HEALTH MATE®
THE THERAPEUTIC INFRARED SAUNA

Infrared and the body

What has already been scientifically proven?

AN OVERVIEW BY JORIS GEERTS

Introduction

A Health Mate sauna is referred to as a therapeutic sauna thanks to its structure and the unique Tecoloy heating elements. To prove this, we are focusing on collating studies and scientific data.

There is a great deal of information about infrared online. So much so, in fact, that even specialists like us sometimes find it hard to figure out what is accurate and what is not. That is why we have had a 'White Paper' drawn up to summarise the medical benefits of long-wave infrared and heat therapy.

We have also conducted studies with various partners, including hospitals, universities and sports centres. Our goal is to advise users individually about their use of the Health Mate sauna, based on the characteristics of their body and the specific objective.

This document provides a summary of what has already been medically proven (published in medical journals and peer-reviewed by other scientists).

Scientific support for the health mate story

Improved circulation and fitness

The fact that you heat up from inside-out, leads to the unique combination of all your veins opening up and your heart rate increasing. This, in turn, improves the circulation throughout your body.

The combination of an increased heart rate and a rise in your core temperature has many proven health benefits and a significant medical impact on your cardiovascular health:

- The effect of heat therapy on blood pressure and peripheral vascular function: A systematic review and meta-analysis. https://pubmed.ncbi.nlm.nih.gov/33866630/
- Can heat therapy help patients with heart failure? https://pubmed.ncbi.nlm.nih.gov/32017138/
- Passive heat therapy improves endothelial function, arterial stiffness and blood pressure in sedentary humans. https://pubmed.ncbi.nlm.nih.gov/27270841/

Moreover, the growth of micro blood vessels and the expansion of the arterial network is stimulated by the combination of high blood pressure due to the heart rate increase and open veins/arteries. This only has a significant effect if the session lasts long enough, the temperature is sufficiently high, and the frequency per week is adequate.

Your fitness and circulatory capacity increase without any physical exertion. The combination of a raised internal temperature (ideally 38.5˚C) and heart rate leads to a medically proven, improved fitness level:

- Passive heat therapy in sedentary humans increases skeletal muscle capillarization and eNOS content but not mitochondrial density or GLUT4 content. https://pubmed.ncbi.nlm.nih.gov/31074654/
- Waon therapy improves quality of life as well as cardiac function and exercise capacity in patients with chronic heart failure. https://pubmed.ncbi.nlm.nih.gov/25740582/
- Effectiveness of a far-infrared low-temperature sauna program on geriatric syndrome and frailty in community-dwelling older people https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7590093/

In order to experience the optimum therapeutic effect, we advise you to use Health Mate 3 times per week for 30-45 minutes, entering the sauna at a temperature of 40˚C and then letting the temperature rise to 55-60˚C.

The aim, as with fitness training, is to increase your heart rate and to maintain it for 30 minutes at between 80 and 60% of (220 minus your age). This will mean that some people may have a higher or lower end temperature.

When using the sauna, you must spend 15-20 minutes in the zone and then another 10-15 minutes during cool down and showering.

Sweating to rejuvenate your skin and detoxify your body

Increased circulation allows your body to heal more quickly.

Toxic substances are contained in our bodies and we are continuously confronted with toxins in the air and our food. We sometimes sweat out toxic substances more efficiently than our kidneys and liver can remove them.

Luckily, our bodies can normally remove these effectively. There are, however, many toxic substances that we struggle to cleanse from our systems (heavy metals, softeners - PBAs, PCBs, etc.).

Various studies have shown that long periods of sweating are an efficient way to remove these substances from our bodies:

- Human Elimination of Organochlorine Pesticides: Blood, Urine, and Sweat Study.
  https://www.hindawi.com/journals/bmri/2016/1624643/
- Human Excretion of Bisphenol A: Blood, Urine, and Sweat (BUS) Study.
  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3255175

Moreover, the pores in our skin are cleaned and the creation of collagen is stimulated. This results in a healthy and more elastic skin:

- Effects of Infrared Radiation on Skin Photo-Aging and Pigmentation.
  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2687728/

Bacteria and blocked pores and sweat glands can lead to acne. Cleansing the skin by means of sweating ensures that the effects are drastically reduced. It is important to shower after sweating to remove excess salt and bacteria.

Scientific studies into long-wave infrared

All these studies use long-wave infrared radiation and allow participants to make frequent use of the infrared sauna: 3-7 times per week over several weeks.

In general, we can conclude that they were all focused on increasing the inner, core temperature by 1-2˚C.

General:

Far infrared radiation (FIR): its biological effects and medical applications

https://europepmc.org/article/MED/23833705

provides various treatments for those using FIR technology, including:

- FIR-therapy for pain relief and infection inhibiting effects for various disorders, such as arthritis, fibromyalgia, backache, muscular pain and neuralgia.
- FIR-therapy for the treatment of heart and vascular diseases, such as high blood pressure and congestive heart failure.
- FIR-therapy for the treatment of diabetes mellitus and the corresponding complications, such as diabetic neuropathy.
- FIR-therapy as a complementary treatment for cancer therapy, to reduce the side-effects of chemotherapy and radiation and improve the patient's immunity.
- FIR-therapy for the treatment of skin diseases such as psoriasis, dermatitis and wounds.
- FIR-therapy for weight loss and detoxification by encouraging transpiration and faster metabolism.
- The study emphasises the fact that FIR-treatment can serve as a very promising complementary treatment for various disorders and that further research is needed to understand and utilise the full therapeutic potential.

Relieving muscular and joint pain:

- The effects of repeated thermal therapy for patients with chronic pain.
  https://europepmc.org/abstract/med/16088266

  This study involved 38 patients with various forms of chronic pain, including fibromyalgia, lower back pain and rheumatoid arthritis. The patients were divided into two groups, a group that received thermal therapy every day over four weeks in the form of an infrared sauna, and a control group who did not have any thermal therapy.

  The results of the study demonstrated that the patients in the thermal therapy group experienced significantly lower pain levels and improved physical capacity after four

weeks' treatment, compared to the control group. Furthermore, the patients' scores improved in relation to quality of life and tiredness. The authors of this study concluded that repeated thermal therapy could be an effective non-pharmacological treatment option for patients with chronic pain.

- Effects of far infrared heat on recovery in power athletes.
  https://www.scitechnol.com/peer-review/effects-of-far-infrared-heat-on-recovery-in-pow erathletes-iTXW.php?article_id=3736

  This study researched the effect of long-wave infrared therapy on muscle recovery among athletes after intensive training. The results demonstrated that the infrared group experienced significantly lower levels of pain and tiredness and enjoyed faster muscle recovery compared to the placebo group. The authors concluded that long-wave infrared therapy could provide an effective treatment for supporting muscle recovery and reducing muscle ache among athletes after intensive training.

- Infrared sauna in patients with rheumatoid arthritis and ankylosing spondylitis.
  https://pubmed.ncbi.nlm.nih.gov/18685882/

  The study examined the impact of the infrared sauna on pain, stiffness and tiredness among patients with rheumatoid arthritis and ankylosing spondylitis. In total, 17 patients took part in the study, during which they used an infrared sauna twice a week for 8 weeks. At the end of the study period, there were significant improvements in pain, stiffness and tiredness among patients. The researchers concluded that the infrared sauna could be an effective, safe and cheap complementary therapy for these patients.

Improved circulation

- Far infrared radiation acutely increases nitric oxide production by increasing Ca2+ mobilization and CaMKII expression in human endothelial cells.
  https://pubmed.ncbi.nlm.nih.gov/23756809/

  The study examined the effects of infrared radiation with wavelengths of 6-14 micrometres on the production of nitrogen oxide (NO) in human endothelial cells. The study suggests that infrared radiation stimulates the production of NO in cells by increasing the mobilisation of calcium and the expression of CaMKII (an enzyme which regulates calcium-dependent signal transduction). This can help to widen blood vessels and improve circulation. The study concluded that infrared radiation with wavelengths of 6-14 micrometres is capable of increasing the production of NO in human endothelial cells and that this can support improvement of the blood flow and the health of the cardiovascular system.

Lowering blood pressure:

- Beever R. Far-infrared saunas for treatment of cardiovascular risk factors:. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2718593/

  The study provides an overview of published evidence on the use of long-wave infrared saunas for the treatment of risk factors for heart and vascular disease. The findings suggest that the use of long-wave infrared saunas can lead to a reduction in blood pressure, a lowering of cholesterol and fewer infections. The use of a long-wave infrared sauna can also have beneficial effects on the heart and blood vessels.

Reducing allergies

- Clinical effects of far-infrared therapy in patients with allergic rhinitis. https://pubmed.ncbi.nlm.nih.gov/18002246/

  The results of the study showed that patients had better scores after four weeks of treatment. The patients in the FIR-therapy group also reported a significant reduction in nasal congestion, sneezing and itchy eyes after treatment.