

# Gymna Cryoflow ICE-CT

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## Treatment Guide





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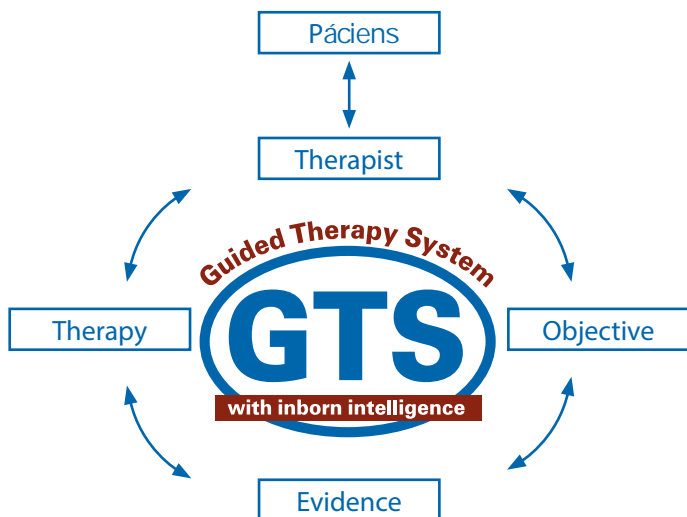
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## Guided Therapy System (GTS)

The latest Gymna Cryoflow ICE-CT is equipped with an intelligent system for presetting the parameters and generating useful information. This invention is called Guided Therapy System or short G.T.S.

After establishing your treatment objective the system automatically selects the form of treatment and the best parameters. In other words, G.T.S. establishes the connection between the therapeutic objective and the scientific basis itself.



A device with G.T.S. follows your therapeutic thinking pattern step-by-step and takes away the need for you to setup technical parameters yourself. This allows you to pay more attention to your patient.

This treatment guide contains valuable information. The different therapy forms are explained and the effects of the various parameters are extensively described.

# 1. Introduction

## 1.1 Definition

Cryotherapy is the therapeutic application of cold that can be obtained in various ways (with ice, cold water, damp cloth, methyl chloride, carbon dioxide...). Basically cryotherapy can be divided in three groups "conduction cryotherapy", "airflow cryotherapy" and "sublimation cryotherapy". With conduction cryotherapy cold is transferred via contact on the treated spot whereas this direct contact is avoided in the two other groups. With sublimation therapy liquid gas (nitrogen) is used to cool down a spot whereas free surrounding air is used to cool down the treatment zone in airflow cryotherapy.

## 1.2 History

Cryotherapy has been used in the treatment of traumatology since time immemorial. The use of ice and snow as therapeutically means was already mentioned by Hippocrates (460-377 before J.-C.).

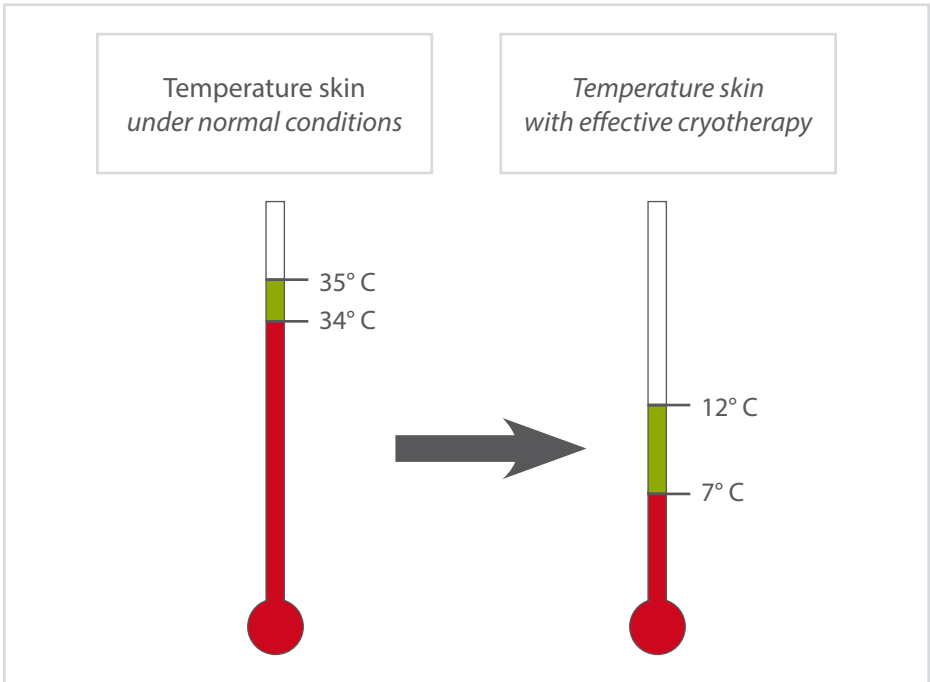
Cryotherapy has been used very frequently because of its beneficial effects; but in a completely empirical way.

The method of application of cryotherapy has gone through several evolutions, of course, but it is especially the improvement of physiological knowledge that has allowed us to better understand the effects and made it possible to better determine the various fields of applications and the modes of operation.

## 1.3 The notion "thermal shock"

In the early seventies various studies showed that, to be really effective in cryotherapy, a "thermal shock" had to be carried out.

The cold causes a vasoconstriction. The quicker the drop in temperature, the more efficient the "return-reaction". "Under normal conditions the skin temperature is around 34° C. This skin temperature should drop as quickly as possible.



THERMAL SHOCK = DECREASE TEMPERATURE CHANGE IN A MINIMUM OF TIME



## 2. The effects of cryotherapy

### 2.1 Local anaesthesia (analgesia)

The maximal effect is reached immediately (within 10 to 15 seconds) during the treatment and it will remain effective, depending on circumstances, from 30 minutes to 3 hours after the treatment has been stopped (the average duration is one hour).

When the skin temperature goes below 15° C, the coldness has the effect of slowing down the conduction of nervous impulses. However, one should be aware of the fact that, *in vitro*, a temperature below 10° C could cause damage to the nervous system. *In vivo*, this limit can be fixed between 5 and 7° C. However, a thermal shock will consist of lowering the skin temperature from 34° C to less than 15° C, but never reach a temperature lower than 5° C.

Cold will also decrease the irritability of the nociceptors (through depolarisation of cell membranes).

### 2.2 Anti-inflammation

The importance of inflammation, of the permeability of the capillaries and of the cellular response is directly linked to the temperature of the tissue.

A fast application of cold causes a decrease in the production of neurotransmitters, which are responsible for the inflammation. This makes it possible to decrease the quantity of the substances that cause pain with 70 to 80 %, which results in a less intense inflammatory reaction.

By causing a vasoconstriction (arteriolar and capillary), cold will oppose the vasodilatation of the inflammatory reaction. This vasoconstriction is responsible for a decrease of the drainage of the blood flow, for a diminution of the hydrostatic pressure and thus for a reduction of the drainage of liquid. As a result the plasmaextravasation, responsible for the volume of the oedema, will be limited.

We should draw attention to the fact that cold does not inhibit the drainage of

the liquids, responsible for the repair of the tissues. Cold will only slow down this process. This deceleration is compensated largely by the reduction of the harmful effects of the oedema, which will allow for a much earlier rehabilitation by means of exercising.

### 2.3 Neurological effects

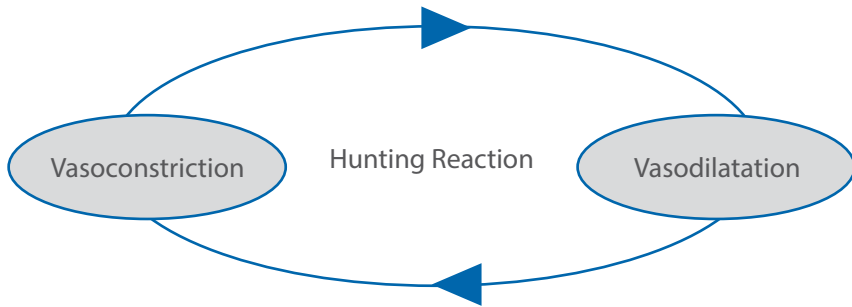
As already mentioned, cold can provoke a local anaesthesia (analgesia) provided that the temperature reaches a level below 15° C. Cold also reduces muscular spasticity.

It has been established that the amplitude of the reflex response during the stretching of the muscle decreases during and immediately after application of the cold. This phenomenon is what led Travell to developing the "Spray and stretch method". This method provides very good results in spasms during stretching of the muscle.

### 2.4 Vasomotor reactions

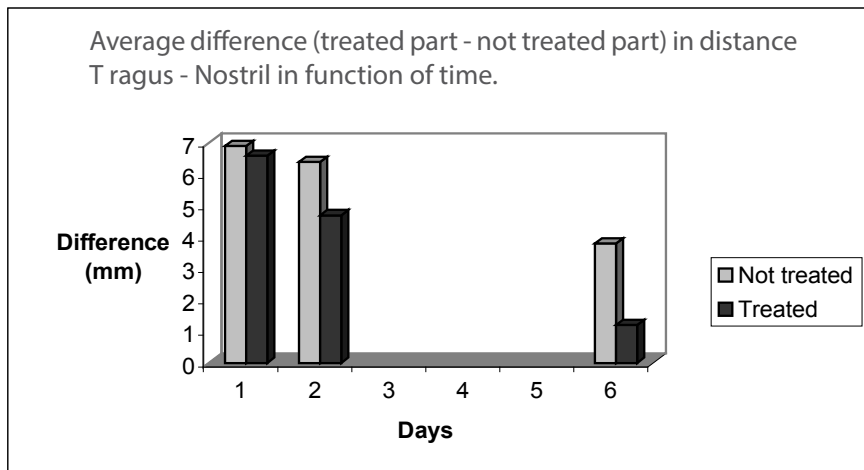
The cooling down of the tissue causes a fast arteriolar and capillary vasoconstriction via the reflexes (thermoregulation).

In 1930, LEWIS described the changes in the blood flow of the skin, when a hand is dipped in water of 10 -12° C long enough. The reaction is the result of an axon reflex. Since then many authors described these reactions, although not everyone follows these conclusions. Today is assumed that the alternation of vasodilatation and vasoconstriction is caused by a decrease of the affinity of the adrenergic  $\alpha$ -receptors. This difference in conclusions can be explained by the difference in circumstances during the experiments.



If the application of cold is carried out long enough, it will be followed by a vasodilatation. This paradoxical vasodilatation corresponds with a protective hyperaemia. If the exposure is prolonged even more, the periods of vasodilatation and those of vasoconstriction will follow after each other. This phenomenon is called the "Hunting Reaction or also Escape".

It has also been demonstrated that only cold, applied alone, has no direct effect on the oedema. In order to have an effect, it must be accompanied by a light compression in an inclined position. This combination will resolve the oedema faster.



Source: M-B Bollack, A. Wilk; Etude du traitement de l'œdème en chirurgie maxillo-faciale par le cryothérapie; Kinésithérapie scientifique, 1998, n° 381, 6-23.

### **3. Airflow therapy**

Gymna has turned its expertise in developing a device to provide the best possible application for this kind of cryotherapy.

With Gymna Cryoflow ICE-CT new standards are being set in the cryotherapy treatment. The Gymna Cryoflow ICE-CT cools down surrounding air but is on top of that the first cryotherapy device to do this with a bio-feedback system, thereby ensuring a constant temperature on the treated area.

The intelligent treatment head not only determines the temperature at the treated area, but also ensures that the air flow automatically adjusts to the intended (skin) temperature. This enables the therapist to setup his treatment very easily; the therapist situates the patient in a comfortable position, positions the treatment head on the required area, fixes the temperature and from then on the Gymna Cryoflow ICE-CT will automatically adept its airflow in order to reach it continuously.

The possibilities for application of the Gymna Cryoflow ICE-CT are enormous. With Gymna Cryoflow ICE-CT a more powerful device than the majority of systems in use is combined with an additional revolutionary biofeedback system adjusting the airflow automatically.

The main disadvantage of other cryotherapy techniques is that the temperature at the outcome of the hose can be measured, but never the temperature that really matters: the one of the treated area itself. That's why we have turned all our expertise to the development of an intelligent hand piece on our Gymna Cryoflow ICE-CT. This does not only involve the determination of (skin) temperature, but also the air flow that is automatically adjusted so that the adjusted temperature remains constant and controlled.

## 4. Indications/Contra-indications

Indications	Contra-indications
<ul style="list-style-type: none"><li>• Sports medicine and traumatology</li><li>• Sprains/ Strains (acute)</li><li>• Bursitis, Tendinitis</li><li>• Rheumatology</li><li>• Prestretching of Muscles</li><li>• Muscle spasm</li><li>• Algodystrophia</li><li>• Neuralgia</li><li>• Postoperative surgery</li><li>• Pain</li></ul>	<ul style="list-style-type: none"><li>• Situations where the body is unable to cope with temperature changes because of allergy, hypersensitivity, or circulatory in-sufficiency</li><li>• Cardiac or respiratory involvement</li><li>• Peripheral vascular disease</li><li>• Loss of thermal sensitivity</li><li>• Anesthetic skin</li><li>• Cold-allergy</li><li>• Raynaud's disease</li><li>• Cryoglobulinemia</li><li>• Paroxysmal cold hemoglobinuria</li><li>• Uncovered open wounds</li></ul>

## 5. General applications

The effectiveness of the cryotherapy is the best during the acute phase, especially during the first 72 hours. Independently from the technology and or the physic principle used, Cryotherapy should always be carried out in two stages:

1. The first stage is the creation of the thermal shock, which means lowering the skin temperature as quick as possible. It is important that this shock appears quickly in order to avoid any adaptation and installation of mechanisms of defense. Ideally, it must appear in less than 3 minutes and if one wants to obtain “neuro-reflexes” reaction, it must appear in less than 1 minute.
2. The second stage is the stabilization of the temperature. It is used for creating and amplifying the “Hunting reaction” but also cooling the muscular tissue (which is more in-depth and having a certain “mass”) in order to use it like “accumulator” and thus getting a longer effect, even after the end of the treatment. The problem here, will be to stabilize the skin temperature in a way to obtain the effects of the cryotherapy without having the risks of tissue damage. The ideal temperature is 12° C.

However, in order to reduce the swelling, it is advised to elevate the treated area during the application. The treated area must be elevated above the level of the heart. The application of a light pressure will further enhance the effectiveness of the treatment.

Cryotherapy treatments are very simple thanks to the Gymna Cryoflow ICE-CT. The unique IR sensor measures the skin temperature and automatically regulates the air flow. This keeps the pre-set temperature constant and optimal during the treatment. It is a major advantage, that due to this automatic system, it is already enough to select the obtained objective or indication and the treatment will be done automatically.

This enables the therapist to setup his treatment very easily; the therapist situates the patient in a comfortable position, positions the treatment head on the

required area, fixes the temperature and from then on the Gymna Cryoflow ICE-CT will automatically adapt its airflow in order to reach it continuously.



Gymna Cryoflow ICE-CT = The IR system makes it possible to determine the skin temperature and automatically adjust the air flow to keep the desired skin temperature constant.

## 5.1 Skin temperature

Under normal circumstances the average skin temperature is around 34° C. By measuring the skin temperature, the infrared sensor enables us to evaluate the stage of pathology (acute, subacute or chronic). In a more acute phase there will obviously be more obvious signs of inflammation and therefore also a higher skin temperature. In order to avoid inaccuracies in treatment, you always have to compare with a reference area:

- The same joint but at the opposite (healthy) side
- The upper joint at the same side of the injury
- The lower joint at the same side of the injury

The established temperatures can be described in a table (like the below example). An accurate summary to evaluate the disorder and the progress of the treatment is acquired in this way.

	1	2	3	4	5	6	7
Treated area							
Opposite side							
Proximal of the area							
Distal of the area							

## 5.2 Thermal Shock

In order to create a thermal shock, it is enough to take the intermediate nozzle (15 mm), to fix the temperature at 12° C, and place the tube 5 to 10 cm from the skin during 3 minutes.



## 6. Objective list

Indication	Temperature	Treatment time (min.)	Nozzle
1. Pain relief			
Acute	12° C	0:15	15 mm
Subacute	14° C	0:10	15 mm
Chronic	16° C	0:10	25 mm
2. Inflammation			
	14° C	0:15	15 mm
3. Swelling			
Acute	14° C	0:15	15 mm
Subacute	14° C	0:10	5 mm
Chronic	16° C	0:10	5 mm
4. Post-surgical			
	14° C	0:15	25 mm
5. Spray & Stretch			
	14° C	0:03	25 mm
6. Trigger point			
	12° C	0:03	15 mm
7. Shockwave Therapy			
	15° C	0:05	15 mm

## 6.1 Pain relief & RICE concept

The famous “RICE” concept can easily be performed and in a very effective way with the Gymna Cryoflow ICE-CT using the objective list “pain relief”. The letters R.I.C.E are abbreviations for: Rest, Ice, Compression, Elevation.

What is the RICE Technique?

Cryotherapy can be used in the acute setting making up an integral component of the R.I.C.E technique to decrease pain, reduce swelling and fasten the healing process.

The R.I.C.E technique is the golden standard in the treatment of acute sporting injuries. The Gymna Cryoflow ICE-CT does all the effects of ice in an efficient way plus the compression due to the pressure of the airflow (see picture below). The treated area has to be positioned in a correct way. That means that the treated area has to be higher positioned than the heart.

The R.I.C.E technique involves all the components that are needed to prevent further injury to the damaged site immediately after the injury has been sustained. If applied correctly and in time, the RICE technique can greatly reduce the recovery time of an injury.



## 6.2 Swelling

Concerning vascular problems, the elevated positioning of the treated zone is of primary importance. The treated area must be elevated above the level of the heart. You have to sweep on the vascular axis from distal to proximal. For the lymphatic drainage, it is of primary importance to drain the ganglion manually. You'll use the small tube and will sweep during ten minutes at a temperature of 15° C. Attention, in the event of suspicion of phlebitis, it is advised not to do cryotherapy treatment.

## 6.3 Spray and stretch treatment

A treatment usually and effectively practised with the cryotherapy is the treatment of muscle spasms like stiff neck, tension headache, lumbago etc. using the spray and stretch technique recommended by Travell & Simons.

In this case, the therapist cools (vaporizes) the muscle in order to decrease the amplitude of the response reflex during the stretching (which can be significant because of the muscular spasm) and then stretches it under particular conditions.



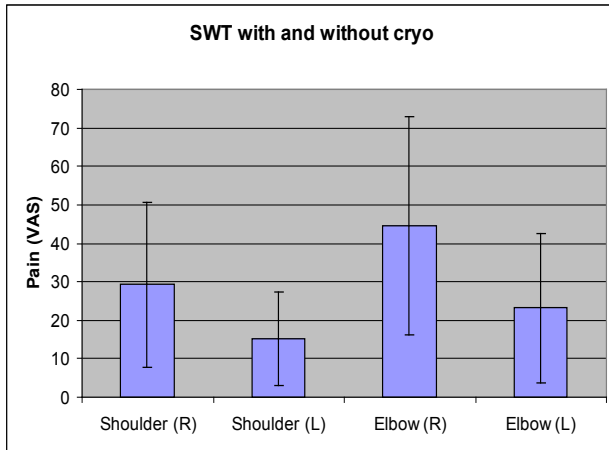
To have a clear view on all the indications relating to the spray and stretch technique, we strongly recommend the following book: David G. Simons, Janet G. Travell, Lois S. Simons, Barbara D. Cummings: Travell & Simons' Myofascial Pain and Dysfunction: The Trigger Point Manual, second edition.

## 6.4 Shockwave therapy

Cryotherapy can be extremely well combined with Shock therapy. Shockwave therapy can be uncomfortable, sometimes even painful. There is also the risk of creating a bruise. The use of the cryotherapy before the treatment is beneficial due to:

- Its analgesic effect which makes the treatment completely painless and offers more comfort for the patient. Thus it is possible to use suitable parameters which improve the effectiveness of the therapy.
- Its vasomotoric effects decrease the risk on bruises caused by shockwave therapy
- Its Hunting Reaction effect, it accelerates the healing process of shockwave therapy.

Cryotherapy (thermal shock) associated with shockwave therapy improves comfort of the patient, makes the therapy softer and increases the effectiveness. The graph below clearly shows the great reduction of pain during shockwave therapy in two joints (shoulder and elbow). We performed shockwave therapy on both sides but before we did it on the left one, we created a thermal shock.



Right side: only shockwave therapy  
 Left side: first thermal shock, afterwards immediately shockwave therapy.

The research (carried out at 50 healthy patients) shows also that 90% of the patients consider that the cryotherapy before shockwave therapy brings a real benefit from a comfort point of view.

Much better	Better	Same	Worst
40%	50%	8%	2%

In order to get those results, you have to use the intermediate nozzle (15mm) at a distance of 10 cm from the skin and a selected temperature of 15°C during 5 minutes minimum.

## 7. Indications

Indication	Phase	Temp. °C	Time (min)	Nozzle
Achillodynia	Acute	12	10	15
	Subacute	14	15	15
	Chronic	15	15	15
Ankylosing Spondylitis	Acute	15	15	15
Arthritis	Acute	12	10	15
	Subacute	14	15	15
Arthrosis	Acute	15	15	15
Bursitis	Acute	12	10	15
	Subacute	14	15	15
Caneaneal spur (heelspur)	Acute	12	15	15
Carpal Tunnel Syndrome	Acute	15	15	15
Cervicobrachial Neuralgia	Acute	14	15	15
Epicondilitys	Acute	12	15	15
	Subacute	14	15	15
	Chronic	15	15	15
Fibromyalgia		15	10	25
Frozen Shoulder	Acute	12	10	15
Lumbalgia	Acute	15	10	25
Luxation		12	10	15
Lymphoedema	Acute	15	10	5
Morton Disease		15	10	15
Muscle Spasm		15	10	25
Muscle Strain	Acute	12	10	15
	Subacute	15	15	15
Osgood Schlatter Disease		15	10	15
Patellar Tendinitis	Acute	12	10	15
Plantar Fasciitis		15	15	15
Pubalgia	Acute	12	10	15
Rheumatoid Arthritis	Acute	12	10	15
Spasticity		15	10	25
Sprain	Acute	12	10	15
	Subacute	14	15	15
Tendinitis	Acute	12	10	15
	Subacute	14	15	15
	Chronic	15	15	15
Tendon Ruptures	Acute	12	10	15
	Subacute	15	15	15
Tendovaginitis	Acute	12	10	15
	Subacute	15	15	15
Trigger Points		14	3	5
Vascular Oedema		15	10	5

Indication

# Achillodynia

## WHAT IS IT?

Painful disorder of the Achilles tendon and the soft tissues around it.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	14	15	15
Chronic	15	15	15

### ! ATTENTION !!

Elevate the treated area above the heart level.



# Ankylosing Spondylitis

## WHAT IS IT?

A type of arthritis that causes chronic inflammation of the spine and the sacroiliac joints. Chronic inflammation in these areas causes pain and stiffness in and around the spine. Over time, chronic spinal inflammation (spondylitis) can lead to a complete cementing together (fusion) of the vertebrae, a process called ankylosis. Ankylosis causes total loss of mobility of the spine.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation



### TREATMENT

	°C	min	nozzle
Acute	15	15	15





# Arthritis

## WHAT IS IT?

Chronic, degenerative disorder of the cartilage characterized by pain, rigidity and movement restrictions.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation
- Ant-inflammation



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	14	15	15



# Arthrosis

## WHAT IS IT?

All degenerative illnesses of a joint are understood, which are characterized by an increasing destruction of the joint cartilages. Also participated are joint structures like bones, joint capsule as well as joint-near musculature.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	15	15	15



# Bursitis

## WHAT IS IT?

Bursitis is an inflammation of a bursa. A bursa is a tiny fluid-filled sac that functions as a gliding surface to reduce friction between tissues of the body. The major bursae are located adjacent to the tendons near the large joints, such as the shoulders, elbows, hips and knees.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation
- Vasomotor



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	14	15	15

### ! ATTENTION !!

Elevate the treated area above the heart level.



# Cancaneal spur (heelspur)

## WHAT IS IT?

A bony growth occurring on the underside of the heel bone. Calcium deposits form when the plan-tar fascia pulls away from the heel area, causing a bony protrusion, or heel spur to develop. Heel spurs can cause pain in the rear of the foot, especially while standing or walking.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	12	15	15



# Carpal Tunnel Syndrome

## WHAT IS IT?

A type of compression neuropathy (nerve damage) caused by compression and irritation of the median nerve in the wrist. The irritation of the median nerve to the hand. The irritation of the median nerve is specifically due to pressure from the transverse carpal ligament.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation
- Myorelaxation



### TREATMENT

	°C	min	nozzle
Acute	15	15	15



# Cervicobrachial Neuralgia

## WHAT IS IT?

A syndrome associated with inflammation of the brachial plexus. Clinical features include severe pain in the shoulder region which may be accompanied by muscle weakness and loss of sensation in the upper extremity. The term brachial neuralgia generally refers to pain associated with brachial plexus injury.



### TREATMENT EFFECTS

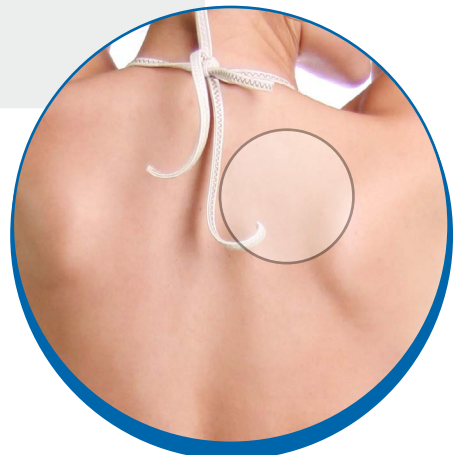
Proposed treatment effects:

- Antalgic
- Anti-inflammation
- Myorelaxation



### TREATMENT

	°C	min	nozzle
Acute	14	15	15



# Epicondylitis

## WHAT IS IT?

An inflammation or damage to the area of an epicondyle of bone. An epicondyle is the projection of a bone above the condyle where ligaments and tendons are attached. The two most common types of epicondylitis are tennis elbow (epicondylitis lateralis) and golfer's elbow (epicondylitis medialis).



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	12	15	15
Subacute	14	15	15
Chronic	15	15	15



# Fibromyalgia

## WHAT IS IT?

A syndrome characterized by chronic pain, stiffness, and tenderness of muscles, tendons and joints without detectable inflammation. Fibromyalgia is considered an arthritis- related condition. 80-90% with fibromyalgia are women.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation



### TREATMENT

	°C	min	nozzle
	15	10	25





# Frozen Shoulder

## WHAT IS IT?

Constant severe limitation of the range of motion of the shoulder due to scarring around the shoulder joint (adhesive capsulitis). The common symptom is pain in the shoulder of gradual or sudden onset, typically located to the front and side of the shoulder, increasing when the shoulder is moved away from the body.



### TREATMENT EFFECTS

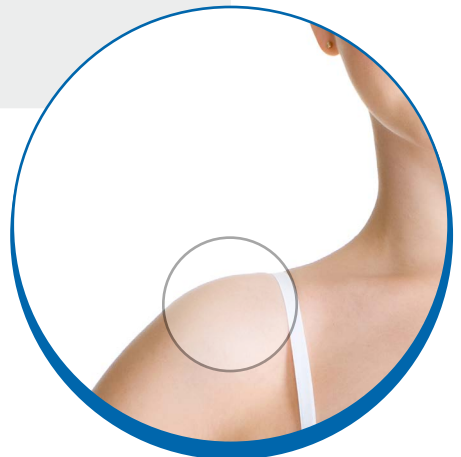
Proposed treatment effects:

- Antalgic
- Myorelaxation
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	12	10	15



# Lumbalgia

## WHAT IS IT?

Is the medical term for the more common lay description of low back pain or lower back pain. It is a common musculoskeletal disorder which affects the lumbar segment of the spine. It can be either, subacute or chronic in its clinical presentation.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	15	10	25



# Luxation

## WHAT IS IT?

Complete dislocation of a joint.  
A partial dislocation is a subluxation.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation
- Vasomotor



### TREATMENT

	°C	min	nozzle
	12	10	15



# Lymphoedema

## WHAT IS IT?

Lymphoedema a (visible) swelling of tissue by build-up of protein-rich fluid in the interstitium. Caused due to a defect in the construction or function of the lymphatic structures or an impediment of the drainage function of the lymphatic system.



### TREATMENT EFFECTS

Proposed treatment effects:

- Vasomotor



### TREATMENT

	°C	min	nozzle
Acute	15	10	5

### ! ATTENTION !!

Elevate the treated area above the heart level.



# Morton Disease

## WHAT IS IT?

Morton's Disease or Morton's Neuroma is a benign enlargement of one of the nerves between the metatarsal heads, usually between the 2nd and 3rd or 3rd and 4th digits. Symptoms of this condition include sharp pain, burning, and even a lack of feeling in the affected area. Morton's disease may also cause numbness, tingling, or cramping in the forefoot.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
	15	10	15



# Muscle Spasm

## WHAT IS IT?

Increased muscular tension and shortness that cannot be released voluntarily and prevents lengthening of the muscles involved. Caused by pain stimuli to the lower motor neurons.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation



### TREATMENT

	°C	min	nozzle
	15	10	25



# Muscle Strain

## WHAT IS IT?

An injury to a tendon or muscle resulting from overuse or trauma. Strains are injuries that involve the stretching or tearing of a musculotendinous (muscle and tendon) structure. An acute (instant or recent) strain of the musculotendinous structure occurs at the junction where the muscle is becoming a tendon. These strains take place when a muscle is stretched and suddenly contracts, as with running or jumping. This type of injury is frequently seen in runners who strain their hamstrings. Symptoms for an acute muscle strain may include pain, muscle spasm, loss of strength, and limited range of motion. Chronic (long-lasting) strains are injuries that gradually build up from overuse or repetitive stress, resulting in tendinitis (inflammation of a tendon).



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	15	15	15

### ! ATTENTION !!

Elevate the treated area above the heart level.



# Osgood Schlatter Disease

## WHAT IS IT?

Inflammation or partial separation of the tibial tubercle caused by chronic irritation, usually as a result of overuse of the quadriceps muscle. The condition is primarily seen in muscular, athletic adolescent boys and is characterized by swelling and tenderness over the tibial tubercle that increase with exercise or any activity that extends the leg.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
	15	10	15





# Patellar Tendinitis

(jumpers knee)

## WHAT IS IT?

A common injury to the patellar tendon. Also called patellar tendonopathy or jumper's knee because it often occurs in basketball, soccer, volleyball and other high impact sports. There may be sudden aching and pain with subsequent swelling just below the kneecap and the knee may feel weak.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	14	15	15
Chronic	15	15	15



# Plantar Fasciitis

## WHAT IS IT?

Inflammation of the plantar fascia (fasciitis), the “bowstring-like” tissue in the sole of the foot stretching from the heel to the front of the foot.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
	15	15	15



# Pubalgia

## WHAT IS IT?

Pubalgia is a painful syndrome of the groin. This ailment is associated with varying degrees of lesions of the muscles of the lower frontal abdomen, pubic symphysis and adductor muscles.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	15	15	15



# Rheumatoid Arthritis

## WHAT IS IT?

An auto-immune disease which causes chronic inflammation of the joints, the tissue around the joints as well as other organs in the body.



### TREATMENT EFFECTS

Proposed treatment effects:

- Reduction of pain/local warmth
- Reduction of oedema
- Maintain articular mobility



### TREATMENT

	°C	min	nozzle
Acute	10	15	15



# Spasticity

## WHAT IS IT?

A state of increased tone of a muscle (and an increase in the deep tendon reflexes). For example, with spasticity of the legs (spastic paraplegia) there is an increase in tone of the leg muscles so they feel tight and rigid and the knee jerk reflex is exaggerated.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Myorelaxation



### TREATMENT

	°C	min	nozzle
	15	10	25



# Sprain

## WHAT IS IT?

An injury involving the stretching or tearing of a ligament or a joint capsule, which help provide joint stability. A severely damaged ligament or joint capsule can cause instability in a joint. Symptoms may include pain, inflammation, and in some cases, the inability to move a limb (arm, leg, foot). Sprains occur when a joint is forced beyond its normal range of motion, such as turning or rolling your ankle.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation
- Vasomotor



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	14	15	15

### ! ATTENTION !!

Elevate the treated area above the heart level



# Tendinitis

## WHAT IS IT?

Tendinitis describes inflammation, swelling, and irritation of a tendon for a variety of reasons. If the normal smooth gliding motion of the tendon is impaired, the tendon will become inflamed and movement will become painful at the tendon insertion side.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	14	15	15
Chronic	15	15	15



# Tendon Ruptures

## WHAT IS IT?

A tendon rupture is a condition where the tendon of the origin is torn. A tendon rupture is associated with the following signs or symptoms; a snap or pop you hear or feel, severe pain, rapid or immediate bruising, marked weakness, inability to use or move the affected part or involved area.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation
- Vasomotor



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	15	15	15

### ! ATTENTION !!

Elevate the treated area above the heart level





# Tendovaginitis

## WHAT IS IT?

Inflammation of a tendon and its enveloping sheath, the lubricated layer of tissue in which the tendon is housed and through which it moves. It is painful, and may temporarily disable the affected part. The inflammation of a tendon sheath caused by calcium deposits, repeated strain or trauma, high levels of blood cholesterol, rheumatoid arthritis, gout, or gonorrhoea. Occasionally movement yields a crackling noise over the tendon.

Tendovaginitis - also known as or related to- vaginal synovitis, inflammation of tendon sheath, tenosynovitis, tendinous synovitis, tenonolemmatitis, tenosynovitis.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
Acute	12	10	15
Subacute	15	15	15



# Trigger Points

## WHAT IS IT?

Trigger points are tight nodules located in skeletal muscles that when touched or pressured, produce tenderness, twitching and jumping. Trigger points cause a condition known as myofascial pain syndrome. The trigger points produce pain locally as well as often referring pain to other areas. Very often the muscles most affected with trigger points are the muscles of posture.



### TREATMENT EFFECTS

Proposed treatment effects:

- Antalgic
- Anti-inflammation



### TREATMENT

	°C	min	nozzle
	14	3	5



# Vascular Oedema

## WHAT IS IT?

Edema is a condition of abnormally large fluid volume in the circulatory system or in tissues between the body's cells (interstitial spaces).



### TREATMENT EFFECTS

Proposed treatment effects:

- Vasomotor



### TREATMENT

	°C	min	nozzle
	15	10	5

### ! ATTENTION !!

Elevate the treated area above the heart level



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## 9. Notes

## 9. Notes

Cryotherapy



Diathermy



Shockwave Therapy



Physio Care



Treatment Tables



Electrotherapy



Active Motion



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