



Transcutaneous electrical nerve stimulation

# TENS

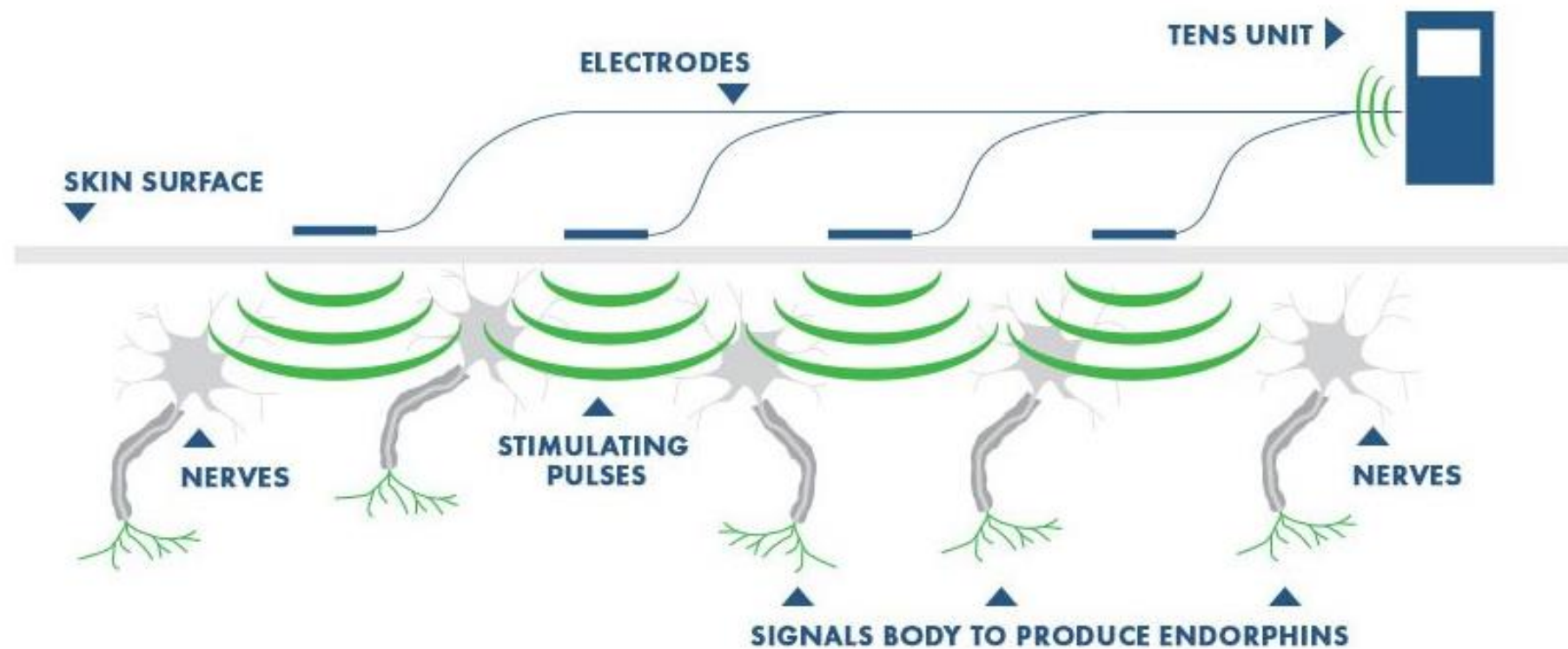
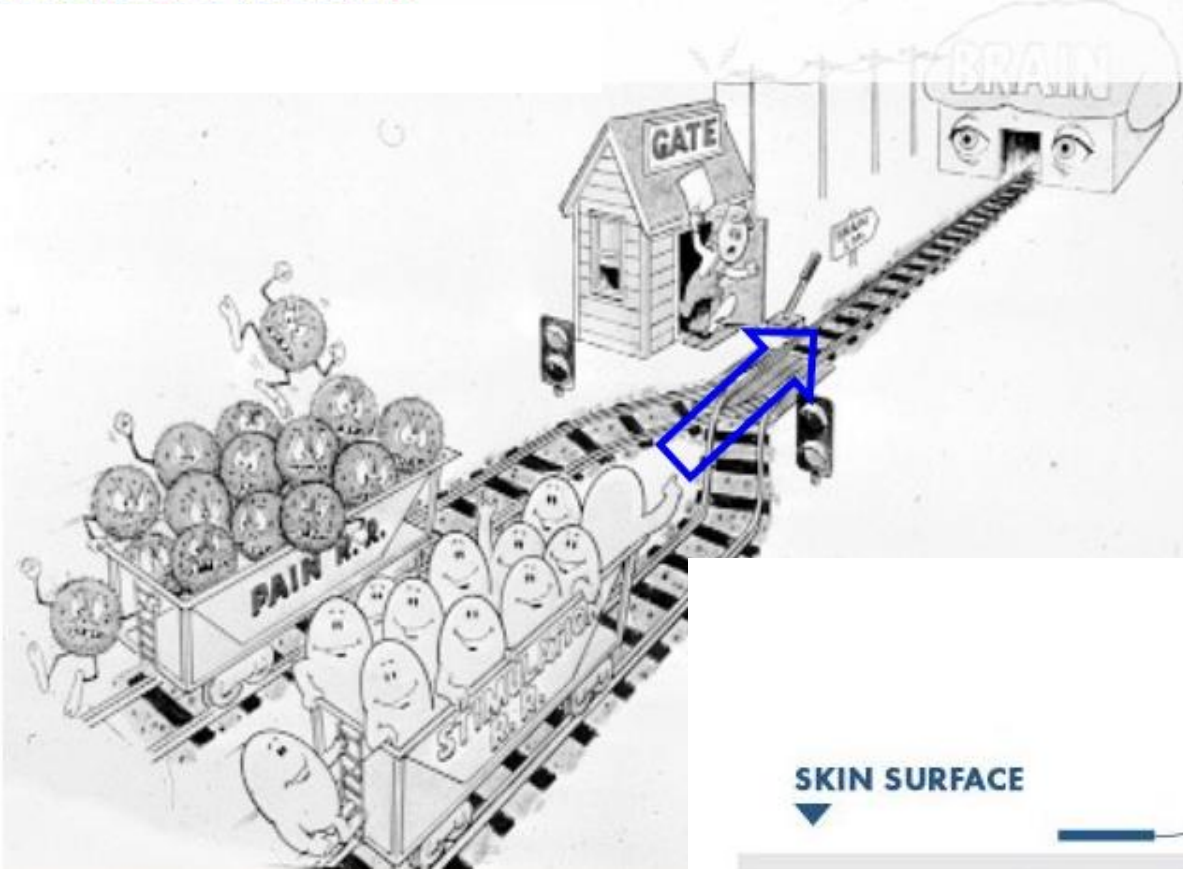
**Colin Beevor**

**Matron and Senior Clinical Nurse  
Specialist**

# TENS

- ▶ **Transcutaneous** - means through the skin.
- ▶ **Electrical** - TENS machines deliver small electrical pulses to the body via electrodes placed on the skin. TENS machines are thought to affect the way pain signals are sent to the brain.
- ▶ **Nerve** - pain signals reach the brain via nerves and the spinal cord.
- ▶ **Stimulation** - if pain signals can be blocked by the tiny electrical shocks from the TENS machine then the brain will receive fewer signals from the source of the pain





# 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.

# TENS is thought to work in four ways

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 contraindication

- ▶ Pregnant women should avoid using TENS in the abdominal and pelvic regions.
- ▶ If there is a pacemaker or implantable cardioverter defibrillator (ICD)
- ▶ known epilepsy
- ▶ The source of pain is over the site of any previous surgery where internal metalwork, such as screws, wires, implants or metal plates have been inserted.
- ▶ Areas of poor sensation in the area where the electrodes are to be applied
- ▶ Do not place electrode pads over the front or side of the neck, close to eyes or in the mouth

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It is vital never to place the electrodes on either the front of the neck or the eyes:-

Putting electrodes on the neck can lower blood pressure and cause spasms.

On the eyes, the electrodes can increase pressure within the eye and possibly cause an injury

## Do not use TENS on

- ▶ Open wounds or rashes.
- ▶ Swollen, red, infected, or inflamed skin.
- ▶ Cancerous lesions, or close to them.
- ▶ Both sides of the chest or trunk at the same time.
- ▶ Directly on spine

## Do not use TENS whilst

- ▶ Bathing or showering
- ▶ Sleeping
- ▶ Driving
- ▶ Using machinery
- ▶ **Do not** place the electrodes close to drug releasing patches
- ▶ use cream, lotion or talcum powder under the electrodes



# Stop using TENS

- ▶ Skin irritation (redness, rash, itching)
- ▶ Headache
- ▶ Dizziness
- ▶ Nausea (feeling sick)

# Settings

- ▶ **Intensity:** A dial allows the user to adjust the intensity of the electrical stimulation.
- ▶ **Frequency:** The frequency refers to the number of electrical pulses per second. High-frequency (HF) pulses range from 80 to 120 cycles per second and may help manage acute pain. Low-frequency (LF) pulses range from 1 to 20 cycles per second and are suitable for the treatment of chronic pain.
- ▶ **Duration:** The duration is the number of microseconds that the current enters the skin for during each pulse.

# What does TENS feel like?

- ▶ Sensations of tingling, tapping, buzzing, or muscle twitching.
- ▶ TENS may feel stronger or weaker at different times
- ▶ When becoming used to the feeling -turn up the intensity
- ▶ Person wearing the TENS controls
  - Intensity
  - Frequency



# Side Effects

- ▶ If the adhesive pads causing redness or irritation  
hypoallergenic pads are available.
- ▶ some people may find it uncomfortable.  
Because of the buzzing, tingling, or  
prickling sensation



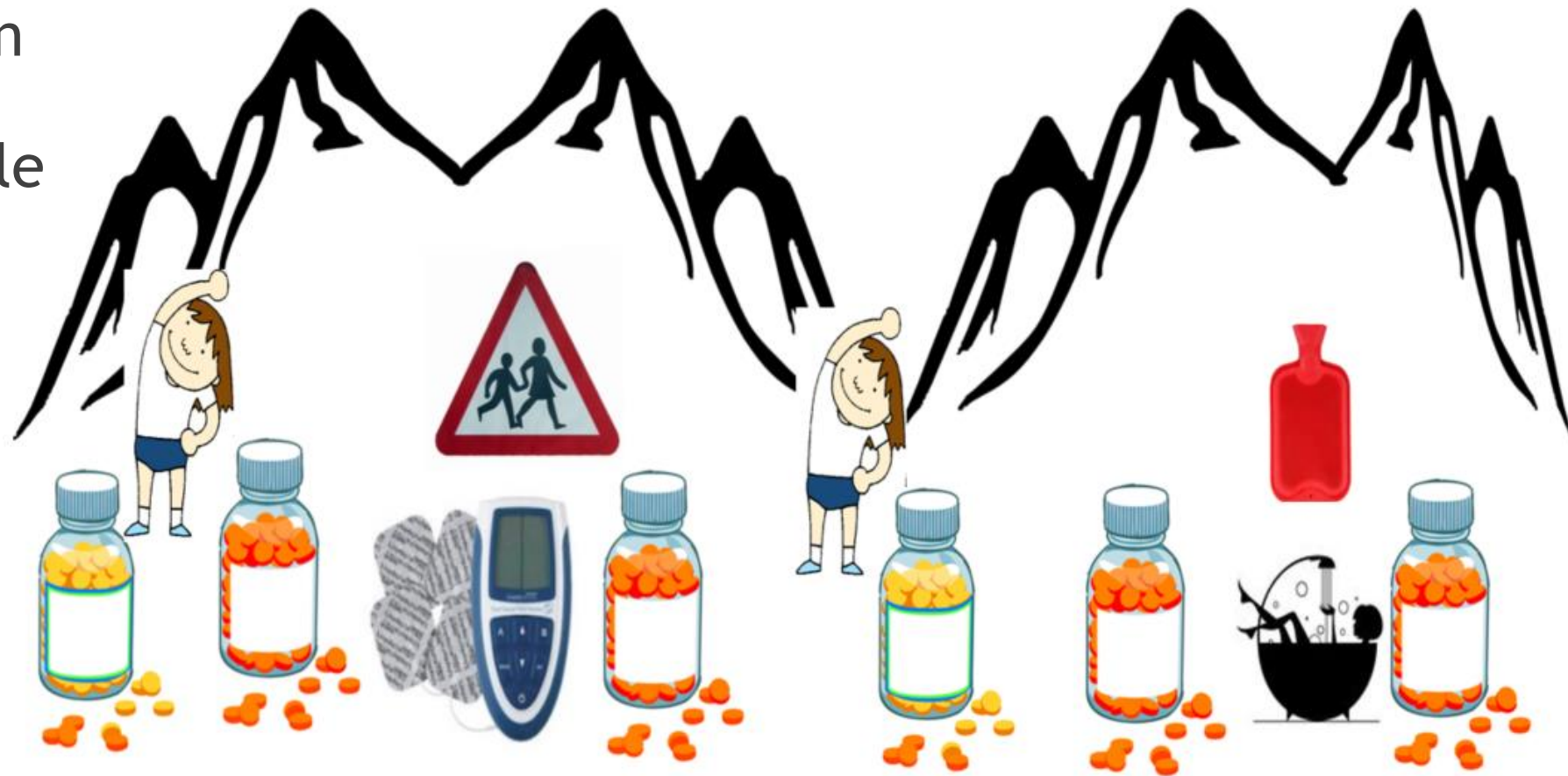
# When to use a TENS is thought to work

- ▶ in addition to pain medication.
- ▶ to help with gradual reductions in pain medication.
- ▶ at the same time as relaxation techniques.

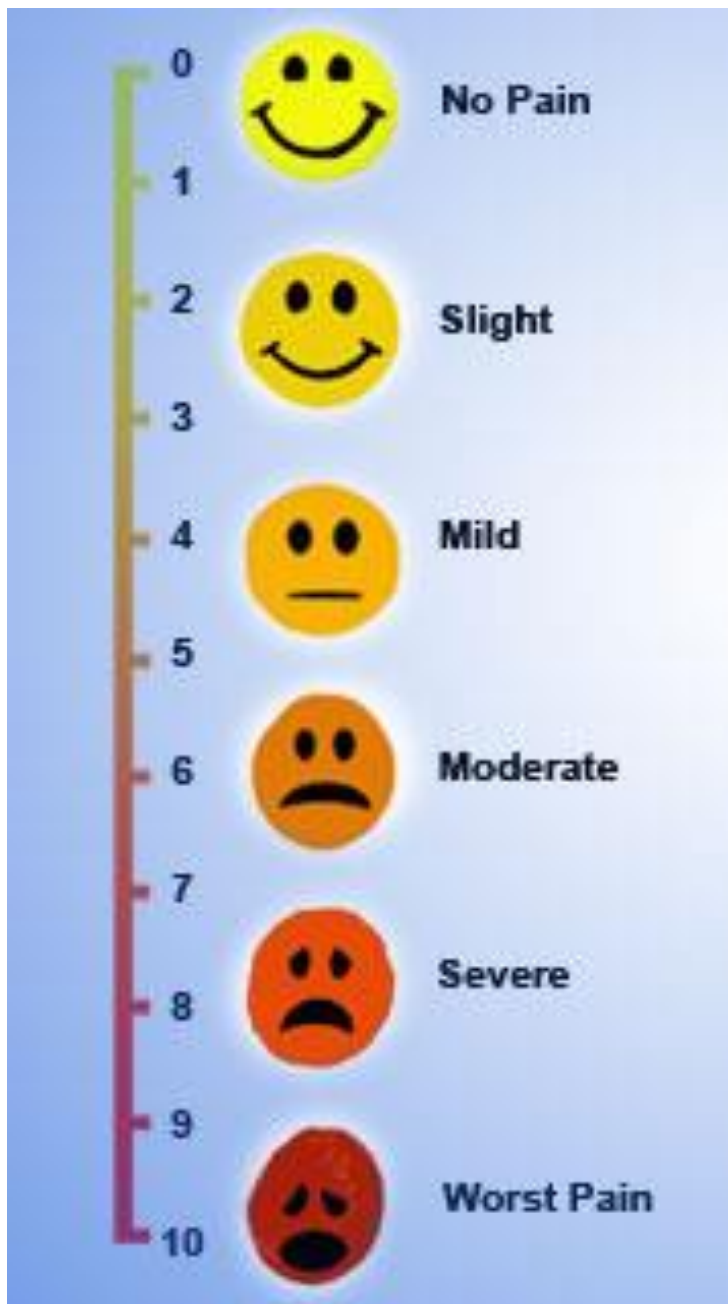


# When to use a TENS is thought to work

during a “flare-up” of the pain as an addition to other flare-up strategies which people develop to cope with these bad spells.







# When to use a TENS is thought to work

- ▶ in the mornings, if pain and stiffness are a problem then.
- ▶ to help people to stay active and involved with normal activities.

TENS could help them to walk further, climb stairs, stand up for longer, sit for longer, manage shopping, do housework and paid or voluntary work.

- ▶ before an activity which might increase the pain.
- ▶ to ease pain after an activity, or after work



# When to use a TENS is thought to work

- ▶ whilst sitting to watch TV, go to the cinema, or the theatre.
- ▶ to cope with uncomfortable seating or when travelling.





# ELECTRODE PAD POSITIONS

Low Back Pain



Neck and Shoulder Tension



Sciatica



Shoulder Pain



Knee Pain



Elbow Pain



Ankle Pain



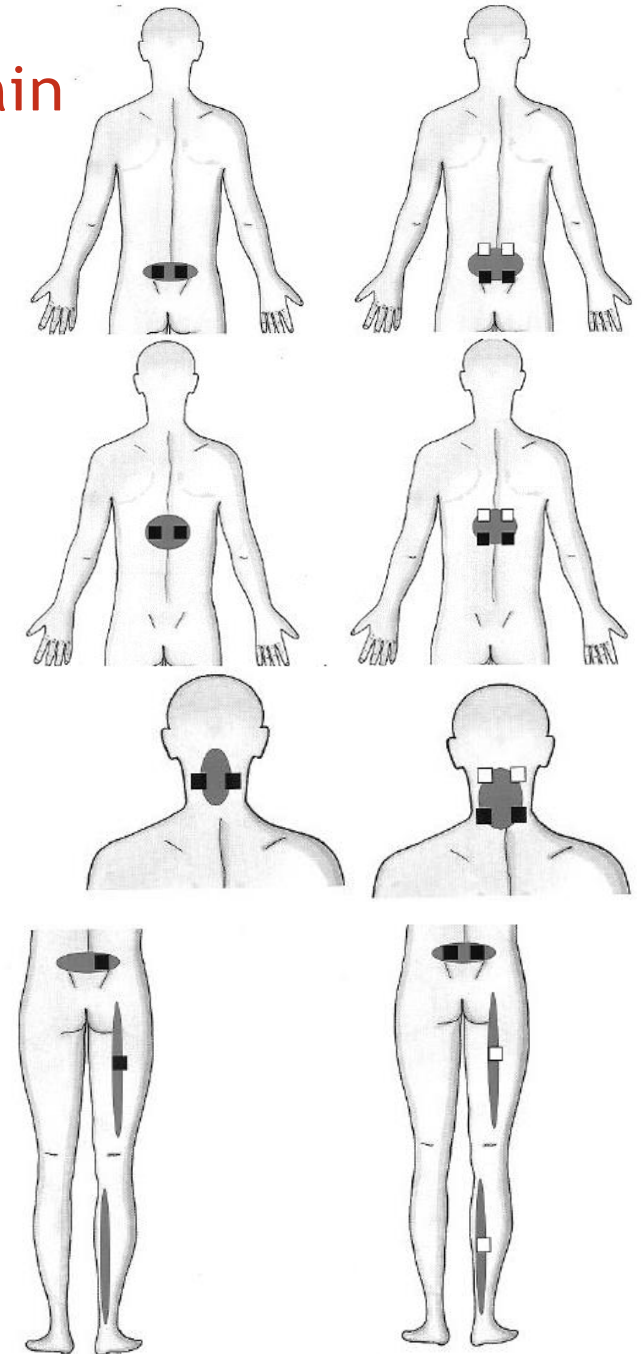
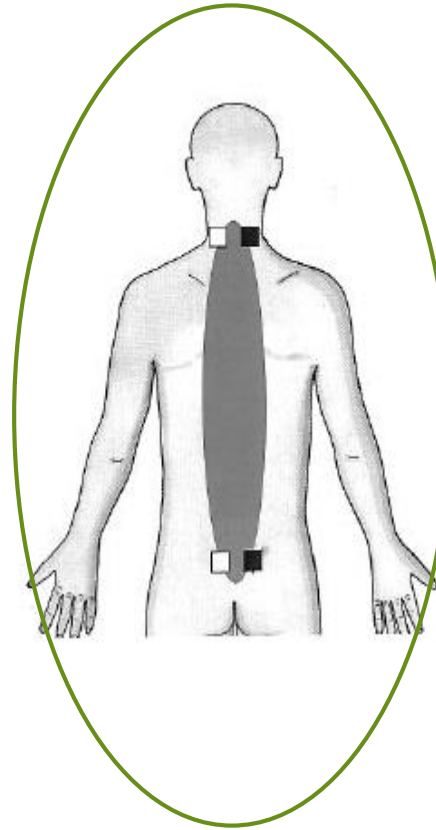
Wrist Pain



Leg Pain

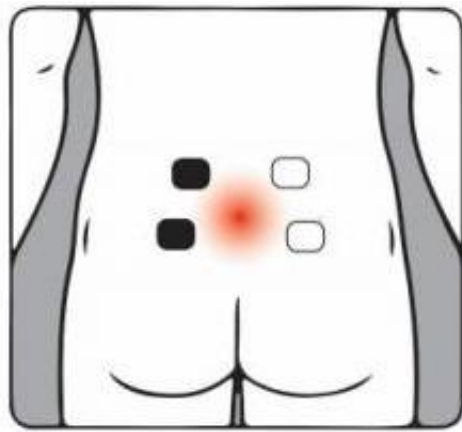


Spinal pain

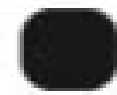
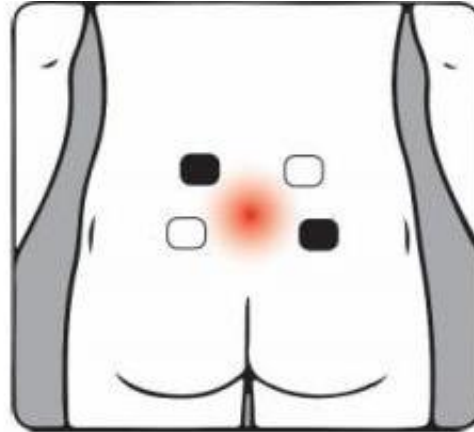


Spinal Pain  
sciatica

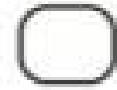
# Back pain and TENS Positioning



or

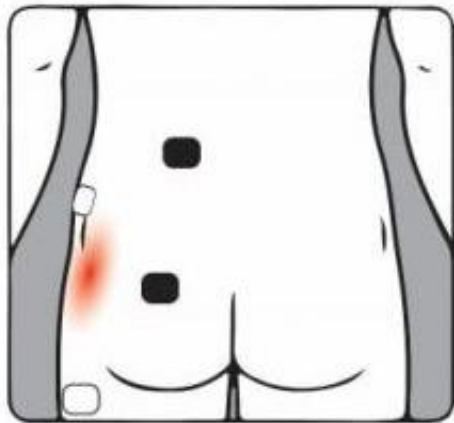


= 1st set of electrodes, Channel 1

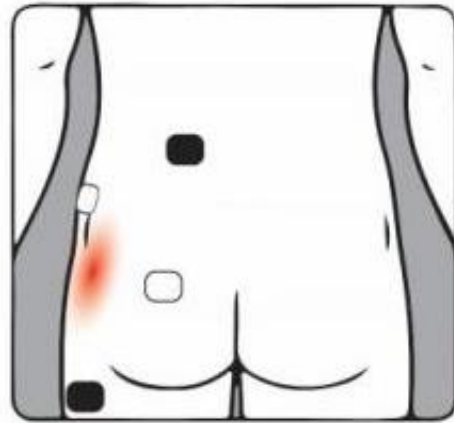


= 2<sup>nd</sup> set of electrodes, Channel 2

Hip pain



or



# TENS Machines



£6.99



£599.99

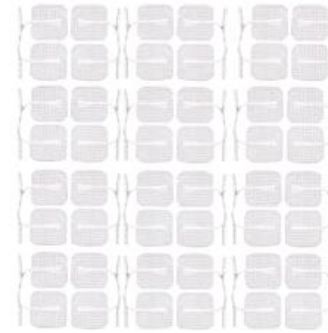
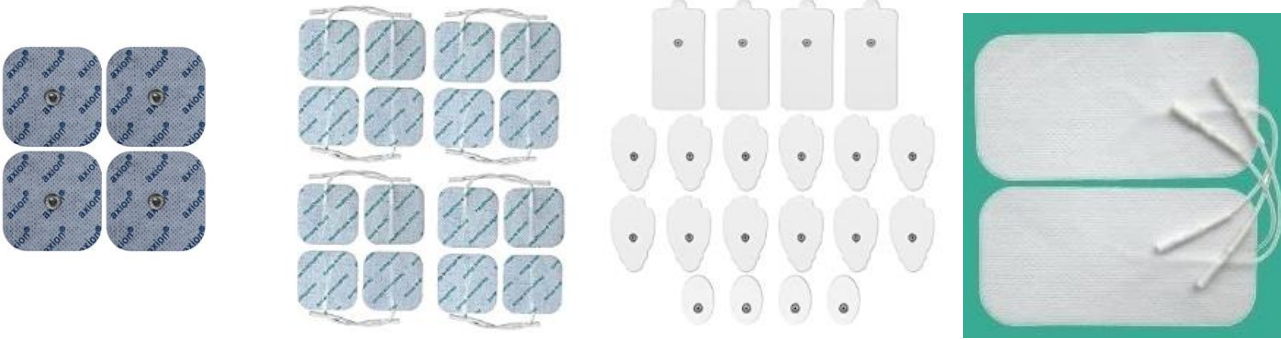


# New Style TENS



# Top Tips- Electrodes

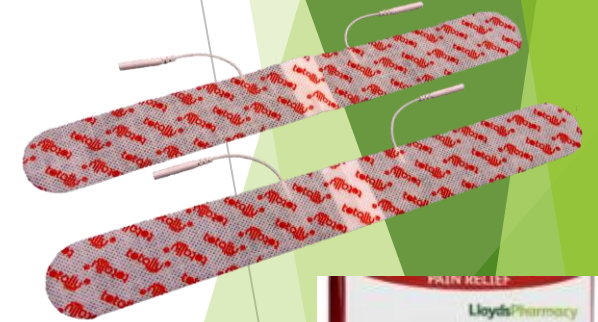
- ▶ The electrode pads are self adhesive and should last for approximately 30 applications if reapplied to the plastic sheet between each use.
- ▶ Buy replacement electrode from the internet
- ▶ Please remember not to use cream and powder under the electrodes



40 pads £16.99



10 pads £79.69



# Making the TENS Pad last longer

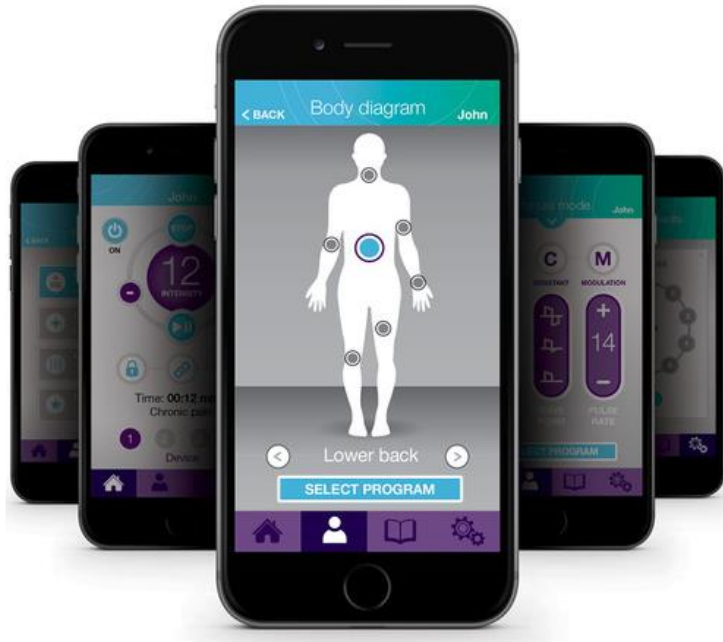
A useful tip to renew 'stickiness' of the electrodes is to smear the sticky side of the pads with water, reapply to the plastic sheet and put them in a fridge for a few hours.

Use water based gel (KY Jelly) with paper tape



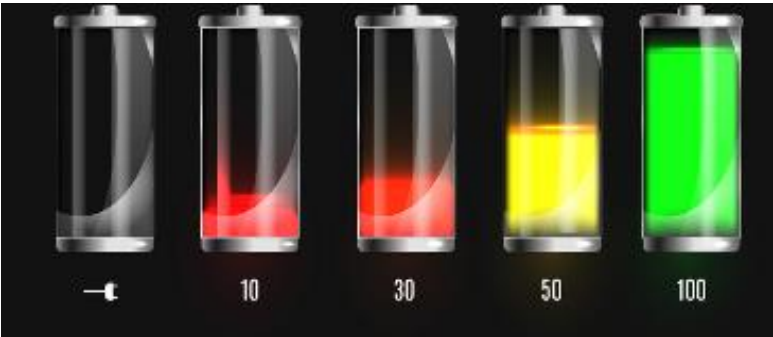


# Technology



# Be Prepared

Remove battery to prevent corrosion

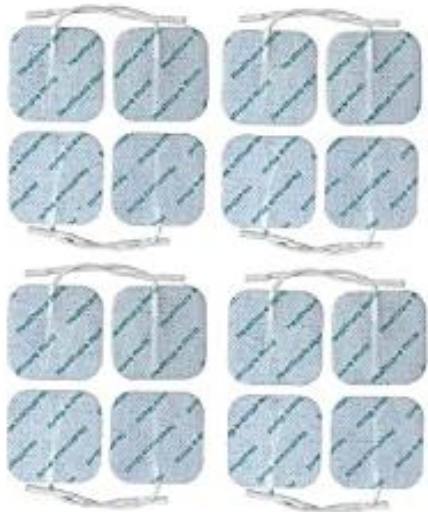


Spare Batteries

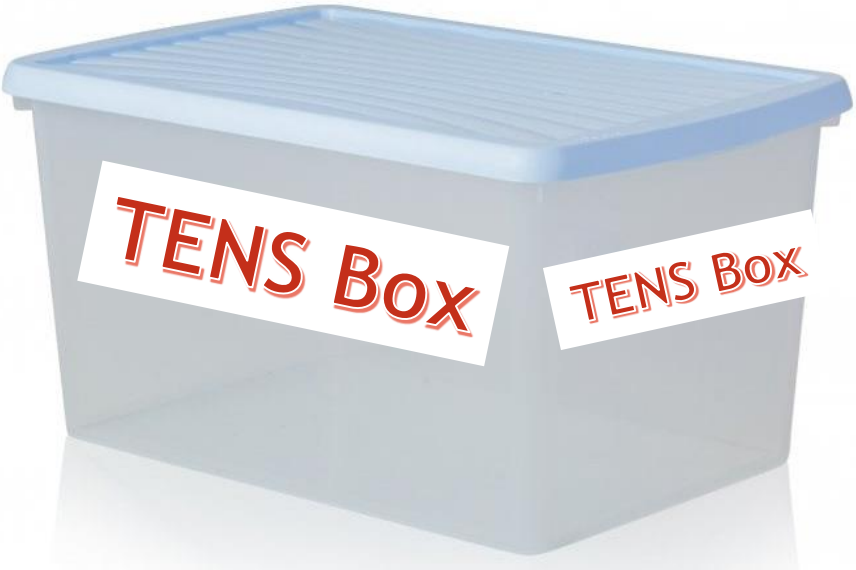


Know where you have left it

Spare Electrode Pads



Spare equipment



# Flight Travel- Carrying medication and medical equipment

If you'll be carrying medication or medical equipment with you into the aircraft cabin, you'll need to bring a doctor's letter or prescription that shows all the items you need. This is to make sure you can pass through check-in and security without any problems



If you need to use any medical equipment onboard your flight, you'll need to give Customer Welfare team a call before you travel.

Details about the equipment:

Name of equipment- Manufacturer

Make, Model and Weight

Size Whether it is battery-operated

Type and wattage of battery, if it's battery-operated

We'll also need to know whether you'll need to use the equipment during take-off or landing, regularly, or occasionally, while you're in the air



# Resources

- ▶ <https://patient.info/treatment-medication/painkillers/tens-machines>
- ▶ <https://www.versusarthritis.org/about-arthritis/treatments/electronic-pain-relief/>
- ▶ <https://www.nhs.uk/conditions/transcutaneous-electrical-nerve-stimulation-tens/>
- ▶ <https://uihc.org/health-topics/transcutaneous-electrical-nerve-stimulator-tens>