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Arthritis or Injury: Ice or Heat - Which To Apply?

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For my clients, an article for your health

Applying cold or heat for conditions involving the muscles or joints has been used for centuries. Cold/ice and heat applications are also used today as standard medical treatments throughout the world. However, since they are obviously opposites, when are they best used? And when could they cause problems rather than be helpful?

This article will focus on the use of cold or heat applications for musculoskeletal conditions. It does not address the treatment of other conditions, such as burns or infections.

INJURY

What happens to the tissues after an injury?

When a runner "pulls a groin" or a tennis player "strains a tendon," the soft tissues in the area of pain are injured. Immediately after the injury, there are disrupted fibers of the affected muscle, tendon, and/or ligament. Additionally, the tiny blood vessels (capillaries) that normally supply blood and oxygen to these tissues are broken. The broken capillaries then leak varying amounts of blood and serum into the adjacent tissues. Therefore, soon after a soft tissue injury, localized swelling occurs. The injured tissues become painful and tender, both directly from the trauma to them and indirectly from the subsequent swelling. This leads to the stiffness, pain, and tenderness that so often accompany the inflammation of tendonitis, bursitis, as well as strain and sprain injuries. It should also be noted that even a bone injury (such as a fracture) is typically accompanied by injury to the nearby soft tissues.

So, what is best applied after the injury?

In a word, **ICE**. The swelling and much of the inflammation that follows an injury is largely due to the leakage of blood from the ruptured capillaries. Therefore, cold applications with ice can help by causing the blood vessels to constrict (clamp down). This constriction of the blood vessels prevents further leakage of blood and serum and minimizes swelling and pain. The cold from an ice pack application also has an added benefit of providing pain relief.

In fact, the optimal management of an acute injury can easily be remembered using the acronym, **RICE**:

1. **R**est (minimize movement of the injured body part)
2. **I**ce (apply a cold pack)
3. **C**ompression (light pressure wrap to the affected body part can help minimize leakage of blood and swelling)
4. **E**levation (raise the body part up so that the pressure from the blood and tissue swelling the affected area is reduced as the fluids drain from the area by gravity)

How does ice help after an injury and how might heat hurt?

As stated above, icing the injured tissues helps by limiting the leakage of blood and serum from the capillaries into the adjacent tissues. Ice also prevents swelling. In contrast, heating tissues causes the capillaries to widen. This widening can cause an increase in the leakage of blood from the capillaries and add to the swelling and pain. It is important to note that the blood that leaks into the tissues will later lead to inflammation, which slows the healing process.

What about recovery after the injury?

The days after an injury, when the tissues are healing, require a different approach from the immediate treatment. Now, the blood leakage from the injured capillaries has generally stopped because the capillaries have been naturally plugged by microscopic blood clots in the repair process. The blood that remains in the tissues needs to be reabsorbed by the body. At this time, heat applications can help, especially prior to recovery exercise workouts. The heat provides an additional benefit by relaxing the muscles of the injured area so that the workouts can occur as safely as possible. Frequently, immediately after a recovery workout, ice is applied so that leakage of serum and/or blood from any capillaries that are disrupted during the workout is minimized.

ARTHRITIS

What is best with the inflammation of arthritis?

I often recommend that my patients use ice packs on the affected joint in order to minimize inflammation and reduce pain, especially with a newly inflamed joint. This can be helpful for many forms of arthritis, including rheumatoid arthritis, gout, osteoarthritis, pseudogout, ankylosing spondylitis, and many others. It should be remembered, however, that icing usually causes stiffness to the local tissues. Accordingly, heat applications can sometimes work best early in the day by relaxing the muscles around the joints, while ice applications at the end of the day can minimize the inflammation resulting from the daily activities.

BEFORE AND AFTER PHYSICAL ACTIVITY

What about prior to exercise activity?

Again, before an exercise activity, heat applications can help nagging, recurrently injured areas by relaxing the muscles so that the workouts can occur as safely as possible. Muscles that are too tight are prone to injury. This is also why stretching before exercise is optimal in order to prevent injury. Immediately after a workout, however, ice should be applied to areas that have been bothered by activity in the past. (*cont.*)

Can you apply too much ice or heat?

Yes. An easy way to properly apply ice is to use a plastic bag covered with a moistened towel. Such an application of ice easily conforms to the shape of the injured body part. The cold pack should be applied over a moist towel on the injured body part. Apply for 20 minutes and remove for at least 20 to 40 minutes so that the skin is not injured from the icing. The doctor may recommend applications only a few times a day or throughout the day depending on the injury or condition.

Heat can also injure the tissues if it is excessively used. It actually can "cook" the skin, causing discoloration. Heat should only be applied for 20 minutes and should not be painful. Sometimes the doctor may recommend heat application several times a day depending on the situation. Never sleep on a heating pad, as this is a common cause of skin burning. Moist heat by heating pad or direct moisture from hot Jacuzzi can be effective depending on the injury or disease involved and overall condition of the patient. The elderly should be especially cautious about using Jacuzzi for therapeutic purposes and a doctor's advice is recommended.