RESESTIVE AND CAPACITIVE THERAPY
THE NEW DIATHERMY APPRAOCH
SPECIAL FEATURES

• Application of High-Frequency Electromagnetic Energy

• Pass through the tissues

• Cause molecular vibration

• Results in deep heating

• Used To Generate Heat In Body Tissues

• Capable of heating large and small volumes of tissues

• Causes both thermal and non-thermal effects
Thermal effects

- Deep heat
- Increased blood flow
- Increased cell metabolism
- Increased tissue extensibility
- Muscular relaxation
- Possible changes of enzyme reactions

Athermal effects

- Edema reduction
- Lymphoedema reduction
- Superficial wound healing
- Treatment of venous stasis ulcers
ABSORPTION

• LOW FREQUENCY: around 0.5 MHz
• DIRECT CONTACT APPLICATION WITH THE PATIENT’S TISSUE

DEEP ACTION thanks to the endogenous transfer of high frequency electromagnetic oscillations.

LOCALIZED ACTION over the area to be treated.
TRANSMISSION MODES

- RESISTIVE
- CAPACITIVE
RESESTIVE MODE
CAPACITIVE MODE
GENERAL INDICATIONS

**RESISTIVE**
- MUSCLES
- CARTILAGINEOUS TISSUES
- JOINTS
- TENDONS
- FIBROTIC TISSUES
- BONE

**CAPACITIVE**
- SKIN
- CONNECTIVE TISSUE
- VASCULAR TISSUE
- NERVOUS TISSUE
- SMALL MUSCLES
BIOLOGICAL EFFECTS

ENERGETIC ENDOCELLUAR MOVEMENTS

HYPEREMIA

INCREASING OF OSSIGEN OVER THE TISSUES

INCREASING OF LYMPHATIC DRAINAGE

REVASCULARIZATION OF ISCHEMIC AREAS
THERAPEUTIC EFFECTS

DECREASE PAIN

REDUCE INFLAMMATION

REDUCE RECOVERY TIME
MAIN THERAPEUTIC EFFECTS AT THE DIFFERENT ENERGY LEVELS

**Low energy density**
- Athermic
- Biostimulation, blood microcirculation increasing, increasing of oxygen, reduction of pain

**Mid energy density**
- Low thermic effect
- Iperemya, vascolarization, increasing of endogenous temperature, blood circulation increasing, metabolism acceleration

**High energy density**
- Thermic effect
- Vasodilatation, lymphatic drainage, warm over the deepest tissues
MAIN THERAPEUTIC INDICATIONS

- Muscular diseases
- Shoulder diseases
- Epicondilytis and epitrocleitis
- Back pain
- Hip diseases
- Knee diseases
- Foot diseases
- Cheloidis ed ulcers
Energy transferring

Capacitive
- Skin
- Connective and vascular tissues
- Nervous tissue
- Small muscles

Energy absorption
- Increased molecular KE
- Thermal effect
- Increased cell metabolism and function

Resistive
- Muscles
- Cartilaginous tissue
- Tendons
- Articulations
- Fibrotic tissue
- Bone

Athermal effect
- Cell ion-binding properties, protein synthesis, ATP production

Enhanced soft-tissue healing
PRECAUTIONS BEFORE APPLICATION

• Just before starting each application, as you usually do with all the other medical equipment, it is suggested to be care to all the required parameters (physiological, age, health conditions, etc. of each patient). It is suggested to make a careful evaluation of the patient’s status and to consider the therapeutic objective.

• Accurately check patient’s skin over the area to be treated; should any special problem is present, try to cover it or, if not possible, avoid to make treatment.

• Check with care the patient’s skin over the area of the treatment; protect burns or any further alteration of the skin.

• Odema, protesys could be also treated both with Capacitive and Resestive modes.

• Take care when treat cervical area.

• After trauma, it is suggested to start treatment after 24-48 hours.
MUSCULAR PATHOLOGIES

- Contracures
- Muscular splits
- Contusions
- Oedema
FEMORAL BICEPS/ GASTROCNEMIUS

Patient: prone on the couch; neutral plate under the quadriceps.
QUADRICEPS

Patient: supine on the couch and neutral plate under the gluteus.
QUADRICEPS

Patient: seated on the couch and neutral plate under the leg.
MOBILIZATION

Muscular contraction movements, flexion and extension of knee and ankle.

THERAPEUTIC COMBINATIONS

High power laser
## OUTPUT PARAMETERS

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<th>RESESTIVE MODE</th>
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SHOULDER PATHOLOGIES

• Biceps Tendonitis
• Insertional tendonitis
• Calcific tendonitis
• Adhesive capsulitis
• Frozen shoulder
Shoulder tendonitis is the inflammation, irritation and swelling of the tendons in the rotator cuff and bicep. Shoulder tendonitis is usually caused by the pinching of the nerve in the shoulder or from repetitive strain (RS) on the shoulder joint. This particular type of tendonitis is common amongst sports and activities that require the hand to be moved above the head. These activities include weight lifting and bodybuilding, swimming, rock climbing, swimming and baseball.

Shoulder tendonitis often starts as just a slight pain in the shoulder or upper bicep but can develop into a pain that will encompass the entire shoulder/upper arm area. It’s a condition that can be easily treated but in serious cases may become permanent.

**Locations of shoulder tendonitis**

There are two areas of the shoulder where tendonitis may develop. The rotator cuff and where the bicep tendon meets the shoulder. You can see these areas marked with an "X" in the shoulder anatomy diagram above.
SHOULDER PATHOLOGIES

A and B, normal physiological movement. C and D, friction between the joints.
FROZEN SHOULDER

Frozen shoulder is the common term for adhesive capsulitis, an inflammatory condition that restricts motion in the shoulder. The capsule of a shoulder joint includes the ligaments that attach the shoulder bones to each other. When inflammation occurs within the capsule, the shoulder bones are unable to freely move within the joint. Diabetes, shoulder trauma (including surgery), a history of open heart surgery, hyperthyroidism, and a history of cervical disk disease are all associated with an increased risk for this problem. Often, there is no known cause.

Treatment Objectives
The objective of this treatment is to improve all symptoms, prevent and treat later complications, correct imbalance, adjust the immune system and most importantly to boost energy and strong body for better health and quality of life.
POSSIBLE REASONS

• Post – traumatic
• Post – surgical
• Diabetic patient
• Infective diseases (HIV)
• Menopausa
• Psicological factors
SUPINE

Neutral plate under the shoulder.
Neutral plate over the dorsale area.

This placement allows a better co-operation and feedback from the patient and it is particularly suggested while the joint mobility is not totally compromised.
MOBILIZATION

The execution of flex-extension, rotation, extra-rotation of the shoulder, if possible, it is suggested to do during the Resistive and Capacitive Therapy for getting the best from the application it-self.
### OUTPUT PARAMETERS

#### CAPACITIVE MODE

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THERAPEUTIC COMBINATIONS

• High power laser: into the acute and sub-acute phase

• Shock-waves: for post-acute phase
It is an inflammation of several structures of the elbow. These include muscles, tendons, bursa, periosteum, and epicondyle (bony projections on the outside and inside of the elbow, where muscles of the forearm attach to the bone of the upper arm). This condition is also called epicondylitis, lateral epicondylitis, medial epicondylitis, or golfer’s elbow, where pain is present at the inside epicondyle. Such pain is usually more noticeable during or after stressful use of the arm. In severe cases, lifting and grasping even light things may be very painful.
PRONE

Neutral plate under the abdomen.

SEATED

Neutral plate under the arm.
MOBILIZATION

Flex-extension movements and prone-supination of wrist and elbow.

THERAPEUTIC COMBINATIONS

• High power laser: for acute and sub-acute phases.

• 1 MHz ultrasound therapy

• Shock-waves: for post-acute phase (near to the chronic phase)
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BACK PATHOLOGIES

• Cervical syndrome
• Dorsal syndrome
• Lumbago
• Hernia
CERVICAL/ CERVICOBRACHIAL

- Prone with neural plate under the shoulder.
- Seated with neutral plate over the dorsal area.
MOBILIZATION

Rotation, inclination, flexion.

THERAPEUTIC COMBINATIONS

• High power laser and/or CO2 laser

• 1 MHz ultrasound
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<td><strong>Hernia</strong></td>
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DORSAL AND LUMBAR PAIN

Prone and neutral plate under the abdomen.
MOVEMENTS
Inspiration, expiration.

THERAPEUTIC COMBINATIONS
• High power laser and or CO2 laser
• TENS, Interferential/Intophoresis
## OUTPUT PARAMETERS

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HIP PATOLOGIES

• Arthrosis
• Borsitis
• Pubalgia
PLACEMENT

Supine with neutral plate under the lumbar area.
MOBILIZATION

Hip flexion, adduction, abduction movements.

THERAPEUTIC COMBINATIONS

• High power laser and or CO2 laser

• TENS, Interferential / Iontophoresis
### OUTPUT PARAMETERS

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PATHOLOGIES OF THE KNEE

• Arthrosis
• Traumatic
• Distortions
• Inflammations
• Rotuleous
• Collateral
• Condropatia
Arthrosis is chronic wear of the cartilage in a joint associated with an imbalance between the production and degradation of bone cells.

Arthrosis is a complex phenomenon involving physical and metabolic factors. In a joint, the cartilage covers the end of the bone and plays a role in the mobility of the joint with minimal friction. The cells are replaced at the same rhythm as they are destroyed. The joint thus preserves all its mobility capacities.

When the cells are replaced more slowly than they are destroyed, and/or the physical constraints, such as shocks or repeated friction, are too significant, the metabolic balance of the joint becomes deregulated. Wear of the cartilage then starts with cracks which gradually deepen until actual holes are formed (ulcerations). The bone can be completely bare in places and the bone surfaces come into direct contact with each other.

The phenomenon tends to auto-amplify. It results in a painful limitation of joint mobility: the joint becomes stiffer and stiffer. The pain associated with arthrosis occurs when the joint is used and calms down when at rest. Certain inflammatory forms are nevertheless also painful at night. Arthrosis can affect all the joints in the body but is most often seen in the knees, hands, spinal column and hips. It is favoured by physical or hereditary factors, by age or by obesity. The main aim of the orthopaedic solution is to decrease the pain.
SEATED

Neutral plate under the leg.
SUPINE

Neutral plate under the leg.
MOBILIZATION

Movimenti di flesso-estensione, contrazioni attive del quadricipite, mobilizzazione della rotula.
THERAPEUTIC COMBINATIONS

• High power laser and or CO2 laser

• TENS/Interferential/Iontophoresis
## OUTPUT PARAMETERS

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<th>Condition</th>
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FOOT PATHOLOGIES

• Fractures
• Distorsions
• Plantar fascitis
• Achille’s tendonitis
PLACEMENT 1

Patient: prone and neutral plate under the tibialis.
PLACEMENT 2

Patient: prone and neutral plate under the quadriceps.
PLACAMENT 3

Patient: seated or on the couch with neutral plate under the foot.
MOBILIZATION

Flex-extension, prone-supination, muscular contraction.

THERAPEUTIC COMBINATIONS

• High power laser and/or CO2 laser

• Shock-waves therapy during the chronic phase of plantar fascitis, calcanear spur, Achille’s tendonitis

• Antalgic currents / Iontophoresis or Electrojontosonophoresis
## OUTPUT PARAMETERS

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SCARS/ULCERS/CHELOIDIS
THERAPEUTIC ASSOCIATION

• CO2 laser

• Vacuum therapy
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