HILOTERAPY

Precision controlled thermal healing process
What does HILOTHERAPY mean?

HILOTHERAPY is a thermal-enabled therapy which promotes the healing of damaged tissue. It is used for surgical procedures, injuries and chronic diseases; which have resulted in swelling, haemorrhages, oedemas and inflammation. HILOTHERAPY not only promotes healing but also reduces pain intensity, thus lessening the need for analgesics.

The medical basis

HILOTHERAPY, as a solution, results from the knowledge gained by the medical profession regarding the healing processes of injured and/or traumatised tissue.

Knowledge about the role of oxygen supply and the supply of nutrients

Oedemas and haemorrhages obstruct the oxygen and nutrient supply of the affected tissue considerably. Thus one suffers from circulation disorders associated with inflammation-related hyperthermia of the corresponding body parts.

The consequences:

The damaged area is no longer supplied with the necessary amount of oxygen needed for maintenance and regeneration. Further cells die due to this lack of oxygen. Meanwhile, liquid-binding proteins become free which lead to additional oedema formation. Therefore, it is important to eradicate the proteins and dead cells in exactly the same way as maintenance of a functioning metabolism, in order to promote recovery.

Knowledge about the role of vascular functions

In reconstructive surgery, vascular dilatation after transplanting areas of one’s own skin and tissue segments (skin flaps), works positively on the post-operative healing process. This process has so far been stimulated by the unselective thermal effects of ‘warm-air thermal blankets’.

This leads to an increase in the body’s core temperature and an associated rise in temperature of the soft tissue surrounding the surgical area.

The consequences:

This type of temperature exposure results in various side effects for patients, including increasing the risk of infection. Hence, it is important to apply only the exact, low-threshold heat directly on to the wound area, with very precise temperature control.

In contrast to local hypothermia (a reduction in temperature), in this case it is important to apply a ‘local’ increase in temperature (hyperthermia), to promote healing.
The therapeutic response

HILOTherapy was developed based on this knowledge and the need to satisfy these requirements. As a thermal healing process, it acts on the affected parts of the body through hypothermia and hyperthermia. The applied temperatures are set to the nearest degree in a range between +10 °C to +38 °C, depending on the medical indication.

Firstly
The effect on the oxygen metabolism
The damaged tissue is treated, thus the oxygen requirement is clearly reduced. A reduction in temperature in the area of the affected body part by around 10 °C reduces the speed of the metabolism by 50%. The oxygen requirement is likewise reduced and so the amount of oxygen that reaches the injury is sufficient for regeneration.

Secondly
The effect on the removal of pollutants
In order to guarantee the transportation of pollutants through lymphatic drainage, the temperature of the tissue must also be reduced. It is of particular importance however, that it is not reduced below 15 °C, otherwise lymphatic drainage is hampered.

Thirdly
The effect on the vascular functions
In order to positively influence the inflow and outflow, both through the arteries and veins (by forced vascular dilatation), a low-threshold, locally-restricted, thermal application is important. A prerequisite for this however, is precise temperature, controlled at 38 °C, which must be applied only to the immediate area of the wound.

Three requirements
These three requirements can only be fulfilled through a thermal healing process; and that is HILOTherapy. The need for properly and accurately controlled remedies is critical as the entire metabolism cannot function when the tissue temperature falls below 10 °C, and if the temperature is under 5 °C, then the nerves cease to transmit impulses.

At the other extreme, in the case of low-threshold, post-operative skin flap heating: If the temperature applied is 38.5 °C instead of 38 °C, the risk of protein denaturation exists, (even with this relatively small variation).

One solution
The solution in all cases is 'HILOTherapy', a thermal healing process with precision control and constant thermal exposure over the entire duration of the treatment. Depending on the indication, the treatment temperature ranges from +10 °C to +38 °C, whereby the application can be limited to the affected body parts.
Indications

HILOTERAPY is the ideal solution for traumatic, pre and post-operative healing in these medical sectors:

- Traumatology / Orthopaedics
- Oral and maxillofacial surgery
- Ear, nose and throat therapy
- Plastic / aesthetic surgery
- Implantology
- Vascular and microsurgery
- Flap surgery
- Rheumatology
- Dermatology
- Sports medicine
- Critical care
- General postoperative
- Physiotherapy / rehabilitative medicine

Treatment areas are

- Oedemas
- Haematomas
- Pain relief
- Sprains, muscle strains, torn muscles, dislocations, tendinitis
- Inflammatory arthritis
- Sciatica
- Fever
- Migraines
- Functional rehabilitation like improvement in mobility and relief of muscle tension

References

The oral and maxillofacial surgical field

„In our oral, maxillofacial and plastic surgery clinic, we have several hilotherapy devices in constant use. In particular, after bi-maxillary osteotomies, we achieve remarkable results in terms of swelling and pain prophylaxis through using hilotherapy. Additionally, due to the high degree of acceptance and the increasing demand for postoperative hilotherapy use on the part of the patient, the devices have become an indispensable part of our treatment process both for small and large surgical procedures.”

Prof. Dr. med. Dr. med. dent. Dr. h. c. Konrad Wangerin, Clinical Director of the oral, maxillofacial and plastic surgery clinic at the Marienhospital Stuttgart

„As users of hilotherapy from the early days, we treat our patients after maxillofacial surgical procedures, directly after treatment for 1-2 hours. Ever since the introduction of the Hilotherm Homecare device, we have given it to our patients for three to four days at home in order to be able to continue hilotherapy there. The facts speak for themselves. Our patients are, as far as possible, also spared swellings and haematomas following surgical procedures such as wisdom teeth operation, implants, etc. The healing process is accelerated considerably, combined with a reduction in post-operative pain, which is why our patients hardly ever have to take painkillers anymore.”

Dres. Beck, Birkenhagen, Peters und Partner, Practice & clinic for oral and maxillofacial surgery, Böblingen

Sports medicine field

13 clubs from the Premier German National Football League already count on hilotherapy, like for example TSG 1899 Hoffenheim:

„We have worked with hilotherapy for a year now and are delighted about its success in regenerating our players. Regardless of whether it is used after surgical procedures or other injuries, with constant, careful thermal therapy - in the range of +15 °C to +18 °C - we have a clear reduction in swellings, haematomas and pains.

We are convinced that our players are ready for action again much more quickly due to using hilotherapy.”

Dr. Pieter Bek, Team Doctor and Simon Stadler, TSG 1899 Hoffenheim Physiotherapist

Plastic and aesthetic surgical field

„Hilotherapy has not only proven itself medically but also as a marketing element. Many patients have realised that post-operative hilotherapy reduces or even prevents swelling and haematomata. With all plastic surgery on the face and breast, hilotherapy has become indispensable, as expected, over the past two years. Early experience with the therapy in traumatology has led to impressive clinical proof of its effectiveness. Pain relief, improved lymphatic flow and swelling prophylaxis significantly improve the postoperative comfort of our patients.”

Dr. Michael Schikorski, Parkklinik Blankenese, Hamburg, Aesthetic-Plastic Surgery

Orthopaedic, trauma surgical field

„Hilotherapy has been used in our centre for over a year on patients who have undergone operations, in particular endoprostheses and results of accidents, as well as patients with rheumatism, both in post-operative treatment and in non-operative treatment.

In the course of an observational study we have assessed the effectiveness and tolerability of the methods, initially on almost 200 applications, by means of standardised questioning of patients and can determine after evaluating the initial data that in virtually all cases, a significant improvement in pain intensity is recorded.

The therapy is accepted very well both by patients who have just undergone an operation as well as patients with swelling, who have not been operated on, in terms of inflammatory systemic disorders.”

Dr. med. Peter Keysser, Consultant at the Rehabilitation Clinic for Orthopaedics and Rheumatology, Rheumazentrum Oberammergau

„By using hilotherapy on patients who have undergone surgery, we achieve an optimal result. The patients find the therapy very pleasant. Post-operative swelling, haemorrhages or the formation of haematomata are clearly reduced through use of this therapy. Hilotherapy is an inherent part of our clinic and is indispensable when it comes to the optimal care of our patients.”

Dr. med. Klaus Steinhauser, Orthopaedist and sports medicine specialist, orthopaedic clinic for outpatient knee joint operations, Karlsruhe

This is an extract from our list of references which we will be more than happy to send to you.
The thermal effect is applied by means of water which circulates through each of our device types. The water temperature is set by the user to the exact value needed and will then be maintained for whatever period is required.

Thus, the medically defined temperature constancy is guaranteed, regardless of whether it is used for short, medium or long term treatment. In addition, applications lasting several hours or several days are possible without temperature deviations.

In a closed-loop circulatory system, the water flows through anatomically formed cuffs. These are available for a variety of head, face and body areas as single-use or multi-use cuffs.

The HILOTHERAPY solution

The basic principle behind the technology is the closed system through which the water, having precision-controlled temperature, flows. In order to embrace various user requirements, there are two therapy devices providing HILOTHERAPY.

The devices differ in their operation and in the temperature spectrum within which the therapeutically suitable temperature is managed.

The larger of the two devices, 'HILOTHERM Clinic', is predominantly used in the inpatient clinical field. It independently achieves the selected temperature in the range of +10 °C to +38 °C, which is maintained for the duration of the treatment.

On this device, which is designed for long term application, two cuffs can be attached and thus two patients can be treated at the same time.

The smaller and more mobile device 'HILOTHERM Homecare' has been developed to facilitate treatment outside of hospital, for example, enabling further treatment at home.

It has a temperature range of +10 °C to +22 °C and will lower affected body area temperature for symptoms such as, haematomas, swelling, oedemas, inflammation, etc.

The reduction in the temperature of the water is enabled through adding cold packs or ice cubes. One cuff can be attached to the 'HILOTHERM Homecare' device.
The therapy devices

HILOTHERM Clinic and HILOTHERM Homecare are the two devices which have been developed for implementation of HILOTHERAPY.

HILOTHERM Clinic

• Especially suited for the clinical application field, pre- and post-operatively.
• 2 cuffs can be attached which means 2 patients can be treated at the same time. Continuous operation at a constant temperature (sensors maintain the set temperature at a constant level).
  Cooling medium: distilled water
  (2 litres distilled water every 6 months)
• Temperature range +10 °C to +38 °C (selectable in 1 °C steps)
• Dimensions 430 x 275 x 268 mm
  Weight: empty: 10 kg
  full: 12 kg
• Transport:
  Indoors: Where possible on equipment trolley Hiloroll.
  Outside: In the original packaging or suitable carry bag.
• Power supply (230 V)

HILOTHERM Homecare

• Particularly suited for mobile use, e.g. in a practice, at the sports club or at home.
  On fresh injuries; after surgical procedures; with chronic inflammation and pain.
• 1 cuff can be attached, treatment of one person at a time. Operation at a constant temperature for up to 4 hours (depending on the size of the cuff used, temperature of the environment, etc.). Sensors maintain the set temperature at a constant level.
  Cooling medium: water
  Cooling energy: cold packs or ice cubes
• +10 °C to +22 °C (selectable in 1 °C steps)
• Dimensions 280 x 185 x 260 mm
• Weight: empty: 3.6 kg
  full: Max. 7.7 kg
  (if container is completely full)
• Transport:
  In purpose-built carry bag (carry strap)
• Power supply (100 - 240 V) or power supply from car
  (Battery available from mid 2010)
Cuffs

Cuffs are available for all relevant parts of the body and these are both single-use and multi-use cuffs.

Lower leg cuff

Round cuff

Round cuff, small

Knee cuff

Foot cuff

Surface cuff, large

Lower face cuff, with link

Lower face cuff, without link

Upper face cuff

Eye cuff, open

Eye cuff, closed

Nose cuff

Nose cuff T-cast

Surface cuff, small