

### Cool+Press - Simple therapy, twofold efficacy!

The Cool + Press Boot combines regulated cooling and pulsating massage, in order to decrease swelling, heat / inflammation and pain.

#### The Cool+Press boots in practice:

Of particular importance is the ability to perform all treatments both while standing still and in movement when applying the Cool + Press boots.

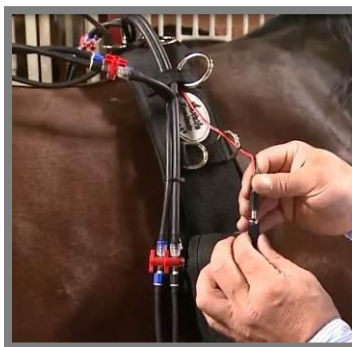
Clinical trials in humans show many positive effects of post-traumatic and postoperative cooling applications - especially in conjunction with compression.



### Indications

- Cryotherapy has proven to be an excellent treatment especially in conjunction with controlled compression for exercise-induced **stress and overuse of the musculoskeletal system with painful irritation of muscles, tendons and joints**
- Similar irritations which occur as part of the **rehabilitation and resumption of training**, can also be reduced significantly faster
- Cryotherapy is also beneficial as **support for the treatment of joint diseases (arthrosis / osteoarthritis)**
- Even **swollen legs ("inactivity oedema")** a problem commonly found in horses that are stabled most of the day can be treated successfully
- Especially with **tendonitis and tenosynovitis (tendon and tendon sheath injuries)** it is very important that a therapy can be adapted from 2 -3 days of cold treatment to warm treatment.

Also very important is a correct movement therapy – walking the horse!



### Conclusion

The lymphatic drainage has achieved very good results in the treatment of inactivity oedema, carpal tunnel syndrome, chronic cellulitis, and post-operative and post-traumatic swelling

### Effects of the Cool+Press Boots

Cryotherapy helps very well with swellings and irritations but in special cases the change between warm and cold treatment works the best. Nevertheless, it is important to get the temperatures right and to promote the healing processes with the help of regulated compressions and movement. Therefore, the targeted application of cold and heat in conjunction with compression plays in addition to veterinary treatment an important role in physiotherapy, physical therapy and rehabilitation.

### Effects of cold

A drop in temperature in the damaged tissue leads to a vasoconstriction and reduced blood flow. This decreases the release of inflammatory cells and fluids into the damaged tissue. Since less inflammatory cells and pain mediators are produced a wound edema stays smaller and an anti-inflammatory as well as pain relieving effect is achieved. This results in an improved mobility and a faster recovery to a normal mobility.

### Effects of heat

Longer acting heat is one of the oldest natural physical remedies and leads to a dilation of blood vessels. The improved blood circulation relieves pain and promotes healing. Clinical trials in humans have shown that passive heat therapy can be significantly supported by active movement therapy. A combination of therapies enables a treatment without medication resulting in a quick recovery.



### Effects of compression

The compression contributes substantially to a reduction in blood flow. External pressure reduces mechanically the fluid circulation into the tissues and a swelling is prevented. Simultaneously, lymphatic drainage is promoted due to the cooling and the stroking massage at the same time.

Due to the pulsating compression in combination with the pressure, which is directed from below to the top, a "suction effect" is produced. This enables edemas and swellings to subside much more quickly compared to a continuous unchanged pressurization.

### Effects of the apparatus-based lymph drainage (KPE)

Unlike humans, horses have an especially thin subcutaneous fat layer in their extremities. As a consequence blood vessels, lymphatic vessels, tendons and ligaments are very close to the surface skin. Through the gentle bottom to top pulsating pressure the removal of lymph is conveyed to the regional lymph nodes. Following the 30-minute stimulation, which can be supported by movement an adjustable constant "pressure bandage" is created via the already applied Cool+Press boots in order to prevent a backflow.

## Contraindications

- Do not apply when there are local circulatory disorders
- Do not apply on open wounds
- Do not apply any cooling gels beneath the cool boots
- Do not apply lymph drainage if there are inflammatory diseases such as acute cellulitis or lymphatic tumor diseases



## Causes for oedemas (= Swelling due to an accumulation of fluid in the tissue)

A constant exchange of substances takes place within blood and tissues in which under the influence of certain pressure conditions fluids leak into the tissue (=transudation) and are absorbed by the vessels (=resorption). The excess water, which is not resorbed by the little blood vessels, will be absorbed through lymph capillaries, which join into lymph vessels and thus be transported through the lymphatic system. Lymph nodes are interposed between the lymph vessels. They act on the one hand as biological filter and on the other hand they produce lymphocytes. Those cells belong to the white blood cells and are important for the defence reaction of the organism during inflammations and injuries. The fluids which are flowing through the lymphatic system are called lymph. Those fluids are clear, have a slightly yellow colour and contain many lymphocytes. If an excessive amount of fluids leaks into the tissue, not enough fluid is resorbed or transported away it will come to a fluid accumulation within the tissue, a so called oedema, and a swelling is apparent. There are many possible reasons for this for example: Cardiovascular diseases, metabolic diseases with altered pressure conditions in the vascular system, or even an increased permeability of the vessel walls for liquid. Furthermore, oedemas occur due to injuries and inflammations or mechanically through an obstruction of bigger lymph vessels.

## Recommendations for use

A sufficient duration of treatment must be applied so that the horse can benefit from this treatment. The usage of regulated cold increases the efficiency and safety of this treatment and avoids unnecessary risks.

- **In cases of recent injuries** they should be cooled several times per day for a duration of approximately 20 minutes. Shorter treatment durations or cooling with a hose does not achieve the positive effects or the necessary penetration which is desired from cryotherapy. Therefore it is advisable to use a regulated cooling in which the temperature is adjustable through the precooling of the cooling pads.
- **In cases of irritations within the musculoskeletal system due to overtraining** a cooling of approximately 20-30 minutes should be applied for regeneration purposes.

**The understanding is that: increased cold supply (pre-cooling at -18°C) will usually lead to faster results. However, the application should not exceed 20 minutes within 2 hours because otherwise there is a risk of tissue damage.**



## Common causes of swelling of the limbs

- **Inflammatory swelling after trauma (injury)**

When there is a damage of tissue the organism reacts first with a short-term narrowing of the vessels and then with an increased blood circulation in the affected areas. Due to that specialized cells so called "inflammatory cells" quickly get to the damaged areas. Those cells border the damaged areas, degrade damaged cells and carry them off. To a large extent this removal takes place via the lymphatic system. Special mediators influence the wall of the blood vessels which makes them more permeable in order to enable the inflammatory cells to pass through the walls. This process is called an "increased vascular permeability". Blood fluids leak simultaneously with the cells which accumulate in the tissue and thus cause a swelling.

- **Phlegmon (= cellulitis)**

Cellulitis is a purulent, areal, infiltrative inflammation of the connective tissue. It can occur after blunt trauma to the tissue and small, often hardly visible injuries of the skin if bacterial pathogens enter the wound. It comes very quickly to a strong and painful swelling. Cellulitis can spread rapidly and lead to severe systemic diseases. In extreme cases if the whole leg is swollen massively, this is described as so-called "elephant leg".

- **Tendinitis (=inflammation of a tendon)**

Through overuse, over-stretching and trauma, for example a grazing with another hoof or kicks, ruptures in the tendon can occur if its elastic limit is exceeded. In the process the individual fibrils or entire fibre bundles rip leading to an inflammation of the tendon the so called "tendinitis". Frequently affected are the flexor tendons of the forelegs which show a significant swelling in the area of the cannon bone when inflamed.

- **Tenosynovitis (= inflammation of the tendon and its sheath)**

The tendon sheath is an auxiliary member of the active musculoskeletal system that surrounds the tendon wherever they are exposed to larger movements and changes of direction when crossing a joint. At bony prominences, the tendons are protected by bursa. In cases of bruises and strains of the tendon sheath bleeding and inflammation with painful swellings occur.

- **Lymphatic oedema**

If the removal of lymph is not possible due to a mechanical closure of a bigger lymph vessel, fluids accumulate in the tissue and a so called "lymphatic oedema" with a regional swelling occurs. Often we can observe a swelling of the lower extremities in horses with only little exercise and older horses since the removal of the fluids is diminished. Though slight movement/exercise the lymph drainage is stimulated and the swelling disappears. This kind of swelling is also called "inactivity oedema". The removal of the lymph can be improved by "lymph drainage". This is done by applying a combined therapy consisting of skin care with a gentle massage, compression and movement.

### References:

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