



TYCOON SWISS MEDICAL

Best CO₂ powered devices
for local cryotherapy

CRYO-T DUO

- Medical rehabilitation
- Physiotherapy
- Sports medicine
- Biological regeneration
- Wellness



CE 2274



Cryostimulation treatment



Cryostimulation

Cryostimulation is a short-term exposure of particular parts of the body (muscle, tendons, ligaments, trigger points) to extremely low temperature (2 - 4°C at the skin surface). Optimal temperature for the treatment achieved by the device ranges between -65°C and -75°C with exposure time from 1 - 12 minutes.

Physiological effects of carbon dioxide stimulation

Carbon dioxide has positive influence on the skin and underlying tissues and is well absorbed by them. Due to its biophysical characteristics carbon dioxide cause:

- Blood vessel dilating action.
- Blood flow increase.
- Anti-inflammatory action.
- Blood fluidity improving action "smooth blood".
- Oxygen dissociation curve tight shift effect (the Bohr effect).

How cryostimulation works

Cryostimulation using CO₂ is different from adjuvant techniques like ice and techniques using liquid nitrogen. CO₂ under pressure in a short time provides sufficient cold (-78°C) that is powerful (pressure), painless (dry). In a human organism, these conditions enable thermal shock to be easily obtained. Thermal shock corresponds to the response of the organism in the face of intense and powerful cold flow rapidly delivered to the body surface. The cold is transmitted to the organism via the skin, involving the epidermis, the mesoderm and the hypoderm. The effects of thermal shock are anaesthetic, analgesic, antalgic, anti-inflammatory, vasomotor, muscle relaxant and anti-oedematous. The results are rapidly and are clinically observable right after the first session of treatments.

Procedure

During the procedure patient can choose any suitable position. The operator is moving treatment nozzle 15cm over the skin surface in scanning movements. Time of the procedure on one body area ranges from 1 to 5 minutes, while in patients with fat deposition or robust musculature may be extended to 10 minutes. In case of treatment several areas, total time should not exceed 12 minutes. Cryostimulation can be performed at the same time on maximum five joints of palm, foot and spine, counted as one group of small joints. Local cryotherapy session usually consist of 10 - 15 procedures performed once or twice a day. Minimum break between sessions should take 4 - 6 hours.

Indications cryostimulation

Based on contemporary literature reports the following indications for cryostimulation should be considered, both as an independent method and as a component of the complex rehabilitation:

Diseases of locomotor system:

- Inflammatory diseases of locomotor system: rheumatoid arthritis, ankylosing spondylitis.
- Arthrosis and secondary degeneration of spine and peripheral joints.

Diseases of metabolic origin:

- Periarticular inflammation in ligaments and joint capsule.
- Some skin diseases with affected joints: psoriatic arthritis.
- Inflammatory diseases of soft tissues: myositis, fibromyositis, and collagenosis.
- Post-traumatic or overloading changes in joints and soft tissues.
- Diskopathies.
- Fibryomalgia.
- Osteoporosis.
- Gout.

Diseases of nervous system:

- Radicular syndromes.
- Multiple sclerosis.
- Spastic paresis.

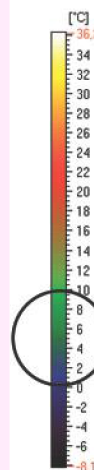
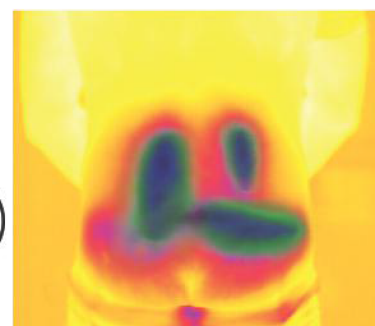
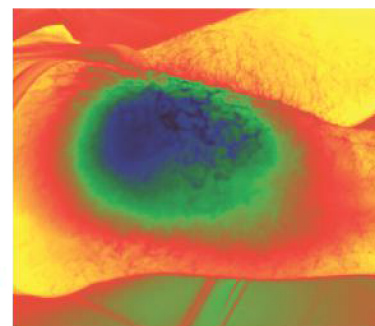
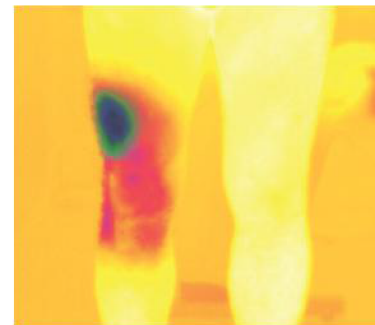
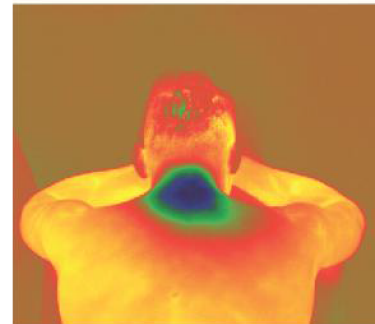
Biological regeneration of overloaded muscles:

- Decreases injury recovery time (up to 50%).
- Helps reduce significantly DOMS (Delayed Onset Muscle Soreness).
- Causes increase in muscle strength.
- Inhibits inflammation and improves joint and tendons functioning.

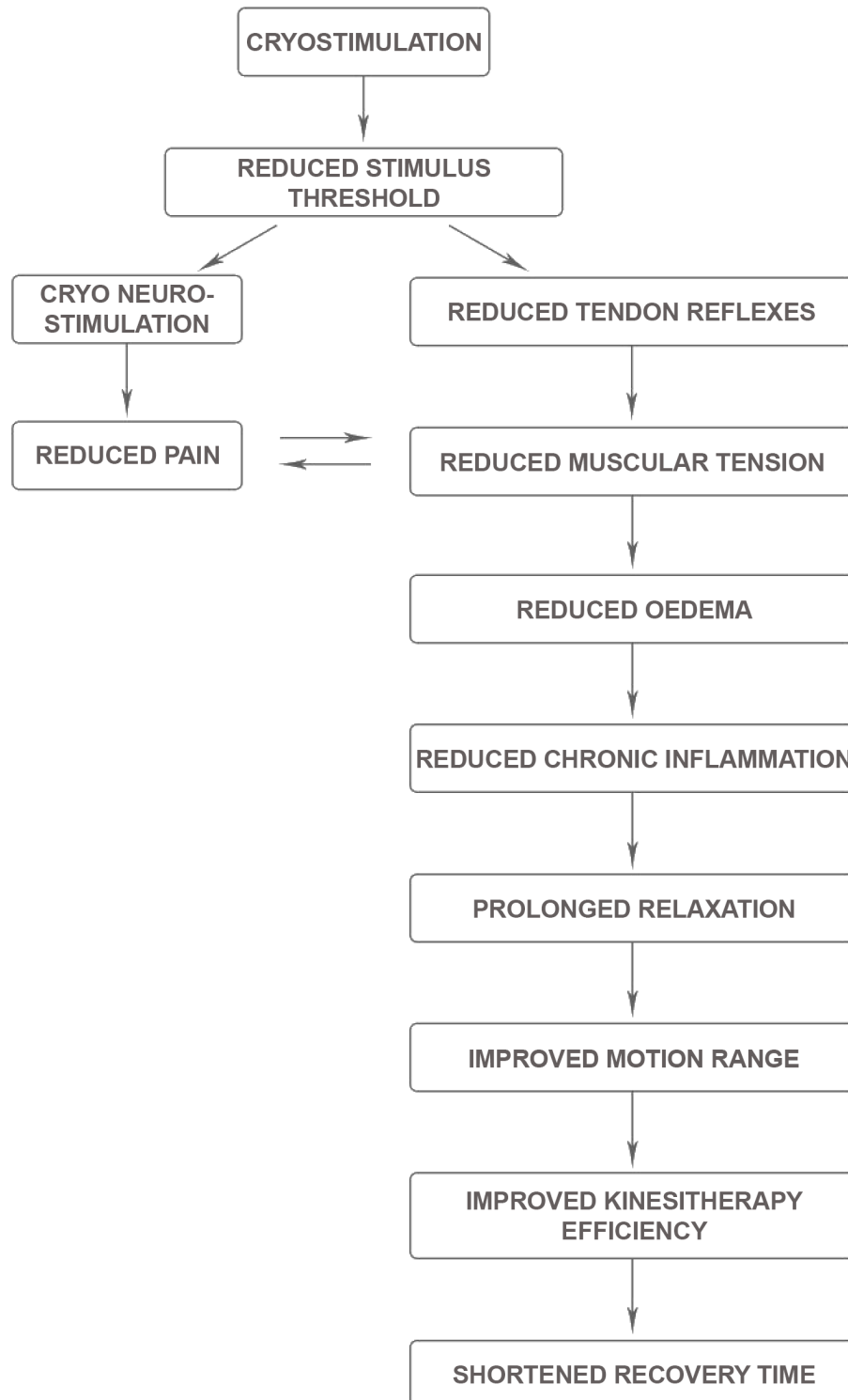
Professional sport:

- Adjunctive biological regeneration (biostimulating effect).
- Adjunctive endurance and strength training.
- Acceleration of post-endurance restitution.
- Prophylaxis of locomotor system overloading, adjunctive post-traumatic treatment of soft tissues and joints (contusion, hematomas, distortion).
- Adjunctive treatment of overloading syndromes in muscles, muscle attachments, joints and spine.

Thermocamera image



Benefits of cryostimulation



Physiological response

1. Thermoregulation is activated

The process is completely tolerable, yet the body interprets the extreme cold as a threat to its wellbeing. The temperature cold-receptors in the skin send this information to the brain (hypothalamus area), which responds with an attempt to restore balance.

2. Vasoconstriction occurs

The first step the body takes to protect its core temperature, is to redirect blood from superficial vessels and capillaries in the skin towards deeper structures. This causes blood to flow from the periphery towards the central core.

3. Vasodilatation rebound occurs

The vessels and capillaries expand up to four times their normal diameter. This causes a significant increase in blood flow to the skin and extremities, enriching cells with oxygen and enzymes to a much greater degree than under normal balanced conditions.

4. Hormones are realised

B-endorphins are realised, which act as the body's natural morphine. This has a pain relieving effect throughout the whole body and also creates a sense of euphoria.

5. Reduced nerve conduction velocity

The cold exposure drastically reduces the body's ability to communicate pain signals. After multiple sessions, the body adapts its perception to pain stimuli.

6. Muscle relaxation take place

Muscle relaxation leads to relief of muscle spasm.

7. Anti-inflammatory response

The body's white blood cells secrete small proteins (cytokines), which are used in cell signaling and ultimately affect the behaviour to the other cells. These proteins can be better either pro-inflammatory or anti-inflammatory. During cryostimulation, pro-inflammatory cytokines are decreased and anti-inflammatory cytokines are increased. This causes a powerful anti-inflammatory response throughout the whole body.

8. Reduces oxidative stress

The body's total anti-oxidative status is increased. The body achieves an improved ability to eliminate free radicals, naturalize toxins and repair cellular damage. This process can lead to a powerful anti-aging effect.

9. Increased metabolism

As part of the body's metabolic reheating mechanism, additional calories are burnt, often to a degree comparable to an intense workout. Reports suggest that an additional 400 to 800 calories are burned as result of a single cryostimulation session and that multiple sessions lead to a longer term in metabolism, which can lead to weight loss.

Cryostimulation device



State-of-the-art cryostimulation device

Cryo-T Duo is an advanced device for local cryotherapy using CO₂ gas as cooling medium. Technological solutions implemented in the device allow efficient and safe use by the doctor, physiotherapist or even at home. Cryo-T Duo device has a user friendly interface allowing easy operation and full concentration on the procedure. The device is offered with 4 different nozzles depending on the area of treatment.

Nozzles

Metrum CryoFlex has designed nozzles of different constitution and working characteristics. Each nozzle has different gas flow distribution and stream strength. All nozzles have electronic regulators allowing adjustment of its working parameters. We offer three core nozzles and hyperbaric nozzle.

Nozzle No. 1

Myofascial trigger points, recommended for children cryotherapy.

Nozzle No. 2

Joints surrounding area (arms, knees), small muscle groups.

Nozzle No. 3

Major joints, large muscle groups (e.g. shoulder girdle, rim hip).

Nozzle No. 4 - Hyperbaric nozzle

The main feature of hyperbaric No. 4 nozzle is a possibility of strong flow generation which enables to obtain higher pressure on the skin surface. Such solution significantly increases cold penetration in the skin and CO₂ absorption that has positive effect on the body approved by clinical researches.



Temperature of cold stream	-65°C ± -75°C
Stream intensiveness regulation	Nozzle adjusting ring
Control panel	LCD color screen
Power source	230V or 110V
Nozzles connection ports	2
Nozzle recognition system	Yes
Temperature measurement	Displayed on screen/led indicators at nozzle
Cooling medium level indicator	Yes
Cylinder verification system	Yes
Cylinder capacity	10-40 l

Cylinder	Nozzle type	Estimated working time
10 liter cylinder	Nozzle No. 1	120 Min
10 liter cylinder	Nozzle No. 2	60 Min
10 liter cylinder	Nozzle No. 3	45 Min
10 liter cylinder	Nozzle No. 4 (hyperbaric)	200 Min



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