PROCEDURE

TENS

TENS uses a small battery-powered device and skin electrodes to provide temporary pain relief.

PURPOSE
Reduce pain during or shortly after treatment

PROCEDURE TYPE
Therapeutic, bedside electrical stimulation through skin electrodes

WHERE IT IS DONE
Outpatient clinic, at the bedside, or at home

ANAESTHESIA
None

HOW LONG IT TAKES
Usually 20-60 minutes per session

PREPARATION
Clean, dry skin; review implants, pregnancy, and reduced sensation

RECOVERY
Immediate; never drive while using the device

MAIN RISKS
Skin irritation, discomfort, burns, implanted-device interference

RESULTS
Pain response is noticed during or soon after a trial

Overview

Transcutaneous electrical nerve stimulation, or TENS, is a non-invasive pain treatment. "Transcutaneous" means through the skin.

A small, battery-powered device sends mild electrical pulses through wires to sticky electrode pads placed on your skin. You usually feel tingling or pulsing beneath the pads.

TENS may reduce pain signals reaching the brain. It may also support the body's own pain-control systems. It does not correct an injury or treat the underlying cause of pain.

The amount of benefit differs from person to person. Research results are mixed, and effectiveness can differ by pain condition. Some people notice short-term relief during treatment, while others notice little or no benefit.

Why the procedure is performed

TENS may be offered as a temporary, drug-free way to manage pain. It is generally used alongside treatments such as exercise, physiotherapy, medication, or rehabilitation rather than as a replacement for them.

It may be tried for some types of muscle, joint, nerve, postoperative, or long-term pain. However, evidence does not support routine TENS use for every condition. For example, UK guidance advises against offering it for low back pain or osteoarthritis.

A supervised trial can help show whether it reduces your pain enough to improve movement, sleep, or daily activities.

Who should and should not have it

TENS may suit you if your pain has been assessed and you want to try a non-drug treatment with few whole-body effects. It may also be considered when pain medicines cause unwanted effects or do not provide enough relief.

TENS should be avoided or delayed until you receive individual advice if you:

Pads should not be placed over the eyes or mouth, on the front or sides of the neck, directly over broken skin, or so that the current passes across your chest. Placement near a recent operation may need approval from your surgical team.

Do not use TENS in water, while sleeping, or while driving or operating machinery.

- Have a pacemaker, implanted defibrillator, neurostimulator, or another electronic implant
- Are pregnant, particularly if pads could be near the abdomen, pelvis, or lower back
- Have epilepsy and pads might be placed on your head, neck, or upper body
- Have reduced skin sensation and may not notice excessive stimulation
- Have broken, infected, inflamed, or fragile skin where pads would sit
- Have new, unexplained, or changing pain that has not been assessed

How to prepare

The instructions from the facility or healthcare professional treating you take priority over general information in this article. Follow the device manufacturer's instructions as well.

Tell the person supervising TENS about implanted electronic devices, pregnancy, epilepsy,

heart rhythm problems, skin conditions, allergies to adhesives, or reduced sensation.

Before treatment:

You do not usually need to fast, stop medication, or arrange anaesthesia. Do not change pain medicines unless your healthcare team has told you to do so.

- Make sure the skin is clean, dry, and free from creams or oils
- Remove jewellery that could be close to the pads
- Check that the device is switched off before attaching electrodes
- Inspect the pads, wires, and device for damage
- Wear clothing that gives access to the treatment area

What happens during the procedure

You will usually sit or lie in a comfortable position. A healthcare professional may identify safe pad positions around or near the painful area. If you are using TENS at home, use only the placement you have been shown or that is approved in the device instructions.

Two or more adhesive pads are attached to your skin and connected to the TENS unit. The device is switched on at a low setting. The intensity is then increased gradually.

You should feel a strong but comfortable tingling, buzzing, or pulsing sensation. It should not feel sharp, burning, or painful. Your muscles may twitch with some settings, but forceful or uncomfortable contractions are not intended.

A session often lasts 20 to 60 minutes. Some home-use plans allow different session lengths. When the session ends, the device is switched off before the pads are removed.

Recovery and what to expect afterward

TENS itself should not cause lasting pain. The treated area may tingle briefly after the device is turned off. If your pain becomes worse or the skin feels sore, stop using it and review the pad placement and intensity with your healthcare team.

You can eat and drink normally after treatment.

Most people can return immediately to usual activities. Temporary pain relief may make movement easier, but avoid doing more than your injury or condition safely allows.

You may drive after the session if you can safely control the vehicle and have not received a sedating treatment. Never operate TENS while driving.

TENS alone does not usually require time off work. Your underlying pain condition may still affect when you can return.

Risks and possible complications

TENS is generally well tolerated when used correctly, but possible problems include:

Moving the pads slightly may help mild irritation, but do not place them on damaged skin. Stop treatment if stimulation becomes painful or causes burning.

Pain relief may also mask discomfort that normally tells you to stop an activity. Follow the activity limits given for your underlying condition even if you temporarily feel better.

- Redness, itching, or a rash caused by the pads or adhesive
- Uncomfortable stimulation, muscle twitching, or increased pain
- Small burns or skin injury from excessive intensity, damaged equipment, or poor pad contact
- Interference with a pacemaker or another implanted electronic device

Results and follow up

There is no laboratory result from TENS. You will usually know during a session or soon afterward whether it changes your pain.

Consider whether treatment helps you move, sleep, work, or complete rehabilitation exercises-not only whether it changes a pain score. Keep a brief record of pad placement, settings, session length, pain relief, and skin reactions.

Arrange routine follow-up if TENS provides no useful relief after an agreed trial, if the effect becomes weaker, or if you are unsure where to place the pads. Your healthcare team can review the device settings and whether another treatment would be more suitable.

Alternatives

Alternatives depend on the reason for your pain and what you hope to achieve.

Choosing not to use TENS is reasonable. It offers temporary symptom control rather than a cure, and lack of benefit does not mean your pain is not real.

- Activity and exercise: These may improve strength and function over time but usually do not provide immediate relief.
- Physiotherapy: This can address movement, strength, and recovery. It requires attendance and active participation.
- Heat or cold: These are simple and inexpensive but tend to provide short-term relief and can injure skin if misused.
- Pain medicines: These may provide more predictable relief, but some can cause side effects, interact with other medicines, or be unsuitable for long-term use.
- Psychological pain-management approaches: Cognitive behavioural therapy, relaxation, pacing, and mindfulness can reduce pain-related distress and improve coping. They require practice and do not remove the physical cause.
- Injections or surgery: These may be appropriate for selected conditions, but they are more invasive and have procedure-specific risks.

When to call your healthcare team

Contact your healthcare team routinely if you develop repeated mild rashes, cannot find a comfortable setting, obtain no useful relief, or need advice about pad placement.

Seek prompt medical advice if you develop a blister, burn, persistent skin injury, marked pain increase, or unusual palpitations during treatment. Stop using the device until you have been advised that it is safe to restart.

Call emergency services for chest pain, severe breathing difficulty, fainting, or signs of a stroke such as sudden facial weakness, arm weakness, or trouble speaking. These symptoms need emergency assessment whether or not they started during TENS.

Common questions

Will I be asleep?

No. TENS does not require anaesthesia or sedation. You remain awake and can describe how the stimulation feels.

Can I drive home?

Usually, yes. You must be able to control the vehicle safely and must not be affected by sedating medicines or another procedure. Switch TENS off before driving.

How painful is it?

It should not be painful. A strong but comfortable tingling is expected. Turn the intensity down or stop if you feel sharpness, burning, or worsening pain.

When will I know if it works?

You may notice a change during the first session or shortly afterward. A few properly supervised trials may be needed to assess useful benefit.

Can I sleep with TENS on?

Generally, no. You may not notice excessive stimulation, loose pads, or skin irritation while asleep.

How often can I use it?

Follow the plan provided by your treating facility and the instructions for your specific device. Session length and frequency should be adjusted if you develop skin irritation or discomfort.

Sources

- NHS. TENS (transcutaneous electrical nerve stimulation)
- National Institute for Health and Care Excellence. Low back pain and sciatica in over 16s: assessment and management, guideline NG59
- National Institute for Health and Care Excellence. Osteoarthritis in over 16s: diagnosis and management, guideline NG226
- Gibson W, Wand BM, Meads C, Catley MJ, O'Connell NE. Transcutaneous electrical nerve stimulation for chronic pain: an overview of Cochrane Reviews. Cochrane Database of Systematic Reviews. 2019;4:CD011890
- Johnson MI, Paley CA, Jones G, Mulvey MR, Wittkopf PG. Efficacy and safety of transcutaneous electrical nerve stimulation for acute and chronic pain in adults: a systematic review and meta-analysis. BMJ Open. 2022;12:e051073