

**Infrared Thermal System**  
**For**  
**Whole-Body Regenerative Radiant Therapy**

**Excerpts from**  
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# PORTABLE INFRARED SAUNA

## The Whole-Body Radiant Thermal System

A Breakthrough in Regenerative Radiant Therapy provided by a Unique Type of portable  
**Infrared Thermal System**

### SAFETY of INFRARED RADIANT ENERGY

#### Is the Infrared Thermal System safe for me?

What exactly is radiant heat? No need to worry – it has nothing to do with either ultraviolet radiation (which gives you a sunburn and damages your skin) or atomic radiation (the kind from a nuclear bomb).

**Radiant heat** is simply a form of energy that **heats objects directly** through a process called conversion, **without having to heat the air in between**. Radiant heat is also called infrared energy (IR). The infrared segment of the electromagnetic spectrum is divided into three segments by wave length, measured in microns or micrometers (a micron = 1/1,000,000 of a meter): 0.076 – 1.5 microns = near or close; 1.5 – 5.6 = middle or intermediate; 5.6 – 1,000 = far or longwave infrared. The infrared segment of the electromagnetic spectrum occurs just below of “infra” to red light as the next lowest energy band of light. This band of light is not visible to the human eye. We can, however, feel this type of light which we perceive as heat. **Our sun produces most of its energy output in the infrared segment** of the spectrum. Our atmosphere has a “window” in it that allows IR rays in the 7 – 14 micron range to safely reach the earth’s surface. When warmed, the earth radiates infrared rays in the 7 – 14 micron band with its peak output at 10 microns.

Dr. Tsu-Tsair Oliver Chi concluded in his summation of infrared devices, that **these rays are selectively absorbed by the tissues**. The internal production of infrared energy that normally occurs within our tissues is associated with a variety of healing responses and may require a boost to a maximal level to insure the fullest healing response possible in a tissue under repair. After boosting a tissue’s level to maximum, the remaining rays pass onward harmlessly. This phenomenon is called “resonant absorption.”

The **sun is the principal source of radiant energy** that we experience daily. Have you ever been outside on a partly cloudy spring day of about 50° F and felt quite comfortable, when suddenly the sun was obscured by a cloud? Although the air temperature had not had time to drop, you felt chilled, as the cloud would not let the warming infrared rays through to reach you. **The infrared heat in this health system is just like the heat from our sun or that which our own bodies produce as they burn fuel to keep us warm.**

Our bodies radiate infrared energy out through the skin at 3 – 50 microns, with most of their output at 9.4 microns. Our **palms emit infrared energy at between 8 – 14 microns**. Palm healing, which has a 3,000 year-old tradition in China, has been based on the healing properties of these natural infrared rays. The Yogis of India also use such palm healing and recommend it especially for relieving eye strain. Panels that produce similar infrared rays are **used in hospitals to warm newborn babies**.

Recent books such as **Cross Currents**, by Robert O. Becker, MD, have detailed the hazards of exposure to certain kinds of electromagnetic fields; such as those encountered under high tension power lines or while working at computer display terminals. The Swedish National Institute of Radiation Protection has concluded that the heaters in the Thermal System are not dangerous. Japanese researchers have also reported that **infrared radiant heat antidotes the negative effects of such toxic electromagnetic sources.**

## **INFRARED VS. CONVENTIONAL SAUNAS**

### **Why is this infrared Thermal System Unique?**

**It uses infrared radiant energy to directly penetrate the body's tissues to a depth of over 1½".** Its energy output is tuned to correspond so closely to the body's own radiant energy that our bodies **absorb close to 93% of the infrared waves that reach our skin.**

A conventional sauna must rely only on indirect means of heat: first, on convection (air currents) and then, conduction (direct contact of hot air with the skin) to produce its heating effect on us. In an IR Thermal System, less than 20% of the infrared energy heats the air, leaving over 80% available to be directly converted to heat within our bodies. Thus an IR based system can warm its user(s) to a much greater depth and much more efficiently than a conventional sauna, as its energy output is primarily used to convert energy directly to heat in us and not to create excessively hot air that then only heats the skin superficially. This crucial difference explains many of the unprecedented benefits reported to be available through an Infrared Thermal System that are **not** attainable through a conventional sauna.

The infrared energy applied in these thermal systems may induce up to 2 – 3 times the sweat volume of a hot-air sauna while **operating at a significantly cooler air temperature** range of **110° to 130°F** vs. 180° to 235°F for hot-air saunas. The lower heat range is safer for those concerned about cardiovascular risk factors that might be encountered in old-style hot-air saunas. German researchers report beneficial effects from hour long whole-body infrared exposure in two groups of hypertensive patients that they studied in 1989; including a 24-hour long increase in peripheral blood flow and decreases in high blood pressure.

It is also distinctly more pleasant to breathe air that is from 50° - 100°F cooler while using the sauna. Due to its "user-friendly" nature, **people naturally prefer to use the Thermal Systems and continue, on a regular basis, due to the ease of breathing much cooler air while feeling as warm as they choose. Also, a distinctive feeling of well-being is reported as an after effect.** These Thermal Systems may even be used with the door fully open, if the only effect desired is infrared penetration or if a very cool no-sweat experience is desired – as in a pre-activity warm-up, while fully clothed. This approach might be used in warming up prior to stretching, working out, running or exposure to cold weather.

These IR systems are **easier as well as more comfortable to use** than old-fashioned hot-air saunas.

**Significantly lower operating costs** make the Infrared Thermal System more desirable than a regular sauna. A 20-minute session, including a 10-minute warm-up in the **Infrared Sauna, costs about five cents of electricity.** A comparable session with a full warm-up in a conventional sauna costs about \$.75 - \$1. Daily usage of the

**Infrared Thermal System will raise your electrical bill by only \$1.50 a month compared to \$22.50 to \$30. a month in a conventional sauna (if each are used for 20 minutes after warm-up).**

## **HEALTH REPORTS FROM AROUND THE WORLD**

### **Some History**

Over the last 25 years, Japanese and Chinese researchers and clinicians have done extensive research on infrared treatments and report many provocative findings. In Japan there is an “Infrared Society”, composed of medical doctors and physical therapists, to further research and support the health benefits of infrared as a method of healing. There have been over **700,000 infrared thermal systems sold** in the Orient for whole-body treatments, and an additional 30 million people have received localized infrared treatment in the Orient, Europe and Australia with lamps tuned to the same 2 – 25 micron wave band as employed in these whole-body Thermal Systems. Whole-body infrared therapy has been used for over 80 years by German physicians in an independently developed form.

### **Passive Cardiovascular Conditioning Effect**

“Many of us who run do so to place a demand on our cardiovascular system, not to build big leg muscles. **Regular use of a sauna** may impart a similar stress on the cardiovascular system, and its regular use may be as effective, as a means of **cardiovascular conditioning and burning of calories, as regular exercise.**”

As reported in the Journal of the American Medical Association, August 7, 1981.

Due to the **deep penetration, over 1½”** into the skin, of the infrared rays generated by these IR Thermal Systems, there is a heating effect deep in the muscular tissues and the internal organs. The body responds to this deep-heating effect via a hypothalamic-induced increase in both heart volume and rate. This beneficial heart stress leads to a sought-after cardiovascular training and conditioning effect. **Medical research confirms** the use of sauna provides **cardiovascular conditioning** as the body works to cool itself and involves substantial **increases in heart rate, cardiac output and metabolic rate.** As a confirmation of the validity of this form of cardiovascular conditioning, extensive research by **NASA** in the early 1980’s led to the conclusion that, infrared stimulation of cardiovascular function would be the **ideal way to maintain cardiovascular conditioning in American astronauts during long space flights.** Blood flow during whole-body hyperthermia is reported to rise from a normal 5 – 7 quarts per minute to as much as 13 quarts per minute.

“The 1980’s was the decade of high-impact aerobics classes and high-mileage training. Yet there was something elitist about the way exercise was prescribed: only strenuous workouts would do, you had to raise your heart rate to between X and Y, the only way to go was to ‘go for the burn’. And such strictures insured that most ‘real’ exercisers were relatively young and in good shape to begin with. Many, many Americans got caught up in the fitness boom, but probably just as many fell by the wayside. As we’ve reported, recent research shows that you don’t have to run marathons to become fit – **that burning just 1,000 calories a week . . . is enough.** Anything goes, as long as it burns these calories.”

Reported in the **Wellness Letter**, October 1990, from the University of California Berkeley.

## Weight Loss and Cardiovascular Benefits

In Guyton's **Textbook of Medical Physiology**, we find that producing one gram of sweat requires 0.586 kcal. The JAMA citation referred to above goes on to state that:

"A moderately conditioned person can easily sweat off 500 gms. In a sauna, consuming nearly 300 kcal – the equivalent of running 2 – 3 miles. A heat-conditioned person can easily sweat off 600 – 800 kcal with no adverse effects. While the weight of the water loss can be regained by rehydration with water, the calories consumed will not be." Since an IR Thermal System helps generate two to three times the sweat produced in a hot-air sauna, the implications for increased caloric consumption are quite impressive.

Burns **600 or more calories** in just one **30-minute session!**

Here's how many calories a 150-pound person normally burns up in 30 minutes of exercise:

SPORT	CALORIES
Marathon Running	593
Vigorous Racquet Ball	510
Swimming (crawl stroke)	300
Jogging	300
Tennis (fast game)	265
Cycling (10 mph)	225
Golfing (without a cart)	150
Walking (3.5 mph)	150
Bowling	120

An Infrared Thermal System can, thus, play a pivotal role in both **weight control and cardiovascular conditioning**. This would be easily valuable for those who **don't exercise** and those who **can't exercise** yet want an effective weight control and fitness maintenance program and the benefits that regular exercise can contribute to such a program. This also allows for more variety in an ongoing training program.

Some weight loss authorities believe that our bodies use fat to dilute toxins. As an IR Thermal System is an unsurpassed expeller of toxins, it is also a great way to get rid of any fat our bodies are using to dilute toxins we are storing.

**Runners:** The Infrared Thermal System is the perfect solution for keeping up your cardiovascular fitness while avoiding a run on a **difficult weather day** – days you may want to just skip a workout or when you **need to rest to allow an injury to heal**. Also, the Infrared Thermal Systems are great for **warming up** before stretching or starting any vigorous activity. You simply get in the IR Thermal System with your clothes on and allow the infrared rays to pour right through your clothing until you just begin to break a sweat. Now you are pre-warmed for stretching, skiing, running in cold conditions, etc. As a warm-up, an Infrared Thermal System should **help prevent injuries** and enhance your ability to stay with your training program or enjoy any outdoor activity.

## Musculoskeletal Benefits

**“Medical practitioners make use of Infrared Radiant Heat to Treat sprains, strains, bursitis, peripheral vascular diseases, arthritis, and muscle pain . . .”**

According to the **McGraw / Hill Encyclopedia of Science and Technology.**

### Pain Relief

**Dr. Masao Nakamura of the O & P Medical Clinic** in Japan has reported great success with the use of infrared treatment for:

Whiplash	Sciatica
Menopause	Arthritis
Shoulder Stiffness	Insomnia
Rheumatism	Acne
Gastroenteric Problems	Ear Diseases

### Benefits of Heat Therapy

The following is summarized from **Therapeutic Heat and Cold**, 4<sup>th</sup> Edition, ED. Justus F. Lehmann MD, Williams and Wilkins, Chapter 9 or concluded from the data therein.

Generally it is accepted that heat produces the following desirable therapeutic effects:

#### **1. It increases the extensibility of collagen tissues.**

- Tissues heated to 45°C and then stretched exhibit a non-elastic residual elongation of about 0.5 – 0.9% that persists after the stretch is removed, which does not occur in these same tissues when stretched at normal tissue temperatures.
- This effect would be especially valuable in working with ligaments, joint capsules, tendons, fascia, and synovium that have been scarred, thickened or contracted.
- This safer stretching effect is crucial in properly training competitive athletes so as to minimize their “down” time from injuries.

#### **2. It decreases joint stiffness directly**

- There was a 20% decrease in stiffness at 45°C as compared with 33°C in rheumatoid finger joints, which correlated perfectly to both subjective and objective observation of stiffness.
- Any stiffened joint and thickened connective tissues should respond in a similar fashion.

#### **3. It relieves muscle spasms**

- Muscle spasms have long been observed to be reduced through the use of heat, be they secondary to skeletal, joint, or neuropathological conditions. This result is possibly produced by the combined effect of heat on both primary and secondary afferents from spindle cells and from its effects on Golgi tendon organs. The effects produced by each of these mechanisms demonstrated their peak effect within the therapeutic temperature range obtainable with radiant heat.

#### 4. It produces pain relief

- Pain may be relieved via the reduction of attendant or secondary muscle spasms.
- Pain is also at times related to ischemia due to tension or spasm which can be improved by the hyperemia that heat-induced vasodilation produces, thus breaking the feedback loop, in which the ischemia leads to further spasm and then more pain.
- Heat has been shown to reduce pain sensation by direct action on both free-nerve endings in tissues and on peripheral nerves. In one dental study, repeated heat applications led finally to abolishment of the whole nerve response responsible for pain arising from dental pulp.
- Heat may both lead to increased endorphin production and a shutting down of the so-called “spinal gate” of Melzack and Wall, each of which can reduce pain.

#### 5. It increases blood flow

- Heating of muscles produces an increased blood flow level similar to that seen during exercise.
- Temperature elevation produces an increase in blood flow and dilation directly in capillaries, arterioles and venules, probably through direct action on their smooth muscles. The release of bradykinin, released as a consequence of sweat gland activity, also produces increased blood flow and vasodilation.
- Whole-body hyperthermia, with a consequent core temperature elevation, further induces vasodilation via a hypothalamic-induced decrease in sympathetic tone on the arteriovenous anastomoses. Vasodilation is also produced by axonal reflexes and by reflexes that change vasomotor balance.

#### 6. It assists in resolution of inflammatory infiltrates, edema & exudates

- The increased peripheral circulation provides the transport needed to help evacuate the edema which can help end inflammation, decrease pain and help speed healing.

#### 7. More recently, it has been used in cancer therapy

- This is a new and experimental procedure.
- It shows great promise in some cases when used properly.

#### Pain Relief and Other Benefits

There have been over 7,000 IR Thermal Systems sold in America, and infrared healing is now becoming **the leading edge in the care of soft tissue injuries** to promote both **relief in chronic or intractable “permanent” cases**, and **accelerated healing in newer injuries**.

Researchers reported over **90% success** in a summary of Chinese studies that assessed the effect of infrared therapy on:

Soft tissue injury	Lumbar strain
Arthritis of the shoulder	Sciatica
Pain during menstruation	Neurodermatitis
Eczema with infection	Post-surgical infections
Neurasthenia	Pediatric pneumonia



Japanese researchers, as reported in the book **Infrared Therapy** by Dr. Yamajaki, have produced the following provocative results with whole-body infrared thermal systems:

**Burns** - relieves pain - and **decreases healing time, with less scarring**

**Auto Accident-Related Soft Tissue Injury** - daily sessions were used until best healing was attained; then the Thermal Systems were used to deal with permanent residuals. The pain control effect on the chronic residuals from such injuries lasted three days before another treatment was necessary.

**Gout, Arthritis, acute and chronic** - greatly relieved

**Menopause Symptoms** - relieved chills, nervousness, depression, dizziness, headaches and stomachaches

**High blood Pressure** - safe in 40 - 50°C range and regular use helps to lower blood pressure

**Low blood Pressure** - sauna trains body to raise pressure

### Blood Circulation

All of the following ailments may be associated to some degree with poor circulation and, thus, may respond well to the increased peripheral dilation associated with IR application:

Arthritis	Neuritis Sciatica
Backaches	Bursitis
Hemorrhoids	Rheumatism
Nervous Tension	Strained Muscles
Diabetes	Fatigue
Stretch Marks	Menstrual Cramps
Varicose Veins	Over-tired Muscles

**Leg and Decubitus Ulcers** - that fail to heal using conventional approaches

**Post-operative Edema** - treatment with infrared has been so successful that hospital stays have reported to have been reduced by 25%

**Peripheral Occlusive Disease** - "The goal is to maintain an optimal blood flow rate to the affected part . . . In general the temperature should be maintained at the highest level which does not increase the circulatory discrepancy as shown by cyanosis and pain." **Therapeutic Heat and Cold** pp 456-7

### Coronary Artery Disease, Arteriosclerosis and Hypertension

Finnish researchers, talking about the regular use of conventional saunas, state that "there is abundant evidence to suggest that blood vessels of regular sauna goers remain elastic and pliable longer due to the regular dilation and contraction" of blood vessels induced by sauna use.

German medical researchers reported, in “Dermatol Monatsschr” 1989, that a single whole-body session of infrared-induced hyperthermia lasting over one hour had only beneficial effects on subjects with state I – II essential hypertension. Each subject experienced a rise in core body temperature to a maximum level of 38.5°C. All of the subjects in one experiment had **significant decreases in arterial, venous and mean blood pressure that lasted for at least 24 hours** and was linked, according to the researchers, to a persistent peripheral dilation effect.

An improvement in plasma viscosity was also noted. Another group of similar hypertensive patients was also studied under the same conditions of infrared-induced hyperthermia, with an eye toward more carefully evaluating the circulatory system effects induced by this type of whole-body heating. During each infrared session there was a significant decrease of blood pressure, cardiac ejection resistance, and total peripheral resistance – in every subject.

There was also a significant increase during each session of the subjects’ heart rates, stroke volumes, cardiac outputs and ejection fractions. The researchers cite these last three effects as evidence that the stimulation of the heart during infrared-induced hyperthermia is well compensated, while the prior list of effects show in clear detail the microcirculatory changes that lead to the desired result of a lowering of blood pressure.

## Skin

Conditions benefited by Infrared treatments in Japan and China:

**Clogged pores** are unplugged of cosmetics **creating a skin texture and tone of unexcelled quality.** Mikkel Aaland’s book **Sweat** (Capra Press, 1978) quotes a Finnish doctor to the effect that: “The best dressed foreigner can come into a doctor’s office, and when his skin is examined, it is found to be rough as bark. On the other hand, as a result of the sauna, the skin of any Finnish worker is supple and healthy.”

**Poor skin tone** is restored to a more youthful level.

**Scars and pain from burns or wounds** are decreased in severity and extent. Infrared therapy is used routinely in burn units throughout Asia.

**Lacerations** heal quicker and with less pain and scarring.

**Acne** - Three or four Infrared treatments may **open pores that have not been functioning in years**, forcing out clogging cosmetics and **loosening dead outer skin.** The sauna is thus a boon to teenage skin, clearing acne and blackheads.

**Cellulite** - European Beauty specialists confirm: a sauna will greatly speed any anti-cellulite program! Due to at least twice the depth of heat penetration into cellulite, combined with up to ten times the level of heating in these tissues, an Infrared Thermal System can be significantly more effective than any conventional sauna.

**Body odor** - by improving the function of the skin, the Thermal System sauna may eliminate the cause of offensive body odor. It definitely reduces body odor induced by occupational exposure to odorous chemicals.

**Eczema and Psoriasis** - have reportedly responded extremely well to Infrared treatments.

**Sunburn** - According to the Ninth Edition of **Clayton's Electrotherapy**, "infrared radiations are the **only antidote to excessive ultraviolet radiation.**"

**Keloids** - form at a reduced rate in those prone to their formation with IR Thermal System use and may be softened by use of IR Thermal Systems if they have formed.

## **HIGHLIGHTS**

**Weight Loss:** First, through sweating and the energy use needed to produce the sweat and second, through direct excretion of fat.

**Beauty:** Excellent for increasing blood circulation to the skin which is essential for **beautiful, youthful, glowing skin!**

Due to **deep cleansing of impurities**, a new "inner glow" results as the skin is free of accumulated dirt and dry skin cells.

Help for **acne, eczema, psoriasis, burns** and any **skin lesions or cuts**.

Open wounds heal quicker with **reduced scarring**.

Removes roughness, leaving **skin baby smooth and soft** again.

Firms and **improves skin tone and elasticity**.

**Scars on Skin:** Scars fully formed, even keloids, may be gradually softened.

Burns and other wounds or incisions may heal with significantly reduced scarring.

**Cellulite:** Cellulite is a gel-like substance made up of fat, water and wastes which are trapped in pockets below the skin. An Infrared Thermal System can assist this condition, as profuse sweating helps clear this form of unwanted debris from the body.

**Pain Relief:** Effective for **arthritis, back pain, muscle spasms, headache**, etc.

**Injuries:** Radiant heat helps with **sprains, strains, muscle spasms and pain**.

Research conducted around the world shows that the segment of the infrared spectrum emitted by the Infrared Thermal System offers an astounding range of possible therapeutic benefits.