



Focus On TECAR

Technical-scientific overview of Radiotherapy

What is Endodiathermy (TECAR)?

T.E.C.A.R stands for "Capacitive and Resistive Energy Transfer", and is also known as diathermy or diathermic therapy. It is an electrotherapy that changes temperature in deep tissues to accelerate healing.

HOW IS THIS TEMPERATURE INCREASE OBTAINED?

Electrical energy, travelling through electrodes in contact with the affected body tissues, increases localised temperature.

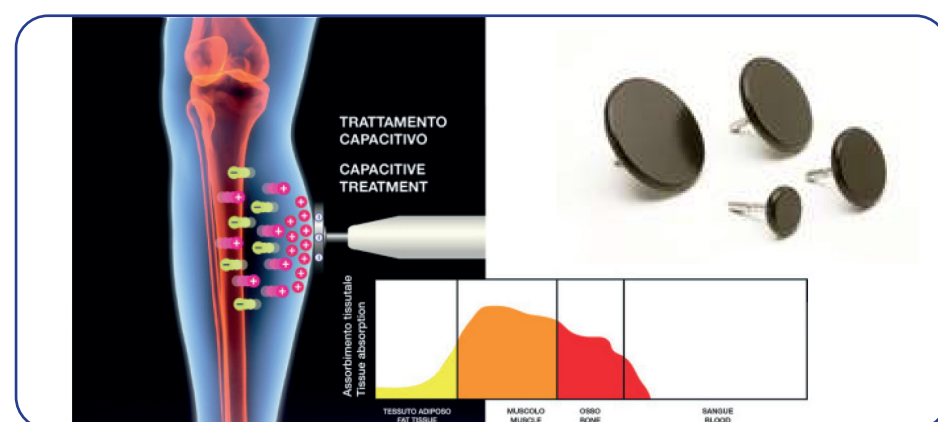
The resulting electromagnetic energy creates ionic flow and micro-hypaemia, thus stimulating the release of endogenous analgesic, biostimulative and regenerative "substances" in tissues, which reduces oedema and inflammation.

TECAR increases localised tissue temperature, resulting in enhanced blood flow and cellular metabolism, thus stimulating the immune defences and accelerating tissue regeneration.

How does it work on the body?

The equipment for endothermal energetic transmission with capacitive/resistive modes, used in Physical Medicine and Rehabilitation, transfers energy to patient's tissues via an electrical signal, modulated in a frequency range around 0.5 MHz (medium wave) that is propagated in the patient's tissues through a plate and two types of ELECTRODES:

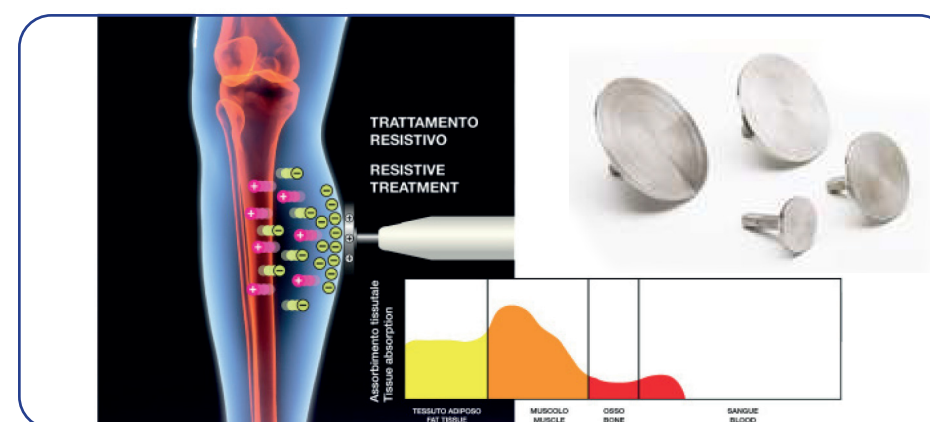
Capacitive



CAPACITIVE ELECTRODES ARE COVERED WITH A SPECIAL INSULATING MATERIAL.

In Capacitive Mode, the electrical charges are concentrated in the superficial tissues with high water content - such as muscles, lymphatics and blood vessels - which act as electrical conductors for the ionic currents, thus heating local tissues.

Resistive

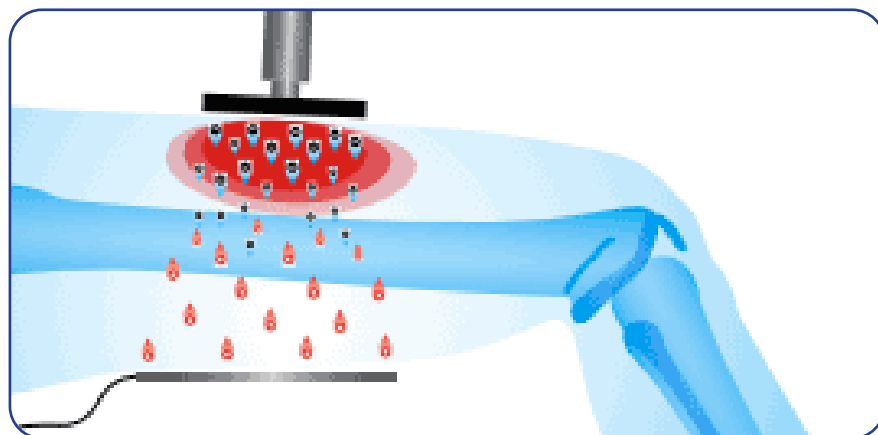


RESISTIVE ELECTRODES HAVE NO INSULATING MATERIAL.

In "Resistive mode" two electrometallic plates are applied on opposing sides of the affected tissues. The dielectric energy is dissipated into organic tissues with low water content (bones, ligaments, tendons). The correct positioning of the electrodes and the plate is essential to achieve beneficial effects. The increased temperature in the local tissues stimulates vasomotor, trophic, metabolic and systemic effects.

How does it work on the body?

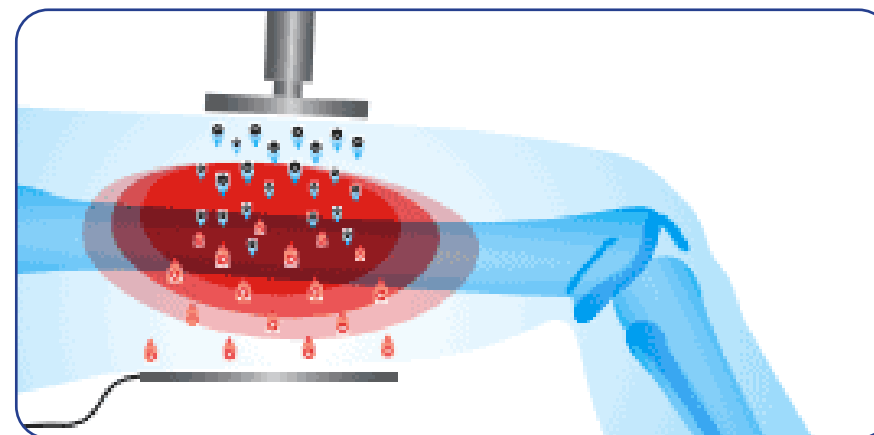
Capacitive



The action is concentrated superficially just below the movable electrode. Soft tissues, rich in water content, are mainly stimulated:

- ① lymphatic system
- ① muscles
- ① venous system

Resistive



The action is carried out effectively on all the tissues with a higher resistance and a low water content, that are interposed between the movable electrode and the return plate:

- | | |
|----------------|-------------|
| ① deep muscles | ① ligament |
| ① joints | ① cartilage |
| ① tendons | ① bones |

When should TECAR be used?

REDUCING pain and restoring mobility

- 🎯 Traumatology
- 🎯 Reduction of oedema
- 🎯 Musculoskeletal rehabilitation
- 🎯 Acute and chronic pain
- 🎯 Arthritic and osteoarthritic joints
- 🎯 Fracture healing
- 🎯 Tendinopathies

Sports medicine and athletic training

- 🎯 Sport injuries
- 🎯 Carpal tunnel syndrome, rotator cuff syndrome, muscle strains, luxations, tendinitis, pubalgia
- 🎯 Warm up enhancement pre-competition
- 🎯 Injury prevention
- 🎯 Preparation for massage and manual adjustment
- 🎯 Muscle relaxation



How to choose the right level of intensity

Depending on the biological response you want to achieve, you can select 3 levels of intensity that generate 3 different temperature levels: **Athermia, Homeothermy, Diathermy**

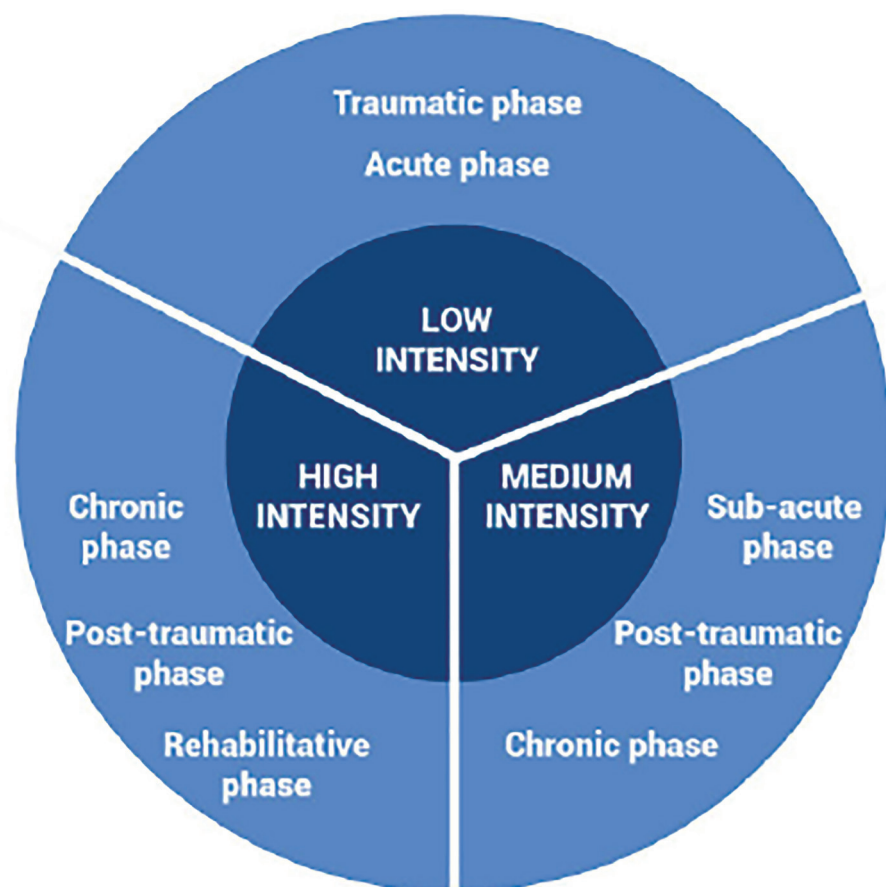
POWER	BIOLOGICAL EFFECTS WITH RESISTIVE OR CAPACITIVE TREATMENT
<p>LOW 50 - 100 watt (athermia <37°C)</p>	<p>Increase in cellular metabolism. Analgesia due to an increase nociceptors threshold. Activation of regenerative substances. Enhanced arterio-venous and lymphatic microcirculation.</p>
<p>MEDIUM 100 - 200 watt (Homeothermy 37-39 °C)</p>	<p>Increase in the demand and consumption of oxygen by the tissues. Increase in local temperature in the area below the electrode.</p>
<p>HIGH 200 - 300 watt (Diathermy >39 °C)</p>	<p>Increase of osmotic processes and cell membrane permeability. Increase in metabolic processes. Vasodilation of the larger vessels and increase of the lymphatic flow. Increase collagen elasticity.</p>

In the capacitive mode, varying the intensity means varying the presence of charges in the soft tissues.

In the resistive mode, varying the intensity means varying the presence of charges in the high resistance tissues.

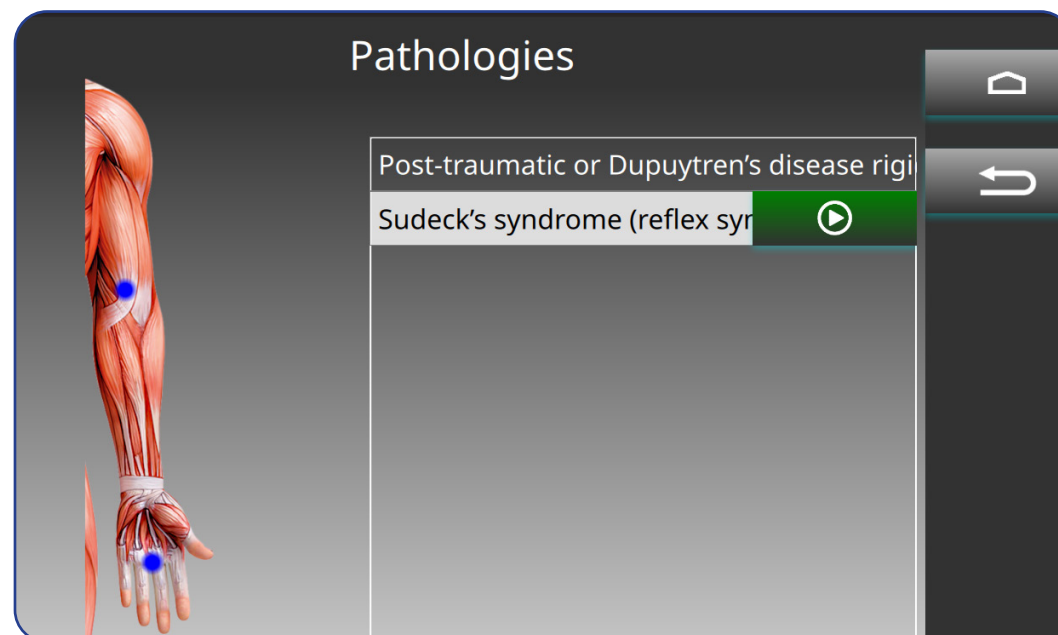
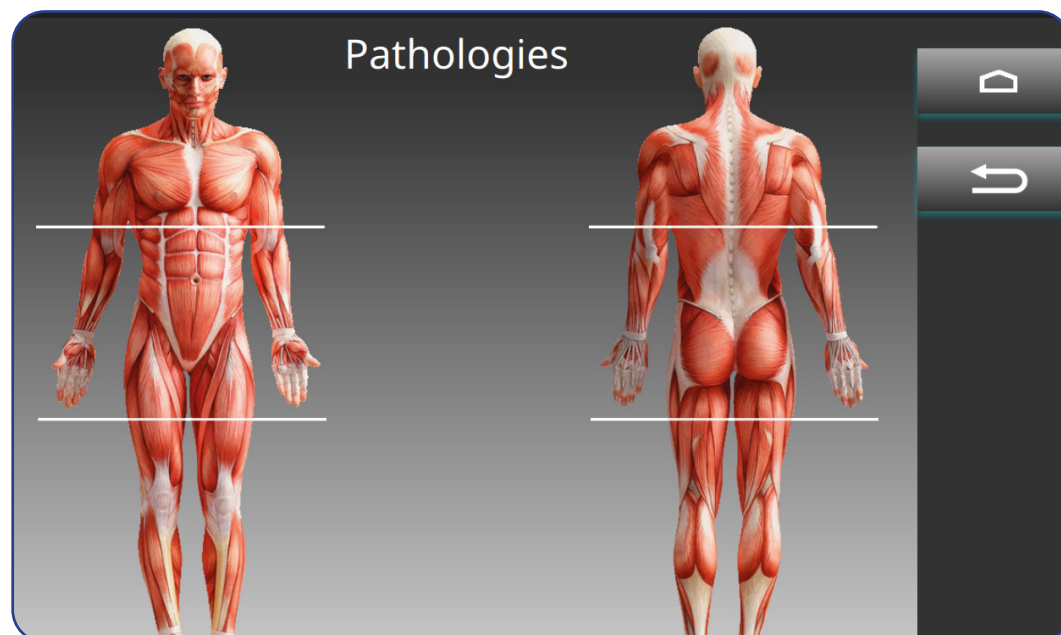
A level of intensity for each treatment

The main variable is always the patient; the second one is the approach to the therapy / rehabilitation program that the practitioner provides. The TECAR sessions can be combined with high-power laser treatments, radial shock waves, massages and exercise rehabilitation.



Pre-set therapeutic protocols

Our software has a library of therapeutic protocols divided into treatable disorders. The operator selects the appropriate body part and disorder to treat, by pressing the "start" button there is no need to set power, time, mode etc. The preset protocols can still be modified at any time during the treatment as the operator will become familiar with the equipment.



Tips for best results

1 Which part of the body are we going to treat?
What disease does the patient have?
What diagnosis has been made?
What other therapies have been used?
What tests were done for the diagnosis?

2 Is it a chronic or acute pathology?
Do you want to get an analgesic or biostimulative effect?
Should the treatment be applied centrally or peripherally?
How large is the target area?
Do you want the treatment to be superficial or at depth?

3 What results do you want to achieve?
Based on the diagnosis, which therapeutic path do you want for the patient?
Do you want to combine TECAR treatment with other electrotherapy equipment?
Is TECAR part of a broader rehabilitation program for proper functional recovery? (Work on posture, rehabilitation in the gym, in the pool, with dedicated manual therapy) ...

4 Does the treatment take place in a static or dynamic phase?
It is appropriate to consider when it's time to mobilize the limb passively, actively and opposing its natural movements.

5 What other equipment is being used to treat the patient?
How does it interact with the human body?
How would you like the human body to react?
This approach will make the treatment more logical, simple and will increase success rates. It will help the therapist understand which TECAR mode (capacitive or resistive), level of energy and type of electrode is better to use.

Tips for best results

The ideal result of a TECAR treatment is achieving a homogeneous distribution of heat in the target body tissues. The approach to each session must start from this fundamental principle.

Make the patient drink a lot of water, both before and after the treatments: it helps the elimination of toxins in circulation, and improves the therapeutic results.

The patient is the most important variable of the therapy, so each session of the treatment cycle might be different, depending on the response to the previous session.

It is good practice to monitor the progress of the patient's response to treatment using semi-objective pain evaluation scores (VAS).

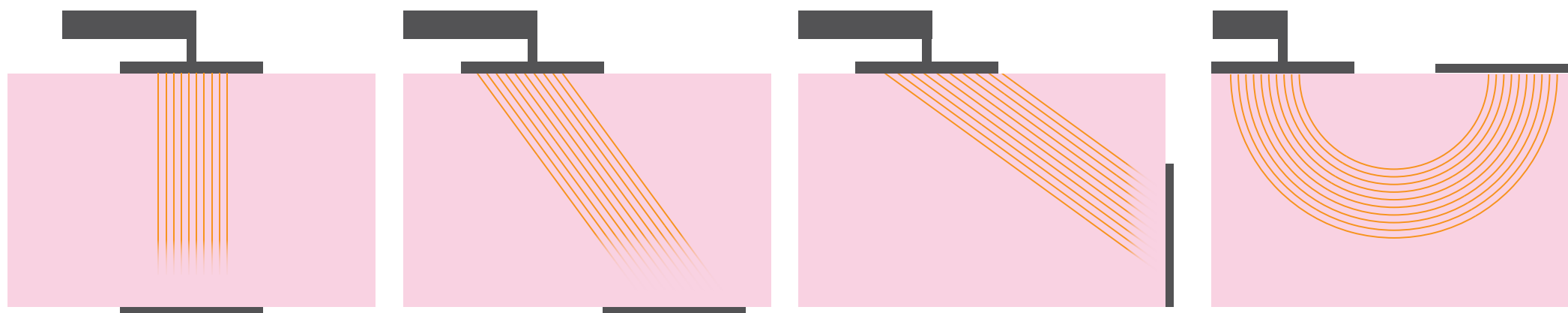
We advise doing regular ROM articulation scores before and after treatment, to help show improvements due to the treatment.

Always consider the proximal and distal components, not just the main symptomatic area to be treated.

In the resistive mode you can increase the pressure on the dermis and the sub-dermis with the electrode, thus improving the concentration of the passing currents within the body, resulting in greater hyperemic effect at depth.

The correct positioning of the return plate and electrode

Position the plate and the electrode either side of the target tissue, as the ions flow always travels the shortest distance between them.



When you select the area of the body to be treated, you should visualise the path along which the energy transfer between the plate and electrode occurs.

TECAR integration with other technologies

TECAR and Shockwave

Each session of Radial Shockwave may be preceded by a few minutes of Endodiathermy treatment, to induce vasodilation and local analgesia, making the Shockwave therapy more tolerable and effective to patients.

TECAR and Laser Therapy

TECAR and Laser Therapy can work synergistically together to treat a range of pathologies.

Each session of TECAR may be preceded or followed by a high power laser treatment, for best results over the whole treated area. Using both technologies in combination also allows the operator to optimise session time.

TECAR and Ultrasound

The TECAR treatment can be integrated with Ultrasound Therapy, using high-frequency, low duty cycle and low power.

Comparing TECAR with other technologies

TECAR vs Shockwave

TECAR differs to Shockwave in the following:

- ① It is an internal endogenous rather than an external physical modality
- ① It is not a painful treatment
- ① It produces greater thermal effect
- ① It works for larger target areas whilst Shockwave is more localised
- ① It works both at depth and at the surface
- ① More frequent sessions are possible

TECAR vs Shockwave

Differences and similarities between TECAR and Laser Therapy:

- ① Both work endogenously to improve cellular metabolism
- ① TECAR improves blood flow better than Class 3b lasers
- ① TECAR can treat a larger, deeper volume of tissues in the same timeframe
- ① Both can be used during active movement of the joint
- ① Unlike Laser Therapy, TECAR cannot be used over internal metal implants
- ① Unlike Laser Therapy, TECAR requires contact gel to ensure energy conduction
- ① Unlike Laser Therapy, TECAR should be used after 72 hours from surgery or trauma

TECAR vs Ultrasound

TECAR differs to Ultrasound in the following:

- ① It is an internal endogenous rather than an external physical modality
- ① It provides excellent analgesia from the first session
- ① It provides greater thermal effect to both superficial and deep tissues
- ① It can be used in the acute and post traumatic phase (after 72 hours)
- ① It can treat larger target areas

Why should you chose TECAR?

EME has been producing equipment for Physiotherapy, Rehabilitation and Sports Medicine for more than 30 years, and exports to over 70 countries worldwide.

Our Services

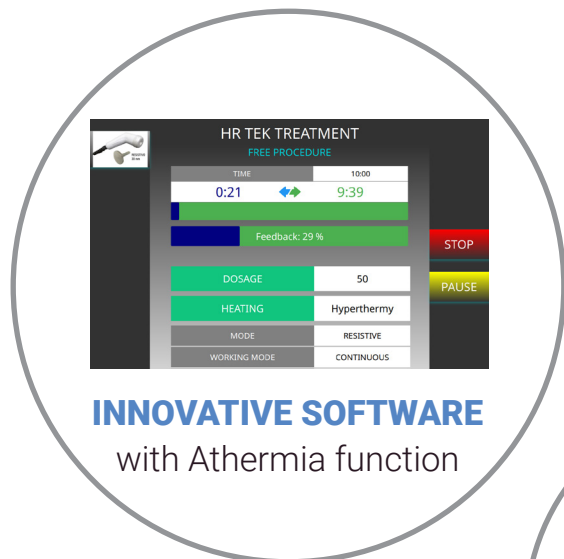
- Technical assistance
- Technical training
- Marketing materials
- Clinical papers
- Blog and Social media community

All EME medical technologies are manufactured in Italy and they are certified in accordance with the norm 93/42/CEE.

EME equipment is also certified 100% MADE IN ITALY by the "Protection of the Italian Manufacturers" Institute to guarantee high quality standards.



HR TEK and Accessories

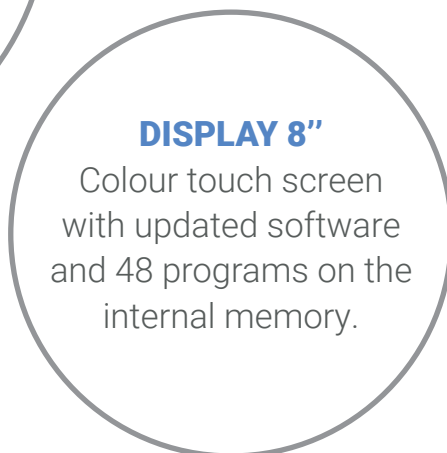


INNOVATIVE SOFTWARE
with Athermia function



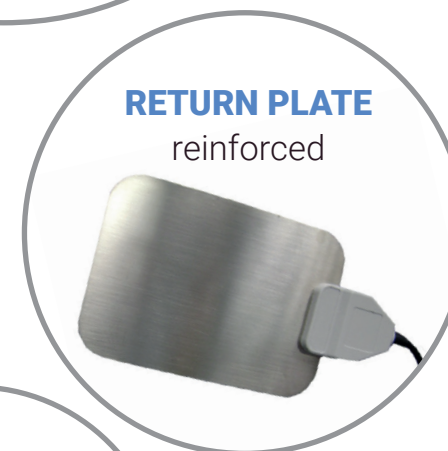
**PROBE SUPPLIED
WITH POWER
ADJUSTMENT
BUTTON**

unique on the market

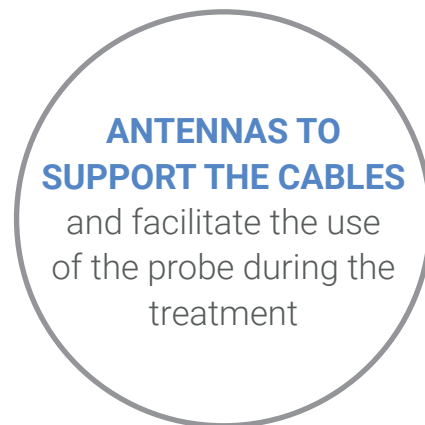


DISPLAY 8"

Colour touch screen
with updated software
and 48 programs on the
internal memory.



RETURN PLATE
reinforced



**ANTENNAS TO
SUPPORT THE CABLES**

and facilitate the use
of the probe during the
treatment



SHIELDED CABLES
for the operator's
safety



HR TEK/HR TEK SP

Polyter EVO



Contraindications

- ⊙ Patients wearing deep-brain neurostimulation implants for the treatment of Parkinson's disease
- ⊙ Patients suffering from cancer
- ⊙ Patients wearing a pacemaker (we advise you to talk to their cardiologist first)
- ⊙ Patients wearing metal prosthesis in the treated area (possibility of treating in capacitive mode only) under the supervision of a physician
- ⊙ In case of skin lesions in the area of application
- ⊙ Patients suffering from hemorrhagic ulcer
- ⊙ Acute inflammations (within the first 48/72 hours).

Side effects

- ⊙ In general there are not side effects. However in rare cases, skin irritation and redness may occur in the treated area after the session
- ⊙ Be careful when treating over bursas due to the risk of producing an inflammatory reaction (especially Olecranon bursitis)
- ⊙ Try to avoid treatments in patients with venous insufficiency of the lower limbs.
- ⊙ Pay attention to patients with diabetic neuropathy or altered skin and peripheral nerve sensitivity

CONTACT US TO LEARN MORE ABOUT TECAR
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We strive to offer everyone the opportunity to feel good
within their body, in harmony and health.



Introducing
TECAR Therapy



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