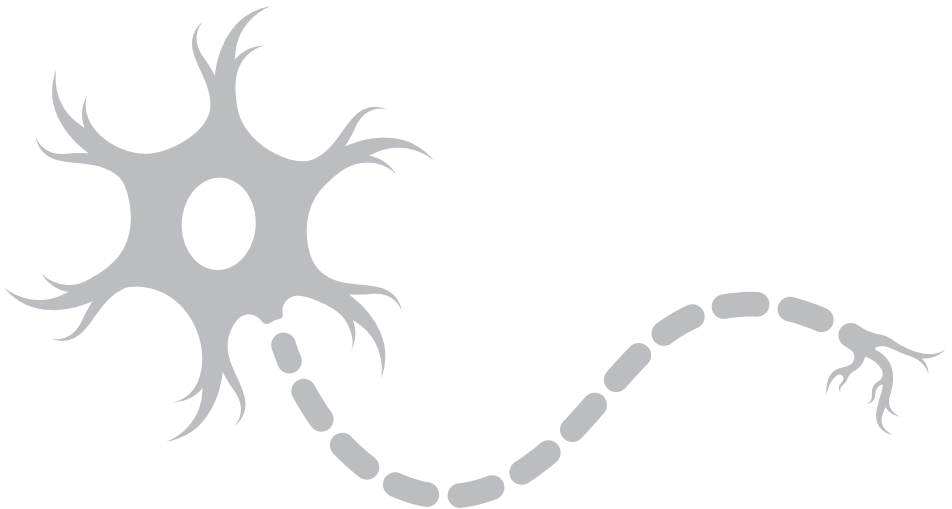


Information on

Neuromuscular Electrical Stimulation (NMES) in Traumatic Brachial Plexus Injury



Neuromuscular Electrical Stimulation (NMES) in Brachial Plexus Injury

What is a Brachial Plexus Injury?

The brachial plexus is the group of nerves that sends signals from the spinal cord to the shoulder, arm and hand.

They allow you to move and feel your arm. A brachial plexus injury happens when these nerves are **stretched or torn and you can experience weakness or changes in sensation.**

What is Neuromuscular Electrical Stimulation?

Neuromuscular Electrical Stimulation is also known as electrical stimulation or functional electrical stimulation.

Your physiotherapist may offer you this treatment to help improve your muscle function and strength. It works by delivering a small electrical impulse to the nerves that supply the muscle.

Research into NMES for traumatic brachial plexus injuries is limited. Although it cannot mimic the natural contraction exactly, it is thought to improve the strength of the muscle as it begins to recover.

What does the device look like and how does it work?

The device is usually a small battery-operated box that has 2 or 4 electrodes attached with wires that stick to your skin.

When you switch it on, you should feel a strong tingling sensation from these electrodes that stimulates your muscle.

The sensation can vary between individuals ranging from muscle twitching and tightening to a full muscle contraction making your arm move.



Figure 1. Example of a Neuromuscular Electrical Stimulation machine

When should Neuromuscular Electrical Stimulation (NMES) not be used?

You should not use this treatment on your arm:

- If you have a pacemaker
- If your skin is broken on the affected area
- Over your neck or throat
- If you have no sensation at all in the area you are placing the electrodes
- If you have poor circulation in the area
- If you are pregnant

Please speak with your therapist before you start NMES.

How do I use NMES and which device do I use?

Speak with your physiotherapist about the devices and type of simulation you can use, ideally before buying a device. This is a personalised process and your therapist can talk you through the device, settings, and where to place the electrodes to achieve the best result.

Recommendations from my physiotherapist:

Which setting do I use?

Your physiotherapist will discuss settings with you and you can write your notes below:

Recommended settings from my physiotherapist:

Mode: B M C

Pulse rate: Hz

Pulse width: μ s

Treatment time:

How often:

Recommended Parameters for Therapists (this information is for staff)

Based on available evidence these are the parameters that are recommended for electrical stimulation of muscle.

1. **Frequency** (Hz) is the number of pulses in one second (20-50 pulses per second)
2. **Pulse Duration** (microsecond) for small muscles is approximately 150-200 and for large muscles 200-300
3. **Ramp time** is at least 2 seconds
4. **On: Off** time ratio should be set in a way where off time is three times the on time
5. **Treatment time** should be between 20 and 30 minutes
6. The **frequency** of the sessions should be three times a week


Further Information

If you have any questions please speak to your physiotherapist.

Scottish National Brachial Plexus Injury Service

🌐 www.brachialplexus.scot.nhs.uk

References

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