

Icing vs. Heat

When to use which and why!

Sue Wevers CAT(C)



A common problem you might have is understanding if or when you should be applying ice or heat after an injury. Should you use ice for an acute injury or heat for a chronic injury? What one may not realize is that if you apply the wrong modality within a particular time frame after an injury you could actually be doing more harm than good.

What happens to body tissue when injured?

In order to understand when to use ice or heat it is important to review soft tissue response to injury. Immediately following an acute injury, blood vessels that would normally supply nutrients and oxygen to the local tissues are broken and damaged.¹ The broken vessels then leak blood which pools into adjacent tissues. Soon after swelling and inflammation occurs.¹ Pain then follows and in response to it, muscles surrounding the area contract and spasm (muscle guarding) to protect and prevent further damage.² Eventually contraction of the blood vessels (vasoconstriction) and clot formation occur and various chemical substances are released into the wound to start the healing process.³ This is called the inflammatory phase.^{3,4}

Chronic versus acute

After an acute injury occurs inflammation is present in the first three days (72 hours) following an injury. Depending on an individual's physiology, the acute inflammation either resolves or develops into chronic inflammation after 72 hours. A chronic injury results from overuse and eventual long term overload of muscles that gives rise to a chronic inflammatory condition. More research is necessary to determine the specific mechanisms that turn an acute inflammatory response to a chronic one, however they seem to be associated with situations that involve overuse or overload of tissues with cumulative micro trauma to a particular structure.⁴

When to use which and why?

After an acute injury ice should be applied within the first one to three days (24-72 hours).⁵ By decreasing the surface temperature of the skin and underlying tissue, the ice causes vasoconstriction which then leads to a decrease in blood being transported to the injury site and prevents further pooling of fluids. This then helps to minimize swelling and pain.² Icing therefore helps

Effects of Cold

- Decrease tissue temperature
- Decrease inflammation
- Decrease swelling
- Decrease circulation
- Decrease pain
- Decrease chance of complications
- Decrease muscle spasm
- Increase tissue stiffness

decrease the chance of secondary complications to the injury site.^{2,5} So in short, the ice helps decrease pain, swelling, and muscle spasm, therefore decreasing the time needed for the injured area to start obtaining full range of motion.²

Heat should not be applied until the vascular system is repaired and there is no longer any swelling or inflammation.⁵ This repair is not usually complete for at least 72 hours.⁵ Heat would therefore be detrimental during acute injury because increased dilation of blood vessels would increase the chance of a secondary condition and therefore aggravate the primary injury.⁵

Effects of Heat

- Relieve muscle spasm
- Decreasing joint stiffness
- Reducing soreness
- Increase collagen tissue extensibility
- Increase blood flow

With chronic injury, onset is slow and there is little vascular collapse. Therefore the chance of secondary injury is decreased.⁵ It is still advisable to apply ice after prolonged activity or exercise to reduce and regulate swelling, inflammation and pain. However heat applications are preferred by some for injury management in conjunction with stretching. These reduce soreness as well as help reduce muscle tissue contracture or tightness.⁵

Further research needs to be carried out with regards to applying heat or ice in chronic conditions. Some physicians recommend patients with chronic conditions (i.e. arthritis) apply heat early in the day if needed to relax the muscles surrounding the joints. The application of ice at the end of the day regulates the inflammation resulting from activities of daily living.¹

General rule of thumb

- Ice for the first 72 hours or longer if bruising and swelling persists.
- After bruising and swelling are gone use heat or ice, whichever gives the most relief.

- 1Shiel, W. MD, Ice or Heat 'Which Should I Apply' www.medicinenet.com/script/main/art.asp?articlekey=18347&pf=3&page=1
- 4'Effects of Cold Therapy' (www.sportsinjuryclinic.net/coldtherapy/coldtherapyeffects.php.)
- 6Kahn, F., MD (2006) Lower Intensity Laser Therapy –In Clinical Practice, Meditech International, Toronto. P.34.
- 3Prentice, W.(2003) Arnheim's Principles of Athletic Training: A Competency-Based Approach, 11th Edition, McGraw-Hill
- 2Knight, K.(1996) Cryotherapy in Sport Injury Management. Human Kinetics

Have Questions? Call us today!

Burnaby

Dr. Gohar Sheikh, D.C. & Dr. Steven Mew, D.C.

604-293-2273

Surrey

Dr. Rob Skleryk, D.C. & Dr. Yuen Yee Ng, D.C.

604-575-1331

Vancouver

Dr. David Wang, N.D.

604-739-1815

Calgary

Blaine Skleryk, RMT & Janet Mwamburi, LT

403-235-2737

Calgary

Amparo Calma, RMT

403-452-0233

Winnipeg

Diana Mason, RMT

204-255-7779