Imagery?

GMI exercises aim to 'train your brain', so that movement and touch no longer triggers a pain response stronger than you should expect. It aims to restore your altered sensory-motor area and lessens central sensitisation. This needs time and regular practice by you.

- **Graded.** Step-by-step introduction of movement, without triggering a pain response by starting with the area of your brain that only prepares for movement. Like sneaking in through the back door.
- **Motor.** A word used to describe our body's system for joint movement; including the brain, nerves, skeleton, joints, and muscles.
- **Imagery.** Using your imagination to think about and move your painful limb and your unaffected limb. To only imagine the movement, not actually move your painful limb.

How is Graded Motor Imagery done?

A GMI program has three stages of exercises.

- To begin with, you must do these exercises exactly how you have been told to by your therapist. Once you are used to them you can do them as you feel necessary.
- Your therapist will tell you when to move on to the next stage.

Stage 1 Laterality exercise

Laterality is our ability to recognise left and right sides. When we look at our own limbs or other people's limbs and try to identify which is the left side or which is the right side, we use the area of our brain which is involved

in movement planning but not movement execution (actually moving). It is thought that the movement planning area of our brain is less likely to be sensitised and send pain messages. This is the back door. For specific exercise instructions, please ask a member of staff for a copy of the Trust's **Laterality exercise** leaflet.

Stage 2 Explicit motor imagery

Explicit motor imagery is imagining movement. When we imagine movement we activate both the movement planning and some of the movement execution area of our brain, without actually moving our body. The purpose of this is to teach the sensitised areas of your brain that movement is not a threat, that you can move and not cause yourself pain.

To start with you may find you feel pain by imagining movement. With practice, it may be possible for you to activate the movement execution area of your brain without triggering a pain response. When you can more easily imagine moving your painful limb it is time for stage three. Please ask a member of staff for a copy of the Trust's **Explicit motor imagery or imagined movement** leaflet for specific exercise instructions.

Stage 3 Mirror Visual Feedback

In this exercise a mirror is used to reflect your unaffected limb, with your painful limb behind the mirror. The idea is to 'trick' your brain into thinking that your affected limb is being moved freely and normally, whilst your unseen affected side moves in the same way but with smaller, controlled, and 'non-threatening' movement. Please ask a member of staff for a copy of the Trust's **Mirror visual feedback** leaflet for full instructions.

- Please feel free to keep asking questions.
- Please discuss your concerns and symptoms with your therapist, no matter how strange they may seem.
- Please remember, everyone feels pain differently. So, although these exercises have been proven to help, it may take you more / less time to see the benefits.
- You will be seen by a therapist regularly. They will guide your treatment and provide you with the necessary support.

Further information

If you have any further questions, do not hesitate to ask your therapist.

This leaflet has been produced with and for patients.

Please let us know:

- If you have any accessibility needs; this includes needing a hearing loop or wanting someone to come with you to your appointment.
- If you need an interpreter.
- If you need this information in another format (such as Braille, audio, large print or Easy Read).

You can let us know this by:

- Visiting the Trust web site (<https://www.ekhuft.nhs.uk/ais>).
- Calling the number at the top of your appointment letter.
- Adding this information to the Patient Portal (<https://pp.ekhuft.nhs.uk/login>).
- Telling a member of staff at your next appointment.

Any complaints, comments, concerns or compliments, please speak to a member of your healthcare team. Or contact the Patient Advice and Liaison Service on 01227 783145 or email (ekh-tr.pals@nhs.net).

Patients should not bring large sums of money or valuables into hospital. Please note that East Kent Hospitals accepts no responsibility for the loss or damage to personal property, unless the property has been handed into Trust staff for safe-keeping.

Further patient information leaflets are available via the East Kent Hospitals' web site (<https://www.ekhuft.nhs.uk/patient-information>).

Reference number: Web 496

First published:
August 2020

Last reviewed:
August 2022

Next review date:
December 2025

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