

ICE THERAPY

by Laurel J. Freeman

Ice, Anyone? Ice isn't just for cold drinks. In the past eight to 10 years, many studies have shown the benefits of ice as therapy. Here are the answers to some common ice-related questions.

WHAT DOES ICE DO?

Ice is one of the simplest, safest, and most effective self-care techniques for injury, pain, or discomfort in muscles and joints. Ice will decrease muscle spasms, pain, and inflammation to bone and soft tissue. You can use ice initially at the site of discomfort, pain, or injury. You can also apply ice in later stages for rehabilitation of injuries or chronic (long-term) problems.

During an initial injury, tissue damage can cause uncontrolled swelling. This swelling can increase the damage of the initial injury and delay the healing time. If you use ice immediately, you will reduce the amount of swelling. Ice decreases all of these: swelling, tissue damage, blood clot formation, inflammation, muscle spasms, and pain. At the same time, the ice enhances the flow of nutrients into the area, aids in the removal of metabolites (waste products), increases strength, and promotes healing. This "ice effect" is not related to age, sex, or circumference of the injured area.

HOW DOES ICE THERAPY WORK?

Ice initially constricts local blood vessels and decreases tissue temperature. This constriction decreases blood flow and cell metabolism, which can limit hemorrhage and cell death in an acute traumatic injury. After approximately 20 minutes of ice, blood vessels in the injured area then dilate (open) slowly, increasing the tissue temperature, an effect, which is termed "reactive vasodilation." A study reported in the *Journal of Orthopedic Sports Physical Therapy*, (Jul/Aug 1994), found that, despite the reactive vasodilation, there was a significant sustained reduction in the local blood volume after ice was applied.

WHAT DOES THIS MEAN FOR ME?

It can mean a lot, if you are injured or in discomfort! Ice Therapy can help the area heal faster, and there will be a decrease in pain and swelling and an increase in lymphatic drainage.

WHY ICE AFTER A WORKOUT?

In the past 28 years, there have been many studies of ice as a therapy tool for injuries. Many of these studies have had conflicting conclusions, but improvements in technology are giving researchers new data. There is no doubt in the minds of many researchers and doctors that ice is the most widely used and efficient form of cryotherapy in medicine today. A 1994 study cited in *The American Journal of Sports Medicine* (Jul/Aug) showed ice affects not only the arterial and soft tissue blood flow, but also the metabolism of the bone, in a positive way. This is significant in the healing process of an injury to a joint.

FOUR STAGES IN ICE THERAPY

There are four official stages to ice. The first stage is **cold**, the second is **burning/pricking**, the third stage is **aching**, which can sometimes hurt worse than the pain. The fourth and most important stage is **numbness**. As soon as this stage is achieved, remove the ice. Time duration depends upon body weight. Twenty to thirty minutes should be the maximum time per area. If it is necessary to reapply ice, let the skin go to normal temperature or go back to the third stage of aching.

WHEN SHOULD I USE ICE?

For the greatest benefits, use ice after exercise and not before. In the *Journal of Sport Rehabilitation* (Feb/1994), a study on the ankle was conducted to see if ice should be used on an injury before exercise. The finding showed decreased temperature reduces the joint mechanoreceptor sensitivity and thereby alters joint position sense, exposing the joint to possible injury. In conclusion, cooling a body part prior to athletic performance is contraindicated, which is academic-speak for "probably a bad idea."

It was once believed the use of ice was only beneficial in the first 24 hours after an injury. Recent scientific studies have shown the benefits of ice over the long term. During the initial stage of an acute injury (within 24-48 hours), or during the chronic stage (after 48 hours) ice can be very beneficial in promoting wellness.

CAN I ICE AS A PRECAUTION?

You can use ice immediately following any workout, discomfort, or injury. If the swelling or pain does not decrease within a reasonable time (24 to 48 hours), consult a physician.

IS ICE SAFE?

Ice therapy is very safe when used within the treatment time recommended. Don't use ice if you have the following conditions: rheumatoid arthritis, Reynard's Syndrome, cold allergic conditions, paralysis, or areas of impaired sensation. Do not use ice directly over superficial nerve areas. In a study printed in the *Archives of Physical Medical Rehabilitation* (Jan/1994), the use of ice was tested on spinal cord-injured and able-bodied men. The results were that ice and cooling down the body temperature may evoke a vascular response to cold stimulus that may be mediated in part by the spinal cord and by supra-spinal centers causing a change in blood pressure.

HOW SHOULD ICE BE USED IN CONJUNCTION WITH EXERCISE?

Ice can be combined with movement. Once the fourth stage of icing has been achieved, numbness, gentle range of motion and isometric exercises can begin. These movements should be painless, stressing circular, spiral, and diagonal movements. Once the numbness has worn off, re-ice and exercise again. This can be done two or three times a day. Ice can cause changes in the collagen fibers of the muscle. Strenuous exercise is a bad idea during an ice treatment, as this can result in further damage to the injury.

HOW DOES ICE COMBINE WITH OTHER THERAPIES?

In March of 1995, an interesting study was conducted on the use of ice and ultrasound. Ultrasound is an instrument used in assisting the healing process to damaged tissue. The study found if ultrasound was followed by a five-minute application of ice, the muscle significantly increased in size. When ice was applied first followed by ultrasound, there was little or no change in the muscle fibers. One of the important conclusions of this study is after exercising, take a shower first, before applying ice, to receive the maximum benefits.

WHAT IS R.I.C.E.?

When there is an injury or discomfort, a good rule to follow for first aid is the mnemonic

RICE:

- Rest the injury.
- Ice the injury.
- Compress the injury.
- Elevate the injury above your heart.

THREE ICING TECHNIQUES

Ice is the easiest tool to use in rehabilitation. It is inexpensive and very effective. The most widely used is the ice pack. To make an ice pack, put ice (crushed is great) in a plastic bag, push out all the air and fasten the bag.

If another bag is available, place the fastened one inside to help prevent leaking. Put a paper towel on the site of the injury or discomfort, and then place the ice pack over the paper towel. This will prevent freezer burn to the skin. If a regular towel is used, the ice pack will not get the skin cold enough to have the physiological effects occur. If the injury is in the neck, back, or shoulder, an ice pack can be put under a T-shirt or blouse. A person can then keep this on while working. Ice packs are also convenient when resting. Ice packs can be used on legs or arms. There are many types of ice packs on the market. If purchasing one, make sure it will get sufficiently cold to achieve the four stages of icing. (See box in lower left.)

The second most used method is ice massage or ice cups. Place water into a styrofoam/paper cup and freeze it. Place a towel under the area with discomfort or pain to catch drips. Holding onto the cup, tear the edge around the cup, exposing the ice. Use a gentle, continuous, circular motion and rub the ice directly over the skin at the site of injury or discomfort. This is good for areas on the extremities such as knees, legs, ankles, arms, wrists, hands, and so on. Ice cups penetrate deep into the muscle fibers. Because this is an active motion, it can sometimes be more effective than an ice pack. The desired effect is to go through the four stages of ice, as stated above, before moving to another area, approximately 5-10 minutes. There are some reusable plastic ice cups on the market, for the environmentally minded; however, paper or styrofoam cups work fine.

The third method is the ice bath. Find a bucket or container large enough to immerse the area in need. Place a towel under the bucket and add ice. Try to isolate the body part that needs to be iced. Immerse your foot for 5-10 minutes (20 minutes maximum). Do not immerse your whole body in ice - doing so can cause shock and/or possibly a heart attack.

Laurel J. Freeman, B.A., a nationally certified sports massage therapist in Florida, has worked with many world-class athletes and has given numerous lectures in health related field. She developed, teaches, and practices Reprogramming Neuromuscular Responses® (RNR®). Laurel is a member of the Florida Track Club.

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FOOTNOTES

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