

## Upper Limb Unit

# Graded Motor Imagery

### Introduction

Graded motor imagery is a set of treatments that are used to help reduce pain and improve the ability to move the hand, wrist, arm or any other part of the body affected by persistent or wide-spread pain.

For some pain conditions traditional therapy treatments to help with movement such as exercise and joint mobilisation are too painful to tolerate. Graded motor imagery is a less 'threatening' way to help improve movement whilst at the same time 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 but some pain (chronic pain) continues after the injury has healed and is therefore 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 which is activated by different factors.

As pain persists this circuit in the brain can become over-sensitive and is very 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 not touched, moved or used this map starts to change and can begin to disappear. Fortunately however 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.



## Patient Information

The treatments need to be completed on a regular basis to achieve a lasting effect. Many different factors can affect the amount of pain experienced. It may therefore be useful to consider when and where you complete your treatment in order to minimise the chance of you experiencing pain during the treatment. You may find for example 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 as a result of lasting pain 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 will have shown you a number of images of the hand in different positions and asked you to identify whether they are left or right hands. If you experienced difficulty with this task you should complete this treatment first before progressing to the later stages of graded motor imagery.

The treatment should be completed as follows:

- Begin with a small number of pictures of hands in simple positions which are easy to identify left from right. Your therapist can provide pictures for you or you may prefer to find and use your own pictures.
- When you are able to repeatedly identify the simple pictures correctly, progress to pictures in more complex positions. You should be able to repeatedly identify the more complex pictures before progressing to the next stage of graded motor imagery.

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

Recognise™ is the first way to accurately measure the ability to recognise left and right body parts and movements, and to train left/right discrimination as part of a comprehensive rehabilitation programme. You can 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 actually doing the movement. This process uses the same parts of the brain as doing a movement but to a smaller degree and is therefore less likely to produce pain.

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

The treatment should be completed as follows:

- Begin with images of the hand in a static position. Your therapist can again provide images for you or you can use your own images

## Patient Information

- If you experience pain when imagining putting your own hand in the position in the images you can imagine someone else moving their hand first
- When you are able to imagine putting your hand in these static positions without experiencing pain, progress to using images of hands doing different activities. Think about how it would feel to do the activity in the image. Your therapist can advise 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.

The treatment should be completed 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 that 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 are able to 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. Gradually try to increase the amount of movement as you progress through your treatment sessions.
- When you are able to complete a movement or movements consistently 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 however you must do them consistently and regularly for progress to be made. If when doing any of these activities your pain increases stop the activity immediately and 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.

## Patient Information

### Contact Details

If you need further information please contact your Therapy Department:  
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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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