

Far Infrared Summary of Heat Therapy Benefits

The following is a summary from Therapeutic Heat and Cold, 4th edition, ED. Justus F. Lehmann M.D., Williams and Wilkins, Chapter 9 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 45C and then stretched exhibit a non-elastic residual elongation of about 0.5 - 0.9% that persists after the stretch is removed. It does not occur in these same tissues when stretched at normal tissue temperatures. Thus 20 stretching sessions can produce around 10 - 18% increase in length in tissues 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 45C caused much less weakening in stretched tissues for a given elongation than a similar elongation produced at normal tissue temperatures.

The cited experiments clearly show that low-impact stretching can produce a 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 minimize their "down" time from injuries.

2. It helps decrease joint stiffness directly.

There was a 20% decrease in stiffness at 45C as compared with 33C 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 helps relieve muscle spasms.

Muscle spasms have long been observed to be reduced through the use of heat, be they secondary to underlying skeletal, joint, or neuro-pathological 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 helps produce 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 vasodilatation produces. This then breaks 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 eventually led to abolishment of the whole nerve response responsible for pain arising from dental pulp.

Heat may lead to both 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 one area of the body produces reflex-modulated vasodilatation in distant-body areas, even in the absence of a change in core body temperature; i.e. heat one extremity and the contralateral 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 an 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 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. It assists in resolution of inflammatory infiltrates, edema and exudates.

The increased peripheral circulation provides the transportation needed to help evacuate the edema (swelling), which can help stop inflammation, decrease pain and help speed healing.

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

This is a new and experimental procedure but it shows a great promise in some cases when used properly. American researchers favor careful monitoring of the tumor temperature; whereas, the successes reported in Japan make no mention of such precaution.

Infrared healing is also 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.

<http://www.naturalsolutionsradio.com/blog/natural-solutions-radio/far-infrared-summary-heat-therapy-benefits>