

Sports TENS 2



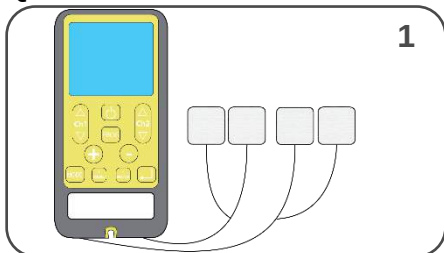
INSTRUCTIONS FOR USE



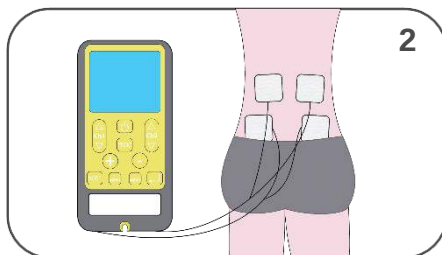
READ CAREFULLY BEFORE USE

TensCare™

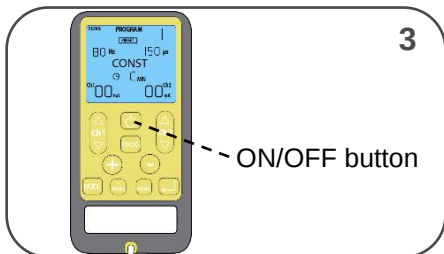
QUICK START GUIDE



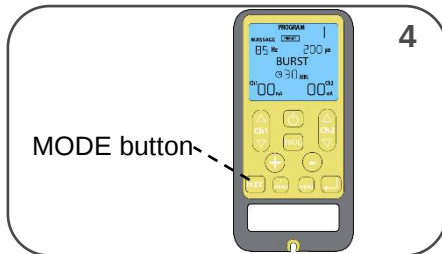
Connect the unit to the electrode pads



Place the electrode pads on the area to be treated



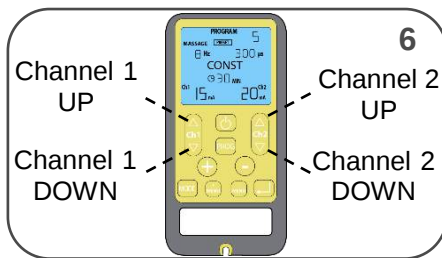
Press and hold the ON/OFF button to switch the device on



Select a mode by pressing the button MODE



Select a programme by pressing the button PROG



Regulate the output intensity for each channel

INSTRUCTIONS FOR USE

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1. INTRODUCTION

INTENDED USE

The **Sports TENS 2** combines the treatment capabilities of a TENS device, an EMS or NMES device, and a relaxing massage stimulator in one unit.

TENS stands for Transcutaneous Electrical Nerve Stimulation. The TENS settings are used to provide symptomatic pain relief for chronic, acute or post-operative pain.

EMS stands for Electrical Muscular Stimulation. The EMS settings are used to provide a muscular training for localised regeneration and muscular hypertrophy.

The Sports TENS 2 is intended for use in both the Hospital and Home Healthcare Environments.

To achieve this, the device has two independent stimulation channels and four self-adhesive electrodes. It offers a choice from a large number of settings designed to increase general wellbeing, alleviate pain, maintain physical fitness, aid relaxation, revitalize muscles and combat fatigue.

You can either select these settings from preset programmes or determine them yourself according to your requirements.

- **Powerful**

Sports TENS is a powerful fitness and performance muscle stimulator for body toning, shaping, beauty and relaxation. It has TENS settings to relieve pain due to injury and over-training Gentle massage is provided for relaxation and de-stressing.

- **Multiple Functions**

Sports TENS is flexible enough to help with all stages of training and recovery. It has 27 EMS programmes, 10 TENS programmes, 10 massage programmes and 8 user defined programmes enabling you to experiment and save your favourite settings – unrivalled performance for a product of this size and price.

- **Memory**

Sufficient memory for a 30 day exercise programme comprising of 3 uses a day. The memory records usage time and average intensity used. For training, this enables you to keep an exercise diary, for rehabilitation and pain relief it offers an objective treatment record.

Special Features

- **Li-Ion mobile phone style battery**

making it lightweight and compact, and is supplied complete with external charger.

- **Unique locking lead connection and built-in cable tidy**

- **Backlit LCD screen**

Whenever a button is pressed the screen will light up making the screen easy to read and very clear.

- **Comfortable strength Control**

Each step in strength is small, thereby maximising the comfort level.

2. CONTENTS

- Sports TENS 2 unit with belt clip
- CM5050 pack of 4 self-adhesive electrodes
- 2 x L-ST2 Connecting Lead wire
- B-BL6F Li-ion battery type BL-6F
- Charging cradle
- Power adaptor
- Instruction booklet
- Transit pouch



3. HOW TENS WORKS

TENS stands for **Transcutaneous Electrical Nerve Stimulation**. TENS stimulates your body's own natural defences against pain. It is totally safe, and has been used successfully by thousands of pain sufferers.

TENS sends a gentle stimulation through the skin which works in two ways:

Pain Gate

Stimulating the sensory nerves, which carry touch and temperature signals. These nerves go to the same connections in the spine as the nerves carrying pain. A strong sensory signal will block the pain signal travelling up the spine to the brain. This is known as closing the "Pain Gate" and takes effect quite quickly after the unit is switched on. You can use TENS several times a day, for as long as you like.

Endorphin Release

At low frequency settings, and slightly stronger output, TENS drives the motor nerves to produce a small repetitive muscle contraction. This is seen by the brain as exercise, and this promotes release of Endorphins – your body's own natural pain killer. The relief builds up and normally takes about 40 minutes to reach a maximum level which can last for hours after the machine is switched off.

By using TENS you can expect to achieve a significant reduction in pain if not complete pain relief.

Side Effects

There are no known side effects to TENS use and long-term TENS use is not harmful.

Positioning the electrodes for TENS

The TENS effect is confined to the nerves entering a single vertebra in the spine. To be effective, you therefore need to stimulate a sensory nerve entering the spine at the same level as the nerve carrying the pain. For this reason electrodes are usually first placed where the greatest pain is felt. Nerves follow the curve of the ribs, and spiral around the limbs, so you will need to try different positions until you find the best for you.

Try moving the electrodes short distances to establish the positions that are most effective for you.

TENS is clinically tested and approved for many applications including the following:

- Back pain, and lumbar and cervical spine problems
- Joint pain (e.g. knee joint, hip joint, shoulder)
- Neuralgia • Headaches • Women's period pains
- Pain after injuries to musculoskeletal system
- Pain with circulatory problems
- Chronic pain through various causes

4 E.M.S.: WHAT IT IS AND HOW IT WORKS

EMS stands for **Electrical Muscle Stimulation** and is a widespread and generally recognized method that has been used for years in sports and rehabilitation medicine.

In the sports and fitness field, one of the uses of EMS is as a supplement to conventional muscle training, in order to increase the efficiency of muscle groups and adapt physical proportions to the desired aesthetic results.

EMS has two main applications. Firstly, a targeted strengthening of musculature can be produced (Activating application) and secondly a relaxing, resting effect can also be achieved (Relaxing application).

4.1 EMS successfully rebuilds and tones muscles.

Different levels of muscle contraction are achieved by sending electrical impulses of various types, depending on the programme selected, into the body. These muscle contractions retrain the muscles, increase their effectiveness and improve their condition. This is beneficial where muscles - for whatever reason - have not been in regular use and have lost condition (muscle atrophy). For sports, the benefit is to increase the effect of training and enhance performance. Typical uses are: -

- Muscle training to improve endurance performance
- Muscle training to support the strengthening of certain muscles or muscle groups in order to achieve desired changes to body proportions.
- Sports training, covering - warm-up, strength, speed, power, resistance, endurance and recovery
- Rehabilitation in relation to sports injury.

The effect on muscle tone of electrical stimulation (EMS) is generally only noticeable after regularly repeated application. Electrical stimulation does not replace regular exercising of the muscle, but is able to reasonably supplement it.

Muscle wastage: EMS is used in the treatment of medical conditions involving muscle wastage including: Neuromuscular facilitation - Muscle reeducation - Muscle training - Prevention/slowness of atrophy/hypotrophy - Preventing postoperative muscle weakness - Reduction of spasticity - Maintaining or increasing range of motion - Training of partial peripheral nerve damage with signs of re-innervation - Treatment of scoliosis.

4.2 Relaxing applications includes the following:

- Muscle relaxation in order to loosen up muscular tension
- Improving muscular fatigue symptoms
- Accelerating muscle regeneration after high muscular performance (e.g. after a marathon).

Through integrated massage technology, the Sports TENS Digital TENS/EMS also offers the possibility of reducing muscular tension and combating fatigue symptoms using a programme based on manual massage in terms of sensation and effect

4.3 Mode of operation

EMS uses external electrical impulses that act through the skin to stimulate the nerves supplying a specific muscle group.

The muscle reacts in different ways depending on the strength of current and duration and frequency of the electrical impulse.

Muscles are made up of two different types of fibre:

- Red fibre is slower contracting and aerobic working.
- White fibre is faster acting and capable of anaerobic working.

The proportions of red and white fibres depend on the way the muscle is used.

Fibre can be converted from one type to the other, depending on the signals it receives. This is known as the Trophic effect.

Different frequencies have different effects: Low (1-10 Hz) frequencies coupled with long impulse times have a purifying and relaxing effect through individual contractions, whereby the circulation in the treated muscle is simultaneously improved and removal of metabolic end products is supported (lymphatic drainage). The oxygen supply to the muscle is improved.

In contrast, medium (20-50 Hz) frequencies can put a high level of strain on the muscle, thus promoting the muscular structure.

Very high frequencies (60-90 Hz) can be used to promote muscle definition and bulk.

The body maps at the back of this guide show pad positioning in order to stimulate specific muscle groups.

4.4 Treatment time and treatment interval

Treatment by EMS can vary between 15–60 minutes stimulation twice a week to treatment several times per day.

4.5 Choosing the right strength

The object of EMS treatment is to produce powerful muscle contractions.

The strength of the current should be increased to **about three times the level at which you can first feel the tingling**, or to as high as you can stand without causing pain.

You will probably feel that electrical contraction is being more powerful than a voluntary contraction, because the current also stimulates your sensory nerves. The signals have a pain-relieving effect.

You may find the sensation uncomfortable to start with, so that you may not get up to therapeutic strength at the start of treatment. The strength can be increased during the course of the treatment, as you become accustomed to the sensation.

Voluntary muscular activity is more effective than stimulation, and it may improve progress if you combine voluntary contraction with stimulation.

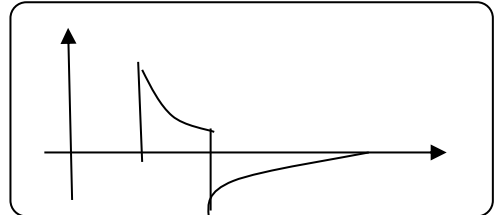
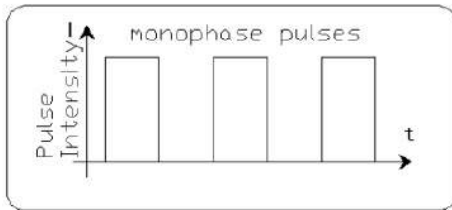
The powerful muscle contractions caused by electrical stimulation give rise to training aches, which usually disappear within a week.

After treatment tingling sensations may continue or your skin may feel numb, this is normal.

5 STIMULATION PARAMETERS:

The effect of Electrical stimulation on the body depends on the following current settings:

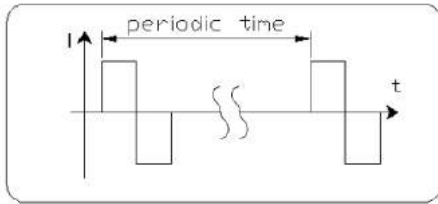
5.1 Pulse Waveform



This describes the time function of the excitation current which may be either or biphasic. With monophasic pulse trains, the current flows in one direction. With biphasic pulses, the excitation current alternates its direction

The Sports TENS uses only biphasic pulse trains, as they reduce the strain on the muscle, leading to less muscle fatigue as well as safer application, and reduce the risk of skin irritation under the electrode.

5.2 Pulse frequency



Frequency indicates the number of individual pulses per second, and is indicated in Hz (Hertz= pulses per second). It can be calculated by working out the inverse value of the periodic time.

Different types of muscle fibres react preferentially to different frequencies:-

Slow-response fibres tend to react to lower pulse frequencies up to 15Hz, while fast-response fibres only respond to frequencies over approx. 35Hz.

With pulses of approx. 45~70Hz, there is permanent tension in the muscle (tetany) combined with premature muscle fatigue. Higher pulse frequencies can therefore preferably be used for elasticity and maximum strength training.

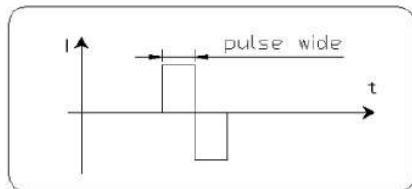
For TENS:

A frequency of 110 Hz is good at blocking pain signals.

A low frequency of 4 or 10 Hz allows for the release of endorphins, the body's natural morphine-like substances.

5.3. Pulse width

Pulse width is used to indicate the duration of an individual pulse in microseconds (millionths of a second). Pulse width also determines the penetration depth of the current. In general a greater muscle mass requires a greater pulse width. A higher Pulse Width is more also more likely to activate pain nerves, so there is a fine balance between maximum muscle stimulation and tolerable sensation.



EMS 50-400 depending on Frequency*

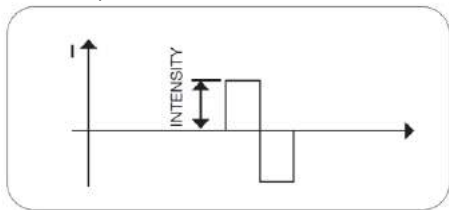
TENS 50 to 250 μ S.

5.4 Pulse Intensity

Setting the degree of intensity is dependent on the subjective feeling of each individual user and is determined by a number of parameters such as application site, skin circulation, skin thickness as well as quality of electrode contact. The actual setting should be effective but should never produce any unpleasant sensation such as pain at the site of application.

In TENS programmes, while a slight tingling sensation indicates sufficient stimulation energy, any setting which leads to pain must be avoided.

In EMS programmes, the intensity needs to be as high as possible for maximum benefit – so set just below the pain threshold.

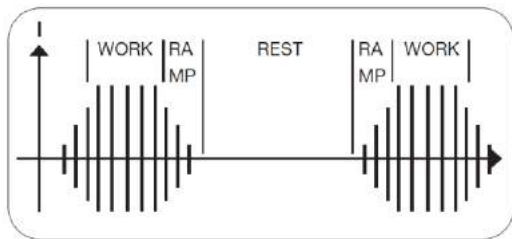


With prolonged application, you may need to increase intensity as nerves get used to the stimulation and become less sensitive (known as accommodation).

5.5 WORK Is the time in seconds that muscle is stimulated (not including Ramp time)
The Sports TENS 2 offers a range of work periods from 1-40 sec

5.6 REST is the time in seconds at zero strength in between stimulation.
The Sports TENS 2 offers a range of rest periods from 1-40 sec. The EMS programmes use an Active Rest –low frequency pulses help to clear metabolites in between Work periods.

5.7 RAMP is the time in seconds taken to move up and down between zero and the set stimulation strength .The **Sports TENS 2** has a fixed ramp time of 1.5 up and 0.75 down



TENS PROGRAMMES

5.8 Constant and Burst Modes

Constant mode is when the sensation is continuous as against Burst mode when the sensation, as its name implies, is one of on and off.

5.9 Modulation Modes

Modulation is when the frequency sweeps across range of settings. This enables the body to receive many different signals and can be very beneficial and lessen any effect of accommodation.

WARNING

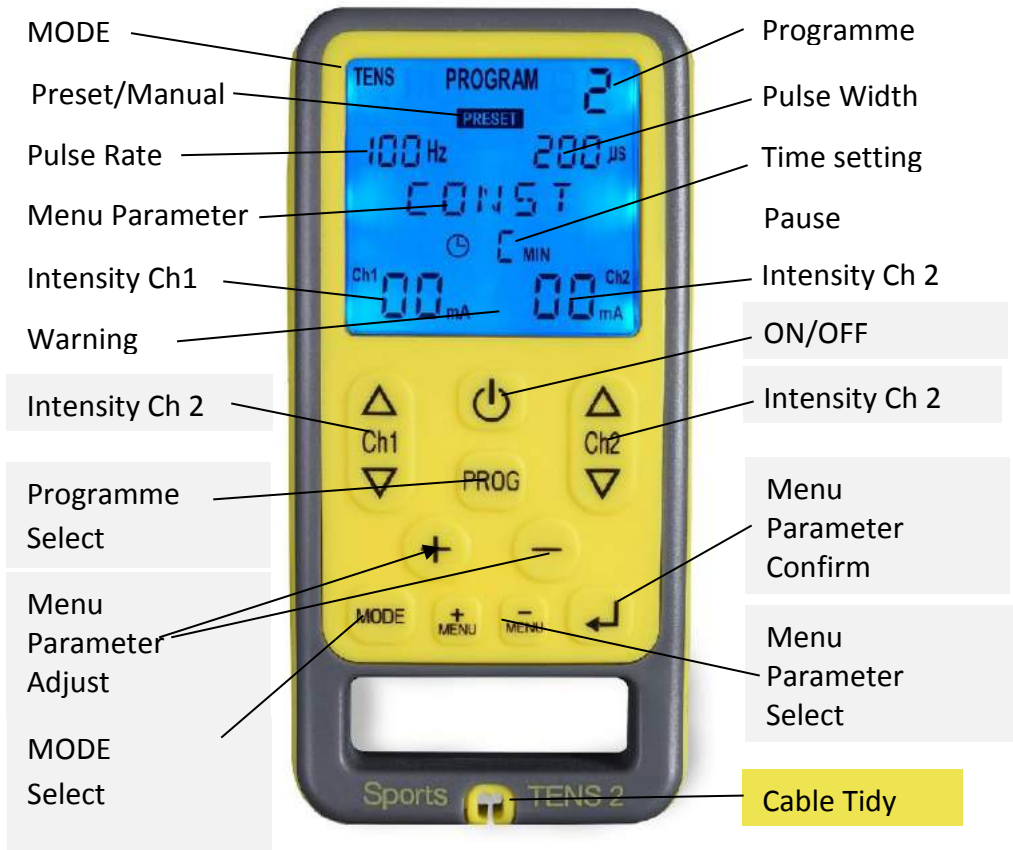
Consult your healthcare professional before altering these settings. Correct settings depend on your muscle tone and exercise goals. Inappropriate settings could cause discomfort, undesired muscle balance, or even muscle injury.

5.10 WARM, TRAIN & COOL Phases

Each EMS programme has three phases:

- A WARM up phase to prepare the muscle for work/
- A TRAIN phase, which works the muscles
- A COOL down phase to minimise fatigue effects

6. CONTROLS AND DISPLAYS



6.1 Switch ON

Press



Unit will display the last programme used.

Backlight will turn off 5 seconds after the last button press

Press again to turn off.

6.2 Select MODE

Press the M button.

Display will cycle through TENS/EMS I,II,III /MASS
(5 choices)

Modes EMS I, II, and III are for use on body areas with Small, Medium and Large muscles. (See Programmes)
Each EMS programme has a WARM, WORK, and COOL phase.

Note: Intensity must be zero before MODE can be changed, otherwise PAUSE is activated

6.3 Select Programme

Press the P Program to cycle through the available programmes.
The Hz and uS settings for each programme are displayed

TENS	1-12
EMS	1-11
MASSAGE	1-10

6.4 Set Treatment Timer

The default setting for preset programmes is shown.

To alter the Treatment Timer setting, press Menu+/-

The Timer display will flash.

Use +/- buttons to adjust the treatment time

Choices are: Continuous, 1-90 mins

6.5 Manual Settings

When a programme has manual settings available, MANUAL will be displayed.

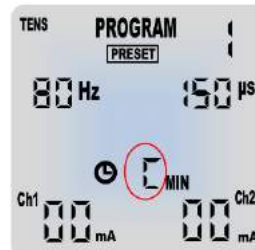
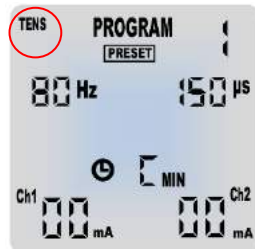
Press Menu + Menu - buttons to cycle through parameters

Selected Parameter flashes

Press +/- buttons to adjust setting.

Press return button  to accept change

Flashing stops



Parameters cycle through: Hz, uS, Work, Rest, Ramp, Timer, "DATE", "HOUR", "MEM D" and "MEM H".

6.6 Set Intensity

Use the ▲▼ buttons for each channel to adjust intensity. Intensity in mA is displayed at the bottom of the screen.

6.7 Automatic Keypad Lock



There is an automatic keypad lock if no button used for 10 seconds. Key symbol appears.

Press either Intensity Down button to unlock.

6.8 Manual Programme Lock



When "Manual" is showing you can protect the manual settings by pressing and holding (↵) button for 5 seconds.

If you try to adjust the parameters, the key symbol will flash.

Press (↵) and hold for 5 seconds to unlock programme.

To unlock the buttons, simply press and hold (↵) button for 5 seconds again.

6.9 Pause



Pressing the MODE button while a programme is in use stops the stimulation and the timer. Pause symbol is displayed.

Press again to resume the programme

6.10 Low Battery



When the battery voltage is low the Low Battery warning symbol will display

6.11 Warning.



In EMS Manual programmes a Warning triangle will be displayed if the Rest period is less than $\text{Rest Time} = \text{Work Time} * (\text{Work Hz} - 16.66) / 16.66$ seconds

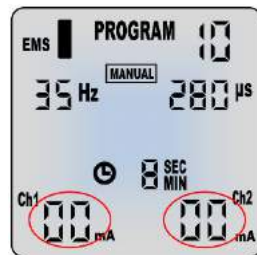
If the warning triangle appears at any other time, see "Troubleshooting"

6.12 Automatic switch off

If the electrodes become detached and the intensity is set to greater than 10, the Sports TENS will automatically reset intensity to zero.

To preserve battery life, the Sports TENS automatically switches off if left at zero intensity for more than 2 minutes

The backlight turns off 5 secs after the last press of the keypad



6.13 Date and Time Setting

The Date (Day of month) and Time (Hour of day) can be set. This enables the memory to give an exact history of daily usage.

To set date and time, press M+ and cycle through parameters to DATE.

Centre left shows Day of month and centre right shows Hour Day is flashing

Adjust with +/- buttons and set with  button

To set Hour, press Menu + and cycle through parameters to TIME.

Adjust with +/- buttons and set with  button



6.14 Memory Mode

To view the memory, press M+ and cycle through parameters to "MEM D"(for view the records on that date),

If no programme has been used for more than 19 minutes, a NULL message is displayed and the unit returns to waiting mode.

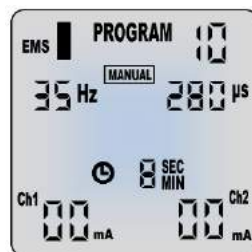
Then use the [>] and [] buttons to select Day – shown in Left centre window.

Having selected the required date, press M+ to cycle to "MEM H (to display hour of individual recordings on that date)

Then use the [>] and [] buttons to move between Recordings (Up to 3 per day)

For each recording the hour is shown in centre right, and values displayed for MODE, PROGRAM, Time in minutes (0-99) in timer window, and average intensity (0-99) in each channel in Ch2/Ch2 mA windows.

To clear the memory, press and hold the [M+] and [M-] buttons together for approx. 5 seconds while in memory mode MEMD or MEM H



7 PROGRAMMES

7.1 TENS PROGRAMMES

TENS PROGRAMMES					
Prog	Hz	Pulse width	Mode	Time	
1	80	150	Const	C	PRESET
2	100	200	Const	C	PRESET
3	2	250	Const	30	PRESET
4	100	150	Burst	30	PRESET
5	150	200	Burst	30	PRESET
6	2/80	200/100	Han	30	PRESET
7	2/100	200/150	Han	30	PRESET
8	10/100	250	PFM	C	PRESET
9	2/120	200/100	FM	C	PRESET
10	100	75	DTENS	C	PRESET
11	2-150	50-300	Const	5-90/C	MANUAL
12	2-150	50-300	Burst 2Hz	5-90/C	MANUAL

Using the TENS Programmes

Your nervous system is different to everyone else's. Only you know how the stimulation feels for you. The best way to use TENS is to try the programmes, and see which ones work best for you. There are some general guidelines:

Programmes with High frequency (Pain Gate)

Programmes 1,2,8,9,10,11

These programmes use the Pain Gate to block the signals travelling along the pain nerves. The sensation will fade after 5 or 10 minutes. Keep increasing the intensity so that you can always feel the stimulation clearly. You can use these programmes as long as you like. The pain relief may wear off after a few hours. In which case, you can take a break and try again later. Programmes 8 and 9 keep changing the sensation, which some users find will extend the effective pain relief.

Programmes with Low frequency (Endorphin release) elements

Programmes 3,4,5,6,7,,12

These programmes encourage production of your natural endorphins but inducing very small, repetitive muscle twitches. All but Prog3 combine this with a higher frequency to combine the pain relief mechanisms, but may be a little less comfortable.

To be effective, you need to keep the intensity high enough to induce small muscle movements. This limits the time you can use these programmes – if you use them for more than about 40 minutes, you may have aching muscles later.

7.2 EMS PROGRAMMES

First select MODE 1, II, or III

Use MODE I for small muscles like the face and hands

Use MODE II for medium sized muscles like arms and feet

Use Mode III for large muscles like thighs, buttocks, and abdomen

All EMS programmes include a WARM Up, TRAIN, and COOL Down phase.

During the TRAIN phase stimulation alternatives between Work –when the muscles are contracted - and Active Rest, with low frequency stimulation to promote metabolite clearance and delay fatigue. Each Work contraction starts and finishes with a gradual change in intensity – called a Ramp

1. All preset TRAIN phases have Ramp up 1.5s, Ramp Down 0.75s.
2. All WARM phases are 6Hz at same PW as Work phase
3. All COOL phases are 3Hz at same PW as Work phase
4. All Active Rest phases have Ramp up 0.5s, Ramp down 0.5s.
5. All Active Rest phases are at 4 Hz, 200uS

Manual settings:

1. All WARM phases are 6Hz at same PW as set PW
2. All COOL phases are 3Hz at same PW as set PW

At first use of a Manual programme the default values are shown.

The Warning triangle  is displayed if Rest period is less than
 $\text{Rest Time} = \text{Work Time} * (\text{WorkHz} - 16.66) / 16.66$ seconds

This is because muscle fibres can only activate a limited number of times a minute (about 1000) without becoming fatigued.

Using the EMS Programmes

EMS can be used for a wide range of sports and medical applications, and the application can get very complicated. The Sports TENS programmes have been designed to simplify this as much as possible. You can use the manual programmes if you want to modify the settings, or to experiment with completely different ones. Some of the ways you can use the programmes are shown below.

EMS PROGRAMMES													
Prog			Work					Amp %	Active Rest				Total time mins
			Freq Hz	Pulse Width uS			Sec		Hz	uS	Time s	Amp %	
				I	II	III							
1	PRESET	Warm	6	200	280	340	300	100					5
		Train	10	200	280	340	9	80	4	200	2	50	41
		Cool	3	200	280	340	600	70					10
2	PRESET	Warm	6	200	280	340	120	100					2
		Train	22	200	280	340	7	80	4	200	11	70	18
		Cool	3	200	280	340	180	70					3
3	PRESET	Warm	6	200	280	340	120	100					2
		Train	25	200	280	340	7	80	4	200	11	50	21
		Cool	3	200	280	340	180	70					3
4	PRESET	Warm	6	200	280	340	120	100					2
		Train	40	200	280	340	7	80	4	200	11	50	18
		Cool	3	200	280	340	180	70					3
5	PRESET	Warm	6	200	280	340	120	100					2
		Train	55	200	280	340	5	80	4	235	11	50	27
		Cool	3	200	280	340	180	70					3
6	PRESET	Warm	5	200	280	340	300	100					5
		Train	60	200	280	340	4	80	5	20	10	50	41
		Cool	3	200	280	340	600	70					10
7	PRESET	Warm	5	200	280	340	300	100					5
		Train	65	200	280	340	4	80	4	200	11	25	20
		Cool	3	200	280	340	600	70					10
8	PRESET	Warm	6	200	280	340	120	100					
		Train	75	200	280	340	4	80	4	200	14	50	25
		Cool	3	200	280	340	180	70					
9	PRESET	Warm	5	200	280	340	300	100					
		Train	100	200	280	340	6	80	4	200	36	25	28
		Cool	3	200	280	340	600	70					
10	MANUAL	Warm	6	200	280	340	120	100					
		Train	10-120	100-350			1-30	80			1-60*		1-90
		Cool	3	200	280	340	180	70					
10 DEFAULT			35	280			5				9		20
11	MANUAL	Warm	6	200	280	340	120	100					
		Train	10-120	100-350			1-30	80			1-60*		1-90
		Cool	3	200	280	340	180	70					
11 DEFAULT			50	300			5						

Programme 1 Muscle Calming

Relaxing the muscles as much as possible and to promote the body's natural endorphins to promote pain relief and to improve the blood circulation and provide oxygen into the muscle.

Programme 2 Resume Training 1

To promote the slow twitch fibres to build muscle strength to help reduce muscle atrophy ready for resuming training activities. Used for all type of sports.

Programme 3 Resume Training 2

Progress from 2 as tolerance increases.

Programme 4 Resistance 1

Improving and increasing the capacity to develop very high level of muscle force over a long period of time. Improving the efficacy of the oxygen consumption at the muscle level and the capacity to withstand toxin accretion, such as lactic acid. For sports activities that require very high levels of prolonged muscle activity: Rowing, Cycling, Middle distance running.

Programme 5 Resistance 2

Increasing the capacity to habitually develop a high level of muscle force. Improving oxygen consumption at muscular level and to increase the capacity to withstand toxin amassing. Used on sports activities requiring prolonged and high levels of muscle force: Cycling, Rowing, Middle distance running

Alternative application Lipolysis

Increasing the flow of blood circulation, and modifying the metabolism of the lipocytes. To help stimulate the subcutaneous deposits of fat. To assist reduce or eliminate the –Orange Peel effect of the skin surface

Programme 6 Maximum Muscle Contraction

To increase muscle bulk and volume and to improve muscle force. Searching for muscular hypertrophy

Programme 7 Muscle toning 1

Strengthening the muscles, improving blood circulation and capillary bed density. Ideal for applying to the Thigh, Legs, Bottom and Abdomen.

Programme 8 Muscle toning 2

Similar to 7, but adding bulk in preference to endurance

Programme 9 Force Output

Anaerobic activity- increasing the muscle capacity to a level of instantaneous maximum muscle force, changing muscle force into explosive action. Used for all activities requiring maximum muscle output in a very short space of time, such as Judo, short distance sprinting, throwing the discus or shot-put.

7.3 MESSAGE PROGRAMMES

Mode	Prog No	Work Time Min	Phase	Phase Time Min	1		2		Wave
					Hz	uS	Hz	uS	
Message Wave	1	30	1	30	85	200	135	100	Burst
	2	30	1	2	1	200	15	200	Burst
	3	30	1	2	25	200	80	200	Burst
	4	44	1	4	1	250	4	250	FM
			2	6	20	250			IM
			3		4	250			IM
			4	4	1	250	4	250	FM
			5	6	30	250			IM
			6		4	250			IM
			7	4	1	250	8	250	FM
			8	6	40	250			IM
			9		4	250			IM
			10	4	1	250	8	250	FM
			11	6	50	250			IM
			12		4	250			IM
			13	4	1	250	8	250	FM
	5	30	1	30	5	300			Con
			2		8	300			Con
	6	30	1	30	5	200			Con
			2		8	200			Con
	7	30	1	30	5	300			Con
			2		8	300			Con
	8		1	5	250	25	250	250	Burst 1Hz
			2	5					Burst 1.25 Hz
			3	5					Burst 1.42 Hz
			4	5					Burst 1.66 Hz
	9	30	1		25	200			2/2
			2		30	200			2/2
			3		40	200			1/1
			4		50	200			1/1
			5		70	200			0.5/1
			6		80	200			0.5/1
	10	30	1		1	200			15 pulses
			2		2	200			11 pulses
			3		3	200			18 pulses
			4		4	200			11 pulses
			5		5	200			15 pulses
			6		6	200			20 pulses
			7		9	200			26 pulses
			8		11	200			33 pulses
			9		15	200			30 pulses
			10		25	200			1 pulses
			11		15	200			30 pulses
			12		11	200			33 pulses
			13		9	200			26 pulses
			14		6	200			20 pulses
			15		5	200			15 pulses
			16		4	200			11 pulses
			17		3	200			18 pulses
			18		2	200			11 pulses

Using the Massage Programmes

You can use the massage programmes to relieve stiffness caused by incorrect posture caused by work (sitting for extended periods at a desk, work on the computer, driving for long periods, constant standing, incorrect lifting and carrying of heavy loads etc.)

You can also use them after intensive exercise to prevent a stiffening of the muscles or to help relieve stiffening more quickly.

Programme 8 has a special squeezing action designed to pump blood and fluid. It is especially effective with swollen legs and veins.

8. POSITIONING OF ELECTRODE PADS



Ensure that intensity is zero before connecting electrodes

Insert connection lead(s) into the sockets below the handle.

Rotate the body of the plug to lock the lead in place. Plug the lead pins into the sockets in the pad pigtails.



To avoid damage, remember to rotate the plug to unlock it before removing the lead.

Only pull the lead by holding the body of the plug.

8.1 Electrode Placement for T.E.N.S.

The placement of electrodes is one of the most important parameters in achieving effective pain relief using TENS. You may need to try various positions before you find the most effective positioning. There are several positioning methods:

Across the painful area

This is the simplest method. Placing one pad over, or slightly further away from the spine than, the source of the pain. Place the other pad closer to the spine so that the stimulation travels through the area of pain

Dermatomes

TENS only works at the level of one vertebra of the spine. The nerves carrying pain and the TENS stimulation into each vertebra cover an area of the body called a Dermatome. Each nerve root serves a known area of the skin. You can stimulate the sensory nerves anywhere in this area to reduce the transmission in the pain nerves. The nerves wrap around the trunk and limbs in a spiral, so the dermatomes can give you a better idea of where to place the pads. See diagram at the back of this book.

Trigger or Acupuncture points.

You can use low frequency TENS to stimulate therapy points. Accurately locating these points can be difficult, so you may want to seek professional advice.

Example TENS Electrode Pad Positions

Low Back



Neck and Shoulder



Sciatica



Shoulder



Knee Pain



Elbow Pain



Ankle Pain



Wrist Pain



Leg Pain



Where only two pads are shown on the arm, shoulder, and leg, use the other two pads either on the opposite limb or place all four pads on the same limb in a square pattern with each pad being about 4 inches apart.

8.2 Electrode Placement for E.M.S.

Electrode placement for electrical muscle stimulation is very important for obtaining the best results. Place two electrodes over the bulk of the muscle, with one electrode over the muscle's motor point. The motor point is the area on the skin that is located closest to the motor nerve's entry into the muscle – about 1/3 of the way down the muscle from the spine. Here it is easiest to trigger a contraction by electrical stimulation. See the diagram at the back of this book. Experiment by moving the electrode across the skin until you locate the point over the muscle that gives the cleanest contraction

Large muscle groups may require stimulation with two channels, that is, four electrodes simultaneously.

The electrode pads must always be used in pairs, so that the signal can flow in a circuit.

 **NOTE: Always check unit is OFF before attaching or removing pads.**

Use 50x50mm square electrode pads for all areas except the face, where smaller 25mm diameter electrodes may be necessary. When exercising smaller muscles, take care to adjust the intensity slowly as the motor nerves may be more sensitive.

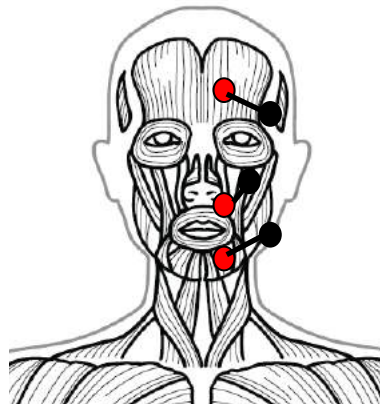
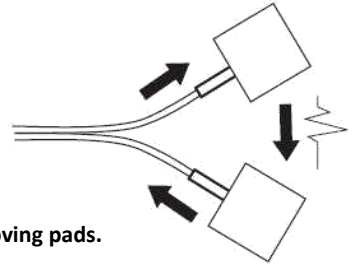
Example EMS Electrode Pad Positions

Eye care

We all are familiar with it. The ever-increasing set of little wrinkles around the eyes. At first, they're accepted as laugh-lines and seen as a symbol of maturity. But, when the eyes also start to swell up, deep wrinkles plough their way through the skin and puffy lids appear, the time has come to do something about it.

You can use Programme7 stimulate the muscles around the eyes. You will notice the muscles working straight away from the slight twitching. The activation of the muscles stimulates the circulation. This relaxing skin care also contributes to an increase in well-being, making you appear more awake and content.

Use small 25mm round electrode. In order to prevent triggering unpleasant sensations, you should increase the current strength very carefully



Stomach / hips

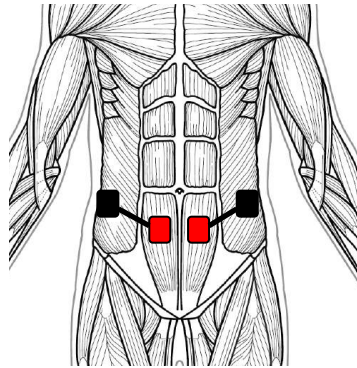
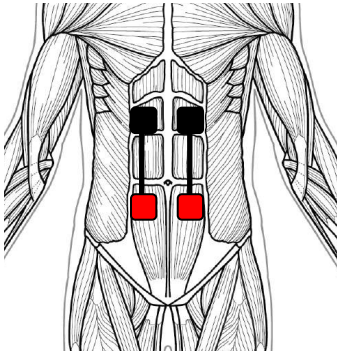
Muscle training and fighting the fat

The stomach, that tiresome subject - you can't magic it away.

Weight reduction is usually the magic word. Weight reduction is effectively aided by training the stomach muscles. With Sports TENS 2 you can single out muscles for direct stimulation.

The stomach contains several different individual muscles.

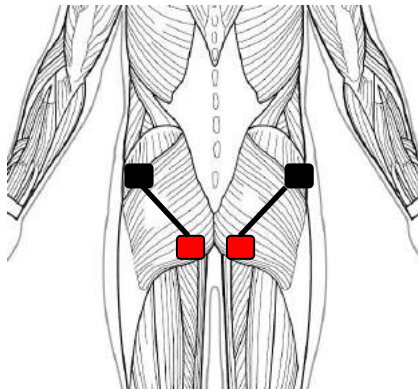
The central stomach muscle is responsible for giving you a slim stomach and a good upper body posture.



Bottom

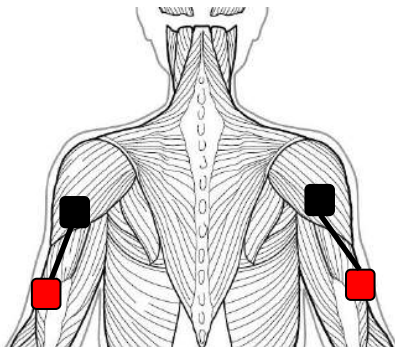
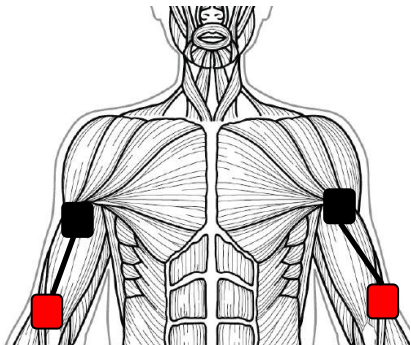
The bottom is equipped with a very strong set of muscles.

Unfortunately, unwanted fat and cellulite zones are often to be found in this area and are very difficult to combat. Muscular training is one way of improving shape. The picture shows the possible electrode positions for building muscles.



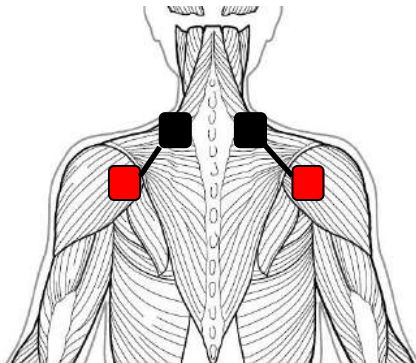
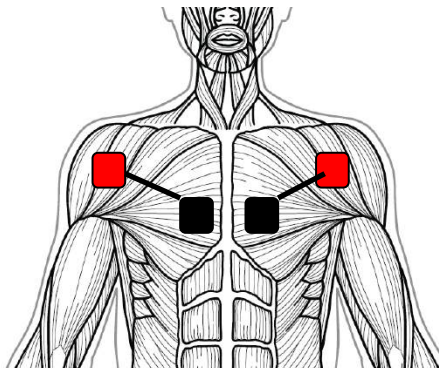
Upper arms

Our upper arms often have little shape and flabby, coarse skin. The cause is usually a lack of movement and muscular work. The Sports TENS 2 can be used to carry out muscle training. In this case too, it is all about stimulation of the circulation of blood. You have the option of treating the front side or the reverse side of both upper arms depending on where the need is greatest.



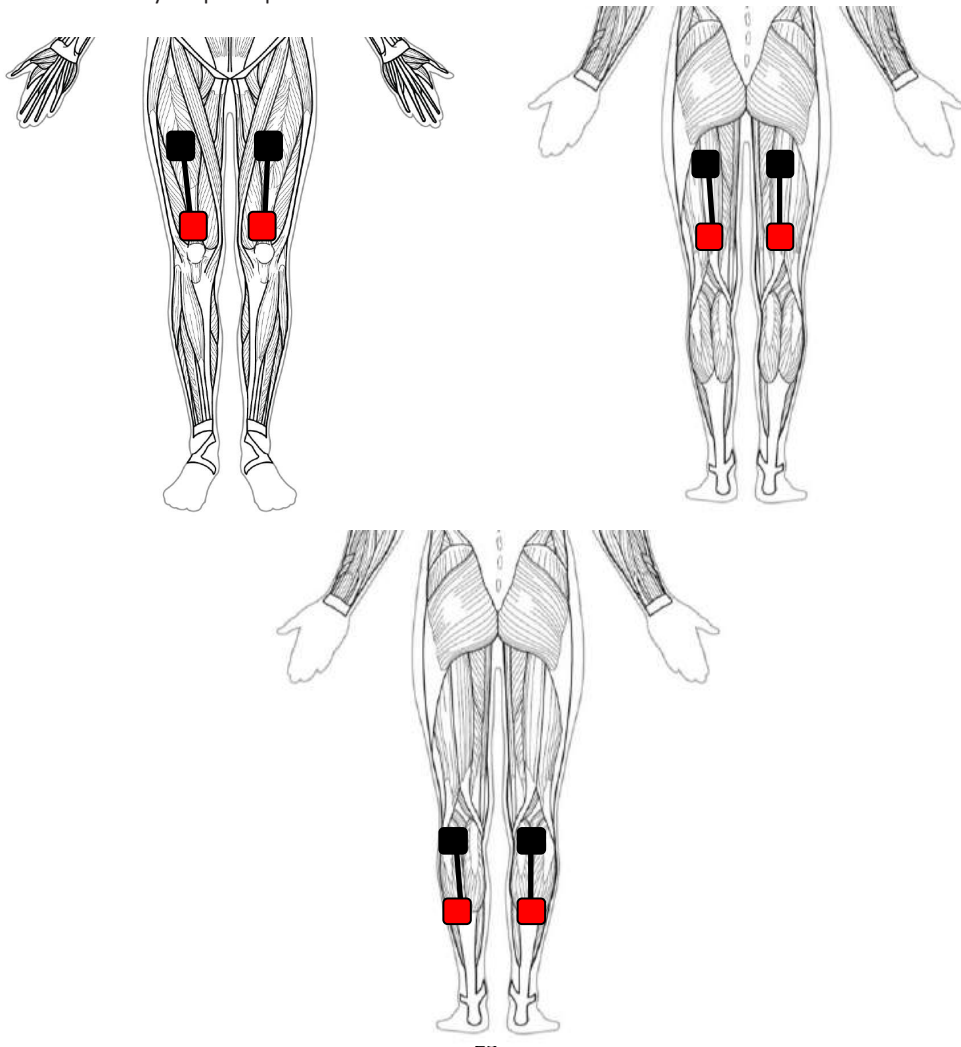
Chest and shoulders

Building chest muscle affects posture and movement in the upper body as a whole.



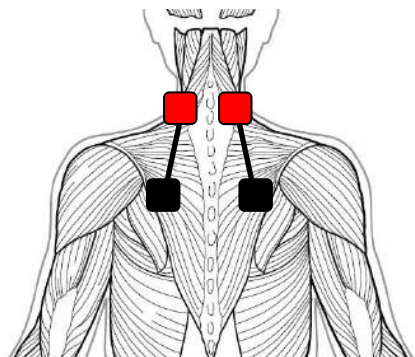
Legs - thighs and calves

It is usually a lack of trained muscles in the legs which disturbs us most, particularly in conjunction with areas of cellulite in the thigh area. Targeted muscle training for the front and back of the thigh and calves is very simple to perform.

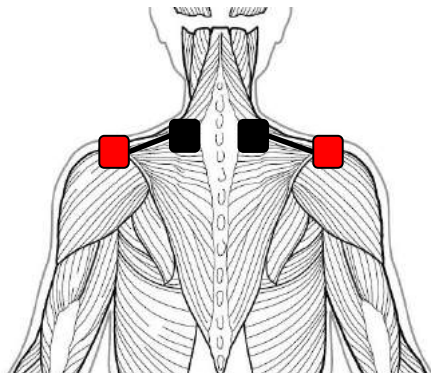


8.3 Electrode Pads positions for Massage programmes

Neck/ Tension headache

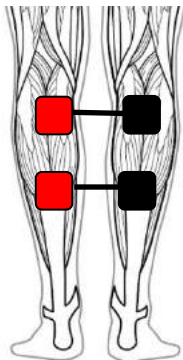


Shoulders



Circulation/Swollen Legs – Program 8

Poor return of blood to the heart is a common problem leading to swollen legs and varicose veins. This program supports what is known as the venous pump. Waste products are discharged which in turn eases the flow of blood.



9. GENERAL PAD ADVICE

- The electrode pads supplied are reusable but are for single patient use.
- In order to obtain the best conductivity through the pads always ensure that they are in good condition and tacky.
- Before use make sure your skin is clean and dry.
- Peel the electrode pads from their protective plastic shield by holding and lifting one corner of the pad and pulling. **Do not** pull on the pigtail wire of the pad.
- After use always replace the pads on the plastic liner and replace in the re-sealable plastic bag.
- If the pads dry out then it is best to buy a replacement pack of electrodes. In an emergency it may be possible to restore some of the tackiness of the pad by adding a tiny drop of water on each pad and spreading around. If too much water is added the pads will become too soft then it is suggested in order to try to re-establish some adhesiveness to place them sticky side up in a refrigerator for a few hours.
- In very hot weather the gel on the pads may become soft. In such cases place the pads, still on their plastic liners and in their bag into a fridge until they return to their normal condition.

10. BELT CLIP

The Sports TENS 2 is supplied complete with a belt clip to allow you to wear the at the waist.

Removing the belt clip

To remove the belt clip pull the central spine upwards, and slide the clip down

Replacing the belt clip

To attach the belt clip, firmly slide it into the slot. Test to ensure that the lock has engaged

11. TROUBLESHOOTING

If your Sports TENS 2 is not working properly please check the following:

Problem: No display/ wont turn on:.

BATTERY:

- i) Is it fitted? ii) Is it charged?

Problem: Intensity won't go above 10 mA

A circuit is not being made

- i) Have you applied both electrode pads (per lead wire) to ensure a complete circuit?
- ii) Are the lead wires properly connected at both ends?
- iii) Is the lead damaged? (Try using the other lead – if this works, then the original lead is faulty)

If the above review has failed to resolve your problem, call TensCare or your local dealer (address on back cover) for advice.

12. CONTRAINDICATIONS, CAUTIONS AND WARNINGS

CONTRAINDICATIONS

- **Do not use** if you have a heart pacemaker or have a heart rhythm problem. *TENS or electrical stimulation in the direct vicinity of a pacemaker may affect some models. If TENS or electrical stimulation is applied on the front of the neck this can affect your heart rate. Very strong TENS or stimulation across the chest may cause an extra heartbeat.*
- **Do not use** if you have epilepsy. TENS may affect seizure threshold
- **Do not use** if you are pregnant or attempting to become pregnant. *It is not known whether TENS or electrical stimulation may affect foetal development.*
- **Do not use** on the abdomen in the later stages of pregnancy. *Stop use immediately if you experience unexpected contractions.*
- **Do not use** when driving, operating machinery, or similar actions needing fine control. *Loose pads, damaged leads, or sudden changes in contact may cause brief involuntary muscle movements.*
- **Do not use** to mask or relieve undiagnosed pain. *This may delay diagnosis of progressive condition.*
Do not use if you have cognitive disabilities, i.e.; Alzheimer's disease or dementia.

In this manual:

A **Warning** is used when failure to follow the instructions may result in serious injury or death. A

Caution is used when failure to follow instructions may result in a minor or moderate injury, or damage to the device or other property.

Notes are used to provide clarification or recommendation.

WARNINGS:



Warning: The device should not be used while walking, driving, operating machinery, or any other activity in which involuntary muscle contraction may put you at risk of injury.



Warning: If you have active cancer, consult with your clinician before use due to concerns for stimulation potentially spreading cancerous cells.



Warning: Caution should be used if you have suspected or diagnosed epilepsy as electrical stimulation may affect seizure threshold.



Warning: Caution should be used if you have a bleeding disorder as stimulation may increase blood flow to the stimulated region.

CAUTIONS:



Caution: Observe caution when using the Perfect EMS at the same time as being connected to monitoring equipment with body worn electrode pads. *It may interfere with the signals being monitored.*



Caution: Strong electromagnetic fields (electrosurgery/microwave cookers /mobile phones) may affect the correct operation of this unit — see Section 22. If it appears to behave unusually, move it away from these devices.



Caution: Use caution following recent surgical procedures. *Stimulation may disrupt the healing process.*



Caution: Observe caution when using the Perfect EMS at high strength settings. *Prolonged use at high settings may cause muscle injury or tissue inflammation. The Sports TENS 2 is capable of delivering outputs in excess of 10 mA (RMS) or 10 V averaged over any period of 1 s".*



Caution: Not suitable for children under 5 years of age. Long cord - risk of strangulation in infants.

Do NOT place electrode pads:

- **On broken skin**
The pads could encourage infection.
- **On skin which does not have normal sensation**
If the skin is numb, too great a strength may be used, which could result in skin inflammation.
- **On the front of the neck**
Could cause the airway to close, giving breathing problems. May cause sudden drop in blood pressure (vasovagal response).
- **Over the eyes**
May affect eyesight or cause headaches.
- **Across the front of the head**
*Effect on patients who have had strokes or seizures is not known.
May affect sense of balance.
The effects of stimulation of the brain are unknown.*
- **Near malignant tumours**
In vitro experiments have shown that electricity can promote cell growth.

Do not:

Ignore any allergic reaction to the electrode pads:

If a skin irritation develops stop using TENS, and try a different type of electrode.

Alternative pads specially made for sensitive skin are available, see Section 16.

TO KEEP YOUR DEVICE IN GOOD WORKING ORDER, OBSERVE THE FOLLOWING ADDITIONAL CAUTIONS



Do not immerse the Perfect EMS unit in water or place it close to excessive heat. *It may cease to operate correctly.*



Do not attempt to open up the Perfect EMS unit.

This will invalidate the guarantee.



Do not use this device with leads, electrodes and accessories other than those recommended by the manufacturer. *Performance may vary from specification and will invalidate the warranty.*



Keep the unit away from sources of high magnetic fields such as TV's, microwave ovens and hi-fi speakers as these may affect the LCD screen.



Keep the device away from a fireplace or radiant heater as the heat may affect the device.



Keep the device away from nebulizer or steam kettle as the moisture may affect the device.



Keep the device away from sunlight as long-term exposure to sunlight may affect the rubber causing it to become less elastic and crack.



Keep the device away from lint and dust as long-term exposure to lint and dust may affect the sockets or cause the battery connector to develop a bad contact.



Do not mix old, new or different types of batteries.

13. CLEANING

The case and lead wires can be cleaned by wiping with a damp cloth and a solution of mild soap and water. Wipe dry.

Do not immerse your TENS machine in water.

Do not use any other cleaning solution than soap and water.

14. CHARGING THE BATTERY

The Sports TENS 2 is powered by a type BL4B rechargeable Li-ion battery.

A separate Charging Cradle and Power Adaptor are included in the kit.

The battery should need charging about once a week

When the battery is running low, a low battery indicator will show on the screen (battery symbol). Although the display fades as the batteries run down, the strength of the output does not change until the warning is shown.

NB: Remove the battery from your Sports TENS 2 if the unit is unlikely to be used for a long period



Warning: Use only the power adaptor and charging cradle supplied.
Use of other chargers could be hazardous and will negate the warranty



To charge the battery:

Step 1. Insert the battery into the charging cradle, connect the charging cradle to the power adaptor and plug it into the mains socket.

Step 2. The red light will appear on the charging cradle – that means the battery is being charged.

Step 3. When the battery is charged, the indicator light on the cradle will change from red to green.

Disposal: Always dispose of batteries responsibly according to local government guidelines. Do not throw batteries onto a fire. Risk of explosion.

Caution: Keep batteries out of reach of children

If necessary, it is recommended to obtain a replacement battery from your local distributor.

Caution: If battery leakage occurs and comes in contact with the skin or eyes, wash thoroughly with lots of water

WARNING:

This product is equipped with a Lithium-ion battery. Failure to follow these instructions could cause the lithium-ion battery to leak acid, become hot, explode or ignite and cause injury and /or damage:

- Do NOT pierce, open, disassemble it, or use it in a humid and/or corrosive environment.
- Do NOT expose to temperatures over 60°C(140F)
- Do NOT put, store or leave it near sources of heat, in direct strong sunlight, in a high temperature location, in a pressurized container or in a microwave oven.
- Do NOT immerse the battery in water or sea water, or get it wet
- Do NOT short-circuit the battery
- Do NOT MIX 5V and 4.2V Power Supplies and Cradles. This could result in failure to charge or damage to the battery.

15. GUARANTEE

Your TensCare device is guaranteed for two years from the date of purchase. If a fault develops return the unit to TensCare at the address below, together with a copy of your invoice and details of the problem. The guarantee does not cover the batteries, electrode pads or mono lead wire.

Please note that the Guarantee is invalidated if

- i) incorrect batteries have been fitted
- ii) the unit has been immersed in water, maltreated or tampered with.

16. CONSUMABLES AND SERVICING

Expected Service Life

- The machine will often last for more than 5 years, but is guaranteed for 2 years.
- Lead life depends greatly on use. Always handle the leads with care.
- Pads should last 12-20 applications, depending on skin condition and humidity.
- Typical battery operation time: No less than 1 week (at 50%, 4 hours per day)

Replacement electrode pads, new batteries and lead wires are available from your supplier or distributor (see back cover for contact details), by mail order from TensCare, by telephone using a credit or debit card, or through our website.

PART NUMBER:

L-ST2	Replacement lead 1.25m
E-CM5050	Electrode pads 50x50mm for external use. Pack of 4*
B-BL6F	Li-Ion battery type BL-6F 3.7V 1100mAh
X-CR-SP	Charger Cradle
X-STPA5V	Charger multiplug (UK/EU)
X-MULTIPAB-US	Charger US 2 pin
X-ELBATCH-AU	Charger Australia

These consumables can be purchased either by contacting TensCare on +44 (0)1372 72 34 34, by going online to www.tenscare.co.uk, or from your local supplier.

Please ensure that you order the correct part number.

For servicing please call Tenscare on +44 (0)1372 72 34 34 to discuss any problem.

If your unit needs to be returned please send it to:

Service Department, TensCare Ltd, 9 Blenheim Road, Epsom, Surrey KT19 9BE, UK

Please ensure that you enclose your name, address and contact telephone number so that you can be contacted and informed about any problem and any costs involved.

17. DISPOSAL OF WASTE ELECTRICAL AND ELECTRONIC PRODUCTS (WEEE)

One of the provisions of the European Directive 2002/96/CE is that anything electrical or electronic should not be treated as domestic waste and simply thrown away. To remind you of this Directive all affected products are now being marked with a crossed-out wheellie bin symbol, as depicted below.

To comply with the Directive you can return your old electro-therapy unit to us for disposal. Simply print a postage-paid PACKETPOST RETURNS label from our website www.tenscare.co.uk, attach this to an envelope or padded bag with the unit enclosed, and post it back to us. Upon receipt we will send your old device for components recovery and recycling to help to conserve the world's resources and minimise any adverse effects on the environment.



18. TECHNICAL SPECIFICATIONS

Output:	99 mA zero to peak
	Constant current 500-1500 Ohm, constant voltage > 1500 Ohm
Max Pulse energy:	Total output limited to 25uC per pulse
Channels:	Dual Channel
Output plugs:	Fully shielded: touch proof
Waveform:	Asymmetrical rectangular bi-phasic.
TENS:	2-150 Hz in steps of 1, 50-300 uS in steps of 5
EMS	10-120 Hz, 50-350 uS
Dimensions:	115x56x23mm
Weight:	90gm without battery (guess!)
Power supply:	BL-6F Li-Ion battery 3.7V 1100mAh
	Mains adaptor with charging cradle.
	Input 110-240V. Output 4.2V DC500mA

Safety Classification:



IP22

Internal power source
Type BF Designed for continuous use.
No special moisture protection.

Environmental Specifications:

Operating



Humidity: 20 to 65% RH

Temperature range: 0 to 35C

Atmospheric pressure: 700hPa to 1060hPa

Storage



Humidity: 10 to 90% RH

Temperature range: 0 to 55C

Atmospheric pressure: 700hPa to 1060hPa



STANDARD SYMBOLS



This symbol means “Refer to Instruction Manual”



TYPE BF EQUIPMENT: Equipment providing a degree of protection against electric shock, with isolated applied part. Indicates that this device has conductive contact with the end user.



Attention! Please follow the instructions in the User Manual.



Do not dispose in household waste (see section 17).



Humidity Limitation: indicates the humidity limits to which the medical device can be safely exposed.



Atmospheric Pressure Limitation: indicates the atmospheric limits to which the medical device can be safely exposed.

LOT

LOT Number: indicates the manufacturer’s batch codes so that the batch or lot can be identified.

S/N

Serial Number: indicates the manufacturer’s serial number so that a specific medical device can be identified.

REF

Catalogue Number: indicates the manufacturer’s catalogue number so that the device can be identified.



This medical device is not water resistant and should be protected from liquids.



Date of Manufacture: indicates the date which the medical device was manufactured. This is included within the serial number found on the device (usually in the battery compartment), either as: “E/Year/Number” (YY/123456) or “E/Month/Year/Number” (MM/YY/123456).



This medical device is indicated for home use.

IP22

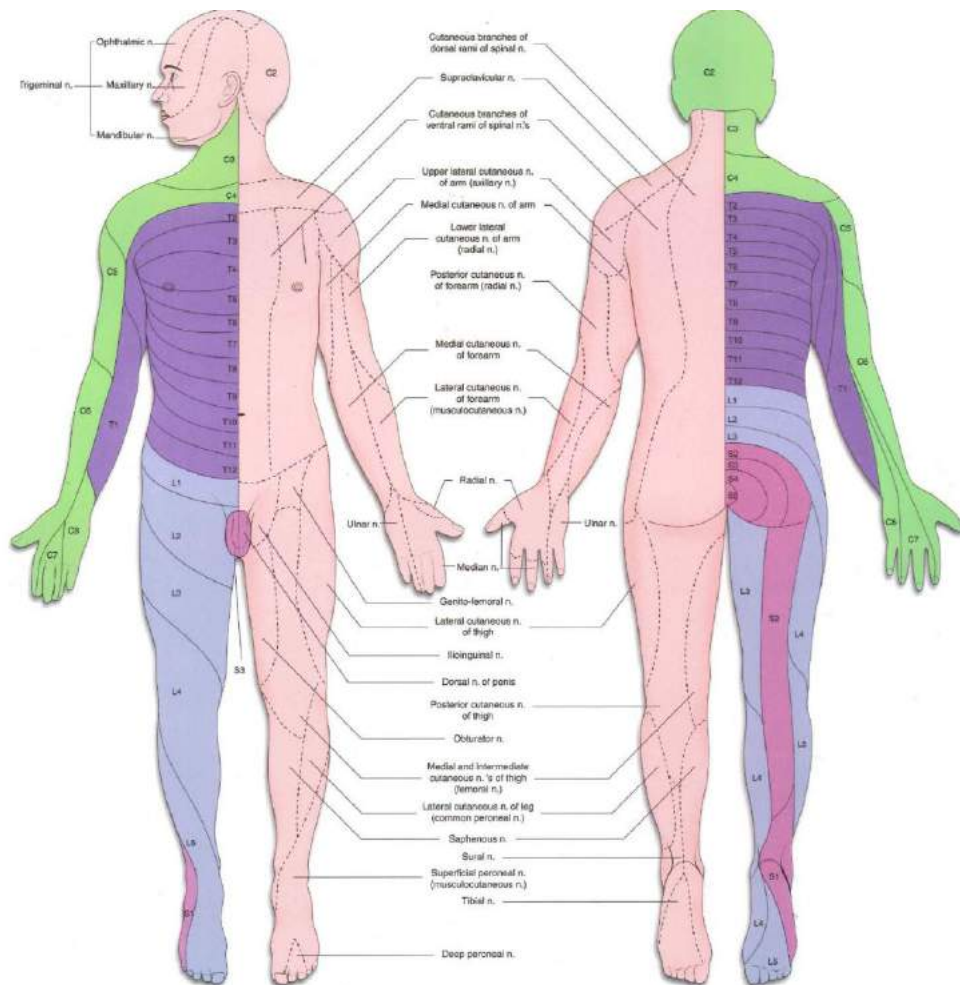
The first number 2: Protected against access to hazardous parts with a finger, and the jointed test finger of 12mmø, 80mm length, shall have adequate clearance from hazardous parts, and protected against solid foreign objects of 12.5mmø and greater. The second number 2: Protected against vertically falling water drops when enclosure is tilted up to 15°. Vertically falling drops shall have no harmful effects when the enclosure is tilted at any angle up to 15° on either side of the vertical.

19. EMC Precautions

Wireless communications equipment such as wireless home network devices, mobile phones, cordless telephones and their base stations, walkie-talkies can affect this equipment and should be kept at least a distance $d = 3,3$ m away from the equipment. (Note. As indicated in Table 6 of IEC 60601-1-2:2007 for ME EQUIPMENT, a typical cell phone with a maximum output power of 2 W yields $d = 3,3$ m at an IMMUNITY LEVEL of 3 V/m).

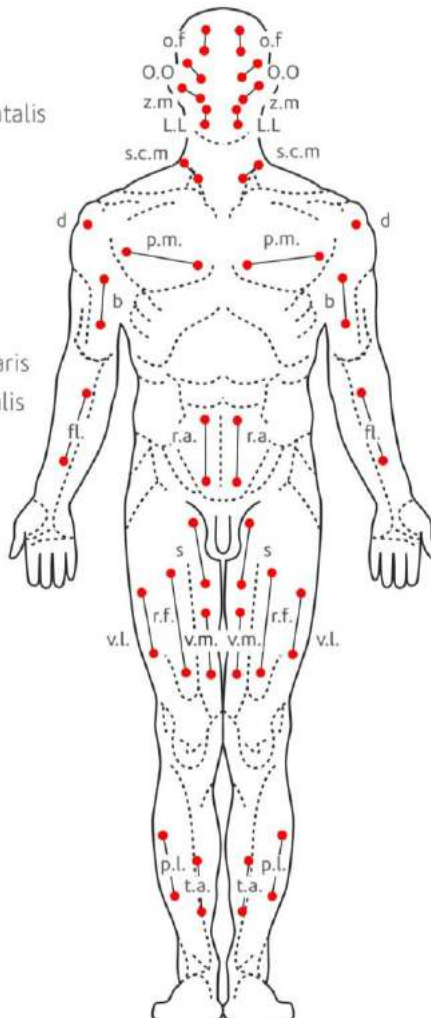
For hospital use, full EMC guidance tables are available on request.

20. TENS DERMATOMES

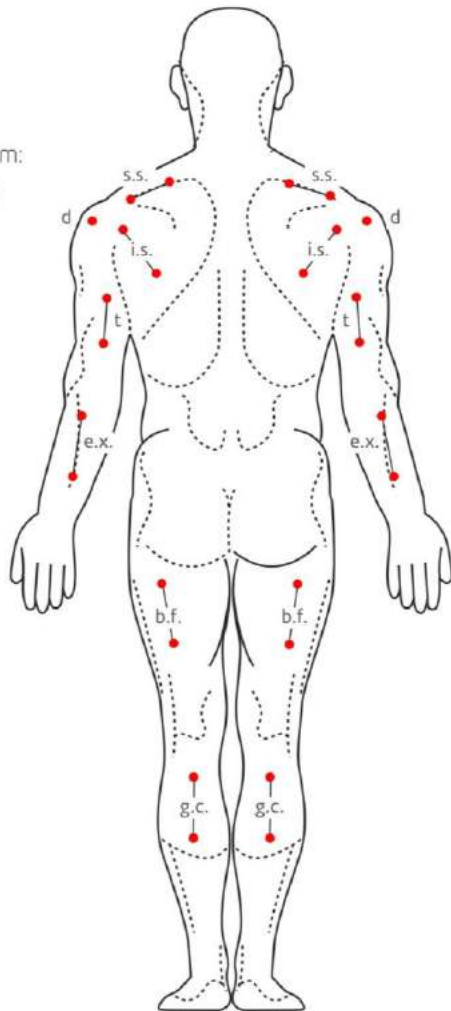


21. EMS Electrode Placement Chart

O.O	M.orbicularis oculi
z.m	M. zygomaticus major
o.f	M.occipito frontalis, pars frontalis
L.L	M. levator latii
s.c.m.	M. sternocleido-mastoideus
d.	M. deltoideus
b.	M. biceps brachii
fl.	Underarm flexors: M. flexor carpi radialis et ulnaris M. flexor digitorum superficialis M. palmaris longus
p.m.	M. pectoralis major
r.a.	M. rectus abdominis
s.	M. sartorius
r.f.	M. rectus femoris
v.l.	M. vastus lateralis
v.m.	M. vastus medialis
p.l.	M. peroneus (fibularis) longus
t.a.	M. tibialis anterior



- s.s. M. supraspinatus
 i.s. M. infraspinatus
 t. M. triceps brachi
 ex. Extensors on the underarm:
 M. extensor carpi radialis
 M. extensor carpi ulnaris
 M. extensor digitorum
 b.f.+st. M. biceps femoris
 + M. semitendinosus
 g.c. M. gastrocnemius
 (+ M. soleus)



Distributed by:



Manufactured by:



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