

## Upper Limb Unit

# Graded motor imagery

Graded motor imagery is a set of treatments for chronic pain. They're used to help reduce the pain and improve the motor function of the hand, wrist, arm or any other body part.

For some pain conditions, traditional therapy treatments are too painful to tolerate. Graded motor imagery helps improve movement while reducing pain.

## Understanding pain

Pain is a very complex concept. When we sprain our ankle, the pain we feel is useful to protect the injury until it heals. Some pain (chronic pain) continues after the injury has healed and is not useful.

We know that chronic pain is not simply experienced when the nerve endings that sense pain are activated. Pain is influenced by activity in many different parts of the brain. Each person has a different pain 'circuit' in the brain that's activated by different factors.

As pain persists, this circuit in the brain can become over-sensitive and easily activated. For some people, just the thought of moving can activate the pain circuit and cause pain to be felt. When the hand or limb is painful, it can become difficult to touch, move or use.

The brain also has a memory or 'map' of different body parts and how these feel, move and function in day-to-day activities. If the hand or limb is



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not touched, moved, or used this map starts to change and can begin to disappear.

But the brain map can be changed and re-established. Graded motor imagery helps with this process.

### **Graded motor imagery treatments**

You may not need to complete all the treatments described. Your therapist will advise on which treatments are appropriate for you.

You need to complete the treatments on a regular basis to achieve a lasting effect.

Many different factors can affect the amount of pain you experience. It may therefore be useful to consider when and where you complete your treatment. This can minimise the chance of you experiencing pain during the treatment.

For example, you may find that at certain times of day and in certain places your pain is less than at others.

### **Laterality**

Laterality involves recognising whether an image is of the right- or left-hand side of the body. When the brain maps begin to change, the ability to recognise right from left can be affected. The following exercise is designed to begin to restore the brain map.

During assessment, your therapist showed you images of the hand in different positions. They asked you to identify whether they are left or right hands.

If you had trouble with this task, complete this treatment first:

- Begin with a small number of pictures of hands in simple positions which are easy to identify left from right. Your therapist will provide

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pictures for you, or you may prefer to find and use your own pictures (see last page of this leaflet)

- When you can repeatedly identify the simple pictures correctly, progress to pictures in more complex positions.
- Before progressing to the next stage of graded motor imagery, you should be able to repeatedly identify the more complex pictures

## Recognise™

You can also complete this treatment using the app Recognise™.

Recognise™ is the first way as part of a comprehensive rehabilitation programme to:

- accurately measure the ability to recognise left and right body parts and movements
- train left/right discrimination

Learn more about how left/right discrimination forms part of the graded motor imagery rehabilitation process at [www.gradedmotorimagery.com](http://www.gradedmotorimagery.com).

## Imagined movements

This treatment involves thinking about doing a movement without doing the movement. This process uses the same parts of the brain as doing a movement but to a smaller degree. So, it's less likely to produce pain.

This technique has been used for many years by elite athletes to help improve performance in their sports.

Complete the treatment as follows:

- Begin with images of the hand in a static position. Your therapist can provide images for you, or you can use your own images
- If you experience pain when imagining putting your own hand in the position in the images, imagine someone else moving their hand first
- When you can imagine putting your hand in these static positions without experiencing pain, progress to using images of hands doing

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different activities. Think about how it would feel to do the activity in the image.

Your therapist can tell you how to make this task gradually more challenging as you progress through the treatment.

### **Mirror therapy**

Mirror therapy involves looking at the reverse image of your non-painful hand in a mirror. The reflection in the mirror then appears as the affected hand. This aims to 'trick' the brain into thinking that the painful hand now feels and moves as normal.

Complete the treatment as follows:

- Place a mirror upright on a table or other surface. A free-standing mirror is ideal.
- Place your pain-free hand in front of the mirror where its reflection can be clearly seen in the mirror. Place your painful hand behind the mirror out of view.
- Ensure any jewellery is removed from either hand before the treatment, so that both hands are essentially the same.
- Begin by just looking at the image of the still hand in the mirror. Make sure that both hands are placed in the same position. You can place your hands in different positions each time you complete the treatment.
- When you can look at the mirror image without experiencing pain, you can begin to move the hands.
- Begin with a small amount of movement in the least painful direction. Ensure both hands move at the same time in the same direction. Slowly increase the amount of movement as you progress through your treatment sessions.
- When you can complete a movement or movements without pain, progress to the next most painful movement or movements until all movements can be done with minimal pain.

### **Remember**

All these activities can help reduce your pain. But you must do them consistently and regularly for progress to be made.

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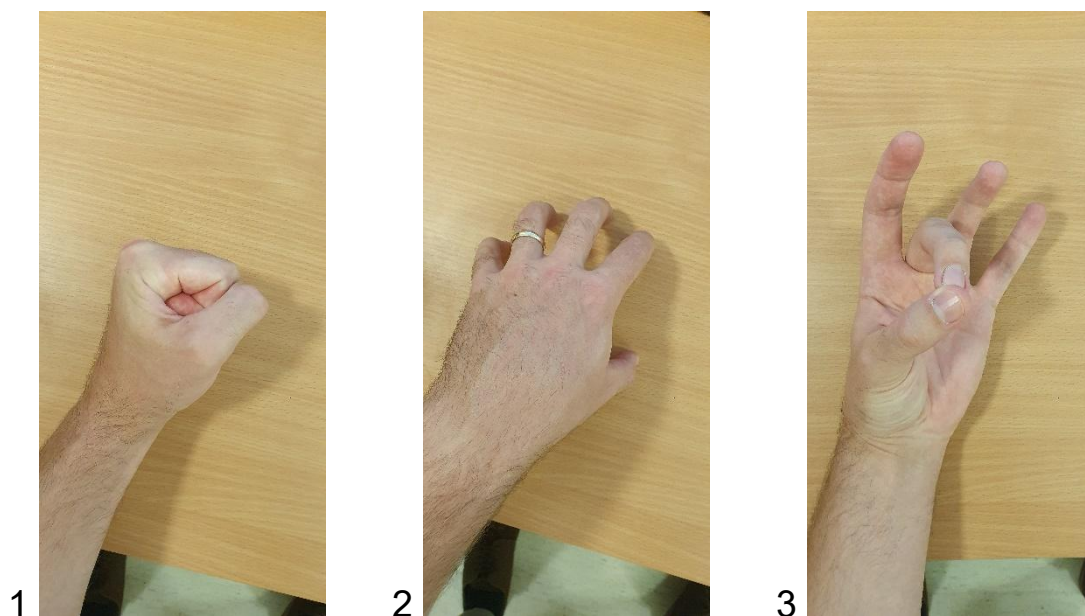
If when doing any activity your pain increases, stop the activity immediately. Return to an activity that does not stimulate pain and discuss this with your therapist at your next appointment.

Continuing treatment is important to help influence the changes we want to occur.

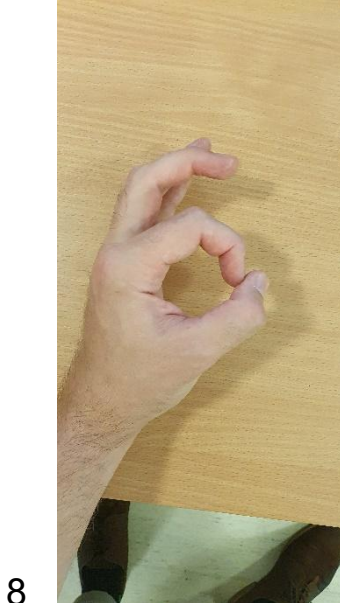
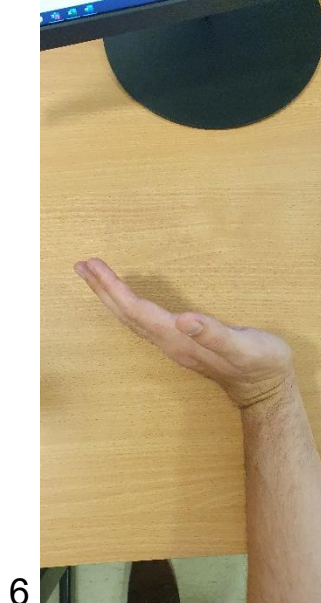
Your pain is real. It is a result of the nerves becoming oversensitive and the brain changing. We can influence the changes and begin to reverse them with treatment, but it takes time, commitment, and effort.

Use the following pictures to imagine your hand in each position (as guided by your therapist). This stimulates the area of your brain which can struggle to receive normal messages.

## Hand pictures



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### Contact details

If you need more information, please contact your therapy department:

**University Hospital, Coventry, and Warwickshire: 024 7696 6016**

**Rugby, St Cross Hospital: 01788 663 257**

The Trust has access to interpreting and translation services. If you need this information in another language or format, please contact 024 7696 6016 and we will do our best to meet your needs.

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Have your say. Scan the QR code or visit:

[www.uhcw.nhs.uk/feedback](http://www.uhcw.nhs.uk/feedback)



#### Document History

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