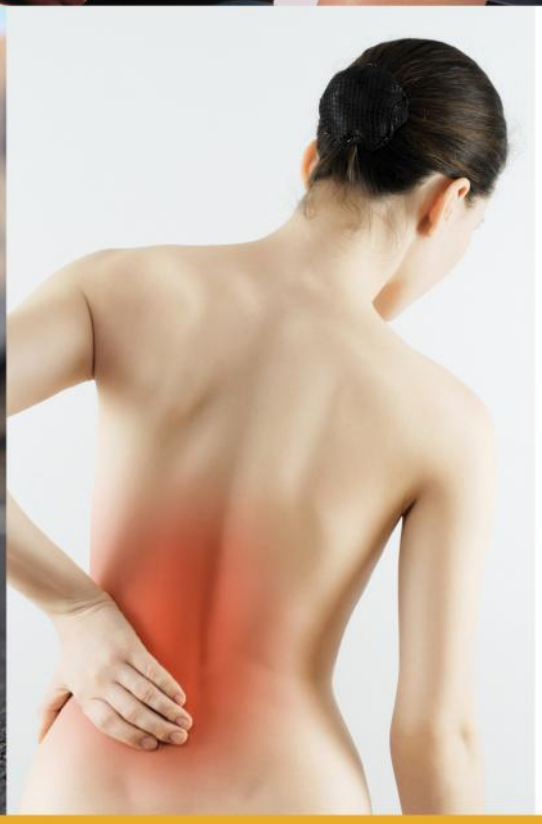
GLOBUS



ELECTROSTIMULATION

User guide

THE ELECTROSTIMULATION

The electrostimulation does not want to replace physical activity but it must be considered as an additional treatment to it.
According to the aims, it will be useful:
- To sportspeople, in order to complete the normal training and to increase performances
- To those who want to treat some imperfections
- To those who suffer from some pathologies
- To those who have suffered from a trauma or in the rehabilitation.

The electrostimulation is a technique that provokes a muscle contraction completely similar to the voluntary one, by using electrical impulses that act on motor points (motoneurons) or on nerve endings (TENS impulses).
There are two different ways of use:
- muscle stimulation (ideal for strength development and for aesthetic treatments)
- stimulation to nerve endings (ideal for the treatments against pain)

Types of muscle

The muscle can be divided in three different types: streaked or voluntary muscle; cardiac muscle and smooth or involuntary muscle.
The **voluntary muscle (streaked)** includes the skeletal muscles and the musculature of organs such as the eyeball and the tongue. It permits the movement and the maintenance of the posture and contributes to shape the body. It responds very quickly to nerve impulses, by contracting in a rapid and intense way. The voluntary muscle cannot be contracted for long time with high intensity because it is subject to fatigue. Generally, streaked muscles are connected to the skeleton by means of tendons.
The **involuntary muscle (smooth)** covers the internal walls of our organs, it is in the wall of the blood vessels, in the wall of the hollow organs (stomach, intestine), inside the eyeball, in the erector muscles of the hairs. Its main function is to push materials inside and outside the body. Smooth muscles have very slow, but prolonged and more effective contractions (requiring less ATP). They are not easy to fatigue and are often intrinsic and, therefore, they do not adhere to skeletal structures.
The **cardiac muscle** is responsible for the continuous and rhythmic contractility of the heart and it has some functional and structural features of the other two types of muscle tissues.
The cardiac and the smooth muscle are not voluntarily controlled.
The most part of the human body muscles belongs to the category of streaked or voluntary muscles, with approximately 200 muscles for each side of the body (approximately 400 totally). Skeletal muscles are the target of the EMS (Electrical muscle stimulation).

The mechanism of the muscle contraction

The skeletal muscle exercises its functions through the mechanism of the contraction.
When the muscle contraction happens, the movement of the articulations is produced and, consequently, the movement of the skeleton, too.

The muscle contracts in the following way: when a person decides to make a movement, his/her brain automatically elaborates the information needed and it creates a signal that, through the nervous system, transmits an electric impulse to the muscle that has to move.
After the reception of the impulse, the anatomic structures of the muscle contract causing the desired movement.
The energy demanded for the contraction is provided by the supply of sugars and fats stored in the human body. In other words, the electrical stimulation is not a direct energy resource but it works as an instrument that triggers the muscle contraction.
The same type of mechanism is activated when the muscle contraction is produced by the electrostimulator. EMS (the electrostimulation produced by the electrostimulator) assume, in other words, the same role of a natural impulse transmitted by the motor nervous system. Normally the muscle relaxes and returns to its original state at the end of the contraction.

Isotonic and isometric contractions

The isotonic contraction occurs when the interested muscles produce a state of constant tension producing the displacement of the joint heads and therefore the movement. Instead, when the musculature produces a tension and the joint heads of a physical segment are blocked (without moving), we talk about an isometric contraction.
In the event of the electrostimulation, an isometric contraction is preferred because it fosters to obtain an even maximum contraction without creating sudden and uncontrolled movements of the joint heads. Despite this, for specific applications, especially in sport field, the electrostimulation can be used together with an isotonic contraction (with overloads, too).

CLASSIFICATION OF THE DIFFERENT TYPES OF MUSCLE FIBERS

The skeletal muscles are composed by a combination of muscle fibers that have different shapes according to the mechanical functions they have to carry out.

I type FIBERS

This type of fibers are also called ST fibers (slow contraction fibers) or SO fibers (oxidative metabolism slow fibers).
The motoneuron that innervates them is tonic and with slow conduction speed.
They are red fibers (the color is due to the presence of the myoglobin molecule) that have a slow contraction speed and a mainly oxidative energetic metabolism (oxygen consumption).
I type muscle fiber is very resistant to fatigue as it is responsible for every kind of activity with a tonic, slow nature, that is connected to the maintenance of the posture.
These fibers are surrounded by a thick capillary net that enables the optimal execution of the aerobic metabolism in a prolonged activity that has moderate strength expressions.
I type fibers are very important in all endurance sports: running, cycling, swimming, cross-country skiing, etc.

IIa type FIBERS

They are also called FTa fibers (rapid contraction fibers) o FOG fibers (oxidative-glycolytic metabolism rapid fibers).

These fibers are to be considered intermediate between the I type fibers and the IIb type fibers; they are innervated by a phasic motoneuron that has a faster speed than the one of the tonic motoneuron.
Thanks to their features, they can specialize by addressing them towards more aerobic or anaerobic metabolic properties.
Therefore, the IIa type fiber is able to carry out rapid contractions with a modest strength development, that are extended during the time due to their relative endurance to fatigue.

IIb type fibers

They are also called FTb fibers (rapid contraction fibers) or FG (glycolytic metabolism rapid fibers).
This kind of fiber is innervated by a phasic motoneuron that transmits the impulses to the muscle at a very high speed.
These fibers are white and have a high content in glycogen and glycolytic enzymes to develop a powerful energetic anaerobic activity.
The contraction is very rapid and develops high strength values; the almost complete lack of mitochondria makes these fibers not able to support an extended activity and, thus, easy to fatigue.
IIb type fibers are very important in all human activities that have explosive strength expressions and, naturally, in all power sports: sprints, throws, jumps, etc.

The limits of the actual classifications

The actual classification of muscle fibers is due more to the need of establishing a series of categories to use for practical aims than to the biological-functional reality of the human muscular system.
It is certain that the fibers are in a continuous range of different metabolic organization levels that correspond to the different types of human activity, generally, and sport performance, specifically.

The distribution of the different types of fibers in the muscle

The relation between the two main categories (type I and the type II) can vary in a sensitive way.
There are muscular groups that are typically constituted by fibers of I type, like the soleus, and there are muscles that have only fibers of II type like the orbicular muscle. However, in the most of the cases we have a simultaneous presence of various types of fibers.
The studies lead on the distribution of fibers in the muscle have put in evidence the strait relationship that exists between the motoneuron (tonic or phasic) and the functional features of fibers from it innervate. They have also shown as a specific motor activity (and sports in particular) can determine a functional adaptation of the fibers and a modification of their metabolic features. In the same way, also the training with the electrostimulation enables the training to focus on some types of fibers rather than on other types, by modifying the parameters of frequency and duration of the impulse, according to the results achieved.

Motor unit type	Contraction type	Contraction frequencies
I type fibers	Slow contraction I	0 - 50 Hz
II a type fibers	Fast contraction II	50 - 70 Hz
II b type fibers	Fast contraction II b	80 - 120 Hz

In order to make a tissue pass from the phase of rest to the one of excitation by means of an induced electrical stimulus (impulse of the electrostimulator), some factors have to be considered:
- the stimulation intensity
- the duration of the stimulation that must be adapted to the body district that is wanted to be stimulated.
Indeed, to excite a tissue, not only the pick intensity value is particularly important, but also the relationship between the duration and the intensity of the stimulus.
This relationship varies according to the muscular districts.

Chronaxy and reobase

The graphical course that represents the relationship between the intensity of a stimulus (I) and its duration (t) is not linear, as the studies carried out by Lapique demonstrate. Observing img. 1, which shows the relationship between intensity and duration of an electrical stimulus provoked to excite a target tissue, it turns out to be obvious that, an increase in the duration of the stimulus corresponds to a decrease in its intensity.

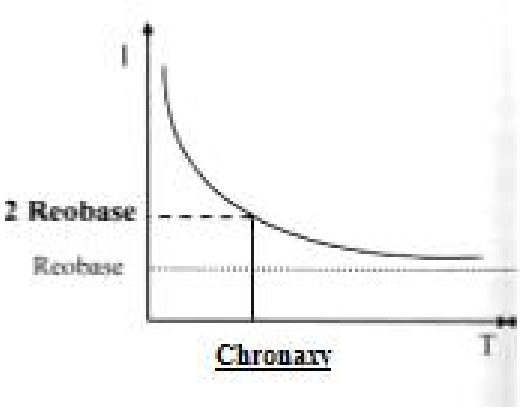


Image 1

However, it does not spoil its effectiveness. On the other hand, when a stimulus of short duration is wanted to be used, its intensity will have to increase for being able to reach the excitation threshold. Lapique's important discover consists in having understood that for being able to obtain an electrical stimulus, qualitatively valid, it is not sufficient to establish a parameter and consequently derive the other. That depends on the intrinsic features of the organic tissues, which try to get accustomed to a constantly repeated stimulus. This phenomenon, called "tissue accommodation", involves the realization of a stimulus that does not depend on it.
The two parameters individuated by Lapique, necessary in order to obviate the problem, are: REOBASE and CHRONAXY.
REOBASE: it is the value of minimum intensity in order to excite the tissue independently from its duration.
CHRONAXY: it is the duration of the stimulus, with a double intensity compared to the reobase, it is necessary in order to excite correctly the target tissue.
Once the chronaxy has been identified, a suitable stimulus is automatically produced to excite correctly the target muscle group. In this way it is also possible to avoid all those typical annoyances of an extended electrical stimulation such as a burning sensation and formication. During the researches to define the electrostimulation programs, therefore, it is indispensable to consider the chronaxy, which varies according to the muscular group that you want to stimulate.

Body Part	Chronaxy
Leg	400 µs
Thigh	350 µs
Lower trunk	300 µs
Upper trunk	250 µs
Arm	150 µs
Forearm	200 µs

Table of the values of chronaxy of the different body parts

Impulse parameters

Recent researches have explained that the muscle contracts in various ways according to the type of stimulation it has received and according to the parameters that characterize it: intensity, frequency, amplitude of the impulse, duration and recovery time.

The parameters that characterizes an electrical impulse are:

- frequency
- amplitude
- intensity

The **frequency** suggests how many impulse cycles occur in a second. It is expressed in Hertz. This value affects the fibers that will be stimulated: the higher the frequency is, the more the stimulation aims to fast fibers. At low frequencies, slow fibers are stimulated.

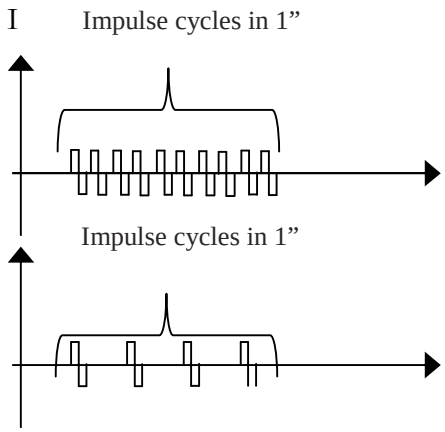


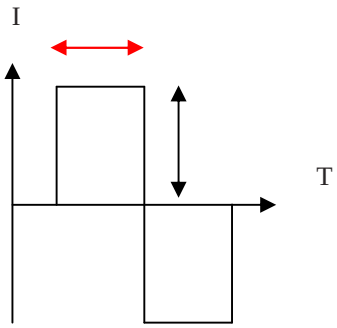
Image 2. In the first graphic the frequency is 10 Hz, in the second one it is 4 Hz.

EXAMPLE:

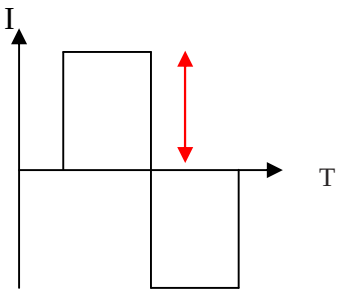
frequency	**fiber type (work)**
10/50 Hz	Slow fibers – Endurance
50/70 Hz	Intermediate fibers
70/100 Hz	Fast fibers - Strength
100/120 Hz	Fast fibers

The **amplitude** is the duration value of the impulse. It is measured in microseconds and represents the chronaxy value of the motor nerve that innervates the muscle to be treated.

EXAMPLE:
150-250 ms Upper limbs
350-450 ms Lower limbs
250-350 ms Trunk



The **intensity** is the value of the electrical current that can be set by the user and it is measured in mA (microampere). Higher the intensity, greater the number of the fibers recruited.



Stimulation intensity

The intensity of current necessary to obtain muscular contraction is personal and depends on the position of the electrodes, the underlying adipose tissue, sweating, the presence of hair on the area to be treated, etc.. For these reasons, the same intensity of current can generate different feelings from person to person, from day to day, and from the right side to the left side of the body. During the same working session, it will be necessary to regulate the intensity in order to obtain the same level of contraction because of the accommodation phenomena. The intensities of current recommended in the different phases are proposed as indicative values, and each person should modify these levels according to his/her personal needs.

- Moderate intensity. The muscle does not tire, not even during prolonged treatments. The contraction induced is tolerable and pleasant. This is the first level on the graphic representation of intensity.
- Intermediate intensity. The muscle is visibly contracted but the stimulation does not cause the joints to move. This is the second level on the graphic representation of intensity.
- Elevated intensity. The muscle is contracted substantially. The muscular contraction will cause the extension or bending of the limb if this is not blocked. This is the third level on the graphic representation of intensity.
- Maximum intensity. The muscle is contracted maximally. This is an intense treatment that should be performed only after having executed different applications at lower intensity.

Moderate		From 10 mA to 20 mA
Intermediate		From 30 mA to 40 mA
Elevated		Above 30 mA
Maximum		At the maximum level of tolerance, but below the pain threshold

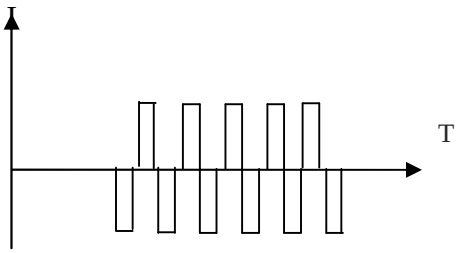
In the descriptions of the treatments, the best levels of intensities are recommended.
NOTE: The recommended levels of current are only indicative.
NOTE: For Microcurrents programs, it is not necessary to set an intensity value (in mA) because this is preset and automatically activated for all phases.

Stimulation type

Globus electrostimulators offer different stimulation modes: continuous, intermittent, frequency modulation, amplitude modulation and BIO-PULSE®.

- **Continuous stimulation**

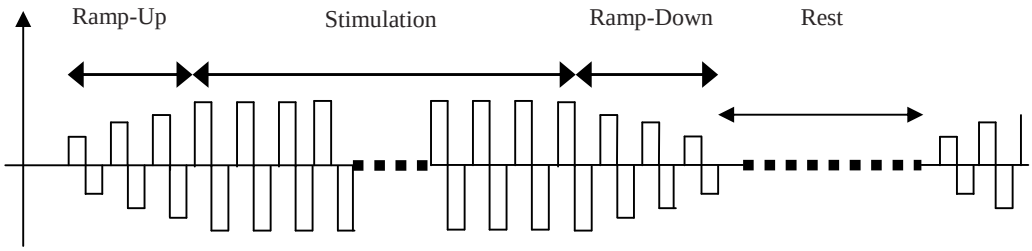
It consists in a continuous stimulation without times of recovery all the phase long.



This type of stimulation is generally used, in order to execute treatments of warm up and cool-down at low frequency (with TENS currents) or for antalgic treatments.

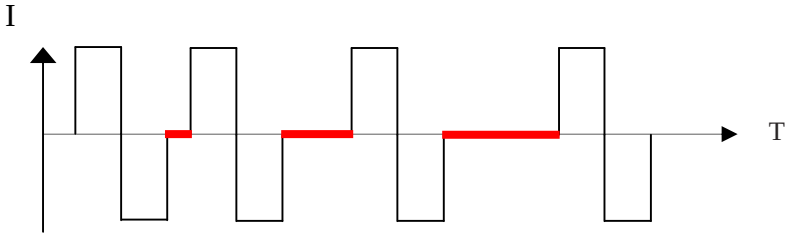
- **Intermittent stimulation**

During this type of stimulation there is an alternation between working time and rest time (active and passive); there can be, for example, 6 seconds of contraction and 10 of recovery, after that the contraction starts up again for 6 seconds and so on for all the duration of the phase.
During the time of recovery, there is also the possibility to raise the intensity of current in order to execute a cool-down active recovery during the rest.



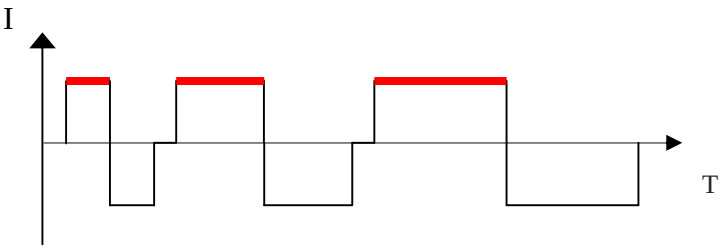
- **Frequency modulation stimulation**

In this type of stimulation, during the working phase, the frequency of the stimulus varies between the predefined values in order to involve the greater number of muscular fibers. They are used for aesthetic treatments and also for specific programs, such as programs of explosive strength.



- **Amplitude modulation stimulation**

In this type of stimulation the frequency remains constant while the amplitude of the impulse varies progressively between the predefined values. It is indicated mainly for aesthetic and fitness treatments.



- **BIO PULSE stimulation**

It must be considered a true and proper Globus innovation (studied in collaboration with some Italian and foreign Universities). It consists in a particular type of modulation of the amplitude of the impulse and of the stimulation frequency, too.
The Bio Pulse stimulation is particularly indicated for beauty and wellness programs such as some kinds of lipolysis and drainage and, above all, programs of relaxing, deep and anti-stress massage.

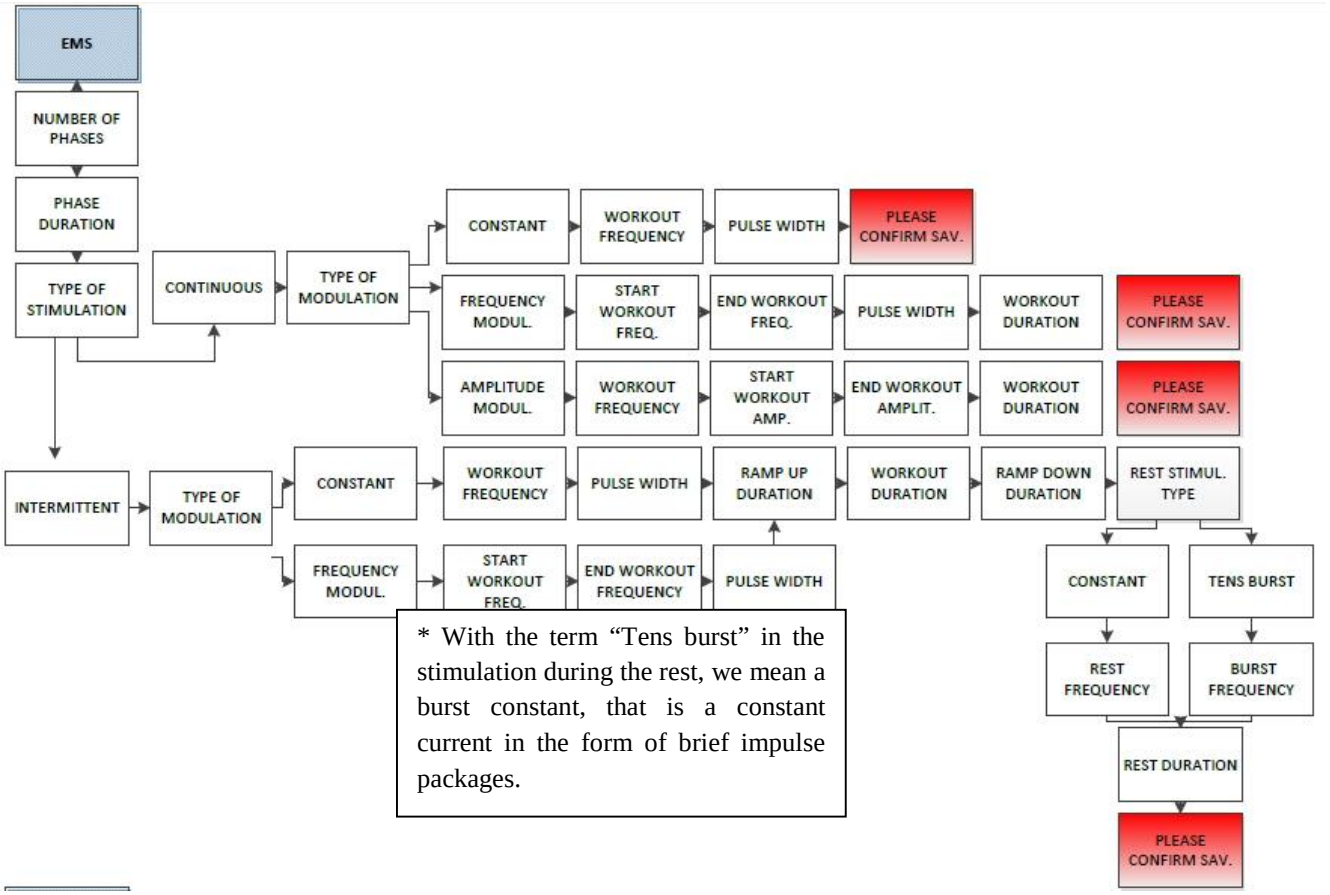
PROGRAMMING

In the most of Globus electrostimulators there is a function that enables the user to set the programs in a very specific way and according to the current needs. The personalized work can create a very specific training and a rapid achievement of the proposed results inn sport field and rehabilitation, fitness and in beauty field.
It is clear that the use of this special function of the principal Globus electrostimulators needs a deep knowledge of the electrostimulation field and especially an optimal experience in the field, firstly made with the preset programs to be personalized further.
The currents that can be programmed vary from device to device and are:

- EMS;
- TENS;
- Interferential;
- Microcurrents;
- Denervated;
- Kotz.

Here we just want to offer some general notions on the parameters that can be set to create a new program.
To program the electrostimulator correctly it is important to consider three different factors that characterize the impulse: *the ramp up, the stimulation time and the ramp down.*
With the term "*Ramp-up*" we mean the time that the stimulation intensity needs to pass from the value of 0 to the preset value during the working phase. Therefore, it represents the time that the muscle needs to reach the maximum contraction set. The ramp up varies according to the features of the program chosen. The choice of the ramp up is in a strait relationship with the physical and muscular features of the athlete, of the sport practiced and of the goal you want to reach. It is important to consider that too brief ramps reduce considerably the comfort of the stimulation and they are difficult to manage by the person that is carrying out the treatment, as he has not enough time to prepare to the contraction. In the same way, too long ramp time can fatigue the muscle even before the contraction ends.
With the term "*Ramp-down*" we mean the time needed for the intensity to return to 0 after the end of the contraction. Even in this case it should be considered that too rapid ramp down times can be less comfortable because the subject does not have the time needed to support the voltage drop, while too long ramp down times can anticipate the feeling of localized fatigue.
With the term "*stimulation time*" we mean the time the musculature keeps the maximum contraction reached. The duration of the working phase does not have a fix value but is has to be established according to the muscle qualities you want to train.

Diagram of the programming of the EMS currents



* With the term “Tens burst” in the stimulation during the rest, we mean a burst constant, that is a constant current in the form of brief impulse packages.

Diagram of the programming of the TENS currents

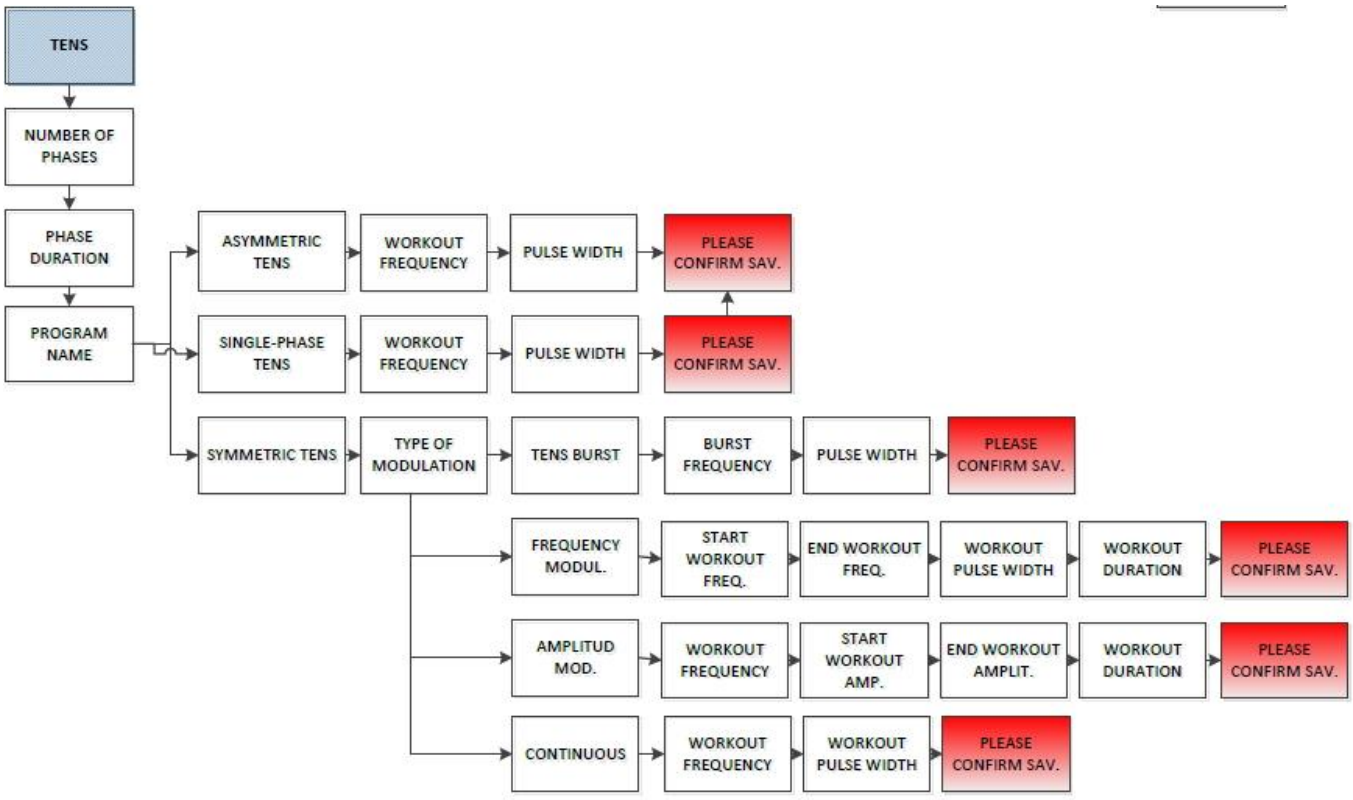


Diagram of the programming of the DENERVATED currents

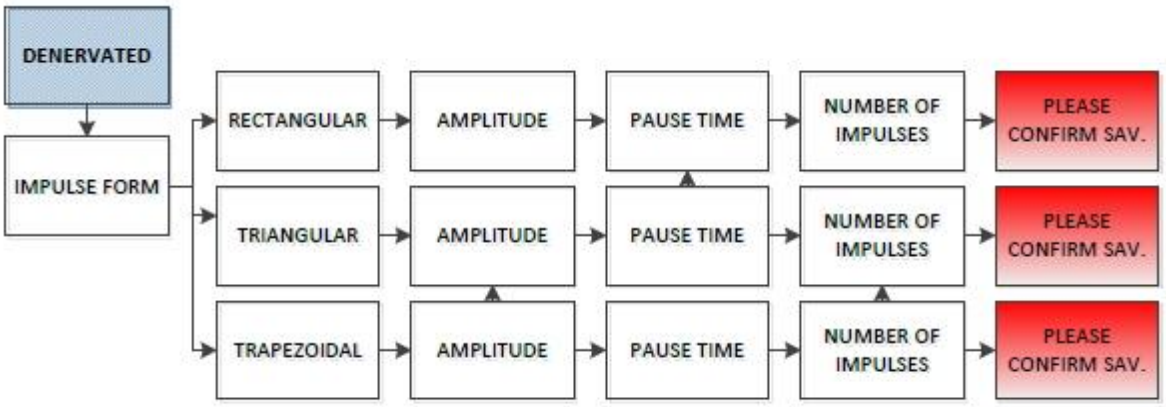


Diagram of the programming of the KOTZ currents

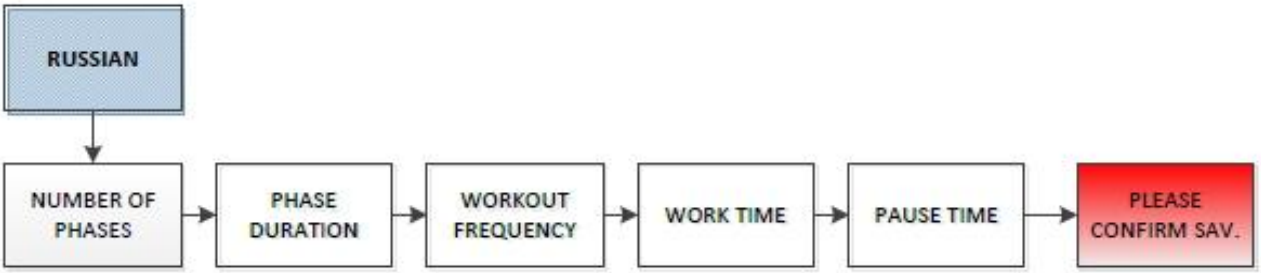


Diagram of the programming of the INTERFERENTIAL currents

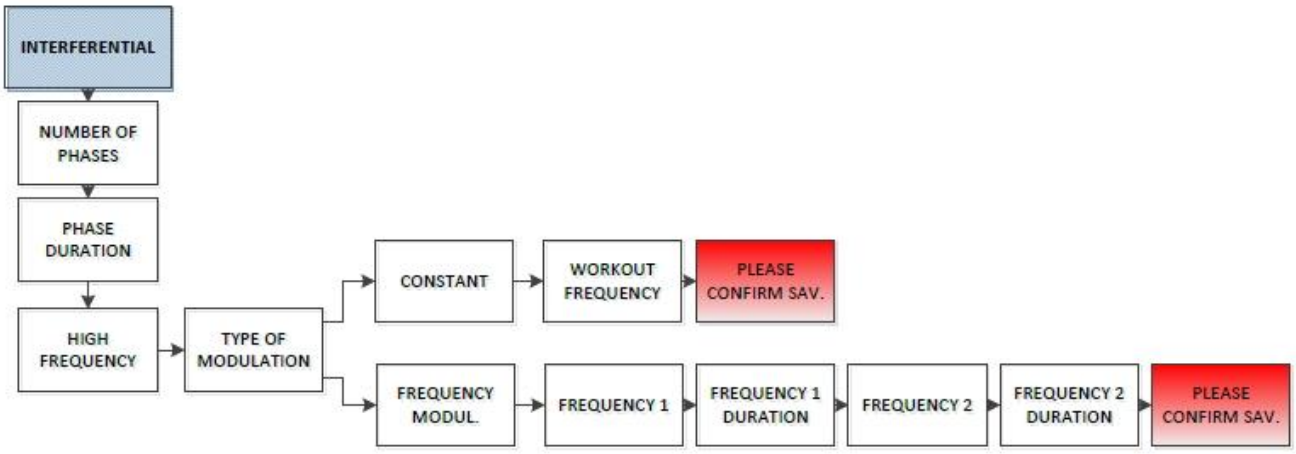
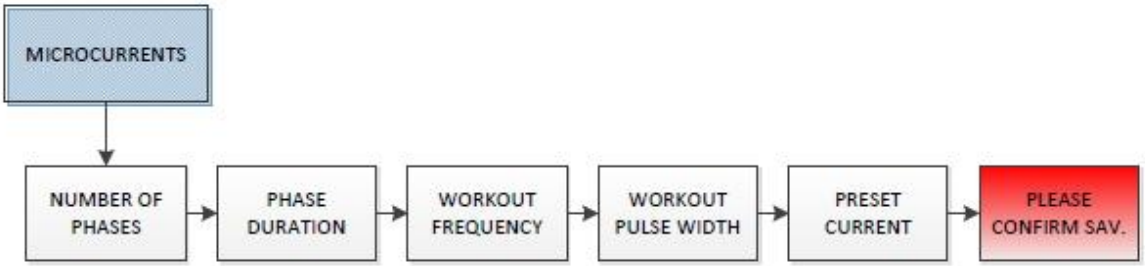


Diagram of the programming of the MICROCURRENT currents



PRACTICAL APPLICATIONS

Use in sport field

Different kinds of strength exist and they are measured in different ways. The maximum development of strength is the *absolute strength*, without considering the body weight; instead when the body weight is considered, we are talking about the *relative strength*.

Here's an example. We know that an ant is able to move an object that weights six times more than it does, therefore it has a relative strength greater than any other weight lifter, even if its absolute strength can be considered paltry.

Another element to be considered is the kind of effort made. For example, the running of a one hundred meters runner is a performance very different from the one of a marathon runner and it develops different strengths.

When the stimulation that our muscle bear is brief, intense and immediate, then we are measuring the rapid strength. When it is extended during the time (and it requires the organism countering certain fatigue), we are measuring the endurance strength.

Obviously, every kind of strength will have a training and a specific load to increase it.

Use in beauty field

The electrostimulation treatments in beauty field can be distinguished in two big areas:

- *specific programs to treat skin flaws*: improvement of the capillary microcirculation, toning and tissue firming, liquid drainage, increase in metabolism and cellular activities, reduction and mobilization of the fat in the localized deposits (e.g. cellulite, water retention, localized fat, …);

- *toning or firming programs:* for those who want to firm and tone their muscles but do not have enough time to practice motor activity.

For long-lasting results, it should be used together with motor activities, as soon as possible. As you will see, these programs contribute to reduce skin flaws through the general and localized increase in the metabolism.

Among the innumerable applications in beauty field, we briefly summarize some of the main aims.

- Loss of weight/ Localized lipolysis
- Anti-cellulite treatment
- Lymphatic drainage
- Firming/Toning

- **Localized loss of weight**

It is known that, when a person goes on diet, he/she loses fat more quickly in the areas where he/she is already slim. For instance, when going on a diet, a woman, who does not have a voluminous breast and wants to lose weight because of her large hips, is going to lose weight in the breast and not in the hips.

To obviate the problem, it is necessary to resort to the so-called "localized loss of weight", that is the losing weight process that, through the increase in the muscle activity, enhances the mobilization of the fat from the adipose tissue (lipolysis) in the areas next to the activated muscles.

Love handles

If the cellulite on hips is a feminine problem, love handles are instead almost exclusively a man problem. Both are difficult to tackle; gym, diet, aerobic work, and more, often permit to obtain only mediocre results.
Electrostimulation can contribute in an effective way to treat this skin flaw because, being a localized treatment, it acts directly on the problem.
In this case it is necessary to have the maximum perseverance and especially the possibility to act more times per day, or at least every day, with specific electrostimulation programs localized on the areas to be treated.

- **Anti-cellulite treatment**

The cellulite is a sworn enemy of woman body. Its elimination is not only an aesthetic caprice, as it is a real "ILLNESS" to tackle and treat from its first symptoms.
The causes that can lead to the appearance of cellulite are different (they often act together to make it difficult to treat): bad alimentation behaviors, lack of exercise, changes in body weight, bad circulation, ineffective lymphatic drainage, deposit of excess fat, water retention, family genetic predisposition, teen-age overweight, little elastic skin or not healthy skin, stress.
The cellulite, which usually appears on feminine body rather than on masculine body, can be of different types:

EDEMATOUS cellulite: it is the first the stage of the cellulite and it is possible to recognize it because the skin, in the critical points, is doughy and when pinching, it presents bumps and it presents the orange peel skin effect. The edematous cellulite is caused by a loss of elasticity of the blood vessels that supply blood to the adipose tissue by causing the liquid stagnation. The cells, that are inflamed, strain blood circulation, by causing firstly swallowing and secondly anti-aesthetic tires.

FIBROUS cellulite: it is the second stage of cellulite. The continuous liquid stagnation makes the adipose tissue suffer and it becomes fibrotic. The skin begins to harden and to become dull. The orange peel effect is evident even without pinching the skin.

SCLEROTIC cellulite: it is the final result of the process of tissue degeneration. At this stage, the hardened nodules are very evident so that the skin looks like a "mattress". In this third stage, the cellulite cause a considerable suffering to the tissues and the adipose cells increase in number and volume and the fibrous septa that separate them tend to stiffen and to shrink. This makes the nerve endings compress and even just touching the critical points causes pain.
To tackle cellulite it is important the use of electrostimulation; indeed, like in an aerobic training, it produces an improvement in the lymphatic drainage and in blood microcirculation, that physiologically are the mechanisms intended to eliminate the excess fat. With the electrostimulation the treatment can be aimed at delimited areas and therefore it has a greater possibility of success.

The treatment must be always used together with other means that we have at our disposal today. Firstly, it is necessary to try to improve the skin health, at least because with healthy skin, cellulite is less evident. Then it is better to eliminate or at least to limit smoke, alcohol and fat assumptions (especially saturated fats of animal origin). Moreover, it will be useful to drink a lot of water poor of sodium, to eat a lot of vegetables and fresh fruits (especially fruits with more water and antioxidants, or with A, C, E vitamins and zinc and selenium).and to massage the areas in order to improve the circulation and the lymphatic drainage and to limit stress.

To sum up: the anti-cellulite strategy must base on five main factors that are diet, exercises, massages, natural integration and electrostimulation.

- **The lymphatic drainage**

Together with the blood, the lymph represents the means by which the interstitial liquid give and receive nutrients, refusal and regulation substances (hormones) that are needed to maintain the integrity and the cell functionality. Compared with blood, lymph is not pushed by the cardiac activity, but it flows in the vessels because of the muscle action. These tissues, by contracting and relaxing, act like a real pump. When this action does not occur, for example due to immobilization, the lymph tends to stagnate, amassing in the tissues. This is the reason why feet and ankles swallow when standing for a long time in a static position.

The "drainage" concept refers to the starting of the liquid from the area where it has been amassed towards an outfall point.

The lymph drainage supports not only this flow, by moving the liquids in the body, but it also acts to unblock the obstructed channels.

It is an effective technique also to prevent and reduce the unaesthetic orange-peel aspect of cellulite. It is indicated in the treatment of pathologies (post-surgical edema, scars), but in this case we suggest that the medical prescription must be specific and personalized.

The programs of drainage and lymphatic massage, carried out with the electrostimulator, can be used daily and are indicated especially for those who suffer from limb swelling or show, at the end of the day, a sense of muscle fatigue.

Thanks to the rhythmic contractions induced by the electrostimulator (programs that link the stimulation in frequency modulation to the amplitude modulation), the so-called "pump effect" is obtained and it permits a reabsorption both of the water component and of the protein component inside the lymphatic ducts.

- **Firming/Toning**

Some factors, such as sudden loss of weight, pre- and post-cellulite status or pregnancy, often affect in a negative way elasticity and the tone of skin and muscle tissue, making some body parts flabby and less tonic.

The "Firming" programs of our electrostimulators are specific and indicated for this kind of problem, as they permit to act locally on the muscle tone involved.

Muscle tone activities are instead intended to increase the percentage of lean mass and therefore to give more consistence and shape to the muscle tone.

- **Specific breast cleavage and arm firming treatment**

Breast, cleavage and arms are the first areas in the feminine body that show symptoms of muscle relaxation. As for the *breast*, among the factors that determine its relaxation, reduction and the appearance of stretch marks, it is to mention especially pregnancy and lactation and too drastic and rapid loss of weight and hormone disorders. The only support musculature of the breast consists in the pectoral muscles situated in the area above.

The mammary area, therefore, is one of the parts of the feminine body more exposed to the problem of muscle-skin relaxation. The *cleavage* is instead one of the areas more exposed to the damages of sun exposure; the consequent skin degeneration prematurely arises with the appearance of spots, keratosis and dehydration. As for the internal part of the *arms*, we can notice how the skin flaws most spread are cellulite, loss of volume, skin relaxation and stretch marks.

The electrostimulation can be useful in tackling these problems by using specific firming programs for women daily.

- **Specific face treatment**

The electrostimulation is effective to recover and maintain the skin elasticity as it reactivates the local circulation bringing new nourishments to the tissues.
The microlifting programs, specific for face, need specific electrodes of reduced dimensions in order to involve only the interested musculature

Applications in rehabilitation

After a force immobilization due to a musculoskeletal trauma, it is very important to recover the tone and the muscle trophism. Electrostimulation permits to recover the muscle tone quickly and to drain the liquids stored because of the immobility.
Please, bear in mind that the electrostimulation should not completely replace the reeducation sessions made by a physiotherapist, who could decide to carry out also proprioceptive and mobility exercises.
The presence of ostheosynthesis devices, such as screws and plates, is not a contraindication in the use of the electrostimulator as it has been conceived not to damage that devices. Before starting any rehabilitation cycle, we suggest seeking your physician's advice.

- **The TENS**

The transcutaneous electrostimulation (TENS) is widely used to reduce most of the articular or muscle pains but also to treat pain of endogenous origin as they have little side effects compared with traditional pharmacotherapy and therefore they are considered an important alternative therapy.
The TENS consist in the selective stimulation of big fibers of peripheral nerves favoring the closing of the gate for pain receptors and increasing the release of endorphin substances with a consequent considerable reduction of the intensity of different kinds of pain. With the TENS programs of our electrostimulators, therefore, we intend to treat acute and chronic pain due to the main musculoskeletal disorders.
The pain decrease following the TENS currents application is connected to these factors:

a. Gate control theory
b. Endorphin secretion
c. Different sedative effects in relation to the frequency

Gate theory

If the electric signals that lead to the brain information about pain are stopped, also the pain perception is eliminated. If, for instance, we hit our head into an object the first thing we do is massaging the area affected by the trauma. In this way, we stimulate the receptors relative to touch and pressure. TENS in continuous mode and in frequency modulation can be used to generate signals similar to the ones of touch and pressure. If their intensity is enough, their priority is so high that it prevails on the pain signals. Once the priority is gained, the gate related to the sensory signals is opened and the pain one is closed, impeding in this way the passage of these signals to the brain.

Endorphin secretion

When a nervous signal proceeds from the pain area to the brain, it spreads through a chain of connections joined together called synapse. The synapse can be seen as the space between the end

of a nerve and the start of another. When an electric signal reaches the end of a nerve, it produces some substances called *neurotransmitters* that pass through the *synapse* and activate the start of the next nerve. This process repeats for all the way needed to the signal to reach the brain. The drugs (opioids) involved in the pain reduction have the task to insinuate in the synapse space and to impede the neurotransmitter propagation. In this way a chemical block of the pain signals occurs. The endorphins are opioids naturally produced by the body to tackle the pain and they can act both on the marrow and on the brain, in this way they are effective analgesics. The Tens can increase the natural production of endorphins and, thereby, they act decreasing the pain perception.

Different effects in relation with the frequency

Depending on the frequency used, it can occur antalgic effects of immediate effect but with no long duration (higher frequencies), or more progressive effects but also longer in time (low frequencies).

- **The MENS Microcurrents**

The microcurrent stimulation is being increasingly used. In USA and other countries such as Japan, Canada etc., the MCR also called MENS is considered one of the more used current in physiotherapy and clinical applications (differing from TENS which, as well known, is particularly indicated for pain relief). A number of studies have demonstrated excellent results in therapy and various protocols and parameters have been defined (protocols and parameters that we have included in our stimulators). For particular pathologies and situations, we suggest referring to your physician.

Compared with conventional electrostimulation therapy, which utilizes electrical current at the milliampere (mA) level, microcurrent utilizes a less intense microampere current for therapy (microampere μA). This slight electrical current is below the human threshold of perception and it is not therefore felt by the patient.

MENS therapy offers patient the following advantages:

-Safe

-Comfort

-Acute and chronic pain relief

-Accelerated regeneration of damaged tissues and rapid healing of wound, cicatrix, and bone fractures.

-Collagen fiber production, promoting elasticity of the skin

-Total absence of side effects and complications.

Brief history of MENS electrostimulation therapy

The neuromuscular electrostimulation therapy with microcurrent (MENS) was developed approximately 20 years ago.

Lynn Wallace treated more than 600 patients with MENS and examined its clinical effects on pain caused by various disorders of the feet, lower limbs, femur, lumbar area, shoulders, elbows, and neck, and found a remarkable sedative effect.

According to Wallace, the initial treatment of 15-20 minutes provided some element of pain relief in more than 95% of patients. The extent of pain reduction was an average 55% after the first treatment, 61% after the second treatment, and 77% after the third treatment. The pain was completely disappeared in 82% of patients after less than 10 treatments (four treatments on average).

Many studies are possible with MENS as its stimulation is not discernible by the patient. Lerner and Kirsch conducted experiments on 40 patients with chronic low back pain in which patients were randomly allocated to a MENS treatment group and a placebo group that was hooked up to dummy MENS units that provided no electrostimulation.
Stimulation was conducted three times a week for eight weeks. Results showed pain reduction of an average 75% in the MENS treatment group and only 6% in the placebo group. A number of studies have also found that MENS promotes the healing of wounds and ulcers.
Gault and Gatens reported a positive effect of MENS in 106 patients with ischemia skin ulcers. In their study, the group treated with MENS using an intensity of 200 μA - 800 μA current recovered approximately twice as fast as the non-treated control group. It has also been reported by a number of clinicians that the healing of bone fractures is greatly facilitated by low-level electrical current. The above-mentioned results demonstrate that MENS is markedly effective in treating acute and chronic pain, promotes regeneration of damaged tissues, and heals wounds, cicatrix, and bone fractures. (Gault WR, Gatens PF Jr *: Use of low intensity direct current in management of ischemic skin ulcers.* Phys Ther 56~265, 1976.)

Functional mechanism of the MENS currents, "Injury current" and the MENS functions
The functional mechanism of MENS is complicated and has to be fully analyzed yet. Although a variety of conflicting theories exists, sufficient research findings have been accumulated that the following conclusion seem justified.

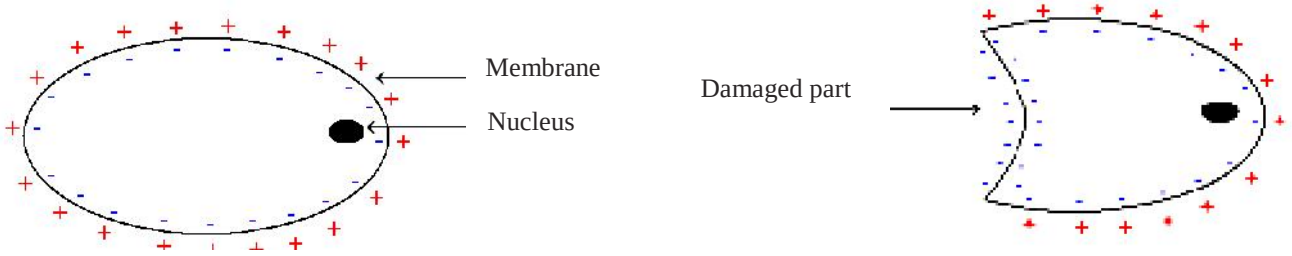


Image 3

It has been clear for over a century that an electrical potential of about -5OmV is present in the cell membrane. This potential is known as the resting membrane potential.
The outer surface carries a positive charge, while the inner surface has a negative charge [Img.3]. When a cell is damaged, the potential of the injured part becomes negative, and the electric current flows from the normal area to the injured area
This phenomenon was accurately measured by Matteucci (1938) and Bois-Reymond (1843), this current is commonly known as "injury current". Injury current is generated not only when individual cells are injured but also when the tissue is damaged. The intensity of the injury current ranges from 10 μA to 30 μA, as demonstrated by experiments. In other words, injury current is a microcurrent. Injury current is considered to promote the recovery of damaged cells and tissues in the living body. Stimulation by this current is thought to generate ATP and to synthesize protein for the restoration of damaged tissue. Therefore, it can be affirmed that artificially generated microcurrent would complement and further promote the natural functions of the injury current.

Phases and duration of Mens therapy
MENS therapy is ordinarily executed in the following two phases. Phase 1 is mainly intended to reduce pain, while phase 2 is designed to solve the trauma and to repair the damaged tissue.

Whereas phase 1 offers rapid pain relief, phase 2 promotes ATP production and protein synthesis to accelerate tissue recovery, providing basic healing. These two phases are executed in succession with phase 2 following immediately after phase 1.
Treatment duration ranges from 15 to 30 minutes in phase 1 and from 5 to 10 minutes in phase 2 (5 minutes standard).
Treatment sessions vary according to the condition being treated. Generally, once a day or once every other day is sufficient. To achieve satisfactory results, the therapy period can vary from 10 to 45 days. Five to ten follow-up sessions are recommended after satisfactory results have been achieved.

Combined use with TENS
MENS and TENS may be combined for therapy.
This combination can produce great effects in cases of acute pain or symptoms of muscle stiffness.

- **IONOPHORESIS**

The ionophoresis is a therapeutic technique that uses the continuous electric current that permits the displacement of charged particles through the tissues. If the charged particles are medicines, then the continuous current acts as a vector permitting the introduction and the penetration of medical substances. It has been shown that by means of the continuous current, there can be a ion migration that, according to the polarity law (negative ions that migrate towards the positive pole and vice versa), enter in the flow of current by penetrating the organism through the sebaceous ad sweat ducts and the hair channels.
The application fields of ionophoresis are all the treatments that act positively on local inflammatory states.

IONOPHORESIS medications
Before performing ionophoresis, always consult your physician.
Read the instructions provided with the medications prior to use.
Before carrying out any treatment, consult with your physician or physical therapist to choice an appropriate medication and identify the correct polarity.
DO NOT APPLY THE MEDICATION DIRECTLY TO THE SKIN. Apply the medication to the absorbent surface of the electrode corresponding to the medication's polarity; the absorbent surface of the other electrode should be dampened with slightly salted water, to promote circulation.

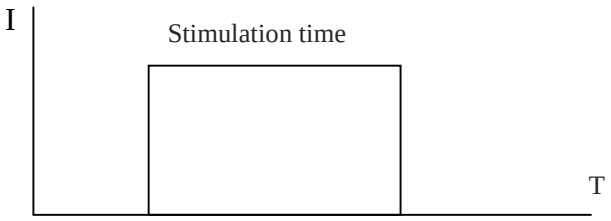
Preventive measures
If the treatment is not performed correctly or the intensity is too high, ionophoresis may cause skin irritation and burns. The recommended current density for an electrode is 0.2 mA/cm2. The skin must be free of lesions and injuries; do not shave the skin before treatment because razors may cause microcuts.
Ionophoresis should not be used on persons with metallic implants or in contact with metallic items, e.g. tables and chairs.

- **Currents for denervated or partially denervated muscles**

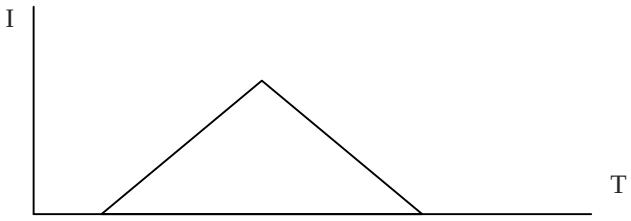
The stimulation of a denervated muscle differs from the one of a healthy muscle for the fact that the activation of muscular fibers needs particular currents.

In presence of a traumatic lesion of the peripheral nerves, the measure of the chronaxy fosters to establish whether the denervation is insufficient, partial or total. The aim of an excitomotor treatment is the preservation of the trophism and the limitation of the muscular sclerosis in order to foster the muscle to be as functional as possible by the end of the reinnervation process that can sometimes last some months. The effectiveness of this type of treatment depends on the correct setting of the stimulation parameters; these must be defined in a specific way for every patient and must evolve with time.
In the programs for denervated muscles three types of currents are mainly used.

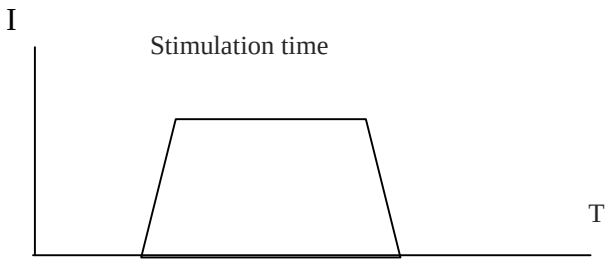
Rectangular currents
The rectangular current is characterized by single rectangular impulses, than varies quickly from the null value to the maximum value of the set up intensity. The duration of the impulse causes a selective contraction of the denervated fibers and the null medium value of the impulses (alternated polarity) avoids whichever phenomenon of ionization of the dermis. The rectangular impulses are mainly use on totally denervated muscles.



Triangular currents
The triangular current reaches the maximum value of the set intensity through a linear ramp up, bound together to impulses of pretty long duration, it determines a valid contractile answer of denervated fibers (controlled by damaged nerves) without stimulating the adjacent and normally innervate ones (healthy ones). Naturally, being this stimulating current (the triangular impulse) in charge of the contraction of denervated fibers, it will be followed by a period of pause in which the current has a null value. The polarity of the impulses is alternated in order to avoid the phenomenon of ionization of the dermis. Because of the adaptation ability of the nervous fibers to the slow increase of intensity of the stimulus and the absence of annoyances to the patient, the triangular current is used to stimulate totally and partially denervated muscles. The selective stimulation of fibers happens without involving the already normal innervated fibers, a problematic sometimes found with the alternated rectangular one because of the fast rise of the impulse.



Trapezoidal current
Trapezoidal impulses are mainly used on partially denervated muscles.



- **Interferential currents**

The interferential current is a sinusoidal current alternated to medium frequencies (2500 Hz, 4000 Hz, or 10000 Hz), modulated in amplitude, characterized by a high ability to penetrate tissues and by an optimal tolerability, even in particularly sensitive patients. The analgesic action of bipolar interferential currents, with frequency of modulation included between 0 and 200 Hz, is connected to the mechanism of the gate control (peripheral block of the pain transmission) and to the stimulation of the inhibitory mechanism. Furthermore, also the removal of the substances that cause pain of the affected region is involved, as it happens for TENS current. By varying the frequency of employed modulation, also an effect of motor stimulation can be exploited, that contributes to the return of the venous flow activating the "muscle pump". They are called interferential currents because they originate and interfere with the tissues in points in which two intermediate frequency currents meet.

Clinical Applications

The interferential current is particularly indicated for arthrosis of the deep articulations (hip, lumbar rachides), deep tendinopathies and for the muscular hypotrophy of normally innervated and deep muscles. The interferential current is basically used in physiotherapy for antalgic and excitomotor aims.

Therapeutic effects

Excitomotor effect: it may provokes the contraction of normally innervated and deep muscles.
Analgesia: it could provoke vasodilatation, which, through the increase of the local blood flow, would remove the algogenic substances from the tissues.
The guide lines for the applications of the electrodes are identical to those supplied for the TENS.

- **Russian currents (kotz)**

Russian currents consist of a sine wave of intermediate frequency (2500 Hz), modulated in packages of work and rest each of 10 ms duration. To avoid early muscle fatigue, occurring after about 12/15 s of continuous stimulation, Kotz established that the maximum duration of the working phase should be of 10 seconds (with a duty cycle of 1:5). Like other currents of intermediate frequency, Russian currents programs facilitate penetration into deeper muscles and may be preferred to low frequency currents (e.g. rectangular biphasic and faradic).

Electrode application and placement

Electrodes for Russian currents are applied in the same manner as for EMS and TENS treatments. The current should be increased gradually until it provokes muscle contraction.

Clinical applications

Muscular electrostimulation with Russian currents is mainly indicated for treatment of muscular hypertrophy, for increasing muscle mass programs and to treat idiopathic scoliosis. Compared to other low frequency excitomotor programs (e.g. rectangular biphasic and faradic), Russian currents programs offer better muscle recruitment and a deep action, since the skin offers less resistance to these frequencies. The disadvantage of these programs is that it is difficult to stimulate selected muscle fibers with the biphasic rectangular current, instead this is possible with lower frequencies.

PROGRAM DESCRIPTION

In this chapter we offer a brief description of the main programs in our electrostimulators.
NOTE. The program list is different for every model. To verify the programs in your electrostimulators please refer to the user manual or to the device.

PROGRAM LIST“SPORT”

Capillarization		
Program effects	Indications for use	Time and intensity
It increases the blood flow to the muscle and improves endurance and recovery abilities. This increase allows the primary and secondary capillary network to be active in order to improve the oxygenation system of the tissues, reducing fatigue during a quite intense work.	Capillarization programs are especially recommended during the first weeks of physical preparation. For sports requiring resistance and endurance strength, the program can be used during the whole season.	1 PHASE: 20' Recommended intensity: intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26-45-46

Warm-up		
Program effects	Indications for use	Time and intensity
It increases muscle temperature to best prepare for training. It increases the blood flow and the muscle metabolism by producing the best physiological conditions to face the effort.	Recommended before a physical training. Use before executing SPECIAL SPORTS.	1 PHASE: 10' Recommended intensity: intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-21-23-28-31

Pre-competition warm-up		
Program effects	Indications for use	Time and intensity
It increases muscle temperature to best prepare for competition. It increases the blood flow and the muscle metabolism.	Use some minutes before competition on the muscles most involved in the sport activity. Especially useful in all sports that need an intense effort already from the first minutes. It does not replace the usual active warm-up of the athlete.	1 PHASE: 20' Recommended intensity: intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-21-23-28-31

Active recovery

Program effects	Indications for use	Time and intensity
It favors the recovery from muscle fatigue after a training or competition, in order to face the next training in better conditions. The stimulation alternates muscle vibrations and soft contractions. This produces more vascularization and favors a rapid recovery from the accumulated fatigue.	This program is recommended for all sports. Use immediately after a training session or a competition. Especially recommended for more daily training sessions or in case of tournaments with close competitions (e.g. beach volley, soccer, tennis tournaments…)	1 PHASE: 20' Recommended intensity: intermediate Electrode placement: 1-2-3-4-5-28-31-32

Maximum strength

Program effects	Indications for use	Time and intensity
It improves the maximum strength ability and increases muscle mass. It allows you to train with a maximum load by reducing the risk of traumas, compared with the traditional training.	Recommended for those who practice activities requiring great strength, to integrate the usual training. Useful also in the first preparation stage to prepare musculature to receive important stimulations.	1 PHASE: 5' 2 PHASE: 15' Recommended intensity: maximum Electrode placement: from 1 to 28

Endurance strength

Program effects	Indications for use	Time and intensity
It improves the ability to exert a high level of strength for a prolonged period of time; it increases the ability to resist toxin buildup, therefore reducing muscle fatigue. The program produces a high number of long contractions, alternated with a brief active recovery.	Recommended for sports requiring an intense muscle work for a prolonged period of time. Use two-three times per week during the season, to integrate the usual training program. At the season start, during the preparation stage, it can be used every other day.	1 PHASE: 5' 2 PHASE: 20 Recommended intensity: maximum Electrode placement: from 1 to 28

Explosive strength

Program effects	Indications for use	Time and intensity
It increases the ability to quickly exert the required strength level. The aim is to use the maximum quantity of muscle fibers in the shortest time possible. For this reason, the program has brief but intense contractions followed by a long period of active recovery.	Use after completing a work cycle for maximum strength. Recommended in all sports requiring explosive strength, such as, for example, running, sports with the ball, jump sports…	1 PHASE: 5' 2 PHASE: 10 Recommended intensity: maximum Electrode placement: 1-2-3-4-5-6-7-10-11-12-21-22-23-24-25-26

Aerobic endurance

Program effects	Indications for use	Time and intensity
It improves the ability to maintain an effort for a prolonged period of time. The endurance training program are long training sessions with stimulations adapted to slow fibers to improve aerobic ability.	Recommended for those who practice sports requiring a prolonged intense work during the time, such as, for example, cycling, running or cross-country skiing. Use two-three times per week during the season, to integrate the usual training program. At the season start, during the preparation stage, it can be used every other day.	1 PHASE: 5' warm-up 2 PHASE : 25' Recommended intensity: maximum Electrode placement: 1-2-3-4-5-6-7-10-11-12-21-22-23-24-25-26

Reactivity

Program effects	Indications for use	Time and intensity
It favors the increase in speed contraction. The muscle stimulations are brief, very intense and extremely fast. The improvement of reactivity is obtained in two ways: by increasing the speed contraction in fast fibers and by boosting the receptive activity in the nervous myotactic fibers.	For all sports requiring fast acceleration and reacting ability, such as for example, sports with the ball, fighting sports and running. Combine this treatment with plyometric and proprioceptive activities to complete the reactivity training.	1 PHASE: 5' (warm-up) 2 PHASE: 10' Recommended intensity: maximum Electrode placement: 1-2-3-4-5-6-7-8-10-11-12-21-22-23-24

Post-competition recovery

Program effects	Indications for use	Time and intensity
It favors the recovery from muscle fatigue after a competition, allowing you to face the next training in better conditions. The program has softer muscle vibrations and contractions, compared with the active recovery program. This produces a greater muscle relaxation and a fast recovery of the typical post-competition pains.	Recommended for all sports, as it improves the ability to quickly recover after a competition. Use this program within the first 3-4 hours after a competition.	1 PHASE: 20' Recommended intensity: intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26-28-31

Decontracting

Program effects	Indications for use	Time and intensity
It allows a complete and deep muscle relaxation, thanks to the comfortable contractions favoring blood flow.	It can be used every time there is the need to relax the contracted musculature.	1 PHASE: 20' Recommended intensity: intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26-27-28-31

Hypertrophy

Program effects	Indications for use	Time and intensity
The high pulse frequency produces an intense muscle work in order to boost hyperthrophy in the muscle fibers.	Especially ideal for those who practice body building; if used on the muscles you want to develop, it will produce optimal results already after a month of use.	1 PHASE: 15' Recommended intensity: maximum Electrode placement: from 1 to 31

PROGRAM LIST "FITNESS-PHYSICAL SHAPE"

Firming

Program effects	Indications for use	Time and intensity
The program firms the musculature of sedentary people and it prepares muscles for more intense stimulations.	The starting program for those who decide to improve their aspect and physical shape. Indicated for sedentary subjects with flaccid musculature requiring the activation of the tone. It can be used every day on big muscle groups: thighs, abdominals and dorsal muscles.	1 PHASE: 20' Recommended intensity: Intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26

Bio Pulse firming

Program effects	Indications for use	Time and intensity
It firms the musculature of sedentary people, with softer and more comfortable stimulations, compared with the firming program.	Indicated for sedentary subjects with flaccid musculature requiring the reactivation of the tone. It is recommended for people especially sensitive to stimulation and/or when the firming program makes you feel uncomfortable. It can be used every day.	1 PHASE: 20 Recommended intensity: low-intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26

Sculpting

Program effects	Indications for use	Time and intensity
It shapes single muscles in a specific way to highlight their shape.	Ideal for those who want to define better their already toned muscles. Combine with usual muscle development exercises.	1 PHASE: 20' Recommended intensity: Intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26

Bio Pulse sculpting

Program effects	Indications for use	Time and intensity
It shapes single muscles in a specific way to highlight their shape.	Ideal for people who want to shape their musculature but prefer a softer and more superficial stimulation.	1 PHASE: 20' Recommended intensity: Intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26

Toning

Program effects	Indications for use	Time and intensity
It improves the quality of muscular tone favoring the atrophy of different muscle districts.	Indicated for subjects who already have good muscle mass. The recommended frequency is three sessions per week. For those who have not so toned muscles, we suggest preparing the muscles, before starting the toning cycle, with at least 10/15 sessions of the firming program	1 PHASE: 15' Recommended intensity: High Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26

Mass building

Program effects	Indications for use	Time and intensity
It increases the muscle volume with very intense contractions, followed by a brief recovery.	Indicated for those who practice fitness and want to increase the volume of some muscles. Use it every other day, and when possible, combine it with the sessions in the weight room.	1 PHASE: 15' Recommended intensity: High Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26

Body Sculpting

Program effects	Indications for use	Time and intensity
The contraction parameters set for this program enhance the trophism of the muscle districts you want to highlight at most (for example, pectorals or biceps in men or glutei in women).	Indicated for those who want to boost the effects of training in the weight room, to obtain a considerable increase in the muscle volume. Being a very intensive work, the musculature involved should be already prepared and trained.	1 PHASE: 15' Recommended intensity: High Electrode placement: from 1 to 31

Definition

Program effects	Indications for use	Time and intensity
It strengthens the muscular tone without important volume increases.	Indicated for those who want to define even more their already toned and firm muscles, without increasing their volume. Used after toning or sculpting programs, it increases their effects.	1 PHASE: 15' Recommended intensity: High Electrode placement: from 1 to 31

Jogging

Program effects	Indications for use	Time and intensity
It improves microcirculation and the oxygen supply to the blood. Therefore, muscle endurance and aerobic capacity will increase.	Ideal to replace jogging activity when it is not possible to train, for example, due to an injury or in case of bad weather.	1 PHASE: 15' 2 PHASE: 15' Recommended intensity: High Electrode placement: 1-2-3-4-5-6-7-8

Anaerobic fitness

Program effects	Indications for use	Time and intensity
It accustoms muscles to bear prolonged efforts thanks to an intense and long stimulation. Therefore, the lactic acid production is reduced and it occurs after a longer working time.	Indicated for those who want to start endurance activities (running, cross-country skiing, walking…) with the musculature trained in a specific way.	1 PHASE: 10' 2 PHASE: 15' Recommended intensity: High Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26

Cramp prevention

Program effects	Indications for use	Time and intensity
It reduces the appearance of cramps on lower limbs thanks to the specific frequencies that relax and vascularize the muscle.	It can be used also every day when cramps are frequent.	1 PHASE: 5 Recommended intensity: Low Electrode placement: 1-2-3-4-5

Aerobic fitness

Program effects	Indications for use	Time and intensity
The aerobic program improves the muscle ability to consume oxygen.	Especially recommended for those who practice fitness regularly. Therefore, the aerobic exercises could be even longer and more intense.	1 PHASE: 30' Recommended intensity: intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-22-23-24-25-26

PROGRAM LIST "BEAUTY-AESTHETIC"

Drainage

Program effects	Indications for use	Time and intensity
It carries out a deep micromassage that activates venous and lymphatic systems by favoring liquid drainage, toxin elimination and lymphatic circulation.	Indicated in case of swollen limbs, or water retention. It can be used also every day, until obtaining the desired effect.	1 PHASE: 20 Recommended intensity: low-intermediate Electrode placement: 4-5-6-7-23-45-46

Bio Pulse drainage

Program effects	Indications for use	Time and intensity
It carries out a deep micromassage that activates venous and lymphatic systems by favoring liquid drainage, toxin elimination and lymphatic circulation.	Indicated in case of swollen limbs, or water retention. It can be used also every day, until obtaining the desired effect. The Bio Pulse drainage is very pleasant and well-tolerated also by subjects sensitive to stimulation.	1 PHASE: 20' Recommended intensity: low-intermediate Electrode placement: 4-5-6-7-23-45-46

Lipolysis

Program effects	Indications for use	Time and intensity
It positively affects the metabolism thanks to the low frequency of the stimulation. For this reason, it is indicated in areas with fat depots.	Indicated as basic program for aesthetic cycle with the aim of losing weight. The lipolysis cycle effect can be boosted by executing the drainage program after it. The recommended frequency is three/four sessions per week.	1 PHASE: 20' 2 PHASE: 20' Recommended intensity: low-intermediate Electrode placement: 6-7-9-23-45-46-51

Bio Pulse relaxing massage

Program effects	Indications for use	Time and intensity
It relaxes musculature by reactivating blood flow and relaxing small contractures that produce stiffness and weariness. Bio Pulse stimulation makes this program very pleasant also for people who are particularly sensitive to stimulation.	Indicated when you want to relax muscles after a physical effort (or after a firming/toning program). There are no contraindications in the use of this program, so it can be carried out daily.	1 PHASE 20' Recommended intensity: Low-intermediate Electrode placement: 1-2-3-4-5-6-7-9-23-27-28-32-45-46

Toning massage

Program effects	Indications for use	Time and intensity
It stimulates vasodilation by reactivating cellular processes, accelerating tissue regeneration and favoring a good muscle circulation.	Indicated for those who desire a smooth and compact skin. Perfect for preventing stretch marks.	1 PHASE 20', Recommended intensity: low-intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-21-23-28-45-46

Energizing massage

Program effects	Indications for use	Time and intensity
It restores elasticity and firmness to musculature, by relaxing tensions, relieving stress and recharging energy.	Indicated in case of high weariness and fatigue.	1 PHASE: 20' Recommended intensity: low-intermediate Electrode placement: 1-2-3-4-5-6-7-9-10-11-12-22-23-27-28-32

Connective massage

Program effects	Indications for use	Time and intensity
It causes a stimulating and reflecting interaction on connective, subcutaneous and interstitial tissue. By producing more muscular-articular smoothness and flexibility, it makes the posture less stiff and the shape more graceful.	Indicated for people with a quite tense and stiff musculature. This leads to postures that make the shape little graceful. Use daily on muscle districts which present tensions.	1 PHASE: 20' Recommended intensity: low-intermediate Electrode placement: 27-28-29-31-32

Post-pregnancy programs

Program effects	Indications for use	Time and intensity
Programs with specific parameters for women who gave birth and need to tone and strengthen abdomen muscles.	Use these programs at least three months after delivery.	1 PHASE: 20' Recommended intensity: low Electrode placement: 23

Face programs

Program effects	Indications for use	Time and intensity
Programs to tone and improve face microcirculation.	Use the programs with low intensities and use only face electrodes (that can be purchased separately). If headache occurs, suspend the treatment for some days.	1 PHASE: 15' Recommended intensity: Low Electrode placement: 52

Breast programs

Program effects	Indications for use	Time and intensity
It improves and tones muscles that support breast.	Indicated for women who want to lift up the breast. Start with the breast firming program for the first 15/20 sessions and then, if desired, use the breast toning program for other 15 sessions.	1 PHASE : 20' Recommended intensity: Intermediate Electrode placement: 50

Skin tone improvement

Program effects	Indications for use	Time and intensity
It tones and improves skin microcirculation to make the skin more bright and smooth.	Use this program in body areas where you want to strengthen skin tissue. E.g. Especially indicated for a sudden loss of weight.	1 PHASE: 20' Recommended intensity: Low-intermediate Electrode placement: 23-45-51

Swollen arms

Program effects	Indications for use	Time and intensity
It accelerates the venous return and obtains a considerable drainage effect of the arms.	To eliminate the feeling of swollen arms due to particular conditions (menopause, hormone disorders connected to menstrual cycle, etc..)	1 PHASE: 20’ Recommended intensity: Low-intermediate Electrode placement: place at the same time the electrodes of the images 12-13-14-22

PROGRAM LIST "PAIN ANTALGIC – TENS"

Attention! The TENS programs reduce the pain but they do not eliminate the cause. If the pain continues, please consult the doctor.

Conventional antalgic tens

Program effects	Indications for use	Time and intensity
It uses the mechanisms of the nervous system to reduce both the acute and chronic pain. The impulses to obstruct the ways of pain propagation are sent through the nerves. It acts on pain symptoms with immediate effect.	It can be used every time you need to reduce the pain.	Time: 30' Intensity: a not painful formication Electrode placement: 21-27-28-29-30-32-34-37-40-41-42-43-47-48

Modulated antalgic Tens

Program effects	Indications for use	Time and intensity
It uses the mechanisms of the nervous system to reduce both the acute and chronic pain. The impulses to obstruct the ways of pain propagation are sent through the nerves.	It is indicated for longer treatment cycles as, thanks to the continuous variation of the impulse frequency, this program avoids that the excitable fibers accustom to the stimulation.	Time: 30' Intensity: a not painful formication Electrode placement: 21-27-28-29-30-32-34-37-40-41-42-43-47-48

Endorphinic Tens

Program effects	Indications for use	Time and intensity
It has an analgesic action thanks to the release of endorphins. In this case, the analgesic effect is delayed, after the end of the treatment.	It is ideal to treat chronic pains as it increases the pain threshold.	Time: two phases, 20'+ 20' Intensity: a not painful formication Electrode placement: 21-27-28-29-30-32-34-37-40-41-42-43-47-48

Low frequency antalgic Tens

Program effects	Indications for use	Time and intensity
The low frequencies of this program permit to obtain an antalgic effect together with a muscle relaxation.	Ideal for acute and chronic pains, which lead to contractures and muscle stiffness.	Time: 30' Intensity: a not painful formication Electrode placement: 21-27-28-29-30-32-34-37-40-41-42-43-47-48

Pad placement for Tens treatments

Here you find the Tens programs of our Globus electrostimulators with their respective pad placement. If you want to know the programs of your model please see the manual of the product.

Program name	Electrode placement
Muscle injuries	on the painful area
Sciatica	37
Cervical pain	32, 34
Epicondylitis	40
Carpal tunnel	44
Hip osteoarthritis	43
Knee pain	41, 42
Menstrual pain	38, 39
Nerve compression	27, 28, 29
Muscle pain	on the painful area
Chronic pain	on the painful area
Post-surgical pain	on the surgery area
Scapulohumeral syndrome	21
Spinal osteoarthritis	27, 28,29, 30
Spinal osteoporosis	27, 28,29, 30 and/or with B-Mat
Ankle osteoarthritis	43
Muscle tendon injury pain	on the painful area
Knee osteoarthritis	41, 42
Chronic lumbago	38, 27, 28
Trapezius pain	32
Fracture pain	on the painful area
Acute pain post inguinal hernia	35
Whiplash	32, 34
Osteoarthritis	see the placement in the various joints
Rotator cuff tendinitis	21, 33
Bursitis-tendinitis	on the painful area

PROGRAM LIST ”MICROCURRENTS”

Energetic muscle restoration

Program effects	Indications for use	Time and intensity
This program offers a rapid APT integration at muscular level that favors the recovery in a short time.	Ideal for all sportspeople, it can be used at the end of the training sessions, in order to obtain a rapid and optimal muscle recovery.	Time: two phases 10’ + 10’ Electrode placement: 61, 62, 69

Hematoma, generic trauma

Program effects	Indications for use	Time and intensity
Thanks to the regeneration process at cellular level induced by the microcurrents, these programs permit to restore the damaged cell to normal physiological conditions.	Ideal to treat traumas and contusions. The treatment can be used together with Tens and it should be carried out daily.	Time: two phases 10’ + 10’ Electrode placement: crosswise on the trauma or on the hematoma

Shoulder, knee and ankle sprain

Program effects	Indications for use	Time and intensity
These programs are studied to reduce the recovery times of the injured articulations.	It should be used every day until eliminating the pain. The treatment can be used together with Tens.	Time: two phases 10’ + 10’ Electrode placement: 56, 59, 67, 70

Tendon inflammation

Program effects	Indications for use	Time and intensity
These programs are studied to eliminate the inflammation in the tendons. Ideal in case of inflammations due both to overload and to trauma.	It should be used every day until eliminating the pain.	Time: two phases 10’ + 10’ Electrode placement: crosswise on the painful area

Sciatica, lumbago

Program effects	Indications for use	Time and intensity
The program is ideal for those who suffer from lumbar pain and sciatica.	It should be carried out every day until eliminating the pain. We suggest using it together with the treatments to strengthen the dorsal, lumbar and abdominal muscles. The specific treatments for lumbar pain and sciatica can be used together with Tens.	Time: two phases 10’ + 10’ Electrode placement: 57, 69, 71

Stiff neck, whiplash

Program effects	Indications for use	Time and intensity
This is the ideal program to reduce the spinal pain due to whiplash, blasts of wind or wrong postures.	It has an anti-inflammatory effect. It should be carried out daily and it can be used together with Tens treatments.	Time: two phases 10’ + 10’ Electrode placement: 58,64, 72

Tunnel carpal syndrome

Program effects	Indications for use	Time and intensity
The crushing of the median nerve of the wrist produces pain that can be reduced through the application of this program leading to a beneficial effect in a short time.	It should be carried out daily until eliminating the pain.	Time: two phases 10’ + 10’ Electrode placement: 63

PROGRAM LIST REHAB

NOTE: The indications for use of Rehab programs have been taken from the scientific literature of electrotherapy in rehabilitation field. For personalized indications and protocols, please follow the advice of your physician or physiotherapist.

Vastus medialis and quadriceps reinforcement

Program effects	Indications for use	Time and intensity
It strengthens in a specific way the quadriceps muscle with special attention to the vastus medialis. In case of femoropatellar pathologies, a good reinforcement of the thigh muscles, and especially the vastus medialis reinforcement, allows the knee articulation to work better, thanks to a more correct biomechanical patellar position (aligned).	Indicated for femoropatellar pathologies that often appear in sports such as jump sports, cycling and running. We suggest carrying out the treatment after the warm-up program (in the "Sport" area). It should be used 3 times per week for at least 6 weeks.	1 PHASE: 30' Recommended intensity: maximum Electrode placement: 1 In order to emphasize the work on the vastus medialis place only the two pads in the medial position.

Swollen ankles

Program effects	Indications for use	Time and intensity
This program has been studied for those who have swelling problems to feet and ankles. It improves the liquid drainage.	We suggest using the programs also twice per day, placing two electrodes on the gastrocnemius muscle (calf) and other two in the anterior tibial muscle.	1 PHASE: 30' Recommended intensity: low –intermediate Electrode placement: 5+8

Quadriceps atrophy (also with prosthesis)

Program effects	Indications for use	Time and intensity
It improves the recovery of quadriceps strength and it speeds up the recovery and the return to normal activities in the patients who had a knee prosthesis operation.	Carry out the program while sitting, with the knees at an angle of 120 degrees and the feet leaning on the floor without extending the legs during the contraction. We suggest using it every other day for the first two weeks, then for the 6 following weeks it must be used in 5 sessions per week	2 PHASES: 5' + 15' Recommended intensity: try to work at the maximum tolerated intensity. Electrode placement: 1

Post ACL recovery

Program effects	Indications for use	Time and intensity
It favors the muscle tone recovery of thighs and legs, according to specific parameters that, even not overcharging the muscle structure, stimulate it physically to recover the usual pre-trauma trophism.	Indicated during the reeducation after a knee ligament reconstruction. The program must be carried out under the physiotherapist's control. We suggest using it 4-5 times per week for at least six weeks.	1 PHASE: 15' Recommended Intensity: try to work at the maximum tolerated intensity. Electrode placement: 1,2,4

Hemiplegia-Upper limbs

Program effects	Indications for use	Time and intensity
The effects of this stimulation, called also FES (Functional electrical stimulation), are intended to improve the voluntary movement by strengthening the muscles, increasing the motor control and the ability to move the limbs in subjects suffering from hemiplegia and decreasing pain.	The electrodes can be placed on the muscles you want to stimulate, in this case the subject should intentionally follow through the movement. Otherwise, the muscles involved should be voluntary contracted, when possible. The electrodes can be placed on deltoid, supraspinatus and forearm muscles. Our 30' program is indicated for those who recently had a neurological damage (in the last three months) and we suggest using it 5 times per week, for 3 weeks. Moreover, we suggest repeating the cycle every 6 months. For the subjects who show consolidated hemiparesis, we suggest repeating a treatment of 10 minutes twice per day for at least 3-6 months.	1 Phase: 30' for upper limbs Recommended intensity: intermediate and in any case according to the tolerated intensity. Electrode placement: deltoid 21, 17, 18 scapular fixators 15, 16 humeral external rotators19, 20 biceps-triceps 12-22 forearm 13,14

Hemiplegia-Lower limbs

Program effects	Indications for use	Time and intensity
The effects of this stimulation, called also FES (Functional electrical stimulation), have the aim to improve the voluntary movement by strengthening the muscles, increasing the motor control and the ability to move and decreasing spasticity and pain.	To improve the flexor-extensor movement of the foot, place the electrodes on the anterior tibial muscle. We suggest using the program twice per day for 3 months.	1 Phase: 10' for lower limbs (feet) Recommended intensity: intermediate and in any case according to the tolerated intensity. Electrode placement: 8

Post ictus functional recovery lower limbs

Program effects	Indications for use	Time and intensity
The effect of the FES (Functional electrical stimulation), used together with reeducation work, is a real help for the subjects who had an ictus because it favors the recovery of the lower limbs and the ability of walking.	We suggest starting the treatment cycle as soon as the rehabilitation can start. The protocol suggest using the program once per day, 5 times per week for 3weeks.	1 PHASE: 30' Recommended intensity intermediate, to be increased gradually during the sessions Electrode placement: 1,5,8

Shoulder subluxation prevention

Program effects	Indications for use	Time and intensity
The effect of the FES (Functional electrical stimulation), used together with reeducation work, is a real help for the subjects who have frequent humerus subluxations because of an hypotonicity in the posterior region of the shoulder.	We suggest placing an electrode in the fossa of the supraspinatus muscle and the other one on the posterior deltoid muscle. The program can be used twice per day for 4 weeks. After the first two weeks the treatment time can be increased until reaching 45 minutes per session.	1 PHASE: 30' Recommended intensity: intermediate, to be increased gradually during the sessions Electrode placement: 19,20

Multiple sclerosis

Program effects	Indications for use	Time and intensity
The FES (Functional electrical stimulation), used in a treatment protocol for patients suffering from multiple sclerosis, are useful to recover muscle tone, sense of fatigue, balance and the ability to walk.	The programs of multiple sclerosis are divided into three groups: one to strengthen small muscle groups (especially suitable for foot and ankle muscle), one for big muscle groups (quadriceps, femoral biceps...) and one for	1 PHASE: 45' Recommended intensity: intermediate for muscle strengthening, low for muscle spasms. Electrode placement: 1,3,8

	muscle spasms. It is important to carry out these programs under the physiotherapist or physician's control.	

Stress incontinence

Program effects	Indications for use	Time and intensity
The stress incontinence consists in urine leakages when sneezing, or coughing and also during an intense physical effort or during the sexual activity. This happens when the pelvic floor muscles are not toned enough. This program favors their strengthening.	The program must be used with the specific vaginal probes to treat woman incontinence or with the anal probes to treat man incontinence. We suggest carrying out the program twice per week, for six weeks.	1 PHASE: 20' Recommended intensity: to be increased gradually during the sessions. We also suggest using the probe with the specific lubricating gel for intimate parts.

Urge incontinence

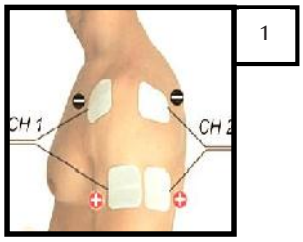
Program effects	Indications for use	Time and intensity
The urge incontinence consist in an involuntary contraction of the bladder that causes its partial or complete evacuation. The subjects affected need to urinate very frequently, but are able to expel just a few drops of urine.	The program must be used with the specific vaginal probes for woman incontinence or with the anal probes to treat man incontinence. We suggest carrying out the program twice per day, for 12 weeks.	1 PHASE: 20' Recommended intensity: to be increased gradually during the sessions. We also suggest using the probe with the specific lubricating gel for intimate parts.

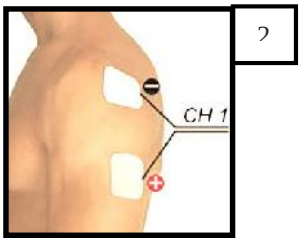
Mixed incontinence

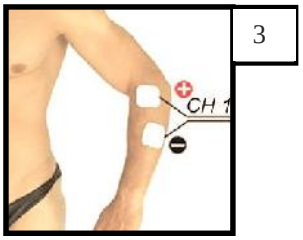
Program effects	Indications for use	Time and intensity
The mixed incontinence occurs when the symptoms of urge and stress incontinence show together. For a complete treatment, it is important to describe all the symptoms in details to your physician.	The program must be used with the specific vaginal probes for woman incontinence or with the anal probes to treat man incontinence. We suggest carrying out the program twice per day, for 12 weeks.	1 PHASE: 20' Recommended intensity: To be increased gradually during the sessions. We also suggest using the probe with the specific lubricating gel for intimate parts.

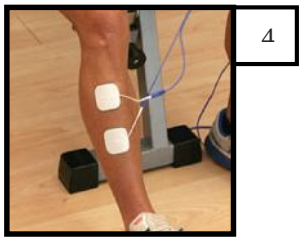
PROGRAM LIST PREVENTION (available on Genesy SII-Elite SII)

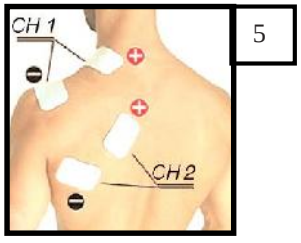
Prevention programs		
Program effects	Indications for use	Programs and electrode placement (see the pictures)
The prevention programs intend to support the preparation physical conditioning for the development of the specific activity. They prepare articulations and muscle tone in order to reduce the risk of contractures, partial and total injuries, tendon inflammations. These programs are recommended both during the activity recovery stage and as integration to the usual physical work (especially for the athletes who usually suffer from specific pathologies connected to the technical movements). The programs are divided into reathletization, muscle tone recovery and prevention.	The *reathletization* programs are indicated for muscle recovery and strengthening of articulations that suffered a trauma or that are especially weak. The *prevention* programs can be used together with the traditional rest exercises that are carried out to maintain strength and solid the articulations that suffered a trauma or that have acute and chronic problems. They favor the rebalancing of the proprioceptive control. The *muscle tone recovery* programs for the ankle are intended to strengthen in a specific way the perineal and anterior tibial muscles.	- Ankle prevention (4-8) - Knee prevention (6-7) - Quadriceps muscle prevention (6-7) - Lower limbs reathletization (6-4-7-8) - Shoulder reathletization (1-2-5) - Shoulder prevention (1-2-5) - Elbow prevention (3) - Upper limbs reathletization (1-2-5) - Ankle muscle tone recovery (4-8)

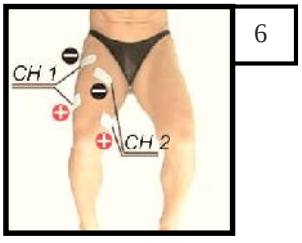


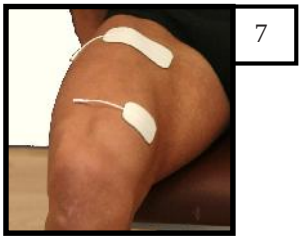


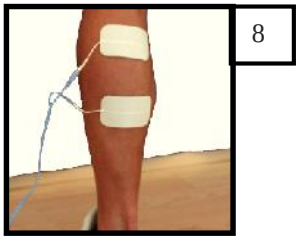












PROGRAM LIST SPECIAL SPORTS

Soccer		
Program effects	Indications for use	Time and intensity
These programs are especially intended to improve the specific conditional abilities of soccer and especially strength and speed endurance. The program effects are to increase the strength and the contraction speed of the muscles of the lower limbs and the endurance in carrying out sprints and goal kicks.	Indicated for soccer players who want to improve their specific conditional abilities and especially strength and speed endurance. We suggest using the *special strength 1* program during the first preparation weeks, then moving progressively to *special strength 2*, and finally using *special strength 3*. The endurance programs should be used during an already advanced preparation stage, after carrying out different strength sessions.	Time and intensity vary according to the program you are using. Generally, as for the strength programs, you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.
Cross-country skiing		
Program effects	Indications for use	Time and intensity
They improve the muscle aerobic endurance and therefore the ability to bear an extended physical effort.	The programs are divided into *endurance strength* and *endurance*, each of them are also divided in three periods: - pre-competition (or before the season, to combine with the skiing preparation); - competition (or during the periods when skiing at least once or twice per week); - rest period (in summer and spring).	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.
Running		
Program effects	Indications for use	Time and intensity
It improves the ability to maintain the effort for an extended period of time. The training programs for running are intended to stimulate slow fibers with very long contraction periods.	These programs are indicated for the different periods of the preparation of the runner, both during the first phase and during the competition periods, but also to maintain active the musculature during the rest period.	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.

Cycling

Program effects	Indications for use	Time and intensity
It improves the ability to maintain the effort for an extended period of time. The training programs for the biker are intended to stimulate slow fibers with very long contraction periods.	These programs are indicated to train strength and strength endurance for those who practice cycling. The programs are divided into three levels to permit both to beginners and to more trained bikers to receive a stimulation according to their preparation level. We suggest starting with the aerobic workout 1 and to increase the level after about 15-20 sessions.	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.

Tennis

Program effects	Indications for use	Time and intensity
It permits to train in a specific way the musculature of the tennis player, who should be able to execute rapid movements with a lot of decelerations and direction changes.	They are indicated for those who practice tennis and want to train the musculature in a specific way to best prepare for training sessions and possible tournaments. The *special strength* programs are progressive and we suggest starting from program 1 and then carrying out *special strength* 2 and 3. It is very useful to train in a specific way the muscle districts that can be subject to overload (for example the forearm muscles to avoid the appearance of epicondylitis).	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.

Golf

Program effects	Indications for use	Time and intensity
It permits to isolate and train in a specific way the muscles most used during the execution of the technical movements of the golf player. A well-synchronized recruitment of the muscle fibers permits to obtain a fluid,	The special strength programs can be carried out on abdominals (especially on oblique abdominals), on lumbar and dorsal muscles, on lower limb muscles and forearm muscles.	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs,

harmonious and more precise movement.	A special attention has been paid to strengthen the deltoid muscle, with a three-stage progression according to the preparation level.	the intensity must be low-intermediate.

Swimming

Program effects	Indications for use	Time and intensity
It permits to train the swimmer's musculature with the aim to improve the effort endurance. Therefore, the athlete's musculature could become accustomed to the training sessions with extended stimulations, obtaining a lot of benefits during the trainings in water.	Indicated for swimmers who want to combine a specific work of athletic preparation to the normal sessions in the swimming pool. The two programs are intended to improve the *endurance strength* (the ability to produce an intense muscle work for an extended period of time) and the *aerobic workout* (improving the abilities of the muscles to consume oxygen). The choice of the body part on which you want to work depends on the single needs and on the swimming style you want to train.	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.

Sailing

Program effects	Indications for use	Time and intensity
The sailor must face different efforts according to the role he has on the boat, to the time and the weather conditions. For this reason, the physical training must be oriented to prepare the musculature to have the best reaction during the sailing.	Indicated for the sailors who want to prepare their musculature to be ready and trained to face the sailing. We suggest carrying out with perseverance the endurance strength program on abdominals, as a good abdominal musculature permits to protect the lumbar area of the spinal column that is particularly strained in this sport.	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.

Volleyball

Program effects	Indications for use	Time and intensity
The specific volleyball programs intend to improve the strength expressions used in this sport, that is, first the *maximum strength* and second the *explosive strength*. Other two programs have been provided, one program intends to improve the reaction ability (*reactivity*) of muscle fibers and the other one intends *to strengthen the musculature of the articulation and the shoulder* of the volleyball player that suffers a lot of pressure.	We suggest carrying out the maximum strength program at the beginning of the athletic preparation for at least two sessions per week. After 12-15 sessions it is possible to execute the explosive strength program, by replacing the second session of maximum strength with a session of explosive strength. The reactivity program is indicated when you want to speed up the legs in order to be quicker during small displacements and in the direction changes, or when you want to speed up the arm that is serving. The shoulder prevention exercises, instead, have been thought to favor the prevention work on stabilizing muscles of the shoulder and the scapula.	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.

Rugby

Program effects	Indications for use	Time and intensity
The rugby specific programs intend to improve the strength expressions used in this sport, that is, first the *maximum strength* and second the *explosive strength*. Other two programs have been provided to improve the *speed endurance.*	We suggest executing the maximum strength program at the start of the athletic preparation for at least two sessions per week. After 12-15 sessions the explosive strength program can be used, by replacing the second session of the explosive strength program with a session of explosive strength. After about two months of work it is possible to introduce a cycle of approximately 10 sessions with the speed endurance 1 program. Repeat the cycle, if necessary, in the middle of the season by	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.

	using the speed endurance 2 program.	

Triathlon

Program effects	Indications for use	Time and intensity
These programs permit to train the musculature to bear at best the prolonged and intense efforts, by improving the ability of the muscles to consume oxygen.	We suggest using these programs progressively, starting with an *aerobic workout 1* and then after 15-20 sessions move to the *2* and *3* programs. The endurance programs have been divided according to the training, that is, during preparation, competition or rest.	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.

Martial arts

Program effects	Indications for use	Time and intensity
These programs improve the muscle contraction speed by training the musculature to carry out rapid and explosive movements, as required in martial arts.	Indicated as integration to the traditional athletic preparation. We suggest carrying out the explosive strength program alternated with the reactivity program.	Time and intensity vary according to the program you are using. Generally, as for the strength programs you should use the maximum possible intensity. As for capillarization and decontracting programs, the intensity must be low-intermediate.

G-PULSE TREATMENTS (only in Activa, Fit&Beauty, Triathlon and Swing)

These are treatments using microcurrents **to treat wrinkles, stretch marks and skin flaws.**
Starting from the age of thirty, the metabolism starts to slow and progressively alter the natural renewal process of skin cellular tissues.

The even more minor metabolic activity leads to a decrease in the skin thickness, to a thickening of the elastic fibers and to an alteration of the collagen, with an increase in the fibrotic element of the dermis.

Especially the dermis appears less turgid, elastic and bright, meanwhile other skin flaws, such as skin wrinkles, dryness, fragility and chromatic alteration emerge.

The **G Pulse** treatments (that are carried out with the special G-Trode handpiece) are based on microstimulation applications, directly on wrinkles, stretch marks, etc.
Already from the first applications the wrinkles and the skin flaws tend to reduce, up to disappear. Through the physiological contribution of the new collagen that fills up the furrows, the skin looks immediately more smooth and tonic.

The G- Pulse regenerative mechanism consist in two phases:

1. The passage of the microstimulation in the tissues produces an increase in the microcirculation and the increase in the local temperature. In this way the nutritional uptake is improved and fibro-blastic cells are called to produce the collagen that the skin needs to recovery tone and elasticity.
2. The G-Pulse microstimulation offers also the energy (ATP) needed to support the cellular metabolism and the protein synthesis. As a lot of scientific research has shown, the application of microstimulation regenerates cells and restores vitality to the tissues.

Some G Pulse programs:

Breast microlifting
Wrinkles
Expression wrinkles
Nail strengthening
Hematoma
Face microlifting
Cellulite
BioSkin collagen
Eye wrinkles
Stretch marks
Bio peeling
Cleavage micro-lifting
Skin elasticity

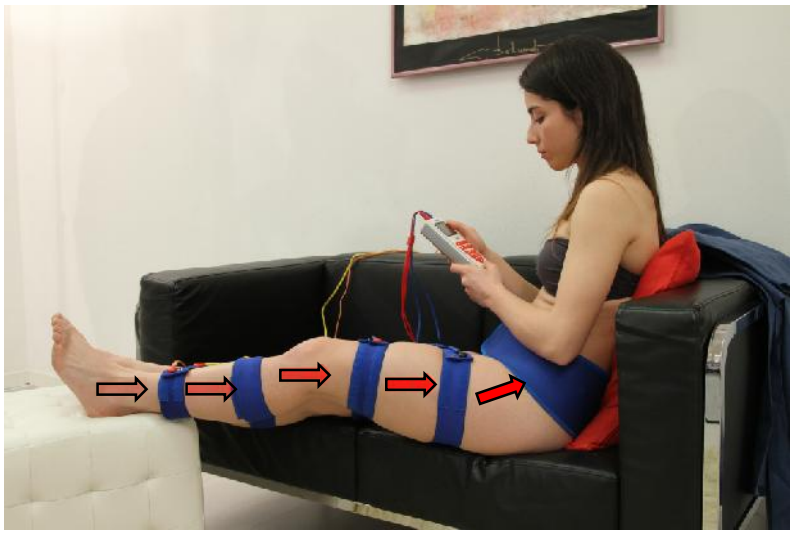
“3S” SEQUENTIAL DRAINAGE

The “3S” programs simulate a real sequential drainage.
The “3S” programs are characterized by an activation delay of the channels 3 and 4 compared with the channels 1 and 2.
The Serial Sequential Stimulation permits to stimulate the musculature in kinetic chain thanks to the differentiated activation times of the muscular groups involved.
In aesthetic field, the 3S programs allow to create a real sequential drainage: the sequential contraction of the different musculature of legs and arms produces a deep drainage of the interstitial fluid through the lymphatic vessels and it favors the return of the venous blood to the heart.
This means that the 4 channels of the electrostimulator act in pair and not all at the same time. This means that the channels 3 and 4, even working with the same contraction and rest times of the channels 1 and 2, start the stimulation with a delay time compared with the channels 1 and 2. The stimulation delay of the second pair of channels can vary between 0,1 seconds up to 11 seconds according to the electrostimulator model. Very small delays, below 1 second, are especially useful for medical and rehabilitation field, while delays of 2, 3, 4, 11 seconds are perfect for beauty and sport field. The rhythmic stimulation of the musculature causes an increase in the speed of the venous circulation (hematic flow) and lymphatic circulation (lymphatic flow). The peripheral circulation and, therefore, the tissue oxygenation and metabolism are improved by the increase in the blood flow. In beauty field the serial sequential stimulations can be used to improve the cellulite skin flaws, to reduce fat depots, to reactivate the blood flow that is slowed down because of wrong postures, to reduce the heaviness due to a long standing or also after very intense training sessions.

Operating mode:
The operation of these programs is exactly the same as any other EMS programs, with the only difference that a delay in the contraction start between the channels will be noticed.
The table below shows the functioning of “3S”.

Channels 1-2	contraction 8"	del. 3"	active rest 5"	del. 3"	contraction 8"	del. 3"	active rest 5"	del. 3"
Channels 3-4	del. 3"	contraction 8"	del. 3"	active rest 5"	del. 3"	contraction 8"	del. 3"	active rest 5"

Example of a “3S” program with 3”delay. The stimulations of the channels 3 and 4 start with a 3’’ delay compared with the one of channel 1 and 2.
Thus, if the electrodes of the channels 1 and 2 are placed on calves and the ones of channels 3 and 4 are placed on thighs, the effect will be the same as a massage moving from the extremities of the limbs towards their base, really like a real manual drainage massage. It is normal to feel a slight itch during the treatment, sign of an increase in the circulatory activity.



After selecting the 3S Serial Sequential Stimulation program list, you will find a list of programs indicating the delay time of the channels 3 and 4 compared with channels 1 and 2. In some stimulators you will have the possibility to choose also the area to be treated and the frequency (Hertz). For beauty and drainage treatments it is better to choose the lowest frequency.

Name	Delay time
SerSeqStim 0,5 sec	0,5
SerSeqStim 1 sec	1
SerSeqStim 2 sec	2
SerSeqStim 3 sec	3
SerSeqStim 4 sec	4
SerSeqStim serial	11

NOTE – The only warning you should follow in order to use the 3S for beauty purposes is to place the electrodes corresponding to the channels 1 and 2 in the body part you want to stimulate first, that is in the most distant body part to the heart.

The recommended accessories to carry out the 3S sequential drainage programs

The sequential drainages can be carried out using the normal electrodes supplied. The use of some accessories that can be bought separately is very useful and comfortable. All these accessories have a more extended stimulation surface compared with the one of an electrode and as they are made of fabric they can be used many times and they are particularly fast and easy to use.

- **Conductive bands**

The conductive bands are ideal for beauty treatments of lower and upper limbs as the stimulation affects all the body surface with the band.
In the thigh this is particularly useful as it makes possible to stimulate both the anterior and the posterior part. This feature represents a great advantage when using beauty programs. The bands can be used also for firming and toning programs, while they are not indicated for specific strength programs, as they do not offer the possibility to act with the stimulation directly on the motor point.
Before using them, the bands must be completely immersed in a bowl of water and then squeezed.

- **“Fast band”**

The “Fast band” is a special band intended to easily stimulate the muscles of the abdomen and glutei. Used together with the beauty programs, it permits to carry out massages and drainage with the maximum comfort. The band should be always used by covering the conductive parts with the specific gel (or by dampening it in water).

How to connect the electrodes to the ”Fast band”

Hips

Abdomen

- **“Fast pad”**

The “Fast pads” are special bands that have the same function of the electrodes including gel, they are suitable for thighs and glutei. You should apply a thick layer of gel on the electrode surface (or dampen it in water) and then you must fix the "Fast pad" using the specific black strips with velcro.

- **Splitted cables**

The splitted cables are special cables that double the number of electrodes per channel. This permits to stimulate different body parts at the same time.

Attention: When using the splitted cables, also the channel intensity is split among more electrodes, therefore it is likely that you have to use a greater intensity compared with the traditional cable in order to perceive the stimulation.

Electrode placement for the sequential drainage

We are going to give some examples of the placement of the conductive bands in order to carry out the drainage treatments. Please, place the bands according to the order described below. The treatments can be carried out also by using the electrodes including gel.

CALFS - THIGHS

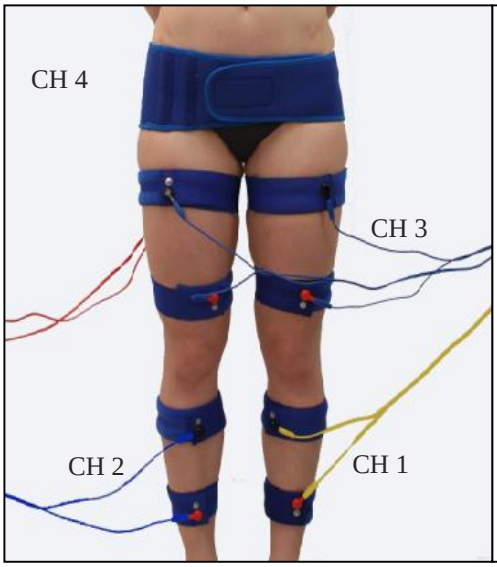
It is necessary a “Fitness Top” kit of 8 conductive elastic bands

Instructions:

- Immerse the conductive bands in water and wrap up them around thighs and calves as indicated in the picture. Connect the electrodes as shown in the picture.
  - Channel 1- calf
  - Channel 2 - calf
  - Channel 3- thigh
  - Channel 4- thigh
- Choose the desired sequential drainage program and start the treatment by setting the intensity both of the contraction and of the active rest time.

CALFS - THIGHS- GLUTEI

It is necessary a “Fitness Top” and a “Fast band” kit of 8 conductive elastic bands.

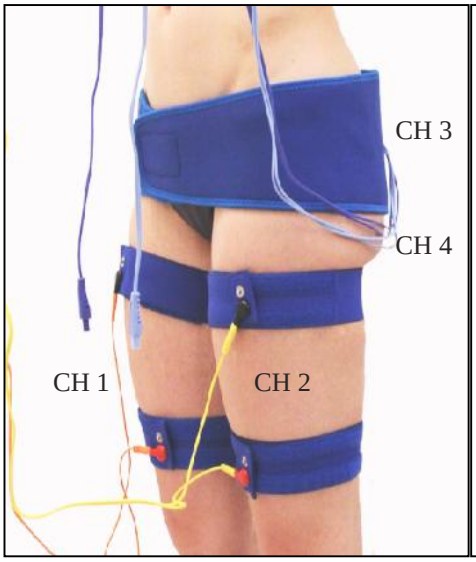


Instructions:

- Immerse the conductive bands in water and wrap up them around thighs and calves as indicated in the picture. Place the gel on the fast band and wear it.
- Connect the electrodes as shown in the picture.
  - Channel 1 - Calf
  - Channel 2 - Calf
  - Channel 3 – thighs by using the splitting cable
  - Channel 4 – Fast band by using the splitting cable
- Choose the desired sequential drainage program and start the treatment by setting the intensity both of the contraction and of the active rest time.

THIGHS - GLUTEI

It is necessary a “Fitness Top” and a “Fast band” kit of 4 conductive elastic bands.

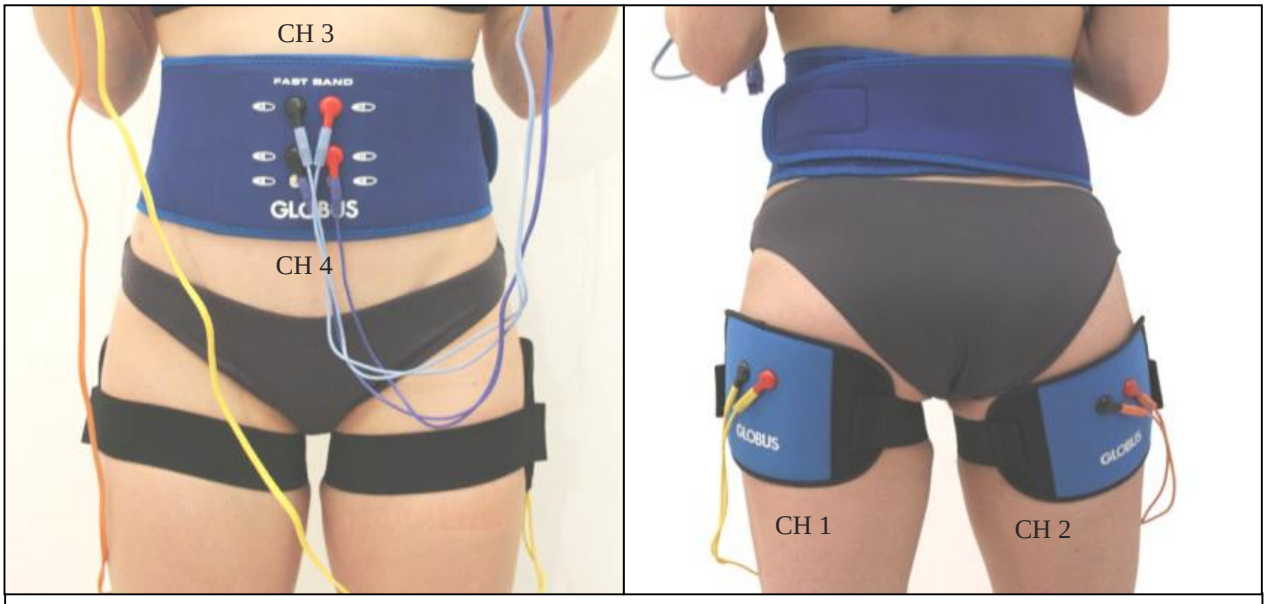


Instructions:

- Immerse the conductive bands in water and wrap up them around thighs as indicated in the picture.
- Place the gel on the fast band and wear it.
- Connect the electrodes as shown in the picture.
  - Channel 1 - thigh
  - Channel 2- thigh
  - Channel 3 – glutei by using the Fast band
  - Channel 4 – glutei by using the Fast band
- Choose the desired sequential drainage program and start the treatment by setting the intensity both of the contraction and of the active rest time.

GLUTEI – ABDOMEN

It is necessary a “Fast pad” kit and a “Fast band” kit.



Instructions:

- Place the gel on the Fast band and on the Fast pad and wear them as shown in the picture.
- Connect the electrodes as shown in the picture.
  - Channel 1- gluteus with a Fast pad
  - Channel 2 – gluteus with a Fast pad
  - Channel 3-4 abdomen by using the Fast band
- Choose the desired sequential drainage and start the treatment by setting the intensity both of the contraction and of the active rest time.

THE ACTION NOW PROGRAMS

The Action Now programs are normal EMS programs with the only difference that the contraction starts only after that the user press the * button. The Action Now programs are especially useful to link and synchronize the electrical stimulation to a voluntary action.

This mode is especially useful in sport field for athletic preparation when you want to add the muscular contraction induced by a stimulator to a work carried out with overloads both in dynamic and isometric mode.

Operating mode: after starting the program and setting the intensity, the device goes on pause and at the start of the stimulation ramp shows the message READY by pressing the * button. By pressing another time the * button, the stimulation starts immediately followed by the expected recovery time, after that the device will goes back to the READY mode. To stop the contraction or the pause before the end of the program, press again the * button.

Let's say, for example, that you want to work on leg extension, thus you can link to the quadriceps voluntary contraction phase also a contraction with the stimulator, in order to emphasize the work on the vastus medialis. After placing the electrodes on quadriceps and choosing an Action Now

program, you can combine the leg extension phase by pressing the * button and stop it or not until the contraction ends and the rest starts.
The Action Now program list can vary from a stimulator to another. The most complete list is shown below:

Program name	Ramp-Up time in seconds	Contraction time in seconds
Action 0,2 - 1 s	0,2	1
Action 0,5- 1s	0,5	1
Action 1 - 1 s	1	1
Action 2 - 1 s	2	1
Action 3 - 2 s	3	2
Action 4 - 2 s	4	2
Action 2 - 6 s	2	6

The programs vary from very rapid and brief contractions, typical when the explosive movement is wanted, to slower and longer contractions when carrying out hypertrophy work.

PERSONAL TRAINER

Use suggestions for the main programs

Below we report a brief guide organized in sectors (sport, beauty and fitness). Each sector contains information and advice on the working cycle and the electrode placement for each objective. This guide is an useful tool for those who desire to reach high level results, even not being able to consult a personal trainer or a sport trainer.

Important principles for the optimal use of this guide:

1) The stimulation programs for strength (maximum, endurance and explosive strength etc..) should not be carried out in the days following the sessions of very intense physical preparation and technical training. Instead, we suggest using cool down and active rest programs.
2) When the musculature is contracted or painful it is best to carry out decontracting programs. Instead, when the musculature is stressed because of an excessive work, we suggest using the cool down and active recovery programs.
3) The Tens programs can be repeated even twice per day, but with an interval of at least 4 hours between them.
4) The Personal Trainer (at the end of this guide) suggest some physical exercises to carry out in addition to the electrostimulation (especially “aerobic” and “cardiovascular”) in order to obtain a better result in the whole preparation.
5) In the program tables, the main indications are in red while the secondary ones are in black. The difference between the main and the secondary sessions has been made to give a work priority according to the available time of each user.

SPORT: SOCCER

OBJECTIVE: PREPARATION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH	X		X		X						X			
EXPLOSIVE STR.									X				X	
CAPILLARIZAT.		X		X		X		X		X		X		
ACTIVE RECOV.	X		X		X				X		X		X	

ABDOMINALS
CALF
DORSALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X			X				X		X			
MAX STRENGTH	X			X				X		X				
MAX STRENGTH			X								X			

Note: The main indications are in red; while the secondary ones are in black.

SPORT: SOCCER

OBJECTIVE: COMPETITION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH			X								X			
EXPLOSIVE STR.	X				X				X					
CAPILLARIZAT.		X		X		X		X		X			X	
ACTIVE RECOV.			X				X		X			X		X

ABDOMINALS
CALF
DORSALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X		X						X		X		
MAX STRENGTH				X						X				
MAX STRENGTH			X								X			

Note: The main indications are in red; while the secondary ones are in black.

SPORT: BIKE-RIDING

OBJECTIVE: PREPARATION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
CAPILLARIZAT.		X				X							X	
AER. ENDURAN.	X			X										
BIKING		X			X		X		X		X			X
DECONTRACT.		X			X		X		X		X			X
ENDURANCE ST.										X		X		

DORSALS
CALF

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
ENDURANCE ST.				X								X		
ENDURANCE ST.	X					X				X				

Note: The main indications are in red; while the secondary ones are in black.

SPORT: BIKE-RIDING

OBJECTIVE: MAINTENANCE PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
AER. ENDURAN.			X							X				
ENDURANCE ST.	X				X							X		
BIKING		X		X		X	X		X		X		X	X
ENDURANCE ST.		X		X		X	X		X		X		X	X

TRAPEZIUS
DORSALS
CALF

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
DECONTRACT.		X					X		X					X
ENDURANCE ST.			X									X		
ENDURANCE ST.					X					X				

Note: The main indications are in red; while the secondary ones are in black.

SPORT: RUNNING

OBIETTIVO: PREPARATION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
CAPILLARIZAT.			X			X			X			X		
ENDURANCE ST.			X		X			X						
AER. ENDURAN.										X		X		
JOGGING		X		X			X		X		X		X	X

CALF
CALF
ABDOMINALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
ENDURANCE ST.			X		X					X		X		
DECONTRACT.		X		X			X		X		X			X
ENDURANCE ST.		X				X				X				

Note: The main indications are in red; while the secondary ones are in black.

SPORT: RUNNING

OBJECTIVE: MAINTENANCE PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	L	M	M	G	V	S	D	L	M	M	G	V	S	D
AER ENDUR..			X							X		X		
ENDURANCE ST.					X									
RUNNING		X		X		X	X		X		X		X	X
DECONTRACT.		X		X		X	X		X		X		X	X

CALF
CALF
ABDOMINALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	L	M	M	G	V	S	D	L	M	M	G	V	S	D
ENDURANCE ST.			X		X					X		X		
DECONTRACT.				X			X				X			X
ENDURANCE ST.					X							X		

Note: The main indications are in red; while the secondary ones are in black.

SPORT: ALPINE SKIING

OBJECTIVE: PREPARATION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X			X			X				X		
EXPLOSIVE ST.										X				
CAPILLARIZAT.	X			X							X			
DECONTRACT.		X			X			X		X		X		

ABDOMINALS
LUMBAR M.
TRAPEZIUS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH	X			X					X				X	
MAX STRENGTH	X			X					X				X	
MAX STRENGTH						X					X			

Note: The main indications are in red; while the secondary ones are in black.

SPORT: CROSS-COUNTRY SKIING

OBJECTIVE: PREPARATION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
ENDURANCE ST.		X		X				X						
AER. ENDURAN.										X		X		
CAPILLARIZAT.	X		X		X				X		X			
AER. ACTIVITY		X		X				X		X		X		

* 30'/40' OF RUNNING, OR UPHILL WALKING OR SKATING

ABDOMINALS
LUMBAR M.
TRAPEZIUS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH	X				X				X					
MAX STRENGTH			X								X			
ENDURANCE ST.													X	

Note: The main indications are in red; while the secondary ones are in black.

SPORT: SKIING

OBJECTIVE: SKI HOLIDAY

QUADRICEPS

PROGRAM	1° CYCLE: 4 WEEKS							DURING THE SKI HOLIDAY						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH	X				X									
EXPLOSIVE ST.			X											
CAPILLARIZAT.							X							
DECONTRACT.		X		X		X		X	X	X	X	X	X	X

ABDOMINALS
LUMBAR M.
TRAPEZIUS

PROGRAM	1° CYCLE: 3 WEEKS							DURING THE SKI HOLIDAY						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X				X								
MAX STRENGTH				X										
ENDURANCE ST.						X								

Note: The main indications are in red; while the secondary ones are in black.

SPORT: RUGBY

OBJECTIVE: PREPARATION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X		X					X		X		X	
EXPLOSIVE ST.						X		X		X		X		
CAPILLARIZAT.	X		X		X			X			X			X
ACTIVE RECOV.		X		X			X			X		X		

ABDOMINALS
PECTORALS
DORSALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X			X					X			X	
MAX STRENGTH			X			X			X					
MAX STRENGTH	X				X						X			

Note: The main indications are in red; while the secondary ones are in black.

SPORT: RUGBY

OBJECTIVE: COMPETITION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X												
EXPLOSIVE ST.				X					X		X			
CAPILLARIZAT.			X		X					X				
ACTIVE RECOV.			X				X		X			X		X

ABDOMINALS
PECTORALS
DORSALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X		X						X		X		
EXPLOSIVE ST.			X		X				X		X			
MAX STRENGTH		X			X					X				

Note: The main indications are in red; while the secondary ones are in black.

SPORT: BASKETBALL

OBJECTIVE: PREPARATION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	L	M	M	G	V	S	D	L	M	M	G	V	S	D
MAX STRENGTH		X		X		X			X		X		X	
EXPLOSIVE ST.										X		X		
CAPILLARIZAT.	X		X		X			X			X			
ACTIVE REC.		X		X		X				X		X		

ABDOMINALS
CALF
PECTORALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH	X				X			X					X	
MAX STRENGTH	X				X			X				X		
MAX STRENGTH		X		X					X		X			

Note: The main indications are in red; while the secondary ones are in black.

SPORT: BASKETBALL

OBJECTIVE: COMPETITION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	M	G	V	S	D	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X												
EXPLOSIVE ST.					X				X		X			
CAPILLARIZAT.		X		X										
ACTIVE RECOV.			X				X		X		X			X

ABDOMINALS
CALF
PECTORALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	M	G	V	S	D	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH			X		X					X		X		
EXPLOSIVE ST.			X							X				
EXPLOSIVE ST..		X			X				X		X			

Note: The main indications are in red; while the secondary ones are in black.

SPORT: TENNIS

OBJECTIVE: PREPARATION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	THU	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X		X				X			X			
EXPLOSIVE ST.						X			X			X		
CAPILLARIZAT.	X		X		X			X			X			
ACTIVE RECOV.		X		X			X			X		X		

ABDOMINALS
CALF
PECTORALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X			X				X				X	
MAX STRENGTH			X		X					X			X	
MAX STRENGTH	X		X					X		X				

Note: The main indications are in red; while the secondary ones are in black.

SPORT: TENNIS

OBJECTIVE: COMPETITION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X						X			X			
EXPLOSIVE ST.				X	X				X			X		
CAPILLARIZAT.		X				X		X			X			
ACTIVE RECOV.			X				X			X		X		

ABDOMINALS
CALF
PECTORALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X		X						X		X		
MAX STRENGTH			X								X			
EXPLOSIVE ST.		X		X						X		X		

Note: The main indications are in red; while the secondary ones are in black.

SPORT: VOLLEYBALL

OBJECTIVE: PREPARATION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH	X		X		X				X			X		
EXPLOSIVE ST.										X			X	
CAPILLARIZAT.		X		X				X			X			
ACTIVE RECOV.	X		X		X					X		X		

ABDOMINALS
CALF
PECTORALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH	X		X		X			X					X	
MAX STRENGTH		X		X				X			X			
MAX STRENGTH		X		X					X			X		

Note: The main indications are in red; while the secondary ones are in black.

SPORT: VOLLEYBALL

OBJECTIVE: COMPETITION PERIOD

QUADRICEPS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH		X												
EXPLOSIVE ST.					X				X		X			
CAPILLARIZAT.		X		X										
ACTIVE RECOV.			X				X		X		X			X

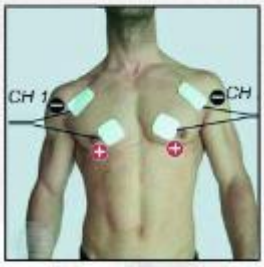
ABDOMINALS
DELTOID
PECTORALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MAX STRENGTH			X		X					X		X		
MAX STRENGTH			X		X					X		X		
EXPLOSIVE ST.,		X			X					X		X		

Note: The main indications are in red; while the secondary ones are in black.

SPORT: SWIMMING

OBJECTIVE: GENERAL CONDITIONING FOR A NONPROFESSIONAL SWIMMER



PECTORALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
ENDURANCE ST.		X		X					X					
AER. ENDURAN.														
POOL SWIMMING	X		X		X			X		X		X		

LARGE DORSAL
TRAPEZIUS
ABDOMINALS

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
ENDURANCE ST.			X							X				
MAX STRENGTH						X							X	
MAX STRENGTH	X							X						

Note: The main indications are in red; while the secondary ones are in black.

FITNESS AND BEAUTY - WOMAN

OBJECTIVE: GLUTEUS TONINIG AND SCULPTING

PROGRAM	1° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN
FIRMING	X		X			X	
TONING		X			X		
SCULPTING							
DRAINAGE		X		X			X

2° CYCLE: 3 WEEKS						
MON	TUE	WED	THU	FRI	SAT	SUN
X			X		X	
		X		X		
	X		X			X

EXERCISES TO BE COMBINED WITH THE STIMULATION






20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min.	With elastic 15 repetitions	15 leaps per leg 2 seq.	30 s	30 s

SUGGESTIONS

The exercises with elastic and the leaps must be carried out without arching the back and keeping the knees slightly bent.

FITNESS AND BEAUTY - WOMAN

OBJECTIVE: THIGH AND HIP TONINIG AND SCULPTING

PROGRAM	1° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN
TONING	X		X		X		
SER.SEQ.STIM 3"	X		X		X		
SCULPTING							
SER.SEQ.STIM 2"		X		X		X	

2° CYCLE: 3 WEEKS						
MON	TUE	WED	THU	FRI	SAT	SUN
X		X		X		
X		X		X		
	X		X		X	

EXERCISES TO BE COMBINED WITH THE STIMULATION





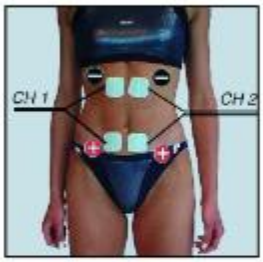

Choose one of the 3 exercises. 20-30 mins.of aerobic activity at constant freq. of 110-130 beats per min.	15 leaps per leg 3 seq.	30 s.	30 s

SUGGESTIONS

The exercises with elastic must be carried out without arching the back and keeping the knees slightly bent.

FITNESS AND BEAUTY - WOMAN

OBJECTIVE: ABDOMINAL AREA TONING AND SCULPTING



PROGRAM	1° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN
FIRMING	X		X			X	
TONING		X			X		
SCULPTING							
DRAINAGE		X		X			X

2° CYCLE: 3 WEEKS						
MON	TUE	WED	THU	FRI	SAT	SUN
X			X		X	
		X		X		
	X		X			X

EXERCISES TO BE COMBINED WITH THE STIMULATION






20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min.	3 sequences of 30 s rec. 1min.	3 sequences of 15 repetitions	30 s	30 s

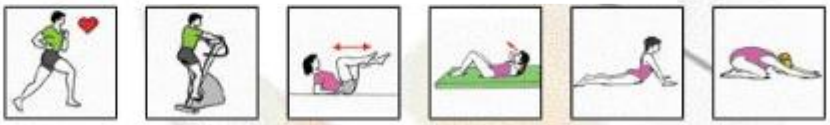
FITNESS AND BEAUTY - WOMAN

OBJECTIVE: POST-PREGNANCY ABDOMINAL TONING AND RECOVERY

SUGGESTIONS
The floor exercises for abdominal toning must be carried out without arching the back.

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
FIRMING	X			X		X		X			X		X	
TONING									X			X		
LIPOLYSIS	X		X		X			X		X		X		X
DRAINAGE		X	X		X		X		X		X		X	

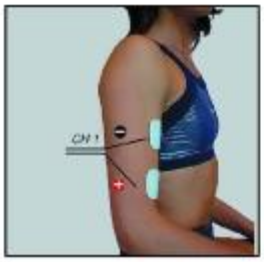
EXERCISES TO BE COMBINED WITH THE STIMULATION



20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min.	3 sequences of 30 s rec.1min.	3 sequences of 15 repetitions	30 s	30 s

FITNESS AND BEAUTY - WOMAN

OBJECTIVE: ARM TONING



SUGGESTIONS
The trunk mobilization exercises must be carried out slowly.

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
TONING MASSAGE	X			X		X		X		X		X		
LIPOLYSIS		X			X				X				X	
DRAINAGE											X			
RELAX. MASSAGE			X				X			X				X

EXERCISES TO BE COMBINED WITH THE STIMULATION

20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	2 sequence of 25 twists	30 s	30 s	30 s

FITNESS AND BEAUTY - WOMAN

OBJECTIVE: BREAST TONING

SUGGESTIONS
The breast area is very sensitive and easy to fatigue: do not use very high intensity to avoid to fatigue the musculature

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
FIRMING	X		X			X		X		X			X	
SCULPTING				X					X			X		

EXERCISES TO BE COMBINED WITH THE STIMULATION

20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	2 sequences of 25 twists	30 s	30 s	30 s

FITNESS AND BEAUTY - WOMAN

OBJECTIVE: FACE TONING

ELECTRODE PLACEM.
Use only the special face electrodes.

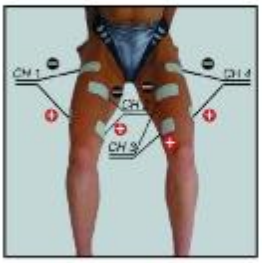
PROGRAM	1° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN
CAPILLARIZATION	X		X			X	
LIFTING EFFECT				X			

2° CYCLE: 3 WEEKS						
MON	TUE	WED	THU	FRI	SAT	SUN
X			X			
	X			X		

SUGGESTIONS
The stimulaton intensity must be very low and it must be increased gradually. Increase 0,5 mA at a time. If during the treatment a slight headache or toothache appear, decrease the intensity.

FITNESS AND BEAUTY - WOMAN

OBJECTIVE: THIGH AND HIP LIPOLYSIS AND DRAINAGE



SUGGESTIONS
The exercise with elastic must be carried out without arching the back and keeping the knees slightly bent. We suggest using the Globus kit bands (available on charge).

PROGRAM	1° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN
LIPOLYSIS	X		X		X		
SER.SEQ.STIM. 4"	X		X		X		
TONING MASSAGE		X			X		
SLIM FIGURE							

2° CYCLE: 3 WEEKS						
MON	TUE	WED	THU	FRI	SAT	SUN
	X		X		X	
X		X		X		
	X		X		X	

EXERCISES TO BE COMBINED WITH THE STIMULATION

FITNESS AND BEAUTY - WOMAN

OBJECTIVE: GLUTEUS LIPOLYSIS AND DRAINAGE

SUGGESTIONS
The exercises with elastic and the leaps must be carried out without arching the back and keeping the knees slightly bent.

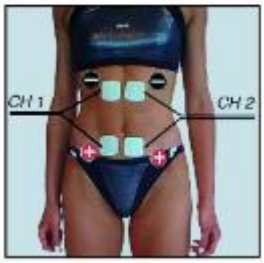
PROGRAM	1° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN
LIPOLYSIS		X		X		X	
SER.SEQ.STIM. 3"		X		X		X	
DRAINAGE	X		X		X		
SLIM FIGURE							

2° CYCLE: 3 WEEKS						
MON	TUE	WED	THU	FRI	SAT	SUN
	X		X		X	
X		X		X		
	X		X		X	

EXERCISES TO BE COMBINED WITH THE STIMULATION

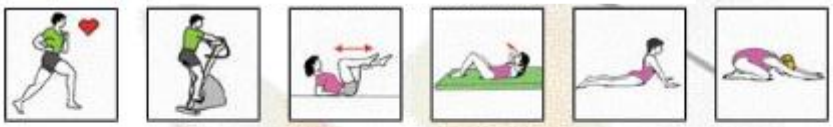
FITNESS AND BEAUTY - WOMAN

OBJECTIVE: ABDOMINAL AREA LIPOLYSIS AND DRAINAGE (WITH FAST PAD TOO)



PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	L	M	M	G	V	S	D	L	M	M	G	V	S	D
LIPOLYSIS		X		X		X								
DRAINAGE		X		X		X			X		X		X	
SER.SEQ.STIM. 2"	X		X		X			X		X		X		
FIRMING									X		X		X	

EXERCISES TO BE COMBINED WITH THE STIMULATION

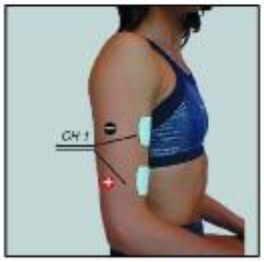


20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	3 sequences of 30 s rec.1min.	3 sequences of 15 repetitions	30 s	30 s

SUGGESTIONS
The floor exercise for abdominal toning must be carried out without arching the back.

FITNESS AND BEAUTY - WOMAN

OBJECTIVE: ARM LIPOLYSIS AND DRAINAGE



PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
TONING MASSAGE	X		X		X				X		X	X		
DRAINAGE		X		X		X		X		X			X	
LIPOLYSIS													X	

EXERCISES TO BE COMBINED WITH THE STIMULATION

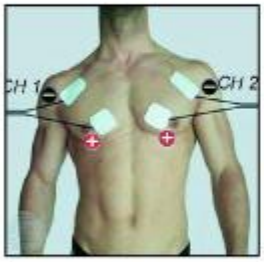
LAVORO DA ABBINARE ALLA STIMOLAZIONE

20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	2 sequences of 25 twists	30 s	30 s	30 s

SUGGESTIONS
The trunk mobilization exercises must be carried out slowly.

FITNESS - MAN

OBJECTIVE: PECTORAL MASS BUILDING



PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
TONING	X													
SCULPTING												X		
MASS BUILDING			X			X		X		X			X	

EXERCISES TO BE COMBINED WITH THE STIMULATION

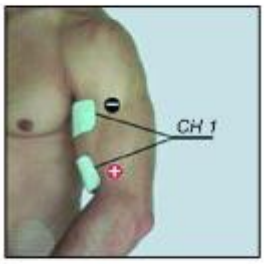
LAVORO DA ABBINARE ALLA STIMOLAZIONE

20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	3 sequences of 15 rep. 5-10 Kg	3 sequences of 15 repetitions	30 s	30 s

SUGGESTIONS
The pectoral strengthening exercises must be carried out slowly with dumbbells of 5-10 Kg.

FITNESS - MAN

OBJECTIVE: ARM AND SHOULDER MASS BUILDING



SUGGESTIONS
The arm strenghtening must be carried out slowly with dumbbells of 5-10 Kg.

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
TONING	X				X									
MASS BUILDING			X						X			X		
BODY SCULPTING								X			X			

EXERCISES TO BE COMBINED WITH THE STIMULATION

20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	3 sequences of 15 rep. 5-10 Kg	3 sequences of 15 repetitions	30 s	30 s

FITNESS - MAN

OBJECTIVE: THIGH AND CALF MASS BUILDING

SUGGESTIONS
The work with barbell must be carried out under the supervision of an expert instructor. Start the jumps from the maximum crouched position.

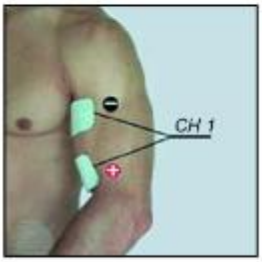
PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
MASS BUILDING		X			X				X		X		X	
SCULPTING			X			X		X						

EXERCISES TO BE COMBINED WITH THE STIMULATION

20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	3 seq. of 12 rep. 30-40Kg.	3 sequences of 6 repetitions	30 s	30 s

FITNESS - MAN

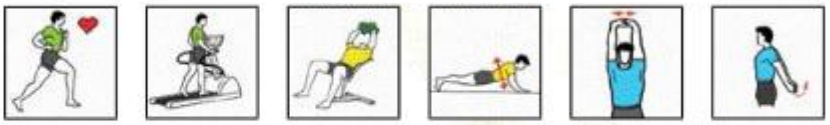
OBJECTIVE: ARM, SHOULDER AND LATISSIMUS DORSI TONING AND SCULPTING



SUGGESTIONS
The strengthening exercises for upper limbs must be carried out slowly with dumbbells of 1-2 Kg.

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
FIRMING			X		X									
TONING	X					X		X				X		
SCULPTING		X		X					X		X			
										X			X	

EXERCISES TO BE COMBINED WITH THE STIMULATION



20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	3 sequences of 15 rep. 2 Kg.	3 sequences of 15 repetitions	30 s	30 s

FITNESS - MAN

OBJECTIVE: ABDOMINAL TONING AND SCULPTING

PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
FIRMING	X				X					X		X		
TONING								X		X				
SCULPTING		X		X		X			X		X		X	

EXERCISES TO BE COMBINED WITH THE STIMULATION

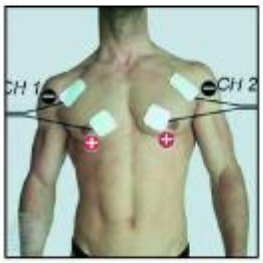
20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	3 sequences of 15 abdominals	2 sequences of 25 twists	20 swings	30 s

SUGGESTIONS

In the floor exercise for abdominal strengthening lift up the shoulders without arching the back.

FITNESS - MAN

OBJECTIVE: PECTORAL TONING AND SCULPTING



PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
TONING	X		X		X			X						
SCULPTING						X			X		X		X	

EXERCISES TO BE COMBINED WITH THE STIMULATION

LAVORO DA ABBINARE ALLA STIMOLAZIONE

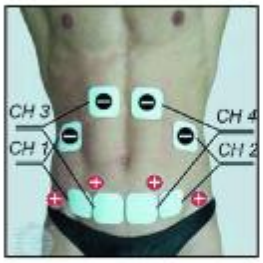
20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	3 sequences of 15 rep. 2 - 5 kg	3 sequences of 15 repetitions	30 s.	30 s.

SUGGESTIONS

The pectoral strengthening exercises with dumbbells of 2 - 5 Kg. must be carried out slowly.

FITNESS - MAN

OBJECTIVE: WAIST REDUCTION



PROGRAM	1° CYCLE: 3 WEEKS							2° CYCLE: 3 WEEKS						
	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT	SUN
FIRMING	X		X		X				X		X		X	
DRAINAGE		X		X		X		X		X		X		
LIPOLYSIS	X		X		X									
SLIM FIGURE								X		X		X		

EXERCISES TO BE COMBINED WITH THE STIMULATION

20-30 mins. of aerobic activity at constant freq. of 110-130 beats per min	3 sequences of 15 abdominals	2 sequences of 25 twists	20 swings	30 s

SUGGESTIONS

In the floor exercises for abdominal strengthening lift up the shoulders without arching the back.

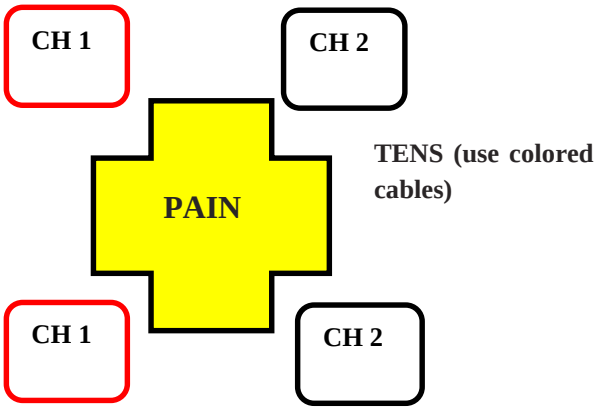
ELECTRODE PLACEMENT

The correct electrode placement and the correct choice of their size are critical aspects for the electrostimulation to be effective.
To choose the size of the electrodes and as for their placement it is necessary to refer to the images at the end of this guide. For any further information visit our website www.globuscorporation.com where you can find a wide range of images and videos on the electrode placement.

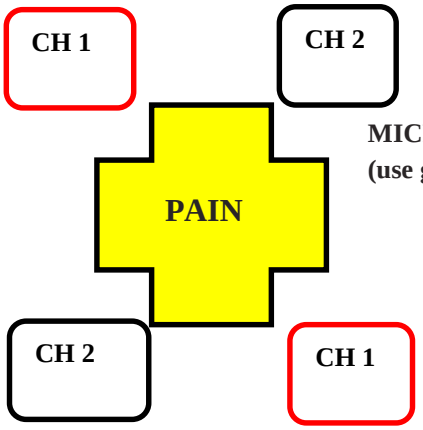
NOTE For all the programs that cause an important muscle contraction (such as, for example, strength, hyperthrophy, toning and firming programs...) it is important to place the electrode on the muscle **motor point**, that is the point most sensitive to stimulation.
If the electrode is not placed exactly on the motor point, the contraction could be small and/or annoying. In this case it is necessary for the positive electrode to be moved a few millimeters up to feel an effective and comfortable contraction.

The body position during the stimulation
The body position during the electrostimulation session depends on the body part involved and on the program type that is being carried out.
During the treatment execution with high intensities, we suggest blocking the limbs in order to work in isometry. For instance, if you want to treat the quadriceps with a strength program, we suggest carrying out the treatment while sitting with the foot blocked, in order to avoid an involuntary leg extension during the contraction phase.
For all the programs that do not imply high intensity (massages, decontracting, drainage programs) the body position is not important, as long as it is comfortable.

Electrode placement for Tens and Microcurrent programs
In the following pages you can find the images with the correct electrode placement for tens and microcurrent treatments. If the localization of your pain is not included in the images represented, you can position the electrodes by forming a "square" on the painful area. Here's an example.



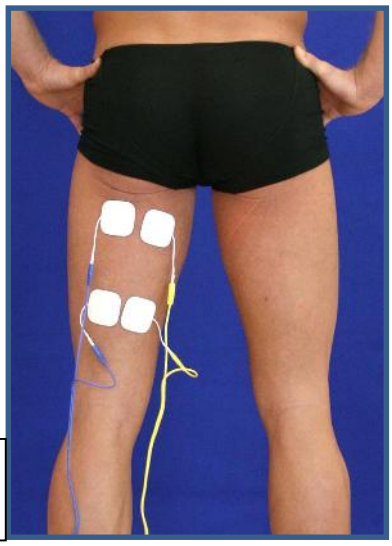
TENS (use colored cables)



MICROCURRENTS (use gray cables)

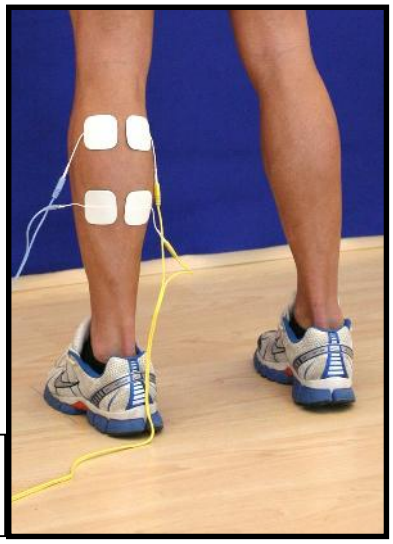
ELECTRODE PLACEMENT

1



2

3



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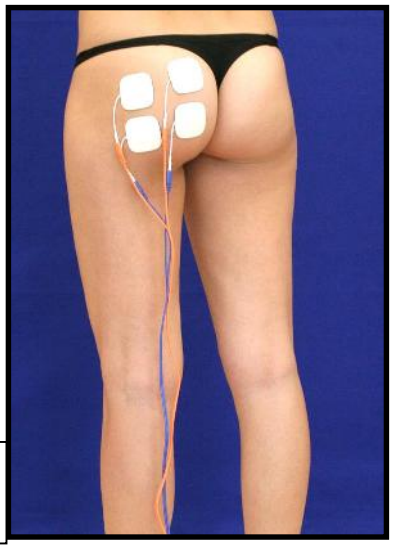

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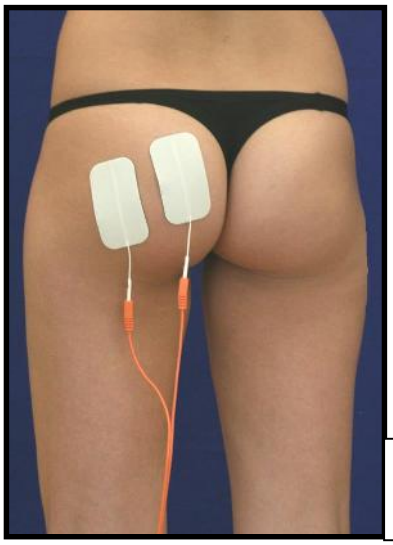

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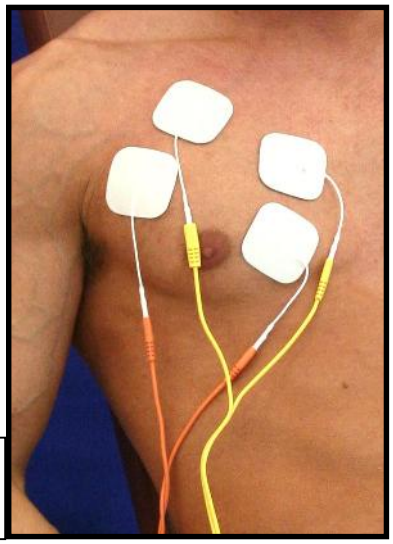

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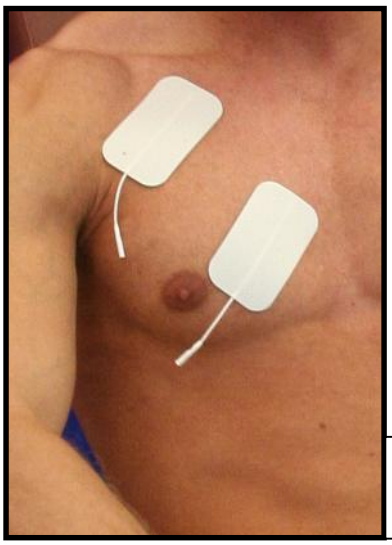

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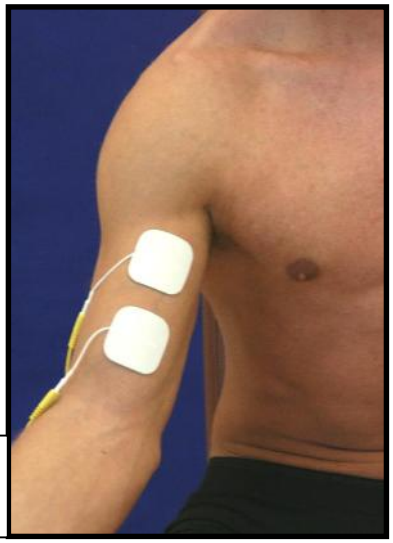

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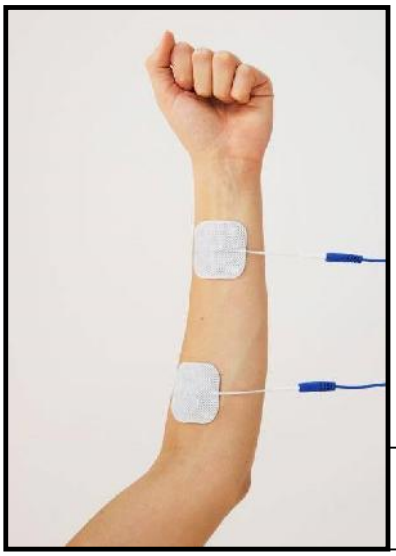

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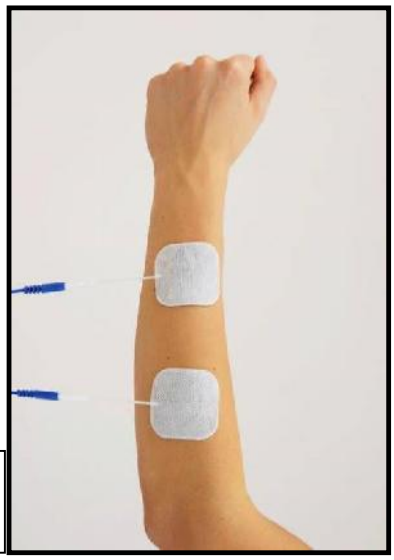

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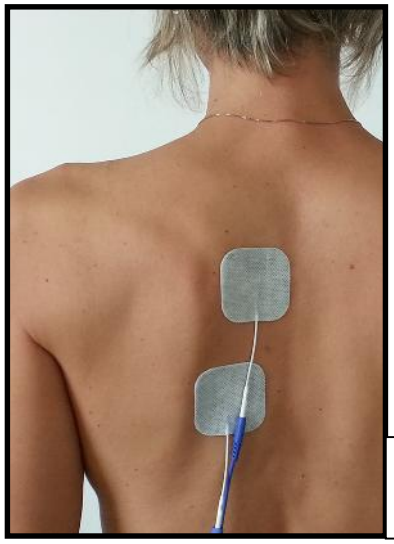

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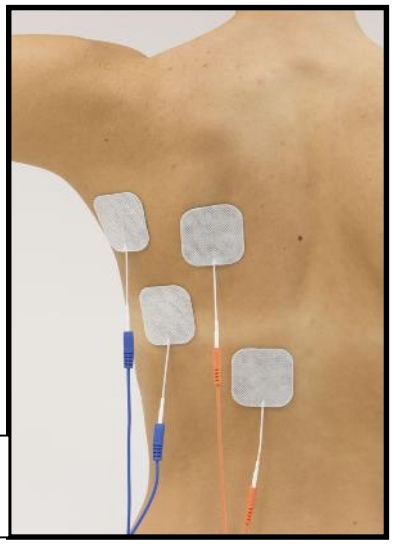

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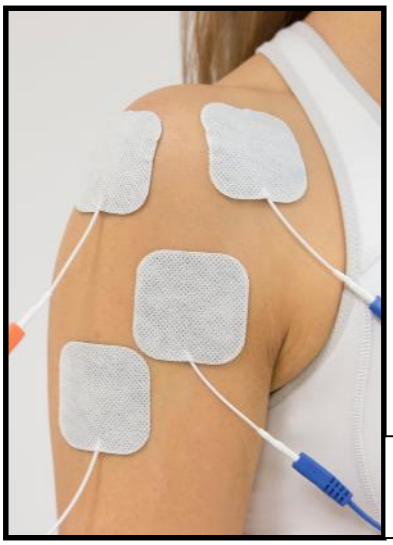

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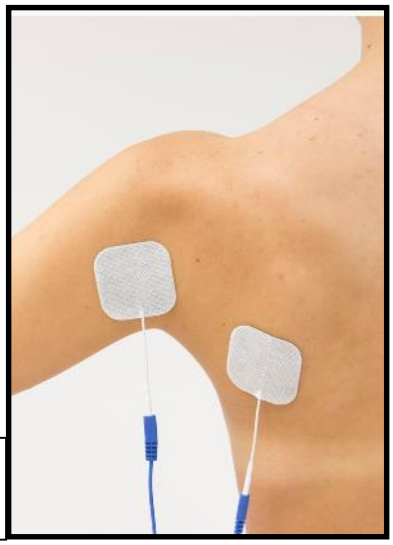

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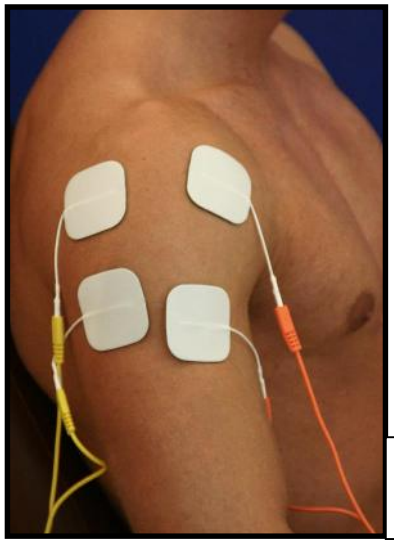

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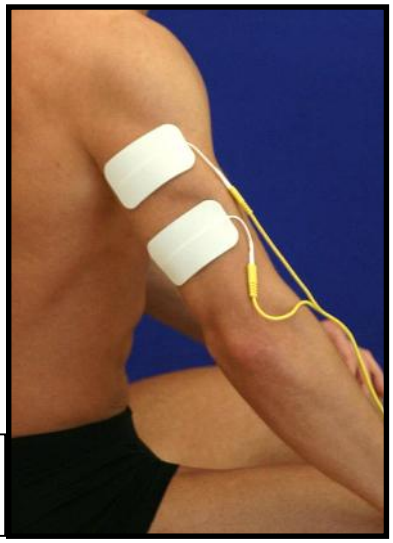

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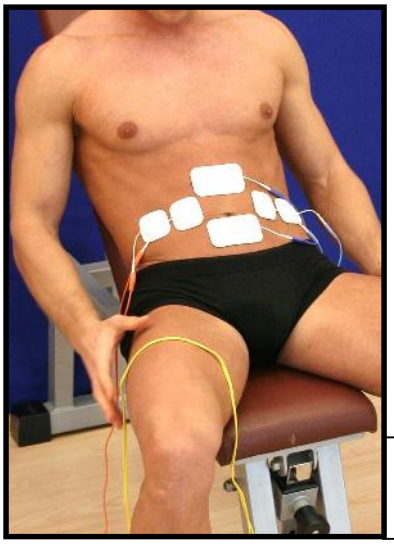

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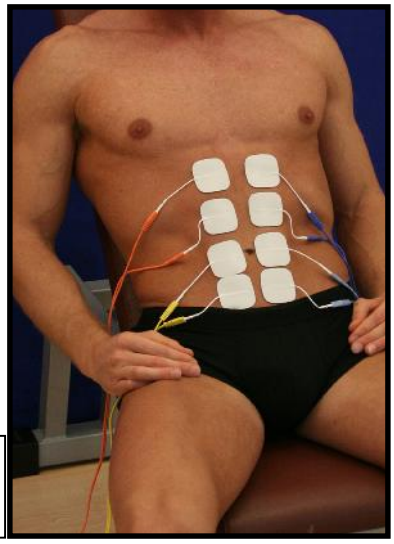

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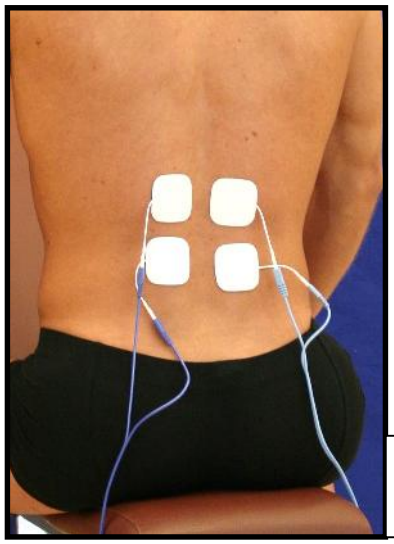

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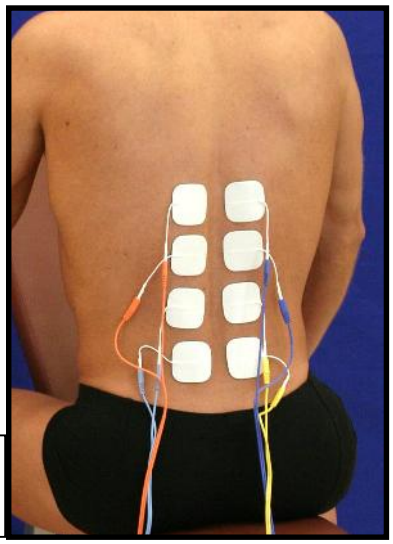

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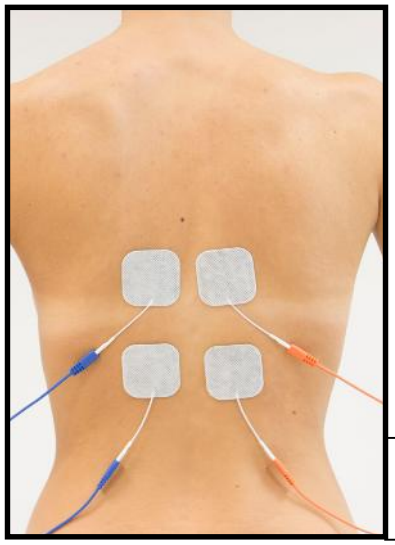

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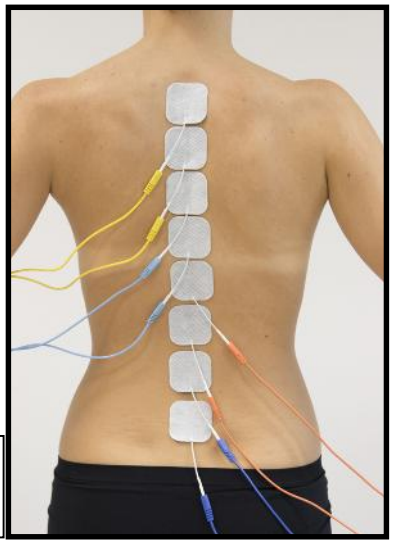

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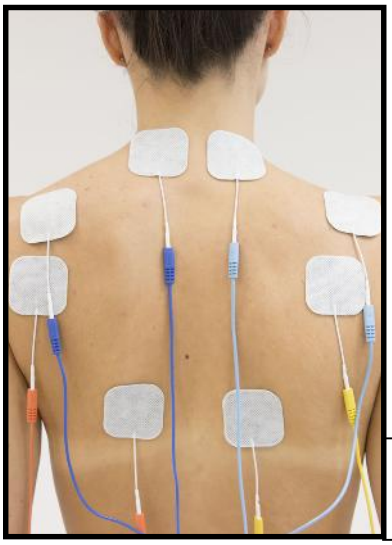

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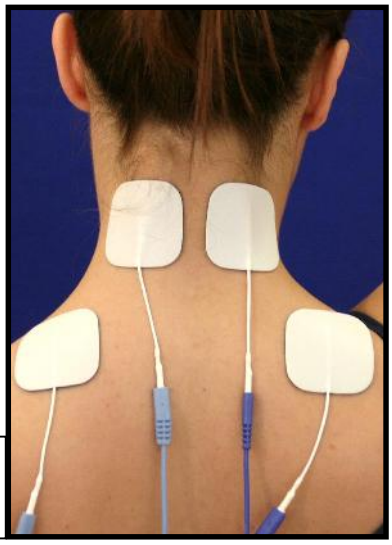

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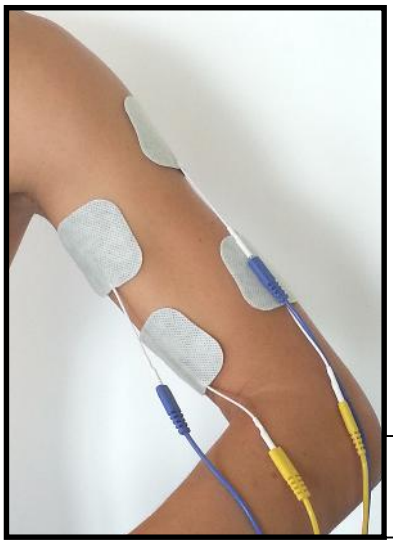

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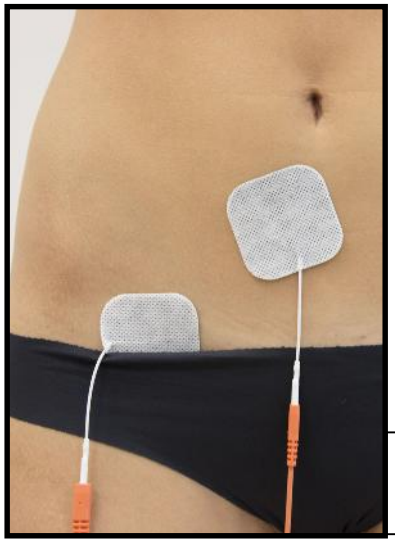

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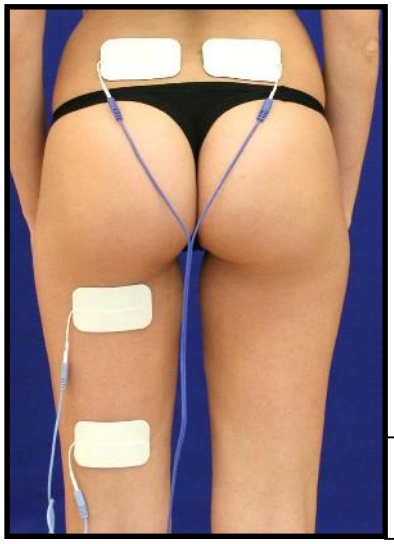

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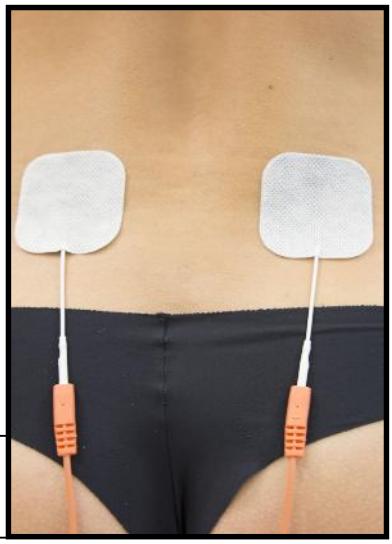

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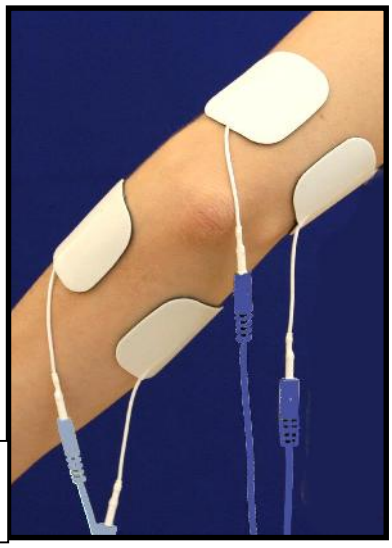

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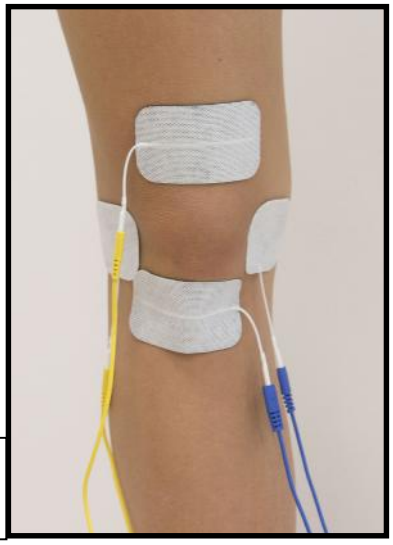

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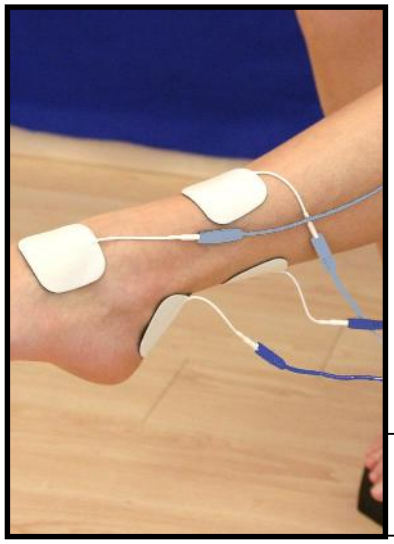

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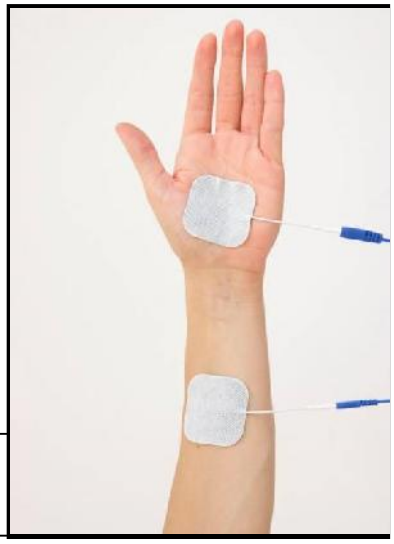

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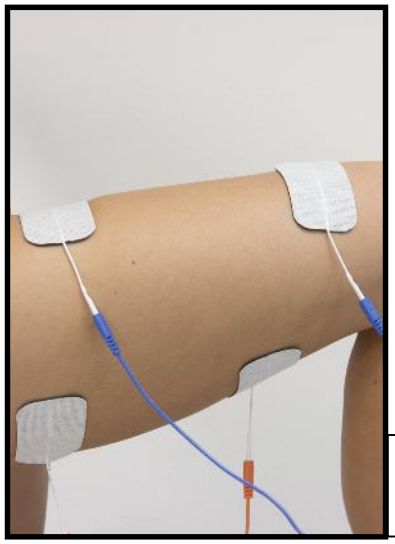

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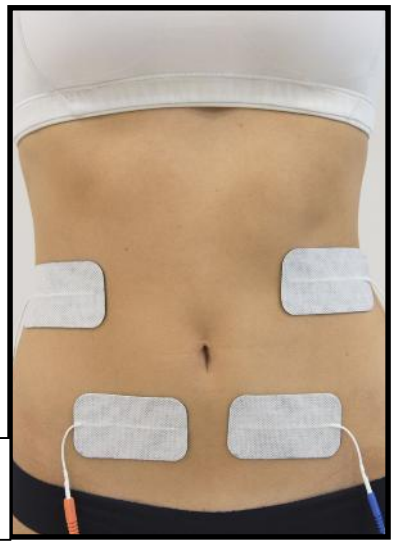

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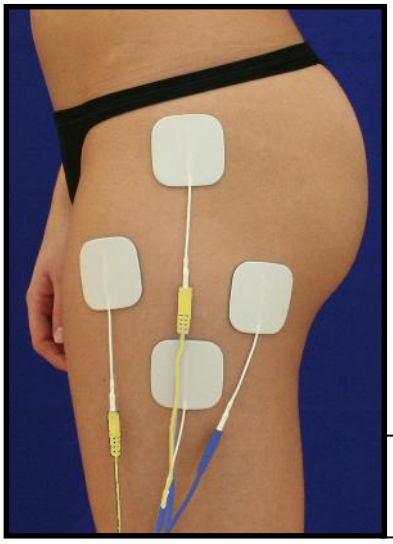

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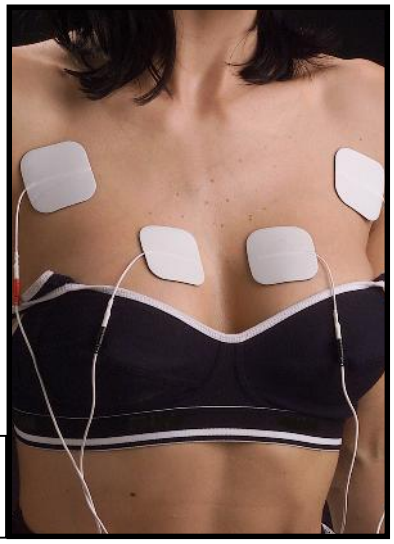

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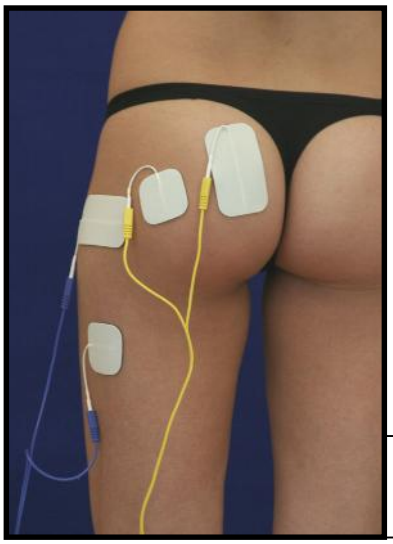

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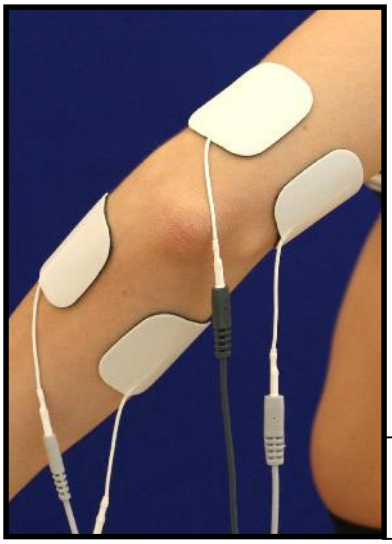

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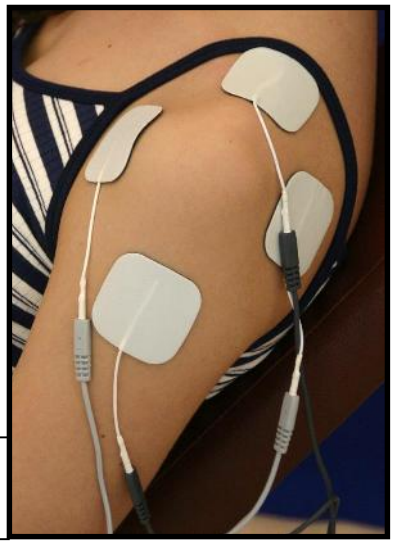

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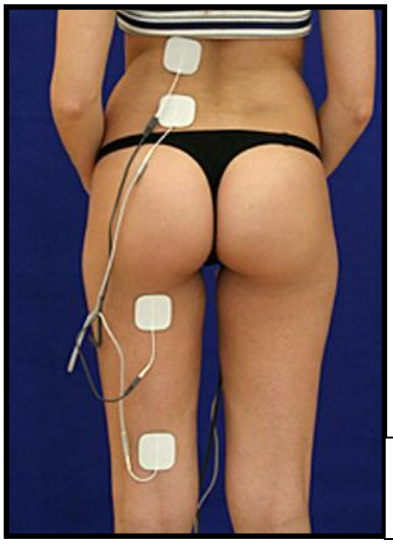

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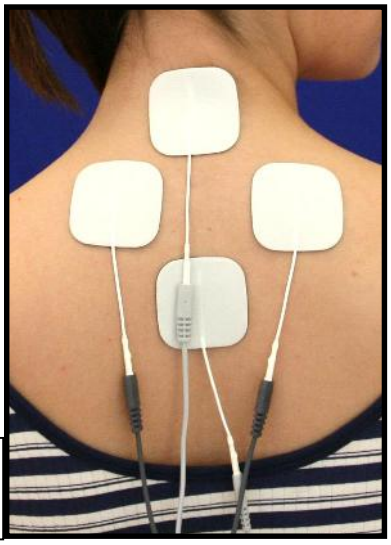

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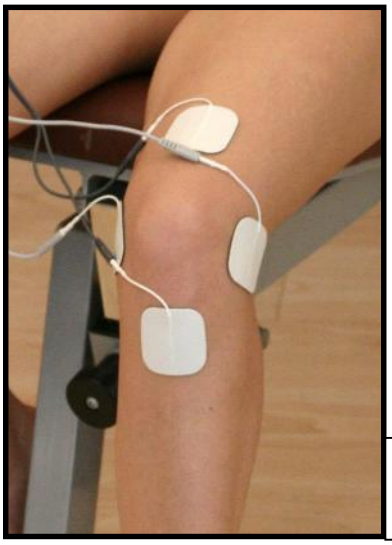

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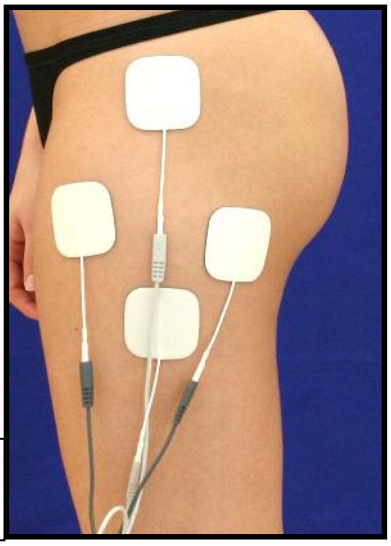

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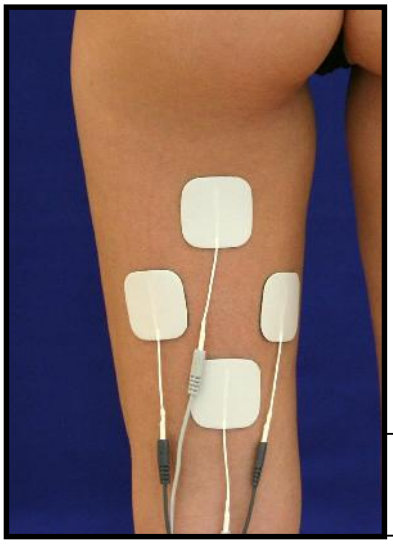

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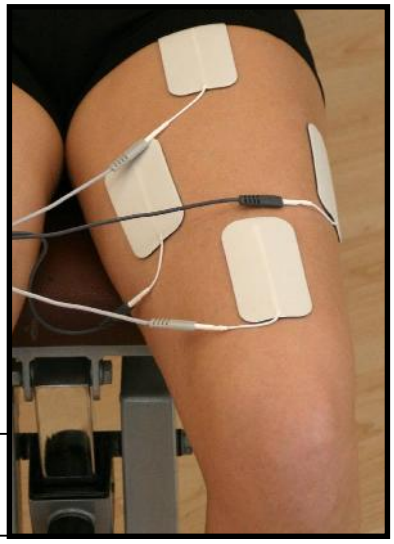

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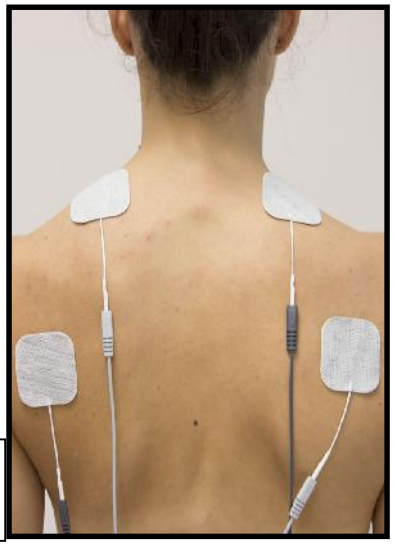

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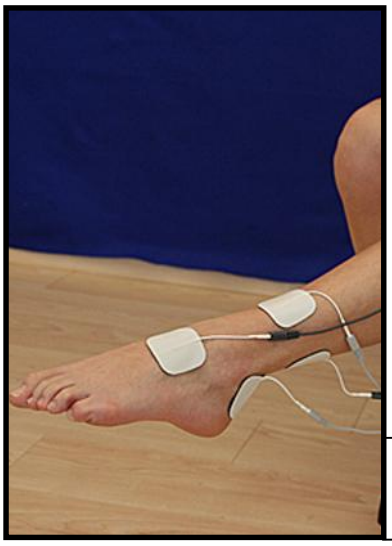

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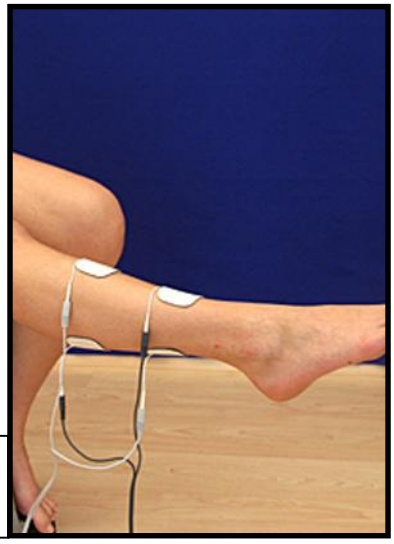

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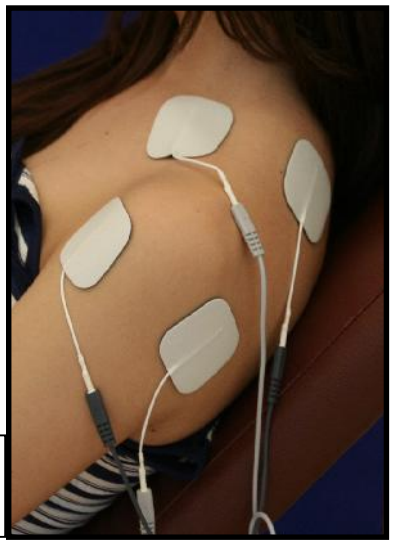

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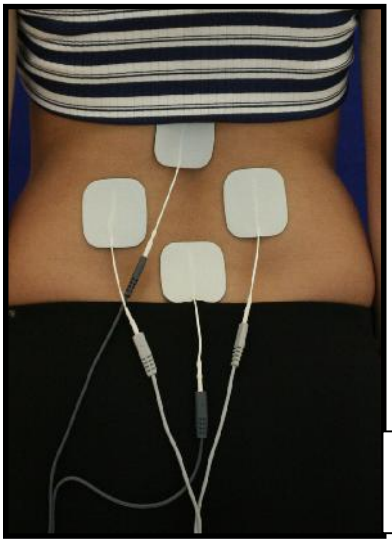

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