



Anaesthesia, Surgery  
and Critical Care

North Bristol **NHS**  
NHS Trust

# TENS and pain relief



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# What is TENS?

TENS is short for Transcutaneous Electrical Nerve Stimulation. TENS is not a cure, but may reduce your pain whilst you wear the machine, helping you to increase your activity levels and your ability to relax.

## How does TENS work?

TENS is thought to work in four ways:

1. Pain messages are carried along nerves via the spinal cord to the brain. TENS sends a tingling sensation along fast nerves. As the brain can only deal with so much information at any one time, the tingling sensation can take priority and the pain messages are blocked or significantly reduced.
2. The body produces its own natural painkillers, called endorphins, in response to the electrical stimulation created by the TENS machine. It has been shown that a high caffeine intake will limit this benefit.
3. The TENS sensation creates a “distraction” from the pain. Some people who benefit from TENS are less aware of the pain, because they are more aware of the tingling.
4. The TENS can reduce the sensation of muscle tension and spasm that can be a problem for many patients with back and neck pain.

# TENS and Pain Relief

## How to use your TENS machine

Make sure that your machine is switched off before you start.

Place the electrodes on an area of the skin where skin sensation is normal. (If the area is numb, then no pain relief will be gained.) Make sure that the pads are not touching each other.

Switch the machine on and gradually turn the control knob (intensity) until a tingling sensation is felt. Some people find a gentle sensation is all that is needed. Others find a stronger but comfortable sensation works better for them.

There are other controls inside the machine, near the battery case. Using these, you can:

- Slow down or speed up the pulse rate
- Vary the pulse width to make the sensation feel more prickly, or softer
- Switch to a “burst” (which pulses on and off) or a “modulated” setting (which gradually increases then decreases the feeling, like a wave). Before you change this last control, turn down the intensity, then change the setting and turn the intensity up until you can feel the sensation again.

You may need to turn up the intensity control knob several times during your treatment so you can still feel the tingling sensation.

We asked experienced TENS users about the benefits of changing the settings:

Some settings worked better when the pain was stronger.

Changing the settings from time to time stopped them getting used to one sensation.

Some people found they could use an intermittent setting for a longer treatment than if they used a constant setting.

Some settings felt better on one area than another. For example, one person preferred a gentler setting to help with their neck pain, and a stronger sensation to help with their low back pain.

Sometimes the sensation fades after a while. Changing the settings or increasing the intensity helps to make the TENS work again.

The expert patients suggested that a new user would do well to experiment with the machine to find out what works best. A TENS diary helped some people: they wrote down what settings they had used, what they were doing, and how much the TENS had helped.

You can use the TENS machine at any time you have pain. But we suggest, the first day, that you start with 3 sessions of 1 hour each time. Check the skin under the pads after use for any redness. If your skin is tolerating the TENS, you can gradually build up the length of each treatment as the days go by. Then you can use the TENS machine at any time you have pain.

You may increase the length of each treatment if you wish. You can leave the electrodes in place between treatments even if the TENS machine is not in use but take them off once a day to wash your skin.

If you have self-adhesive electrodes, return them to the plastic

sheet and bag. If they become dry, moisten them with a few drops of water and place the pads in the bag in a fridge.

If you have black re-usable carbon electrodes, wash in mild soapy water and dry thoroughly.

If you experience most of your pain over night, the TENS can be used during this time.

## Using TENS strategically

We asked experienced TENS users when they used TENS, and why. They had developed four different strategies, depending on what they wanted from the TENS machine. There is room for flexibility here: over time, if you find the TENS machine helpful, you will find out what works best for you.

These are the four main strategies:

For rest and relaxation. Some people would switch the machine on when they were resting or relaxing. They might plan to do this before, or after an activity.

For general activities. Some people would use it all day, or “on and off” all day to help with general, day-to-day activities.

For specific activities. Some people would switch it on when they were doing specific activities which they knew could be painful. This could help them to gradually build up the length of time they could do these activities.

During flare-ups of pain. TENS was often used when the pain was stronger: a pain “flare-up”. TENS was sometimes used if the pain was beginning to build up, to reduce the chances of it building up more. Some people said that it helped them to recover more quickly from flare-ups, or reduce the number of flare-ups they have.

## Positioning the TENS pads

The expert patients said that it helps to adjust the positioning of the pads. This is because the position and behaviour of the pain can vary from day to day for some people. The instruction booklet for your TENS machine will give you some ideas about pad positioning. Be prepared to adapt these to suit your own needs, and to move the pads if they are not in the right spot that day.

Each person had his or her own particular methods. Here are some of their ideas:

Try using two pads, one either side of the pain.

Position one pad over a tender area, and put a second pad nearby.

If you have purchased your own machine try using four pads to surround the area of pain.

If you have two pain problems, try using two sets of pads to treat each pain at the same time. Alternatively, treat each area in turn.

If you have back or neck pain that is worse on one side of the body than the other, try putting two pads on the painful side.

If you have both back pain and leg pain, try putting two pads on your back and another two pads in a line down your leg where the pain is.

## Linking TENS use with other strategies

The expert patients had developed a range of ways of using TENS to help them in different situations. Here are some of examples, which may help you. TENS can be used:

- in addition to pain medication.
- to help with gradual reductions in pain medication.
- at the same time as relaxation techniques.
- during a “flare-up” of the pain as an addition to other flare-up strategies which people develop to cope with these bad spells.
- in the mornings, if pain and stiffness are a problem then.
- to help people to stay active and involved with normal activities. For example, TENS could help them to walk further or faster, climb stairs, stand up for longer, sit for longer, manage shopping, do housework and paid or voluntary work.
- whilst sitting to watch TV, go to the cinema, or the theatre.
- to cope with uncomfortable seating, or travelling.
- before an activity which might increase the pain.
- to ease pain after an activity, or after work.
- to reduce muscle spasm and muscle tension, together with other strategies such as heat, relaxation and gentle stretches.

- Occasionally, some people have skin irritation if they are allergic to the pads or gel. If this happens, contact the Pain Clinic for advice.
- Low or no sensation - replace the battery.
- Very occasionally, the pain might feel worse during or after treatment. This is a temporary effect. Try a lower intensity, a different pulse rate or width or a shorter treatment.

Burning sensation or irritation under the electrodes may be due to:

- Worn out pads - replace if necessary.
- Intensity too high - try reducing the intensity
- If using black carbon electrodes, make sure that the whole surface is covered with gel.
- Loose or broken lead.
- Using TENS for too long on the same spot - move the pads, or have a break.

### **Conditions where a TENS should NOT be used.**

- If you have a pacemaker
- During the first 3 months of pregnancy.
- Over broken or infected skin.
- Over the heart, near the eyes or on the front or side of the neck.
- When bathing or showering.

**Please ask for further advice if you need to use TENS whilst driving or operating machinery.**



## Top Tips for TENS Use from our Expert Patients

1. Carry a spare battery if you are using your TENS away from home.
2. Keep new self-adhesive pads ready in case your old ones stop being sticky.
3. If the self-adhesive pads do not suit you, you can try the older style (carbon rubber) pads, which are used with a sticky gel.
4. If the pads do not stay attached very well, try using special adhesive tape (the type used for fixing bandages in place). Perhaps use a support bandage on top of the pads if you are treating a part which a bandage would fit over, for example your knee. Ask your pharmacist for advice about this.
5. Try the hypoallergenic pads if you have sensitive skin.
6. Look after the leads and connectors as they are a little fragile.
7. You can usually hide your TENS with your clothing, if you do not want other people to know you are wearing it.
8. Try using a rechargeable battery, which can be charged up when the TENS is not in use.
9. Leave your TENS machine available somewhere close to hand at home, so that you can find it easily and quickly when you need it.
10. Try doing something else whilst you are using your TENS. Focus on some other activity, and allow the TENS to do its' job in the background.
11. Try using TENS regularly through the day, whilst relaxing, to help you to pace your activities or work.
12. TENS is not safe to be used whilst driving, but some users will fit the pads and leads before a long journey and only

- connect the TENS unit when they are having a break from driving.
- 13.If pain affects your appetite, try using TENS for a session before your meal.
  - 14.If you feel that you are “getting used to” a particular TENS sensation and it does not work as well, vary the settings, or have a short break.
  - 15.TENS can only help if it is used in the way which works well for that individual: keep experimenting in different situations, and see what works for you.
  - 16.Build up your confidence in the TENS machine: it helps to be relaxed about it.
  - 17.Have realistic expectations. Do not expect it to work for everybody, and for every kind of pain. It is not the answer for every problem, and it is not a cure.

## References and Further Information

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This guide was revised following research involving patients of the Pain Clinic at North Bristol NHS Trust. We would like to thank all of the patients at the Pain Clinic who volunteered to be interviewed for this research. We hope that their experiences will help you to make the most of your TENS machine.

**PATIENT  
APPROVED** 

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If you or the individual you are caring for need support reading this leaflet please ask a member of staff for advice.

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