HCR 1002

The revolutionary technology that maximizes therapeutic effectiveness and speed

humantecar.com

Human Tecar®

HCR is a fundamental tool within the Human Tecar MO: by acting on microcirculation, it maximizes the body's capacity for recovery, preserves and restores balance, and enhances performance. From the very first session, the person being treated will be able to ascertain the immediate benefits of treatment: pain and discomfort disappear; functional recovery is more easily achieved, fast.

WHAT IS IT?

Human Tecar HCR is an electromagnetic stimulator of microcirculation. It works by means of a medium-frequency radio signal (447 kHZ) that, placed in contact with biological tissue through two specific types of conductive electrodes – high and low-impedance – triggers metabolic activation of the tissue itself, stimulating blood flow/lymphatic circulation in more or less extensive body areas. The electromagnetic signal is conveyed to tissue by direct contact, acting from the inside, without any energy loss.

HCR is a new-generation technology, the outcome of a quarter of a century of hands-on experience and four years of research in the biomedical field.

Its high-efficiency generator guarantees greater power and drastically reduces therapy times; its Advanced Emission System allows previously unthinkable therapeutic precision, thanks to unprecedented control of signal. The device is characterized by much higher levels of performance in terms of energy consumption, with near-zero energy loss between incoming and outgoing power; it only weighs around 7 kilograms (15 pounds), moreover, which makes it easy to carry and travel with.

A further advantage is its flexibility: it allows practitioners to vary temperatures, even very slightly, adapting a given therapeutic protocol to the precise requirements of the person being treated at all times – something that's crucial in case of inflammatory conditions, both acute and chronic, or in pain therapy.

Finally, its ample display allows one to visualize both power values applied and tissue's internal response in terms of impedance, current intensity and energy developed.

HOW DOES IT WORK?

The healing process starts from within the body. Stimulating energy from inside biological tissue to activate reparatory, anti-inflammatory processes, Technology comes to the aid of the physician to eliminate pain and solve the problem causing it: energy calls for energy.

HCR is based on the principle of capacitance, well known in physics and applied to this type of electro-medical device for the first time here.

In biological terms, we may speak of the mobilization of electrical charges – called electrolytes – that are naturally present in the body. These can influence cellular metabolism, triggering the need for more oxygen and nutrients and therefore, an increase in blood flow to a given body district.

Homogeneity of response in deep tissue

One of the major advantages to HCR is the homogeneity of response in deep tissue: this is because energy is exclusively conveyed by means of the attraction and repulsion processes of the electrical charges drawn by the active electrode from the various body districts, so it acts from within rather than without the body.

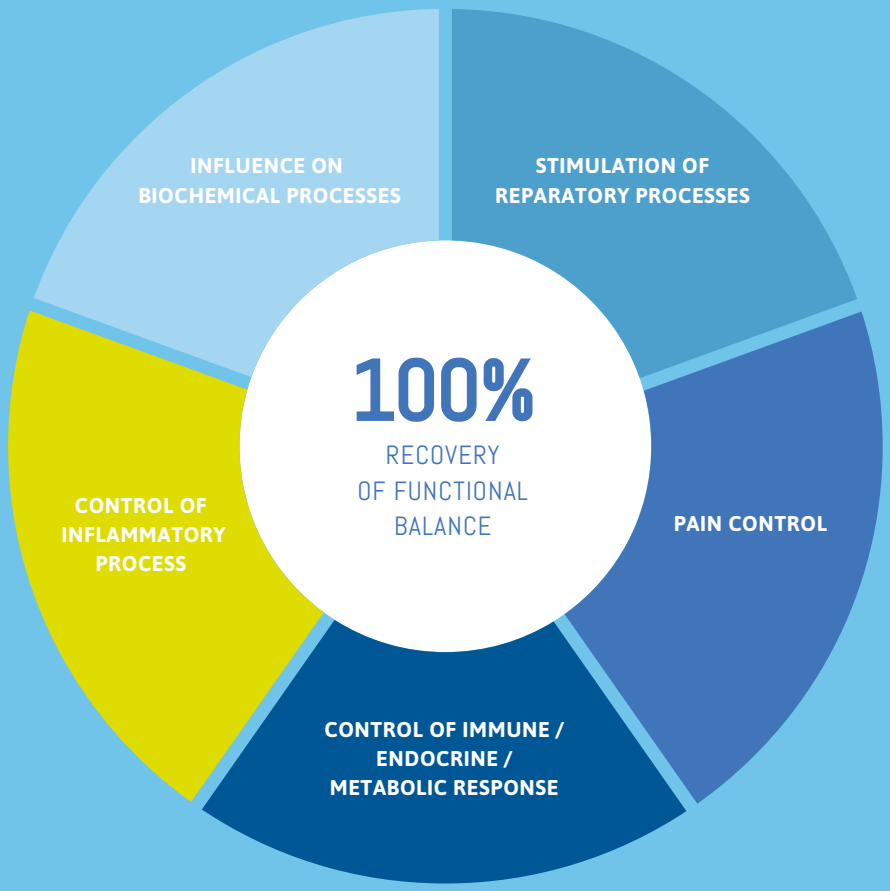
Flexibility of technology

Practitioners can utilize HCR in a very flexible manner, since its use is highly focused and precise, acting locally and prompting variations in temperature in a given body district and therefore, differences in temperature between that district and one close to it or adjacent to it.

THREE LEVELS

The mobilization of electrolytes and their accumulation in the desired body district occurs in three distinct stages:

1. On a **first level**, there is biostimulation with an increase in endocellular energy transformation, increased oxygen requirement due to the action on tissue biochemistry, and an analgesic (painkilling) effect, thanks to the effect on free nerve endings.
2. On a **second level**, we have intracellular oxygenation, chemical microhyperemia in the capillary and precapillary districts, associated with degranulation of the specific receptors, an increase in speed of blood flow due to the 'shunt effect,' and finally endothermia due to the acceleration of metabolism in the substratum.
3. On a **third level**, we have mechanical vasodilation associated with an increase in deep temperature, increased blood flow and lymphatic drainage.



The basic principle behind HCR technology is homeostatic in nature: stimulating and supporting the body in its self-regulating mechanisms.

It's not a matter of acting in the body's stead but of stimulating physiological tissue activity from within, supporting the body's recovery process and triggering its natural anti-inflammatory and reparatory processes.

Stimulating the body's natural processes leads to functional balance.

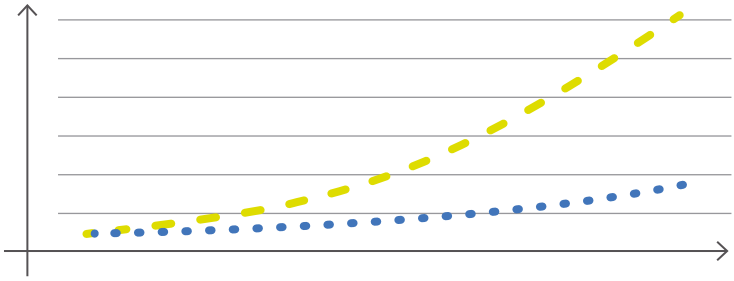
Under normal conditions, the body's sensation of well-being is associated with a balance of biological factors and components: what we perceive as "normalcy." In the presence of any element whatsoever that should tend to alter this balance – from physical effort to trauma or inflammation – the body launches its natural, self-reparatory processes, which HCR technology stimulates and accelerates.

Temperature management stimulates the body's natural reparatory processes.

HCR affects temperature; in particular, minimal variations of temperature in specific, well identified body districts. In this way, it exerts a decisive influence on the biochemical processes that trigger anti-inflammatory and reparatory mechanisms.

A suitably modulated increase in temperature causes the body's natural biological processes to accelerate in the area concerned, acting on inflammation, edema and pain, enhancing the blood's oxygen carrying capacity from the peripheral arteries to tissue (effect on the oxygen-hemoglobin dissociation curve and on myoglobin), facilitating the increase of oxygen reserves in the muscle or tissue concerned, and accelerating the activity of chemical mediators in tissue.

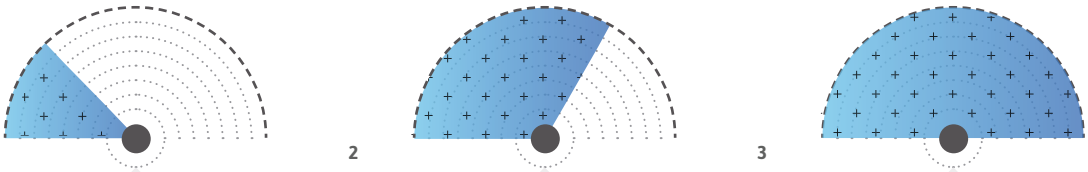
HCR 1002 – THREE REACTIONS PRODUCED



1. INCREASE IN MICROCIRCULATION
2. VASODILATION
3. INCREASE IN TEMPERATURE

Blood Flow
Cellular Metabolism

HCR 1002 – STIMULATES THE MOVEMENT OF ELECTROLYTES



1

Biostimulation
activates beneficial threshold values.

2

Hypoxic hyperemia.
Oxygenation.

3

Reactivation of metabolic activities.
Vascularization and increase in temperature.

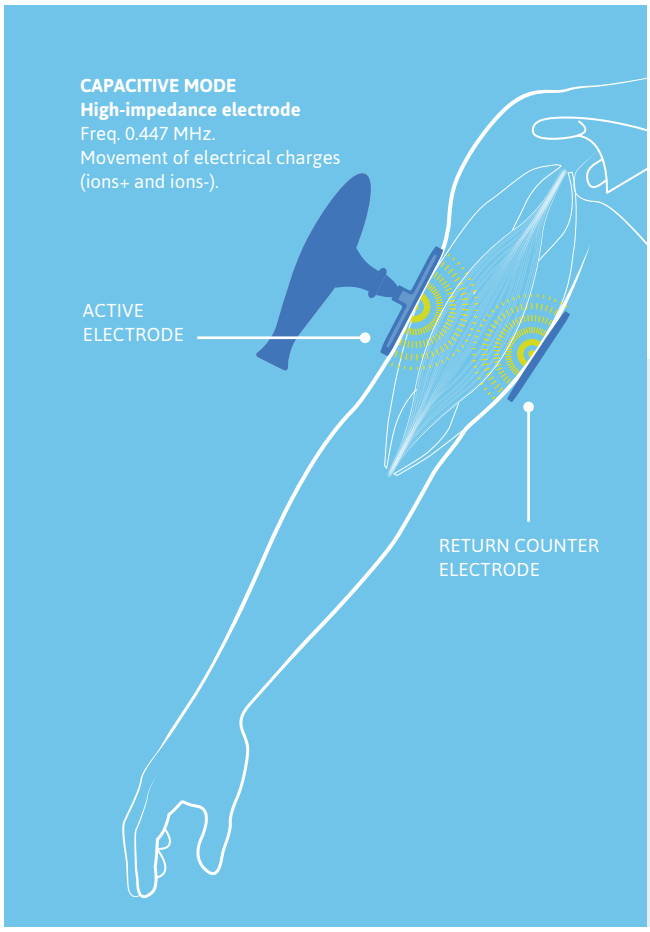
PATHOLOGICAL TISSUE → **HEALTHY TISSUE**

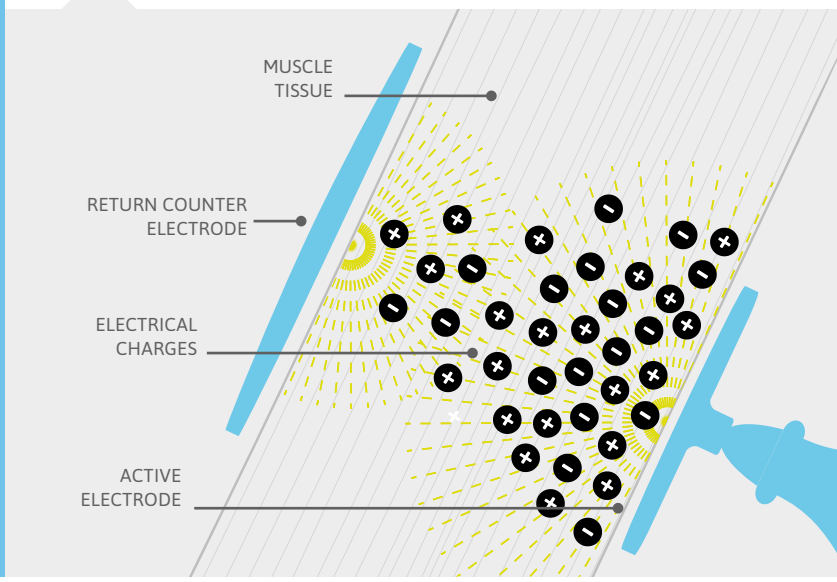
Advantages of transferring the entire potential of HCR to biological tissue by means of high-impedance lymphodynamic and thermo-dynamic electrodes (capacitive) and low-impedance electrodes (resistive), in combination with the Universal Electrolytic Emulsion

HIGH-IMPEDANCE ELECTRODES

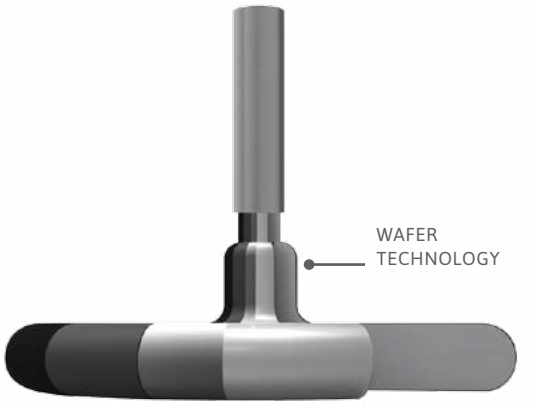
Particularly suited to treating soft tissue (muscular, adipose, vascular, lymphatic).

High-impedance (capacitive) electrodes induce an endogenous response, contingent on the intensity of the electromagnetic signal applied, reactivating blood flow (minimal or max. variations, depending on goal), in low-impedance soft tissue with high water content. In practice, this tissue is revitalized thanks to intense vascularization, which acts on edema, pain and inflammation; with all the benefits of better blood flow.





High-impedance (capacitive) electrodes, coated with a special insulating material, are made with a multi-layer coating technique (wafer technology), with one or more biocompatible materials. Their characteristic is transferring the medium-frequency radio signal to biological tissue in the most effective way possible. The person being treated feels that internal and deep circulation is reactivated, which in turn induces an increase in temperature in the given body district.



- **Convex, high-impedance lymphodynamic electrodes**

  Suitable for inducing small changes in blood flow in tissue, with microscopic variations in temperature, specific in lymphatic drainage of tissue. Convex lymphodynamic electrodes are used in treatment of painful pathologies with edema and effusions, and any time the tissue's draining component needs to be activated solely by acting on capillary blood flow velocity.

  Convex lymphodynamic electrodes are made by means of a specific technology, distinct from that of other high-impedance electrodes, with a special material that better responds to tissue's lymphodraining activity. They are sensitive to even the slightest power variations applied by the HCR device.

  Convex, high-impedance lymphodynamic electrodes enable better and faster treatment of body areas like the popliteal area (behind the knee), armpits, and the small joints of hands and feet, since due to their shape, it is possible to make full use of the electrode's active surface.

- **High-impedance thermodynamic electrodes, flat and convex**

  Particularly suited in treatments where greater increases in circulation and temperature are required, as, for example, in case of muscle contracture; thermodynamic electrodes are characterized by different shapes and diameters in order to better adapt to the body areas concerned.

CONVEX LYMPHODYNAMIC ELECTRODE

FLAT LYMPHODYNAMIC ELECTRODE

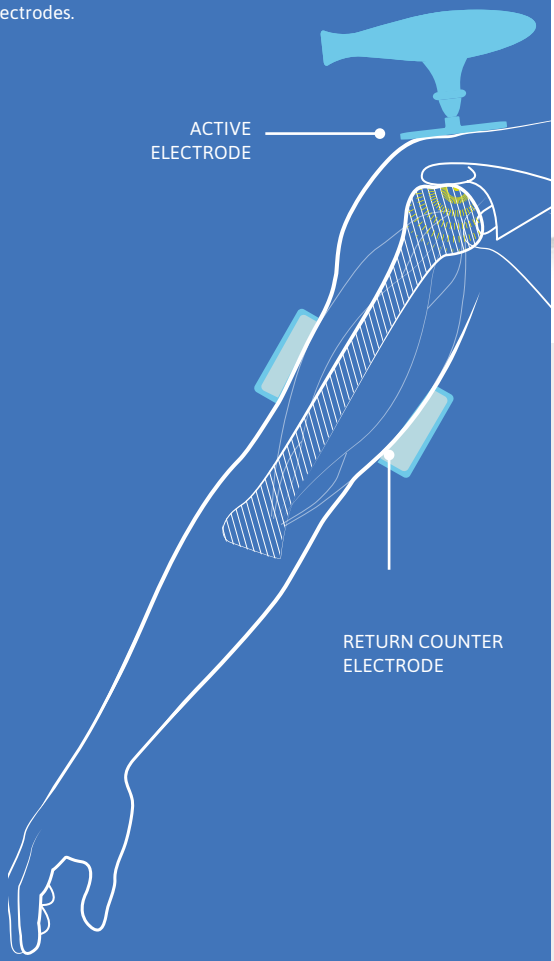
CONVEX THERMODYNAMIC ELECTRODE

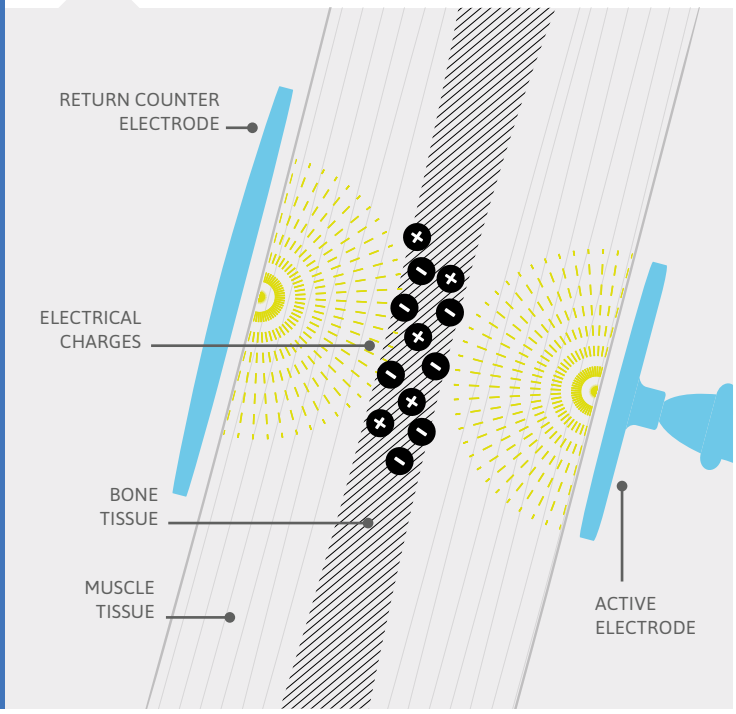
LOW-IMPEDANCE ELECTRODES

Particularly suited to selective, in-depth action; treatment with low-impedance electrodes is currently considered the treatment most effective on fibrous connective tissue and bone tissue, biophysically more resistant tissue (bones, cartilage, large tendons, aponeuroses).

Low-impedance or resistive electrodes are powered by the same radiofrequency signal. The practitioner assesses which intensity level he had best apply, depending on the required endogenous response. This consists of concentrating circulation and increasing temperature in osteoarticular and tendinous tissue as well as in the presence of fibrotic tissue and scars, i.e. in areas with low levels of electrolytes. They are instrumental in resolving biological damage in all forms of chronic and acute pathology characterized by degeneration and fibrosis.

RESISTIVE MODE
Low-impedance electrodes
Freq. 0.447 MHz.
The capacitor model in physics is reproduced in the transfer of energy by means of non-insulated electrodes.





Universal Electrolytic Emulsion

Treatment with HCR cannot do without the Universal Electrolytic Emulsion, a functional cosmetic product with high levels of conductivity that constitutes an indispensable factor in reducing superficial tissue's resistance and facilitating the internal mobilization of electrolytes, responsible for the consequent circulatory response.

It is a highly technological product that, correctly utilized, strongly affects response time to therapy. It guarantees tissue's thorough hydration, reduces skin resistance, optimizes electrode's smooth movement over skin and prevents therapeutic activity from focusing solely on tissue's superficial layers. It also makes treatment a very pleasant experience.

Electrodes and ergonomic Smart Use handpieces

In order to carry out treatment and focus on the proper body areas, the practitioner will often need to change the type of electrodes and corresponding diameter several times during a single treatment session; particularly in case of inflammatory pathologies and analgesic therapies, where minimal variations in temperature can immediately affect results.

In order to make it easier and faster to change electrodes, each of these has been made to fit special handpieces with Smart Use connections, which makes replacing electrodes extremely swift and easy.

Each electrode-bearing handpiece has been ergonomically designed and made with special materials that make it light and easy to use – including when HCR is applied with counter resistance techniques.

AREAS OF APPLICATION IN PHYSIOTHERAPY

Pain

HCR is effective in the early treatment of all non-surgical osteoarticular and muscular pathologies, acute or chronic. Its action is intensely analgesic; it drains tissue by acting on microcirculation and functionally stimulates peripheral circulation thanks to its modulation of endogenous temperature. Results are swift and stable in time.

Sports

Besides its performance in case of acute and chronic osteoarticular and muscular pathologies, HCR is also useful in the recovery from an excessive bodily workload ("overtraining syndrome"), which can cause muscle pain; also, in case of delayed recovery from trauma, in sleep disturbances, in case of intercurrent diseases due to the temporary decrease in immune defenses, or whenever the athlete finds it impossible to continue training due to insufficient strength, rapidity and endurance. Moreover, in increasing blood flow and lymphatic circulation, HCR is conducive to fast deacidification of tissue and therefore, faster disposal of toxins. Overworked athletes' strength is restored and they get back into shape, fast.

Anti-aging, regenerative medicine, aesthetic medicine and post-surgery

Physiotherapy has taken on a fundamental role in personal well-being and anti-aging *tout court*, where HCR technology has facilitated the swift and stable solution of a number of functional problems that give rise to more or less serious blemishes and imperfections.

Facial skin revitalization

HCR is conducive to greater hydration of the skin and facilitates the elimination of toxins. Thanks to the internal and homogeneous increase in tissue temperature, it favors new collagen formation, while externally, treatment improves skin tone and texture, consequently restoring luminosity.

Phlebo-lymphology, lymphedema and cellulite

For the first time ever, anti-cellulite action manages to be simultaneously effective on nodules, painless and systemic. By means of deep, vigorous stimulation – one, however, that takes care not to excite the nerve endings related to pain – HCR acts on microcirculation of the blood and lymph, i.e. starts with the deepest vascular district, rebooting tissue metabolism. Results are structural: the dermis and hypodermis are gently restructured. Skin tissue recovers a smooth surface and homogeneous plasticity, since each anatomical component of the tissue affected has been put in a position to carry out its function properly and its proper metabolism has been restored.

Stress, sleep disturbances, jet lag

Being subjected to continuous stress triggers repeated physiological response to stress. This is directly linked to the insurgence of actual illnesses that can affect various areas of the body. Most people are afflicted by stress, in various measure and various guises (jet lag, sleep disturbances). In particular, those subject to heavy responsibilities, those obliged to travel frequently or whose work is especially heavy, those facing anxiety-triggering situations in their professional or personal lives. Should one face an excessive burden of stress, or even borderline stress (in other words, which is in danger of becoming excessive: in this case, we speak of prevention), a suitable anti-stress therapy is recommended. The HCR device is a precious ally in this kind of therapy: it reboots the body and improves the quality of rest, rebalancing vital functions and providing the necessary energy and drive to restore ideal psychological and physical well-being.

The elderly

HCR is an extremely effective technology in the treatment of chronic pathologies that affect a high percentage of elderly people. Some of the most common are degenerative and inflammatory articular afflictions, inflammatory processes of the extremities, debilitating pain that systematically comes with all regressive processes, just as the inability to concentrate and lack of balance due to the reduced supply of oxygen and blood to the brain. The technology is also employed in various forms of osteoporosis and in numerous post-surgery rehabilitation protocols, particularly after arthroplasty surgery. Some of its advantages are that it does not interfere with pharmaceutical therapies, has no collateral effect, and recovery time is considerably shortened, thus cutting back the costs of lengthy physiotherapy sessions.

Disability

HCR technology is highly appreciated in the world of disability, where it plays a major part in considerably improving quality of life and has long been employed to treat acute and chronic pathologies, in prevention and in muscular recovery.

Veterinary medicine, rehabilitation, physiotherapy, fitness and prevention

Many years of research and tangible results, the experience acquired in human physiotherapy, both in the world of sports and without, have soon crossed over to the veterinary field, enabling the treatment of horses, first, then of small animals, to change therapeutic approach. Today, the veterinarian is supported by a new resource that can help him or her reduce therapy time considerably. As in professional sports for humans, HCR is used in the prevention and muscular recovery before and after intensive training and when races (e.g. in the case of racing horses) are closely spaced together.

Prevention

Thanks to the speed with which it is possible to resolve even complex issues, HCR technology is used in prevention not only in high-level professional sports but in occupational medicine and in daily life, in order to prevent any minor inflammation, cramp, muscular fatigue or stress from turning into an acute or chronic pathology, which would be harder to treat and affect quality of life.
It ensures the person treated is recharged with energy, restoring ideal physical conditions and improving well-being.

TECHNICAL CHARACTERISTICS

CLASSIFICATION OF DEVICE – Technical and Manufacturing Parameters

For protection level against electrical risk	Class I
For protection level against electrical risk – applied parts	Type BF
For electromagnetic compatibility	Class A, Group 1
For protection against damage deriving from water	Common Device
For protection against damage deriving from dust	Common Device
For method of sterilization	Not applicable
For security in the presence of inflammable gas	Not suited
Mode of use	Device suited to continuous use
Mode of placement	Transportable device

CLASSIFICATION OF DEVICE – for intended use

On the basis of intended use, it may be classified as follows:

GMDN Code - Global Medical Devices Nomenclature
47575 - Device for heat treatment by radiofrequency - resistive and capacitive

UMDNS Code - Universal Medical Devices Nomenclature System
11244 - Diathermy Units

CND Code - Italian Classification of Medical Devices
Z12069099 - Physiotherapy and rehabilitation equipment - other

TECHNICAL DATA for use

Power and mains frequency	100 - 240 V 50 - 60 Hz
Input fuses	2 x T5A H 250V
Input power	380VA
Output frequency	0.447 MHz ± 0.002 MHz
Output voltage and power	RES: 150V/300W ± 10% and ± 2W CAP: 600V/450VA ± 10% and ± 2W
Consumption when in standby mode	1.1 W
Consumption when at rest	12 W
Size/Weight	L 53 x P 27 x H 19 cm / kg 7.5
Remote control: batteries	2 x alkaline batteries GP23A 12V

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