

# All you need to know about SAUNA's

***"Saunas are an excellent way of stimulating the removal of waste products through the skin - known as the third kidney in Chinese medicine"***

## Health Benefits

### The ultimate fat burner:

As you relax in the gentle heat of the Physiotherm Infrared Sauna, your body is actually hard at work, producing sweat, pumping blood - and burning up to 1000 calories in just 30 minutes. So you lose weight - not just water.

***"A heat-conditioned person can easily sweat off 600 - 800 kcal with no adverse effects (see calorie table). While the weight of the water loss can be regained by re-hydration with water, the calories consumed will not be."***

*Journal of the American Medical Association (JAMA)*

Since an infrared sauna helps generate two to three times the sweat produced in a hot-air sauna, the implications for increased caloric consumption are quite impressive.

Infrared therapy brings about a significant rise in the level of growth hormones that help to maintain lean body tissue, including muscle. A 30-minute session burns up to 1000 calories depending on your size and physical condition!

### Cellulite:

A Physiotherm Infrared Sauna helps clear ugly cellulite (the gel-like lumps of fat, water and debris trapped in pockets beneath the skin). European beauty specialists routinely incorporate daily saunas in programs to reduce cellulite. Because the radiant heat of the Physiotherm Infrared Sauna warms three times as deeply as conventional saunas, it is significantly more effective at reducing cellulite.

Number of calories an average 68 kg person burns up in 30 mins exercise
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SPORT	CALORIES
Rowing (peak effort)	600
Marathon Running	590
Vigorous Racquet Ball	510
Swimming (crawl stroke)	300
Jogging	300
Tennis (fast game)	265
Chopping Wood	265
Cycling (10 mph, 16 kph)	225
Golfing (without a cart)	150
Walking (3.5 mph, 5.6 kph)	150
Bowling	120
<b>Physiotherm Sauna</b>	<b>up to 1000</b>

## Beautiful, youthful skin:

Infrared heat helps develop the body's capillary network.

- Excellent for increasing blood circulation to the skin so essential for beautiful, youthful, glowing skin!
- A new "inner glow" as the skin is freed of accumulated dirt and dry skin cells due to the deep cleansing of impurities.
- Wonderful relief for acne, eczema, psoriasis, burns, any skin lesions or cuts.
- Open wounds heal quicker with reduced scarring.
- Removes skin roughness, leaving it baby smooth and soft.
- Firms and improves skin tone and elasticity.

## Scars on Skin:

Fully formed scars, even keloids, can be gradually softened. Burns and other wounds or incisions may heal with significantly reduced scarring.

## Increases Blood Circulation and Strengthens the Cardiovascular System:

As your body increases sweat production to cool itself, your heart works harder pumping blood at a greater rate to boost circulation, supplying the conditioning benefits of continuous exercise. Heart rate, cardiac output and metabolic rate increase, while diastolic blood pressure drops, for improved overall cardiovascular fitness.

***"Many of us who run do so to place a demand on our cardiovascular systems, not to build big leg muscles. Regular use of a sauna may impart 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..."***

*Journal of the American Medical Association*

## Fitness:

A Physiotherm Infrared Sauna session is the perfect solution for keeping up your cardiovascular fitness if you:

- wish to add a gentle but very effective workout to your program
- need to skip a workout or
- need to allow an injury to heal.

For the maximum flexibility, research shows that stretching after a 30-minute session will produce a permanent increase in your flexibility. Even one 20-minute session will create up to a 10% temporary increase in your flexibility. As a warm-up, a sauna session will help to prevent injuries and increase your fitness program's enjoyment.

## **Athletes - great for a warm-up:**

For athletes, the Physiotherm Infrared Sauna is exciting good news. The perfect warm up prior to exercise, because muscles relax most readily when tissues are warm and allow greater flexibility and range of motion. Afterwards it helps oxygen debt recovery and faster healing of strains and muscle pain. Infrared saunas are installed at top sporting events such as the Olympic games for this purpose.

To warm up before starting any vigorous activity simply get in the sauna with your training gear on and wait until you just begin to break a sweat. Now you are pre-warmed for stretching, skiing, swimming, running, etc.

A Physiotherm Infrared Sauna is also a great post-activity warm-down, especially in cold weather.

## **Relieve Pain and Injuries:**

A Physiotherm Infrared Sauna helps with sprains, strains, arthritis, muscle spasm and many other muscular-skeletal ailments. Much of the stiffness and soreness that comes with ageing is reduced or eliminated in the infrared sauna. The deep heat helps blood vessels dilate, bringing relief and healing to muscle and soft tissue injuries. Increased blood circulation carries off metabolic waste products and delivers oxygen rich blood to oxygen depleted muscles, so they recover faster.

## **Eases Joint Pain and Stiffness:**

In Europe, radiant heat therapy is widely used to treat patients suffering from any form of arthritis. In addition, it has been proved effective in the treatment of sprains, neuralgia, bursitis, muscle spasms, joint stiffness and many other muscular-skeletal ailments. Much of the stiffness, aches and soreness that comes with ageing is reduced or eliminated.

## **Detoxify your body:**

The infrared sauna is also a great way to get rid of fat that stores toxins.

The deep penetrating infrared heat causes toxins to be released from cells into the lymph fluid. Since sweat is manufactured from the lymph fluid, toxins present will exit the body through the sweat. By taking this detoxifying load off your liver

and kidneys, even people with impaired liver or kidney function will enjoy a significant benefit.

Increased blood circulation stimulates the sweat glands, releasing built-up toxins and waste. Daily sweating can help detoxify your body as it rids itself of an accumulation of potentially carcinogenic heavy metals (lead, mercury, zinc, nickel, cadmium) as well as alcohol, nicotine, sodium, sulphuric acid and cholesterol.

## **Improves the Immune System:**

The deep heat produced from a infrared sauna raises your body temperature, inducing an artificial fever. As it works to combat the "fever," your body's immune system is strengthened. Combined with the elimination of toxins and wastes produced by the intense sweating, your overall health and resistance to disease is increased.

## **Reduces Stress and Fatigue:**

Perhaps the most immediate effect you will experience with your Physiotherm Infrared Sauna is pure relaxation, as it melts away the stress and tension of life. Just a few minutes in the gentle warmth of your Physiotherm Infrared Sauna gives you an overall massaging effect, soothing jangled nerves and knotted muscles. You'll feel rejuvenated and renewed, restored in both body and mind.

***"I used to hesitate to recommend something that seemed so expensive, but when you realise the lifelong incapacity and expense of diseases such as heart disease, chemical sensitivity, chronic fatigue, fibromyalgia, chronic pain syndromes, migraines, Alzheimer's, or any others caused by chemical and metal toxicity, a sauna is cheap."***

*Total Wellness, Dr S.A. Rogers, M.D.*

***"Regular use of a sauna may impact a similar stress on the cardiovascular system as running, and its regular use may be as effective [at] burning calories."***

*Journal of the American Medical Association.*

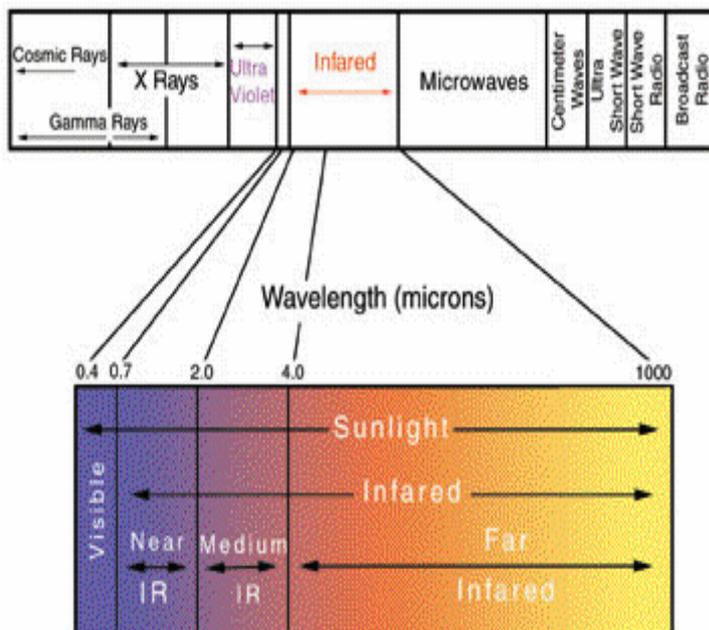
## Here is how Infrared heat works for you...

*What exactly is Infrared heat?*

Infrared heat is simply a form of energy that is directly transmitted onto objects because of its specific wavelength. It has nothing to do with ultraviolet light which gives you sunburn and damages your skin.

Where conventional saunas use hot air to transfer heat, the infrared heat rays warm your body directly. This allows an in-depth heat in a more pleasant temperature of 35-45C, thus providing more health advantages and providing a highly enjoyable comfortable environment, where you can still breathe normally without the discomfort of high humidity or steam.

The sun is our natural supplier of infrared heat. If we put a thermometer in direct sunlight it will indicate a higher temperature than in a shaded area. In the shaded area the thermometer shows the correct temperature. The temperature of the air, however, is the same both in the shade and in direct sunlight. It is only the invisible infrared heat rays that increase the temperature in the direct sunlight. The infrared wavelengths occur between visible light (.76u) and microwave (1000u) on the spectrum.



Sunlight is part of a wide spectrum of frequencies including infrared and ultraviolet rays. Visible sunlight is in the middle of this spectrum. At a lower frequency, light changes to ultraviolet rays that can cause sunburn. At a higher frequency, light changes to infrared rays. As well as sunlight, infrared heat is everywhere, even in the palm of your hand. These include short (light), medium-long and long (heat) rays varying from 0.76  $\mu$  to 1000  $\mu$ . The 5.6 - 15  $\mu$  long infrared heat rays are the most beneficial to the human body. This is why the infrared elements of the Physiotherm Infrared Saunas operate in this frequency range.

Conventional saunas need high air temperatures to pull impurities from the body, but infrared heated saunas can directly penetrate up to 45 mm inside the body. Impurities can be pushed out using lower and more comfortable temperatures. Compared to conventional saunas this means many more health benefits.

As the body temperature rises, perspiration occurs and blood circulation increases. The muscles and organs are stimulated and toxic waste (fat, heavy metals and other toxic materials) is removed from your body through perspiration.

## **The Physiotherm frequencies:**

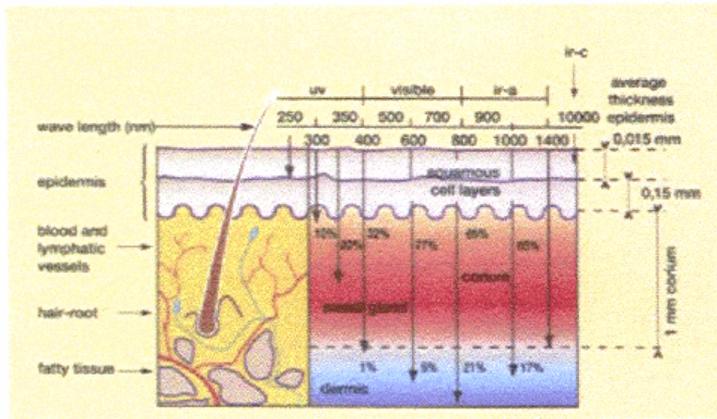
The 6-14 $\mu$  long infrared heat rays are the most beneficial to the human body. This is why the infrared elements of a Physiotherm Infrared Sauna operate in this frequency range.

## **How does it work?**

Unlike conventional heating systems which rely on heating the air to warm our bodies, the efficient infrared heat loses less than 20% of its energy in heating the surrounding air, allowing over 80% of the heat energy to be directly converted to heat onto and within our bodies. This energy can then penetrate safely up to 45mm into our skin layer and outer body.

## **How does it benefit us?**

Our body reacts to the increased heating through the natural cooling process of perspiring. Through the perspiration process, acid and waste residue like toxins, sodium, alcohol, nicotine, cholesterol and the potentially carcinogenic heavy metals are removed from the cells (especially zinc, lead, nickel, cadmium, etc). As well as the pores of our skin opening and discharging waste products, the skin sheds any old skin cells, leaving it glowing and immaculately clean, with improved tone, elasticity, texture and colour.



**VISUAL PROPERTIES OF THE SKIN**

## **Cardiovascular Conditioning:**

Whilst the moisture on the surface of the skin evaporates and thus cools the body, a number of other changes occur in the body to release the heat as quickly as possible. The heart beats harder and faster, pumping more blood through the now dilated blood vessels, thus achieving the conditioning benefits of continuous exercise.

## **Weight Control and Caloric Consumption:**

As our body expends energy to produce sweat (1 gm sweat requires 0.586 kcal) a moderately conditioned person can easily sweat off up to 1000gms or more in a sauna session - the equivalent to running 10-15 kms. While this weight loss can be regained by rehydration with water, the calories consumed will not. This is a valuable system for those who don't exercise and those who can not exercise, yet want an effective weight control and fitness program , along with the benefits that regular exercise brings.

## **Who is using infrared technology?**

Infrared heat is well known for pain relief. Health professionals have used infrared heat lamps for decades to treat muscle and joint problems. In hospital baby care units, incubators are often equipped with infrared heating systems to keep new-born babies warm. Major medical successes have been achieved recently in the use of infrared light to treat wounds, third degree burns and brain cancer. It is in wide hospital use in the USA to stop mouth sores caused by radiotherapy in cancer patients. Today you can even buy refrigerators that have infrared compartments to keep food fresh.

***Nothing gives as good a feeling as a good sweat!***

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

Excerpt from according to the McGraw/Hill Encyclopaedia of Science and Technology.

## **Independent Studies**

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

- Burns - relieves pain, decreases healing time with less scarring.
- High blood Pressure - safe in 40-50°C range and regular use helps to lower it.
- Low blood Pressure - sauna trains body to raise blood pressure.
- Brain Damage - accelerated repair in brain contusions.
- Short-Term Memory – improved.
- Cancer of the tongue reversed.
- Toxic Electromagnetic Fields - effects neutralised.
- Cerebral Hemorrhages - recovery is both sped up and significantly enhanced.
- Auto Accident - Related Soft Tissue Injury - daily sessions were used until good healing was attained; then the sauna were used to deal with permanent residuals. The pain control effect on the chronic residuals lasted three days before another sauna treatment was necessary.
- Arthritis, Acute and Chronic - greatly relieved
- Gouty Arthritis – relieved.
- Menopause Symptoms - relieved chills, nervousness, depression, dizziness, headaches and stomach aches.
- Weight Loss - first, through sweating and the energy used to produce a sweat, secondly, through direct excretion of fat.

## **Blood Circulation**

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

- Arthritis
- Neuritis
- Sciatica
- Bursitis
- Backaches
- Rheumatism
- Haemorrhoids
- Strained Muscles
- Nervous Tension
- Fatigue
- Diabetes
- Stretch Marks
- Children's Over-tired Muscles
- Menstrual Cramps
- Varicose Veins
- Upset Stomachs
- Leg and Decubitus Ulcers - that fail to heal using conventional approaches.
- Post-operative Edema - treatment with infrared has been so successful that hospital stays were reported to have been reduced by 25%.

Infrared Thermal System

***For Whole Body Regenerative Radiant Therapy***

Dr. Aaron M. Flickstein

## Is the Infrared sauna 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 convection, 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 3 segments by wave length, measured in microns micrometers (a micron = 1/1,000,000 of a meter 0.076 to 1.5 microns = near or close; 1.5 = middle or intermediate; 5.6 to 1000 = far or longwave infrared. The infrared segment of the electromagnetic spectrum occurs just below or "infra" to red light as the next lowest energy band of light. This band of light is not visible to human eyes but can be seen by special cameras that translate infrared into colours visible to our eyes. 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.

According to Dr. Tsu-Tsair Oliver Chi in his summation on the mechanism of action of infrared devices tuned to the human body, these rays are selectively absorbed by the tissues needing a boost in their output. 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 maximum level to ensure 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 spring day of about 18°C 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 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 its 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 eyestrain. Sauna use has been popularised by the Finns whose ancient religion used it as a ceremony for mental, spiritual and physical cleansing. This culture continued with the Finns when they migrated from an area north-west of present day Tibet, between 3,000-5,000 years B.C, to their present location in Finland.

Dr. Tadashi Ishikawa received the patent on the zirconia ceramic infrared heaters used in saunas in 1965, after five years with Fuji Medical's Research and Development Department. The saunas based on these heaters were used exclusively by medical practitioners in Japan until 1979 when they were released for public use. The idea has now been further refined into the Infrared sauna that has been sold in the United States since 1981. Panels that produce similar infrared rays are used in hospitals to warm newborn babies.

The heaters in these saunas emit about one-third of their output in the middle infrared band, from 2 to 5.6 microns, for super-deep penetration and the other two-thirds in the long band, from 5.6 to 25 microns with this part of the output evenly spread around the 9.4 micron pivot point of peak human output. This distribution maximises the higher

penetration of the middle-band waves and combines them with the long waves that produce a resonant absorption amplification of healthy tissue output.

The Chinese researchers consider the band from 2-25 microns as the most therapeutic. The source of infrared heat in those saunas is actually lava sand, warmed by an electrical resistance coil embedded within it. This is the same luxurious radiant heat we all enjoy while vacationing at the beach. The sand and coil are contained in a long, thin ceramic tube also tuned to our bodies.

This zirconia ceramic emitting tube is shielded by a metallic grill that is covered by a soft coating of suede-tex, and is safe to touch while it is operating. Recent books such as *Cross Currents*, by Robert O. Becker, M.D., 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. Japanese researchers have reported that infrared radiant heat antidotes the negative effects of such toxic electro sources. These saunas have been tested and found to be free of such so called "toxic" electromagnetic fields. The Swedish National Institute of Radiation Protection has concluded that the heaters in the sauna are not dangerous but therapeutic.

## **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 Monatsschrift" in 1989:**

A single whole-body session of infrared-induced hyperthermia lasting over one hour had beneficial effects on subjects with stage 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 site 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.

## **Ageing**

Problems often accompanying ageing, that have been reported to have been alleviated or reduced by Infrared Therapy in Japan:

- Menopause
- Cold hands and feet - a physical therapist found 20-50% improvement was maintained.
- High Blood Pressure - example: case of a diabetic with a systolic decrease from 180 to 125 and a concurrent 4.5 kgs. weight loss after infrared use.
- Rheumatoid Arthritis - 7 out of 7 cases successful in one clinical trial.
- Radiation Sickness - relieves signs and symptoms.
- Cancer Pain - relieved pain in later stages of cancer extremely well.
- Sequelae of Strokes - example: hemiparesis relieved over time.
- Benign Prostatic Hypertrophy – reduced.
- Duodenal Ulcers – eliminated.
- Pain - which prevented sleep or limited useable sleeping positions relieved.
- Compression Fracture Pain - example: pain gone for 3 days after each treatment in osteoporotic compression fractures.
- Hemorrhoids – reduced.
- Cystitis – gone.
- Cirrhosis of Liver – reversed.
- Gastritis – relieved.
- Hepatitis – gone.
- Asthma, Bronchitis - cleared up (like moving to Arizona's dry air).
- Chron's Disease – gone.
- Post Surgical Adhesions – reduced.
- Leg Ulcers - healed when previously static and resistant to other cures.
- Keloids - significantly softened and, in some cases, completely gone.

## **Ear, nose and throat**

Conditions relieved with infrared treatments in Japan:

- Chronic middle-ear inflammation or infection - In one clinical study of chronic serious otitis media no pathogenic bacteria were isolated in 70% of the subjects studied.
- Sore throats.
- Tinnitus - chronic severe case cleared with 10 Infrared treatments
- Nose bleeding.

## Skin

Conditions benefited by infrared treatments in Japan and China:

- Nettle rash
- Clogged pores are unplugged of cosmetics creating a skin texture and tone of unexcelled quality. Mikkel Asland'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 a 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.
- Body odour - by improving the function of the skin, the sauna may eliminate the cause of offensive body odour. It definitely reduces body odour 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 radiation is the only antidote to excessive ultraviolet radiation."
- Keloids form at a reduced rate in those prone to their formation.
- Dandruff - Due to increased blood flow through the scalp.

## Musculoskeletal Cases

Success reported with infrared treatments by Japanese researchers:

- TMJ Arthritis.
- Traumatic Arthritis.
- Acel-decel Injury Sequelae.
- Disc-protrusion Related Neuralgia.
- Brain Contusion - accelerated healing.
- Tight Shoulders – relaxed.
- Compression Fracture - Example: pain stopped for 3 days with only a single treatment.
- Spinal Cord Shock - post traumatic shock reversed.
- Muscle Tension – relaxed.
- Post-exercise Muscle Pain - vital to competitive athletes.
- Arthritis: Gouty, Rheumatoid, DJD - each substantially relieved or improved.
- Shoulder Pain - Relieved or eliminated.
- Bursitis – eliminated.
- Muscle Spasms - reduced or eliminated.
- Low Back Pain – relieved.
- Adhesions - lengthened or more easily broken; they are common in competitive athletes, trauma and repetitive stress syndromes.

**The following is summarised from “Therapeutic Heat and Cold”  
4th Edition by ED. Justus F Lehmann M.D., Williams and Wilkins.  
Chapter 9 or concluded from the data therein.**

Generally it is accepted that infrared 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 to 0.9% that persists after the stretch is removed which does not occur in these same tissues when stretched at normal tissue temperatures. Thus 20 stretching sessions can produce a 10-18% increase in length in tissues so heated and stretched. This effect would be especially valuable in working with ligaments, joint capsules, tendons, fasciae, and synovium that have become scarred, thickened or contracted. Such stretching at 45°C caused much less weakening in stretched tissues for a given elongation than a similar elongation produced at normal tissue temperatures. The experiments cited clearly show that low-force stretching can produce significant residual elongation when heat is applied together with stretching or range-of-motion exercises, which is also safer than stretching tissues at normal tissue temperatures. This safer stretching effect is crucial in properly training competitive athletes so as to minimise 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 observations 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 underlying skeletal, joint or neuropathological conditions. This result is possibly produced by the combined effect of heat on both primary and secondary afferent 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 Melzac Wall, each of which can reduce pain.

## 5. It increases blood flow

Heating of one area of the body produces reflex- modulated vasodilatations in distant-body areas even in the absence of a change in core body temperature; i.e.. heat one extremity and the contra lateral extremity also dilates; heat a forearm and both lower extremities dilate; heat the front of the trunk and the hand dilates. 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 venuies, 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 vasodilatation. Whole-body hyperthermia, with a consequent core temperature elevation, further induces vasodilatation via an hypothalamic-induced decrease in sympathetic tone on the arteriovenous anastomoses. Vasodilatation is also produced by axonal reflexes and by reflexes that change vasomotor balance.

## 6. Care of Soft Tissue Injuries

Infrared healing is now becoming the leading edge in the care of soft tissue injuries, promote both, relief in chronic or intractable "permanent" cases, and accelerated healing in newer injuries.

Localised infrared therapy using lamps tuned to the 2-25 micron waveband is used for the treatment and relief of pain by over 40 reputable Chinese Medical Institutes. Researchers reported over 90% success in a summary of Chinese studies that assessed the effect of infrared therapy on:

Soft tissue injury	Lumbar Strain
Periarthritis of the shoulder	Sciatica
Pain during menstruation	Neurodermatitis
Post-surgical infections	Eczema with infection
Facial paralysis (Bell's Palsey)	Diarrhoea
Cholecystitis	Neurasthenia
Pelvic infection	Paediatric pneumonia
Frostbite with inflammation	Tinea