Tried and true ice and heat modalities still prove effective for acute and chronic pain.

BY ANN H. CARLSON

When it comes to pain management and relief, two traditional modalities have proved effective for generations: using ice packs and applying heat. Each method has its supporters and its place in the therapist’s arsenal of pain-management modalities. While the application of these treatments has not changed much over the years, therapists must still be vigilant about when each method should be used and whether they produce the desired effect.

Both modalities are used to treat acute pain as well as chronic pain. For Brian Mock, MPT, COMT, CSCS, of the Centers for Rehab Services at the University of Pittsburgh Medical Center’s Center for Sports Medicine, ice is generally the preferred modality, especially when dealing with acute injuries that present with inflammation.

“Ice, generally, I believe to be the better modality,” he says. “It’s definitely the better modality for pain relief and inflammation. With heat, you’re actually increasing the blood flow, where ice—along with compression—has been shown to decrease inflammation, decrease nerve-conduction velocity, and increase the tolerance of pain.” Heat may come into play in later stages of treatment to relax the muscles.

For patients with chronic conditions, the approach is a little different, according to Steven Stanos, DO, medical director of the Chronic Pain Care Center at the Rehabilitation Institute of Chicago, assistant professor in the Department of Physical Medicine and Rehabilitation, and assistant program director of the Multidisciplinary Pain Fellowship at Northwestern University’s Feinberg School of Medicine, Chicago.

“We mostly use ice or heat to control muscle spasm, maybe after exercise, if there is a flare-up in muscle pain or joint pain,” Stanos says. “We use it almost as a breakthrough pain medicine to help with the flare-ups.” The modalities are also used to help patients progress through exercise or stretching programs.

With chronic pain, the rules for when to use ice and heat are less cut and dried, according to Stanos, and the choice is often based on client preference. “With our group, because it’s more of a chronic condition, we do it based more on what their comfort measure is and what they get out of it clinically,” he says.

COOLING DOWN

For inflammation, ice is usually the first response, and it is especially effective for acute injuries to the knee or other joints. Mock cautions against the conventional advice that ice should be used on acute injuries for only the first 24 to 48 hours before switching to heat. “The inflammatory phase can last anywhere between 3 and 5 days,” he says. “In the presence of inflammation, that’s generally where you want to use ice. That’s where you hear the acronym RICE: rest, ice, compression, and elevation.”
There are several cold-therapy delivery methods—including cold packs, gel packs, compression units, menthol compounds, and even vapo-coolant spray—but Mock prefers old-fashioned ice chips in a baggie, as he says they are often colder than gel packs. (He still uses cold packs, however, especially when ice needs to be wrapped around an elbow or a shoulder.) When using ice chips, Mock applies the baggie directly to the skin or places it on top of a protective layer. He then watches for any signs of erythema, redness, or discoloration. "You don't want to go more than about 20 or 30 minutes," he says. "You're monitoring the skin for any signs of irritation or injury."

In some cases, such as neck or back injuries, cold therapy is a hot sell for patients who prefer the soothing feel of heat in these areas—despite the fact that ice might be more appropriate to control inflammation. "People generally like to have heat on their back or neck," Mock says.

In these instances, he usually follows the client's preference if they refuse the ice treatment. "If somebody absolutely doesn't want us to put ice on them, it's not a big deal," he says. "We'll take care of it by other means. Healing is going to occur regardless."

Of course, ice therapy is not for everyone. Those who have ischemia or impaired blood flow could get worse by using cold treatments. It is also contraindicated for those with arterial vascular disease in the extremities or those who have temperature dysregulation issues in the extremities.

HEATING UP

Heat modalities also have their place in the healing process. "Heat is generally the modality that we use for increasing tensile strength, increasing blood flow to the area, and helping muscles and tendons to relax so that we may better be able to perform a massage or work out a trigger point," Mock says.

After using ice for the early stages of acute injuries, Mock sometimes turns to heat. "When you're coming into the later stages of healing function, that might be when you want to apply heat beforehand to actually go ahead and let that muscle relax so you might be able to stretch it more or work it out a little bit better," he says.

A variety of modalities are available to administer heat, including hot packs, paraffin baths, whirlpools, and even ultrasound. Mock's clinic uses hydrocollators, and the moist heat is kept at about 179 degrees. When applying the heat therapy, therapists use six to eight layers of protective padding to protect the skin from burning, and the ultimate heat used is between 105 and 110 degrees for increasing blood flow, for example.

Stanos notes that over-the-counter heat packs are popular with his patients. These items are activated by air and provide local heat to the skin for 6 to 7 hours at a time. "They're using that before and after exercise or even during activities," he says.

No matter which modality is used, Mock says that monitoring for inflammation is key. "You may feel some warmth to the skin, you may see some redness—there's a presence of inflammation," he says. "You should be using an ice modality at that point."

The main concern for patients using heat modalities at home is that they may burn themselves by keeping the heating pack on too long. "I've seen a number of patients who, by accident, had significant superficial burns from heating pads, and actually from ice, too," Stanos says.

Patients using these items at home should be careful if they have neuropathy or loss of sensation that could block out the pain from burning until it is too late. They are also not for those who have cognitive impairments that could lead them to leave a hot pack burning for too long. For most patients, however, this is a safe, effective modality to use at home.

COOL TRENDS AND HOT TOPICS

Ice and heat treatments have not evolved too much in clinical practice over the years, although there are some budding trends. For example, Mock notes that more athletes opt for an ice bath after competition or practice. "The thought there is to actually reduce muscle soreness, but there really hasn't been much evidence to show that it helps recovery," he says.

One of the most exciting discoveries in the past decade is the identification of several heat and cold receptors in the body, known as thermoreceptors. "Now they're targeting medications, patches, and oral medicines that could activate those receptors," Stanos says. "So, there are modalities that the therapist can add, and there are the patches, creams, and gels that patients can buy over the counter that also provide heat and cold."

These products may ultimately improve the effectiveness of cold and hot modalities because they will target these receptors directly. "Now we're understanding how these heat receptors are activated, and they also act as counterirritants," Stanos says. "So, that may also help with increasing or decreasing blood flow to an area and decreasing muscle spasm. It may get a lot more potent with these better formulations and devices."

These new developments and more traditional ice and heat modalities are generally effective for pain management, but Stanos cautions against spending too much physical therapy time applying these treatments. In some cases, such as working on stretching, the use is necessary, but for the most part, he recommends teaching patients to use these modalities at home so that the time in the clinic can be spent on active exercises and instruction.

"I think you really need a balance to make sure the patient has a good understanding of the usefulness of the modalities, and to understand that the real reason they're in physical therapy is to get them instructions on how to do the exercises," he says. □

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REFERENCES