

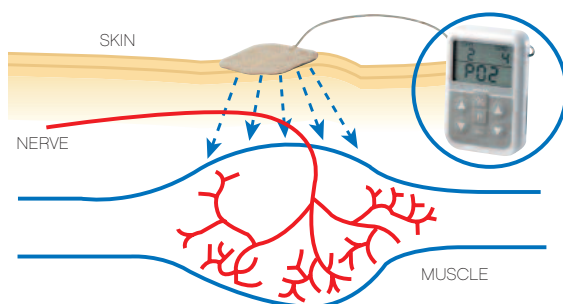
**Level 5 Diploma in Massage Therapy  
for Sports  
TENS Electrotherapy**



## What is TENS Therapy and treatments?

The word TENS is an abbreviation of Transcutaneous Electrical Nerve Stimulation. With the term transcutaneous meaning "across the skin".

Put in simple terms for us, your TENS unit stimulates your nerves via an electrical current through your skin. The type of stimulation delivered by the TENS unit aims to excite (stimulate) the sensory nerves, and by so doing, activate specific natural pain relief mechanisms.

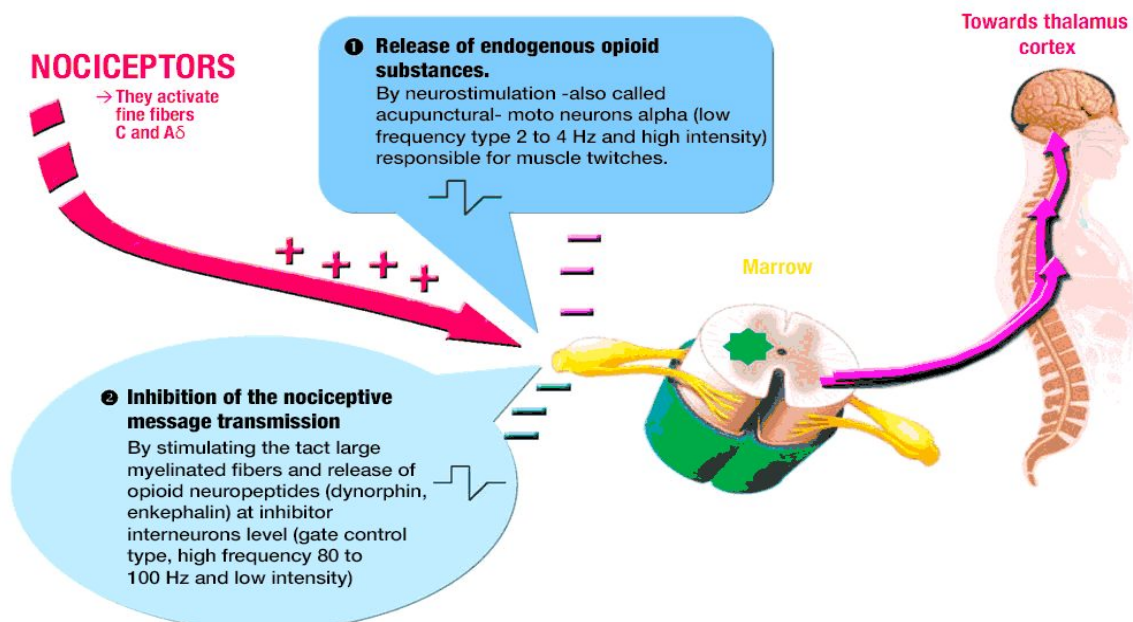


Most common programs use high-frequency stimulation, which is the first choice for both acute and chronic pain. The High Frequency sends impulses to the nervous systems pain-inhibiting mechanisms, thus blocking the pain. Another type of therapy is low-frequency stimulation. Now this can lower pain by stimulating muscles to release the bodies, own relief, endorphins. Place the electrode on a muscle in the painful area so that you can see a visible contraction.

The TENS unit is powered by a 9 volt battery which produces pain relieving electrical pulses. Either two (single channel) or four (dual channel) self-adhesive electrodes are applied to the skin and attached to the TENS unit with lead wires. With modified electrical pulses are then passed from the TENS unit, via the lead wires and electrodes, to the nerves which lie underneath the skin surface. It works on the superficial and spinal nerves traversing to the brain.

The treatment is very popular with therapists as the TENS is a non-invasive tool to assist with pain relief and can be easily applied. With the regular application of the TENS machine can result in reduced pain for up to 4 – 6 hours following the use.

How-ever the therapy should not be consistently used as the level of pain relief declines with prolonged use; although the variation of electrode placement may combat this.



## Setting the Mode

Three mode settings, Normal, Burst and Modulation.

### Conventional



**Normal:** - Constant Stimulation at the frequency and pulse width setting. Most commonly used for acute pain relief via a gating effect. The therapy consists of short impulses. With the electrodes usually placed on nerve pathways around the site of pain. Popular to be used for conditions such as muscle pain, tennis elbow, Gout, carpal Tunnel and hip and back pain.

### Modulation



**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. The variations are randomly built up, almost like a shock to the system. It can be used to treat all conditions mentioned with the normal/ conventional setting. But for long term chronic conditions Modulation is perhaps best.

### Burst



**Burst:** is useful in chronic pain relief. The unit will send through a burst of pain-relieving power. Short bursts of stimulation beginning with high frequency and repeated with low frequency. Pain relief is longer due to the body producing its own natural pain killers. Conditions such as back pain, sciatic pain and whiplash etc.

## How high should I TURN THE INTENSITY?

Every individual client you have will react differently to TENS therapy (stimulation). So it is important to increase the intensity to the correct level.

Increase the intensity to a level that is comfortable to the client. Never turn up the intensity to high, that it is un-comfortable and almost unbearable for the client.

You can use TENS if required for long periods of time. To combat long term chronic pain. Although remember to place the electrodes in slightly differing positions, this will stop the possibility of skin irritation.

**TENS should always be a pleasant sensation**

### Setting the Pulse Rate (Frequency)

Pulse Rate is the number of electrical pulses you will feel in one second. Frequency is measured in Hertz (Hz). Pain relief can occur at various frequencies. Acute pain is usually most effective between 80 and 120 Hz. Chronic pain can also benefit from lower settings 2 to 10Hz that stimulates an endorphin release. A setting between 35 and 50Hz is commonly used to stimulate muscles for strengthening or even relaxation.

The following settings are recommended:

80 to 120Hz-acute pain

35-50Hz-muscle stimulation

2 to 10Hz – chronic pain

### Setting the Pulse Width

These are the ON periods of the current. Generally speaking, pain relief will occur with low to mid time periods. Muscle stimulation requires a longer pulse width to successfully reproduce a muscle contraction.

You can alter the time that each pulse lingers before resetting. The time period is extremely small. It's measured in microseconds  $\mu\text{S}$  (1000th's of a second). While you may not notice the difference, your nerves can.

The following setting is recommended:

**175 to 200 $\mu\text{S}$**

You can strengthen the power of your machine by increasing the pulse width.

### What Time Duration Should You Use a TENS Machine?

The following settings are recommended:

**Acute pain** 20 to 60min up to four times daily

**Chronic pain** – 20 to 30min up to five times weekly

Recent research has suggested however in TENS treatment times indicates that a minimum of 1 hour to 90 minutes is the most effective for pain relief. TENS can be used in many cases for much longer time periods.

## Application of electrodes

### Positioning

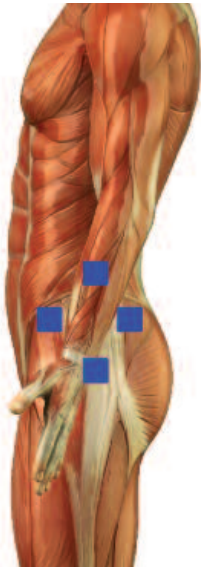
The electrodes are self-adhesive; discontinue treatment if the resident develops a skin irritation following treatment from the electrodes.

The electrodes are normally positioned over the area of pain but other more advanced applications may often prove better. **Please consult with physio for initial set up of electrode positioning. If you are unsure.**

It's best practice to place TENS unit pads near the painful/injured area. This type of placement is called contiguous placement. Placing the electrodes in this manner causes the electrical current to be directed through or around the area of pain.

**Examples:**

### Chronic Hip Pain



Primary Placement

Setting  
Mode: Modulation  
Mode  
Pulse Width: 200µs  
Pulse Mode: 100Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
90 minutes, three times daily thereafter

### Frozen Shoulder



Primary Placement

Setting  
Mode: Continuous or Modulation  
Mode  
Pulse Width: 160 - 200µs  
Pulse Mode: 80 - 100Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
60 minutes, twice daily thereafter

### Shoulder Pain



Primary Placement

Setting  
Mode: Modulation  
Mode  
Pulse Width: 260µs  
Pulse Mode: 80 - 100Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
60-90 minutes, 3 times daily thereafter

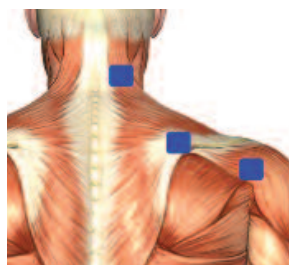
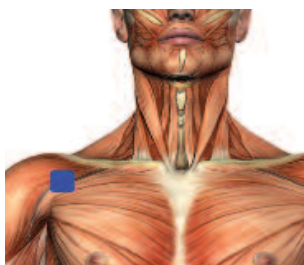
### Degenerative Arthritis: Cervical and Lumbar



Primary Placement

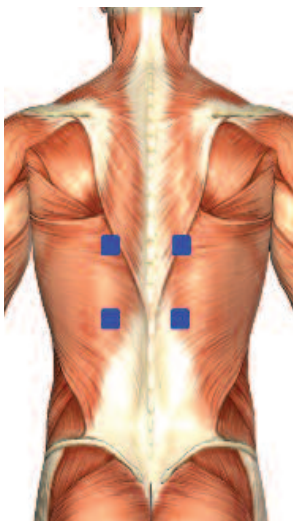
Setting  
Mode: Continuous  
Mode  
Pulse Width: 100µs  
Pulse Mode: 100Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
90 minutes, 3 times daily thereafter



Alternative Placement

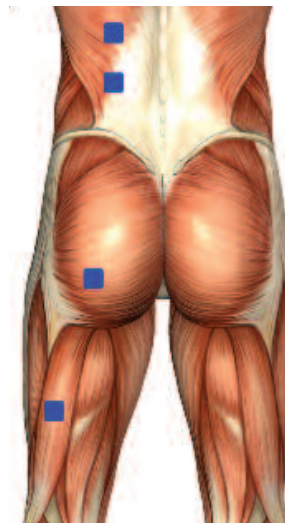
## Lower Back Pain



Primary Placement

Setting  
 Mode: Continuous or Modulation  
 Mode  
 Pulse Width: 200 - 250µs  
 Pulse Mode: 50 - 80Hz  
 Output: Adjust to the most comfortable and perceptible intensity level  
 Treatment Time  
 90 minutes minimum twice or three times daily thereafter

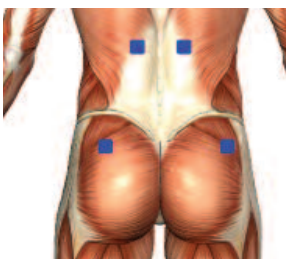
## Hip Neuralgia



Primary Placement

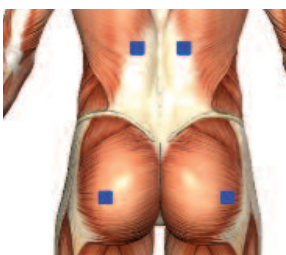
Setting  
 Mode: Modulation  
 Mode  
 Pulse Width: 150 - 220µs  
 Pulse Mode: 80 - 120Hz  
 Output: Adjust to the most comfortable and perceptible intensity level  
 Treatment Time  
 60 - 90 minutes minimum for the first 4 days 4 hours per day thereafter

## Sciatica



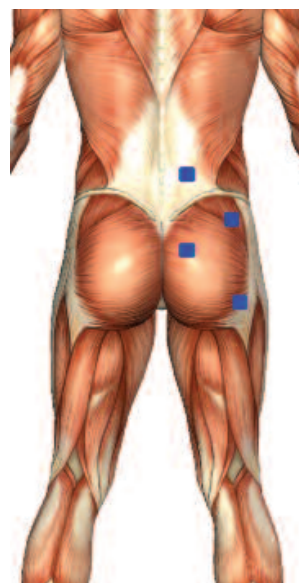
Primary Placement

Setting  
 Mode: Modulation  
 Mode  
 Pulse Width: 260µs  
 Pulse Mode: 150Hz  
 Output: Adjust to the most comfortable and perceptible intensity level  
 Treatment Time  
 60 minutes minimum, 2 or 3 times daily thereafter



Alternative Placement

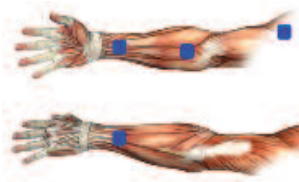
## Phantom Limb, Lower Extremity



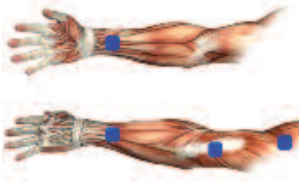
Primary Placement

Setting  
 Mode: Continuous or Modulation  
 Mode  
 Pulse Width: 200 - 260µs  
 Pulse Mode: 50 - 100Hz  
 Output: Adjust to the most comfortable and perceptible intensity level  
 Treatment Time  
 60 minutes minimum, three times daily thereafter

## Wrist Pain



Primary Placement

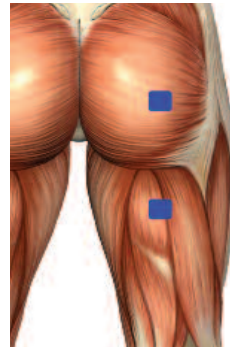


Alternative Placement

Setting  
Mode: Continuous  
Mode  
Pulse Width: 200µs  
Pulse Mode: 30 - 50Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
60 minutes minimum, twice daily thereafter

## Low Extremity Pain



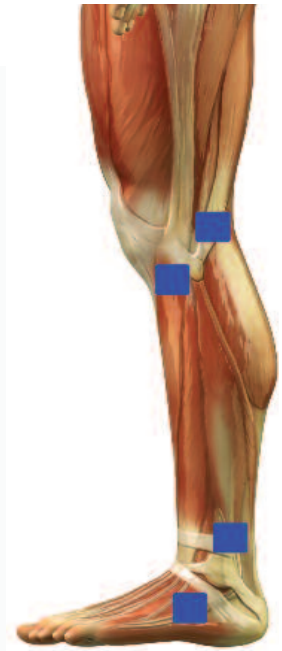
Primary Placement



Primary Placement

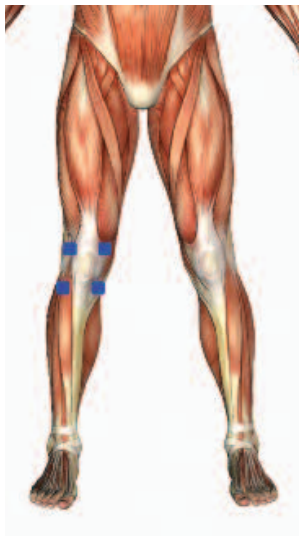
Setting  
Mode: Continuous or Modulation  
Mode  
Pulse Width: 120 - 150µs  
Pulse Mode: 50 - 80Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
90 minutes minimum, twice daily thereafter



Alternative Placement

## Degenerative Arthritis - Knee Pain



Primary Placement

Setting  
Mode: Continuous Mode  
Pulse Width: 200µs  
Pulse Mode: 80Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
60 - 90 minutes, twice daily thereafter

## Lower Leg Pain



Primary Placement

Setting  
Mode: Modulation Mode  
Mode  
Pulse Width: 100 - 160µs  
Pulse Mode: 80-100Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
60 - 90 minutes, twice daily thereafter



Alternative Placement



## Knee Pain - Post-Op



Setting  
Mode: Modulation  
Mode  
Pulse Width: 100 - 150µs  
Pulse Mode: 120Hz  
Output: Adjust to the most comfortable and perceptible intensity level

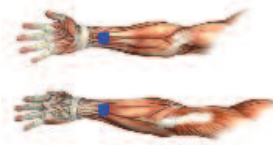
Treatment Time  
60 - 90 minutes, twice daily thereafter

Primary Placement



Alternative Placement

## Carpal Tunnel Syndrome

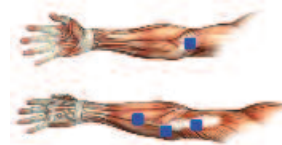


Primary Placement

Setting  
Mode: Continuous Mode  
Pulse Width: 200µs  
Pulse Mode: 100Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
60 - 90 minutes, twice daily thereafter

## Elbow & Forearm Pain



Primary Placement

Setting  
Mode: Continuous  
Mode  
Pulse Width: 100µs  
Pulse Mode: 100Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
60 - 90 minutes, twice daily thereafter

## Cervical Pain



Primary Placement



Alternative Placement

Setting  
Mode: Continuous Mode  
Pulse Width: 100 - 150µs  
Pulse Mode: 60 - 100Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
60 - 90 minutes, 3 times daily thereafter

## Chronic Cervical Strain



Primary Placement

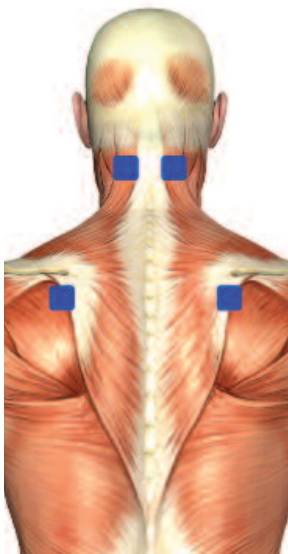


Alternative Placement

Setting  
Mode: Modulation Mode  
Pulse Width: 160µs  
Pulse Mode: 30Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
4 - 5 hours, 3 times daily thereafter

## Chronic Cervical Strain



Primary Placement

Setting  
Mode: Modulation Mode  
Pulse Width: 200µs  
Pulse Mode: 60 - 100Hz  
Output: Adjust to the most comfortable and perceptible intensity level

Treatment Time  
4 - 5 hours, 3 times daily thereafter

## TENS can be used for

TENS can be used to treat most types of pain where the cause has been determined including:

- Arthritis
- Back Pain
- Bruising
- Calf Strain
- Dead Leg
- Fibrositis Finger Pain
- Headaches Migraines
- Knee Pain
- Lumbago Muscle Stress
- Neck Pain
- Neuralgia
- Osteo-arthritis
- Period Pains
- Post Herpetic Neuralgia
- Pregnancy/ Labour Pains
- Rheumatism
- Sciatica
- Shoulder Pain
- Sleeplessness
- Spondylosis
- Sports Injuries
- Tennis Elbow
- Tenosynovitis
- Wrist Pain

### **Hygiene and housekeeping considerations:**

- One set of electrodes per Resident
- Keep in packet with name of Resident and date of first use written on plastic packet with permanent marker
- Ultrasonic gel can be placed on the electrodes if they appear to be dry and not in adequate contact with the Resident
- Micropore can be used to tape electrodes in place
- Place TENs unit in carry case when not in use
- The 9 volt battery will require replacement depending on level of use.

### **When is it time to replace the Electrodes?**

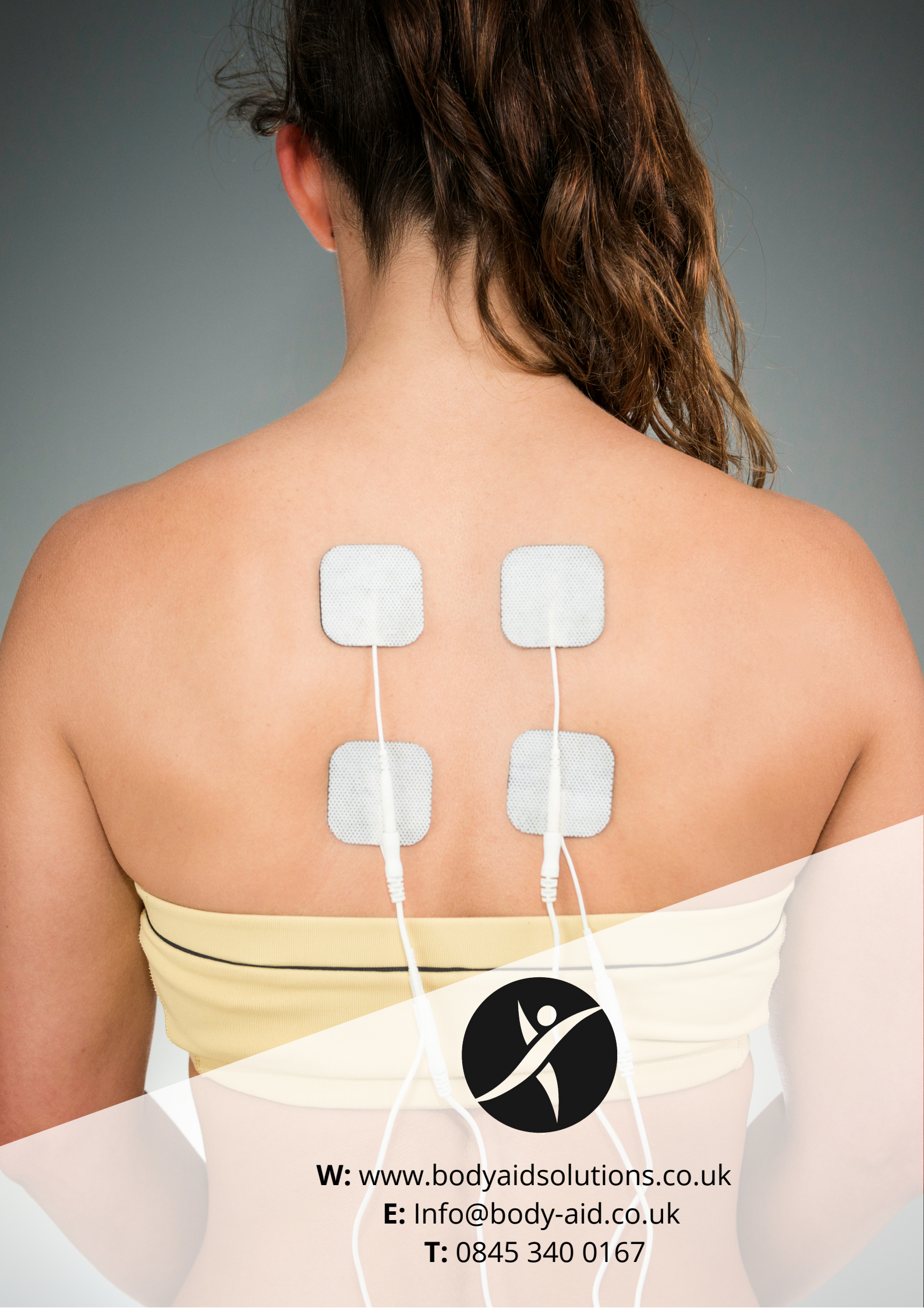
It is important that the self-adhesive pads, be replaced when they no longer stick well or if you begin to feel a 'stinging sensation' on your skin. The usual life span is approx 6-8 weeks per set. This is dependant on skin type and weather conditions. With humidity affecting their durability.

If a reaction occurs, there are products that act as skin barriers for the electrodes upon the skin in these situations.

## Where and when to not use TENS machines

TENS electrodes **should NEVER be placed:**

- Across your eyes (intraocular pressure) or brain
- On the front of your neck due to the risk of acute hypotension (through a vasovagal reflex) or even a laryngospasm
- Through the chest (using a front and rear of chest wall electrode positions). Either side of your spinal column is permitted.
- Across an artificial cardiac pacemaker (or other indwelling stimulator, implantable cardioverter-defibrillators (ICDs), including across its leads) due to risk of interference and failure of the implanted device. Serious accidents have been recorded in cases when this principle was not observed.
- On open wounds or broken skin areas (although it can be placed around wounds).
- Over a malignant tumour (based on experiments where electricity promotes cell growth).
- Directly over the spinal column (although it can be placed either side of your spinal column).
- Internally, except for specific applications of dental, vaginal, and anal stimulation that employ specialised TENS units.
- Epilepsy patients
- On areas of numb skin/decreased sensation TENS should be used with caution because it's likely less effective due to nerve damage. It may also cause skin irritation due to the inability to feel currents until they are too high.
- Areas of Infection. There's an unknown level of risk when placing electrodes over an infection (possible spreading due to muscle contractions). Cross contamination with the electrodes themselves is of greater concern.
- Patients who are non-compliant or have dementia



**W:** [www.bodyaidsolutions.co.uk](http://www.bodyaidsolutions.co.uk)

**E:** [Info@body-aid.co.uk](mailto:Info@body-aid.co.uk)

**T:** 0845 340 0167