



**ENS – Electric Nerve Stimulation
(TENS/NMES/FES)**

Instructions for Use

What is ENS?

Transcutaneous Electrical Nerve Stimulation or ENS is **an electrotherapeutical** process of using electrical current to excite and stimulate the nervous system of a living body. The term 'electrotherapy' has applied to a variety of treatments including the use of machines such as the deep brain stimulators for neural diseases, shock therapy, etc. This term has also been applied focusing to the use of electrical current to speed up the process of **wound healing**. Additionally it is a **non pharmacological treatment** and falls into the category of alternative cures and medicines. ENS devices are used as a non- invasive nerve stimulation system designed to reduce both acute and chronic pain by the application of electrical current through electrodes placed on the skin for **pain control**.

How ENS work?

A Transcutaneous Electrical Nerve Stimulating Machine or the ENS Machine is device which uses electrical current at certain frequencies to reduce acute and chronic pain by exciting and stimulating the peripheral nervous system of the human body by means of two electrodes connected to the surface of the body.

It can be applied with variable frequencies, from low (<10 Hz) to high (> 50 Hz). Intensity can also be altered from sensory intensities into motor intensities. Sensory intensity is when the patient feels a strong but comfortable sensation without motor contraction. High intensity usually involves a motor contraction but is not painful. Basically, higher-frequency stimulation is delivered at sensory intensity, and low frequency stimulation is delivered at motor intensity.

ENS may modulate or suppress pain signals in the brain by using evoked cortical potentials to show that electric stimulation of peripheral A-beta sensory fibres reliably suppressed A-delta fiber nociceptive processing.

Some studies showed that, regardless of intensity, different frequencies activate central mechanisms to produce analgesia. Specifically, low-frequency ENS activates μ - opioid receptors in the spinal cord and the brainstem which helps the body produce its own endorphins and increase local blood flow to relieve pain, whereas high frequency ENS activates δ -opioid receptors in the spinal cord and the brainstem which further blocks the pain impulses going to the brain.

High-frequency ENS showed a decrease in pain-related cortical activations in patients with carpal tunnel syndrome, while the other showed that low frequency ENS decreased shoulder impingement pain and modulated pain-induced activation in the brain.

Where to use ENS machine?

As far as the applications for personal use is concerned, ENS machines are used to reduce pain from muscular trauma, joints and nerve algesia, musculoskeletal pain. They may work better for these problems than for abdominal, pectoral or head pains. Unlike a lot of medication there are virtually no side effects of a ENS machine. However, pregnant females, person with an artificial pacemaker, having episodes of epileptic seizures must not use this machine. The reason, a person having an artificial pacemaker and epilepsy must not use this machine because, the artificial pacemakers implanted into the skin provides artificial impulses to the heart for beating and it also contains very sensitive operational circuitry, using ENS with interfere with the electrical activity of the pacemakers, ipso facto causing a malfunction and as far epilepsy is concerned, they are basically caused due to abnormal excessive or synchronous neuronal activity in the brain. So a person having a history of epileptic seizure must refrain from using a ENS, as because it can worsen the condition of the patient.

ENS machines can be used solitarily for pain relief or can be combined with other professional treatments.

The use of an ENS machine might allow reduction of the amount of painkilling medicines people usually take, for pain relief which further involves many side effects. A ENS machine usually have no side effects.

An ENS machine might be worth a trial, particularly if conventional pain relief methods have been tried and no good came out of it.

How to use ENS machine?

1. This ENS machines is specifically crafted and designed so that the user can handle it easily.
2. Before placing the electrode pads on the skin, it must be made sure that the machine is switched off.
3. The machine can be tested by holding the pads between the fingers and then carefully turning it on. A tingling sensation must be felt. This will ensure that the machine is working correctly.
4. It must be made sure that the skin, where the electrodes are to be put, must be clean and dry and there are no cuts, scratches or area of skin irritation.
5. The pads must be placed on the either side of the pain. Self-adhesive pads or flexible rubber pads must be used which should be completely layered, on the skin and the pads must be applied, with a thin layer of electrode conductive gel. The two pads should not be applied close to each other. **A distance of at least an inch must be maintained.**

6. The machine must be turned on slowly, by setting the pulse rate to the required setting and turning it up until a gradual tingling sensation is felt. The sensation needs to be quite strong but not so much that it makes the user uncomfortable.
7. After a few minutes the sensation will start to fade away slightly. This is called accommodation. When this happens, the machine must be turned up slightly and then left for the rest of the time in use. **The machine must not be turned up too high, as this can cause over-stimulation which may worsen the condition.**
8. At the end of the session the machine must be turned off and the electrodes from the machine must be disconnected.

Note: The machine must be used for at least 45 minutes but can be used for up to 15 hours before the electrodes and the probes need to be cleaned and re-sited.

Modes

Transcutaneous electrical nerve stimulation (TENS)

- Intended for temporary pain relief in sore and aching muscles or for symptomatic relief of chronic pain

Neuromuscular electrical stimulation (NMES)

- Intended for relaxing muscle spasms, preventing muscle atrophy, increasing blood circulation, maintaining or increasing range of motion, and especially for re-educating the neuromuscular system

Functional electrical stimulation (FES)

- Intended for relaxing muscle spasms, preventing muscle atrophy, increasing blood circulation, maintaining or increasing range of motion, and especially for re-educating the neuromuscular system
- Essentially the same as NMES, but especially effective for neurological rehabilitation, as the stimulation is automatically controlled to turn muscle contractions into functional movements
- Usually incorporated into an exercise or bracing device to maximize functionality

PLN - Plain mode is between 0 to 5 units

- Constant Stimulation at the frequency and pulse width setting. Most commonly used for acute pain relief via a gating effect.

INT – Intermittent mode is between 5 to 10 units

- Modulation. The frequency varies between different settings and uses a cyclical to help reduce nerve adaptation. This is useful for acute and chronic pain relief.

Cautions When Using an ENS Unit

1. Electrode pads or probes must not be used on broken skin.

2. Electrodes must not be placed over the front or side of the neck, too close to eyes or in the mouth.
3. The unit must not be used over areas of reduced sensation.
4. The machine must not be used near water such as in the bath or shower. This may lead to a short circuitry which may further damage the circuitry. 5) ENS must not be used while driving or operating heavy machinery.

Contact

**Satvaayush Technologies Pvt. Ltd., Flat 505, Park View Residency, Naina Gardens, Lane,
Prashanti Nagar, IDA Kukatpally, Kukatpally, Hyderabad, Telangana 500072**

Phone: +91-7702583793, +91-9390885370

Email: nagaraju@activecure.in