

# Damien Howell Physical Therapy

## Cold Therapy or Heat?

There is frequent debate and confusion about when to use ice and when to use heat when treating an injury.

The first question an athlete asks after an injury is “When can I return to play?” The use of ice or cold therapy is promoted as speeding the healing process. However scientific studies are few and the scientific controls of these few studies are poor. Two investigators reported patients returned to sports or full function quicker if they used immediate ice therapy when compared to using ice therapy later or no ice therapy. Another investigator reported no difference in return to participation between ice therapy and no ice therapy.

A study which looked at 45 sportsmedicine textbooks found that 37% of the textbooks provided no specific guidance on the duration, frequency, or length of ice treatment. The lack of agreement and direction is a result of lack of good research.

Most of the research by which health professionals’ justify ice and heat therapy is based on the studies of the physiologic response of animals. The assumption is the physiological response observed in animals also occurs in humans.

In animals the physiologic responses to applying ice to a joint include slowing impulses that travel along a nerve which diminishes pain, and stimulate blood vessels to constrict, decreasing blood flow. Decreasing blood flow can slow bleeding and swelling associated with an injury.

Ice applied for too long, however can lead to an increase in blood flow. Cheeks exposed to cold winter weather eventually turn rosy. The body protects itself by shunting blood in the vessels that are constricted to provide warmth and nutrition. Using repeated, rather than continuous, ice applications helps sustain reduced muscle temperature without compromising the skin and allows superficial skin temperature to return to normal while deeper muscle temperature remains low. Ice should be applied for 10 minutes or less, taken off and then reapplied. Ten minutes of ice every hour is better than leaving the ice for extended periods.

Cold will make things stiff. There are times when a stiff joint is bad and there are times when a stiff joint is a good thing. Positioning the joint in a

functional position when applying ice can counteract the adverse stiffening effects of applying ice. For example when icing to the Achilles tendon or plantar fascia position the foot/ankle in the joint angle which equals the angle of the joint when standing.

Like ice heat decreases pain, but unlike ice it increases blood flow and makes tissue more pliable. The mechanism by which heat decreases pain is not clearly understood, but it may be because of the psychological effects – it feels good to be warm. Heat is probably less effective in terms of decreasing pain than ice.

Heat should be avoided when there is bleeding, as heat dilates blood vessels and increases blood flow. That is why it is recommended to avoid heat the first 24 to 72 hours after an injury.

Ice can be beneficial for neck and back pain. I continue to be amazed at the response I get even from other health care professionals who are surprised when I recommend applying ice to the neck or back. There is an illogical view that if your neck or back is injured that you should use heat. The muscles and joints in the neck or back are physiologically the same as the muscles and joint about the ankle

The worst thing that can happen when using ice is to leave it on too long causing frostbite; although the chance of this is very small. Another problem that can occur when icing a knee or elbow is that it can damage a nerve, causing paralysis. Both of these problems can be prevented by limiting the time of application to less than 10 minutes.

The worst thing that can happen when using heat is to leave it on too long, causing a burn. The chance of this happening is greater than the chance of developing frostbite from ice. A more common mistake is applying heat too soon after an injury, leading to increased bleeding and swelling, which will delay healing.

- If the chief problem is pain and swelling, use ice.
- If the chief problem is stiffness use heat.
- If it is a fresh injury, use ice.
- If it is an old injury consider heat.
- If in doubt, use ice.
- Whether you use ice or heat, avoid leaving it on too long.

All therapeutic modalities such as ice, heat, acupuncture, magnets, electrical stimulation, and medication should be considered adjuncts to progressive functional exercise. The goal of thermo-electric modalities is

to decrease pain to allow appropriate remedial exercise. It is important to recognize heat, cold, electrical stimulation, and currently available medications do not make tissue heal quicker; they just make the healing process more tolerable. There is greater potential to speed the recovery or rehabilitation process by managing the appropriate amount and duration of rest and exercise.