INSTRUCTIONS FOR USE

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Sports TENS 2

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The Sports TENS 2 is a multi-purpose combination unit that offers the latest in electro muscle stimulation and TENS. It has three basic functions, which can be used in combination:

1. Stimulation of sensory nerves for Pain Relief (TENS).
2. Stimulation of motor nerves and muscle tissue (EMS) to build and alter muscle function.
3. A massage effect.

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.

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/slowing 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 reinnervation - 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 monophasic 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 (millions 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 µS.

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

5.9 Modulation Modes
Modulation is when the Frequency (FM) or Intensity (IM) sweeps across a 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/training
- A TRAIN phase, which works the muscles
- A COOL down phase to minimise fatigue effects

6. CONTROLS AND DISPLAYS
6.1 Switch ON
Press \( \bigcirc \)
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, TRAIN, and COOL phase. Note: Intensity must be zero before MODE can be changed, otherwise PAUSE is activated.

6.3 Select Programme
Press the P Programme to cycle through the available programmes. The Hz and \( \mu \)S 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 \( \leftarrow \) to accept change
Flashing stops
Parameters cycle through:
Hz, \( \mu \)S, Work, Rest, Ramp, Timer, “DATE”, “HOUR”, “MEM D” and “MEM H”.

6.6 Set Intensity
Use the \( \uparrow \downarrow \) buttons for each channel to adjust intensity. Intensity in mA is displayed at the bottom of the screen.

6.7 Automatic Keypad Lock \( \uparrow \)
There is an automatic keypad lock if no button is used for 10 seconds.
Key symbol appears.
Press the Intensity Down button for either channel to unlock.

6.8 Manual Programme Lock
When “Manual” is showing, you can protect the manual settings by pressing and holding \( \downarrow \) for 5 seconds.
If you try to adjust the parameters, the key symbol \( \downarrow \) will flash.
Press \( \downarrow \) and hold for 5 seconds to unlock programme.
To unlock the buttons, simply press and hold \( \downarrow \) button for 5 seconds again.

6.9 Pause \( \gg \)
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 \( \downarrow \)
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 \( \text{Rest Time} = \text{Work Time} \times \text{WorkHz} - 16.66/16.66 \) 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) for each channel in the mA window for that channel.
To clear the memory, press and hold the [M+] and [M-] buttons together for approx. 5 seconds while in memory mode MEM D or MEM H.

7. PROGRAMMES

7.1 Tens Programmes

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<td>50-300</td>
<td>Burst 2Hz</td>
<td>5-90/C</td>
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</table>

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 by inducing very small, repetitive muscle twitches. All but Prog 3 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 I, 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 alternates 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 Work PW
2. All COOL phases are 3Hz at same PW as set Work PW

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

The Warning triangle ▲ is displayed if Rest period is less than Rest Time=Work Time*(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.

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<table>
<thead>
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<th>Work</th>
<th>Active Rest</th>
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<td>III</td>
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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. Here are some of the ways you can use the programmes:

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 build up, 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.

<table>
<thead>
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<th>Prog No</th>
<th>Work Time Min</th>
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</tbody>
</table>

**7.3 SPORTS TENS 2 MASSAGE PROGRAMMES**
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.

8.0 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 pigtailes.
⚠️ 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

![Examples of electrode pad positions for different pain areas: Low Back Pain, Neck and Shoulder Tension, Sciatica, Shoulder Pain, Knee Pain, Elbow Pain, Ankle Pain, Wrist Pain, Leg Pain. Each position shows the use of two or four pads placed in various configurations to target different areas effectively.]
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. In the examples below the pads are colour-coded to match the leads to be used but, because the waveform is bi-polar, this colour coding is not critical.

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 it 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/ won't 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. CAUTIONS AND WARNINGS

Do not use TENS or EMS:
- if you have a heart pacemaker or have a heart rhythm problem.
- if you have epilepsy.
- during the first three months of pregnancy.
- when driving or operating machinery or doing any other task where sudden movement could be hazardous.
- if you are suffering from acute, feverish or infectious diseases.
- to mask or relieve undiagnosed pain.

Do not place electrode pads:
- on broken skin, as this may encourage infection.
- to 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 carotid sinus nerves, on the front of the neck, as these may affect heart rate.
- over the eyes, or across the front of the head.
- on the abdomen at anytime when pregnant.
- near malignant tumours.

Do not:
- ignore any allergic reaction to the electrode pads: If a skin irritation develops, stop use and allow the skin to heal. If the problem persists, try using a different make of electrode or change the electrode, try moving the electrode position each day by just the width of the electrode.
- start your TENS or EMS treatment until the cause of pain has been diagnosed. If you are in any doubt about any of these warnings please consult your medical adviser.

Also do not:
- immerse your unit in water or place it close to excessive heat.
- attempt to open up the unit. Such actions will void the guarantee.
- mix old, new or different types of batteries. Be sure to dispose of old batteries safely.

Caution:
- observe caution when using electrotherapy at the same time as being connected to electro-monitoring equipment with body worn electrode pads as interference may occur.

Do: Remove batteries from your machine if the unit is unlikely to be used for a long period.

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.

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

For a replacement battery, contact Tenscare or your local distributor.

Use only the power adaptor and charging cradle supplied.

USE OF OTHER CHARGERS COULD BE HAZARDOUS AND WILL NEGATE THE GUARANTEE

Warning

There is a risk of smoke, fire, or rupture if the battery is not used according to the following guidelines:
- Do not disassemble the battery
- Do not short-circuit the battery
- Do not incinerate or heat the battery
- Do not use or leave battery near a source of heat, stove or heated place (more than 80°C)
- Do not immerse the battery in water or sea water, or get it wet
- Do not charge battery nearby the fire or in strong sunlight
- Only use the charger provided and observe charging instructions

Disposal

Always dispose of batteries responsibly according to local government guidelines.

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, malfreated or tampered with.
16. CONSUMABLES AND SERVICING

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-ST2CR: Charger Cradle
- X-STP: Universal Power supply
- X-STPP-UK: Plug adaptor UK 3 pin
- X-STPP-EU: Plug adaptor EU 2 pin
- X-STPP-US: Plug adaptor US 2 pin

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 wheelie 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

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Output:</td>
<td>99 mA zero to peak</td>
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<tr>
<td>Max Pulse energy:</td>
<td>Total output limited to 25μC per pulse</td>
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<tr>
<td>Channels:</td>
<td>Dual Channel</td>
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<tr>
<td>Output plugs:</td>
<td>Fully shielded: touch proof</td>
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<tr>
<td>Waveform:</td>
<td>Asymmetrical rectangular bi-phasic.</td>
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<td>TENS:</td>
<td>2-150 Hz in steps of 1, 50-300μS in steps of 5</td>
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<tr>
<td>EMS</td>
<td>10-120 Hz, 50-350μS</td>
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<tr>
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<td>Weight:</td>
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<tr>
<td>Power supply:</td>
<td>BL-6F Li-Ion battery 3.7V 1100mAh</td>
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<tr>
<td>Safety Classification:</td>
<td>Internal power source</td>
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<tr>
<td>Environmental</td>
<td>Type BF Designed for continuous use. No special moisture protection.</td>
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<tr>
<td>Operating Specifications:</td>
<td>Humidity: 20 to 65% RH</td>
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<tr>
<td>Storage Specifications:</td>
<td>Temperature range: 0 to 35C</td>
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</table>

STANDARD SYMBOLS

- Follow operating instructions
- CE medical device. Type BF
- Caution
- Do not dispose in normal dustbin – see para 17
19. EMC PRECAUTIONS

Use special precautions regarding EMC according to the information provided below.

- Other portable and mobile RF communications equipment can affect performance.
- Do not use when adjacent to or stacked with other electrical equipment.
- Use of leads or electrodes other than those listed in section 16 may affect EMC performance.

Guidance and manufacturer's declaration - electromagnetic emissions

The Sports TENS 2 is intended for use in the electromagnetic environment specified below. The customer or the user of the Sports TENS 2 should ensure that it is used in such an environment.

**Recommended separation distances between portable and mobile RF communications equipment and the Sports TENS 2**

<table>
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<tr>
<th>Distance (m)</th>
<th>Separation distance according to frequency of transmitter (W)</th>
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<tr>
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<td>12, 12, 23</td>
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</table>

For transmitters rated at a maximum output power not listed above, the recommended separation distance in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Recommended separation distances between portable and mobile RF communications equipment and the Sports TENS 2

The Sports TENS 2 is intended for use in the electromagnetic environment specified below. The customer or the user of the Sports TENS 2 should ensure that it is used in such an environment.

**Immunity test**

<table>
<thead>
<tr>
<th>Test</th>
<th>IEC 60601 test level</th>
<th>Compliance level</th>
<th>Electromagnetic environment guidance</th>
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</thead>
<tbody>
<tr>
<td>Electrostatic discharge (ESD)</td>
<td>±6 kV contact, ±8 kV air</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Surge</td>
<td>±2 kV for power supply lines, ±1 kV for input/output lines</td>
<td>Not applicable</td>
<td>Not applicable</td>
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</tbody>
</table>

If floors are covered with synthetic material, the relative humidity should be at least 30%.

**Power frequency (50/60 Hz) magnetic field**

<table>
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<tr>
<th>Distance (m)</th>
<th>Not applicable</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

NOTE: UT is the a.c. mains voltage prior to application of the test level.
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 brachii
- **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)
This product is manufactured by Tenscare Ltd., in compliance with the European Union Medical Device Directive MDD93/42/EEC under the supervision of Intertek Notified Body number 0473.