

NEUROREFLEXIVE PAIN THERAPY:

LEARNING FROM PHYSIOLOGY

Cryotherapy is a procedure that has been used for a long time in the area of physical therapy, both in the form of cold chambers for patients with rheumatic illnesses, and as cool packs for the injured. So what is different about the neuroreflexive pain therapy with the CryoFos device? We asked accident doctor and doctor for orthopaedics and surgery, Dr. Peter Stehling from Karlsruhe, about his experience.



Cryotherapy is already a recognised procedure when it comes to the medical treatment of pain, inflammations and swelling, and takes place using hyperbaric CO² gas. Compared to ice or other cooling procedures, the main difference about the new form of application is that the fluid, hyperbaric CO² is sprayed onto the body region to be treated in a targeted manner. The CO² is applied in the form of dry ice released from a gun. This allows a so-called thermal shock to be achieved, which sees the skin temperature cooled from approximately 32 °C to 2-4 °C in approximately 30

seconds. The induced neuroreflexive effects work together with the generated pressure and vibration to exponentiate and trigger a raft of physiological reactions to stimulate healing processes and alleviate pain.

The interview:

The CryoFos device claims to enable causal pain therapy; in other words, not just symptomatic treatment.

What is actually known about the mechanisms of effect?

Stehling: it takes advantage of the fact that sensations of pain and temperature are fed via the sensors of the skin along the lateral spinothalamic tract to the thalamus and cerebral cortex, whereas sensations of pressure and touch reach the cerebral cortex via the ventral spinothalamic tract. At the moment of thermal shock, a centrally triggered reflex is transmitted via these paths, which after initial vasoconstriction – as is the case with ice treatment – leads to a deep vasodilatation – something not possible by ice treatment. This vasodilatation results in the removal of inflammatory mediators such as prostaglandins, histamines and kinins, in addition to serotoninins, which require oedema and haematoma to be reduced in number very quickly. The vascular permeability distorted by the inflammation – as part of suspending semi-permeability – is rapidly normalised again in a matter of minutes, enabling the re-absorption of the inflammatory mediators and their removal via the venous system to work again from a physiological standpoint. This explains why this type of cryotherapy does not purely

amount to symptomatic treatment by cooling, rather a causal therapy to alleviate the cause of pain.

On whom do you use the method most frequently in your surgery?

Stehling: I use the method on all patients experiencing pain, whether it results from an injury, haematoma, oedema, e.g. after distortions or strains, but also in the case of chronic inflammatory reactions as part of rheumatic illnesses or soft tissue rheumatism, tendinitis, calcaneal spur, achillodynia, epicondylitis, myalgia in the lumbar spine and shoulder/neck area, in the case of complaints similar to migraines or even post-operation immediately after the wound has been closed and in the further course of proceedings. Particularly in this latter situation, it is advantageous that this is a non-contact procedure.

How do the patients react?

Stehling: the patients, whether children or adults, are delighted with this therapy. It is pain-free and naturopathic. Thanks to a safety mechanism with regenerate temperature reading and automatic shut-off in the case of the temperature falling too low, the risk of cryogenic burns is practically eliminated.

Indications	Contraindications
Acute sporting injuries	Cryoglobulinemia
Bruises	Cold allergy
Haematoma	Raynaud's phenomenon
Oedema	Diabetic gangrene
Strains and torn ligaments	Mucous membrane treatment
Muscle tenseness	Open wounds
Inflammatory rheumatic processes	
Tennis elbow or golfer's elbow	
Calcaneal spur	
Gonarthrosis	
Dorsalgia/sciatica	
Cervicobrachial neuralgia	
Complex regional pain syndr., stages 1 & 2	
Post-operative treatment/pain	

It is said that this procedure is a recognised therapy. What evidence/studies are in existence?

Stehling: numerous studies have already been carried out confirming the efficiency of this therapy. These studies are summarised in a piece of work by Dr. med. Lothar Weiß, specialist for surgery from Freiburg (see "Service").

I am personally currently investing the effectiveness of the combination of CryoFos with monochromatic blue light in the case of wound problems. A study in the field of gastroenterology brought me to this idea; after gastroscopic evidence of Helicobacter pylori had been found, the area was irradiated for four minutes with monochromatic blue light of a wavelength 400-450 nm. As part of the follow-up gastrointestinal endoscopy two to three days later, the doctors were able to demonstrate that 90% of the Helicobacter pylori had been killed. Since anaerobic bacteria play an important part in the case of wound problems, I am currently investigating the benefits of adjuvant monochromatic light therapy with a wavelength of 450 nm; in other words, a wavelength still in the

realms of blue light, but without giving rise to sight problems. It can be seen that in the case of ulcers, open wounds or perioperative use, the wound heals quickly thanks to enrichment of oxygen and the bactericidal situation.

Will German public health insurance assume the therapy costs?

Stehling: this is not the case. This type of cryotherapy is a specific health service, and depending on the body region being treated is charged at a rate of approximately 15-20 euros per session. In cases of acute treatment, up to approximately 5 sessions are necessary; in chronic cases, up to ten sessions are necessary.

How high are the purchase and maintenance costs?

Stehling: customers should contact the CryoFos company to find out the current price. The price per CO² gas bottle with riser pipe, including delivery and collection, is 43 euros excluding VAT and daily rental of 35 cents per bottle. Each bottle is filled with 10 kg and is sufficient for approximately 40-50 sessions. If customers order before

12 noon, the bottles will be delivered on the following day. I always hold approximately three bottles in stock.

Can the application be well integrated into surgery processes?

Stehling: thanks to its simple operation, excellent mobility, and manageability in small spaces, the device can be integrated into surgery or clinic processes excellently. It is a device fulfilling German Medical Devices Regulation Class 2a and therefore maintenance-free. Thanks to the short treatment duration, the entire expenditure of time is very low and very efficient nonetheless. An important prerequisite for the treatment's success is the correct application; that is, that the thermal shock must be achieved, as controlled by the regenerate temperature reading. Many clinics and resident doctors work with this new technology and wouldn't want to do without it, particularly since patient satisfaction, as already stated, is excellent. Many thanks for the interview!

Service:

PDF file: Weiss L. "Evaluating Scientific Material on Neuroreflexive Stimulation Therapy Using Hyperbaric CO² Gas (Cryotherapy)", www.cryfos.com

Technical Information:

Surgery device:

Dimensions: H:109.0cm,W:40.0 cm, D: 45.5 cm
 Empty weight: 25 kg
 Weight with bottle: 53 kg
 Power supply: 12 V battery

Mobile device:

Dimensions: H:73.8 cm,W: 43.0 cm, D: 31 cm
 Empty weight: 16 kg
 Weight with bottle: 27 kg
 Power supply: 12 V battery