

Hot and cold therapy for pain relief

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✓ Meets Patient's **editorial guidelines**

Est. **6 min** reading time

This leaflet gives a general overview of hot and cold therapy for soft tissue injuries and other pains.

At a glance

- Hot and cold therapy can help relieve pain and reduce swelling.
- Heat therapy can soothe muscle aches, spasms, and stiffness.
- Cold therapy can numb pain and help reduce swelling.
- You should protect your skin when applying hot or cold treatments to avoid injury.
- Do not use heat or cold therapy on damaged skin or areas with poor sensation or circulation.

This summary has been automatically generated from the article content to help readers quickly understand the key points.

Why do we use hot and cold therapy?

Hot and cold therapy have been used for many years to treat pain and reduce swelling, and many people have found them effective. More recently, studies have been done to investigate whether hot or cold treatments really make a difference in healing. In general, when used sensibly, they are safe treatments which make people feel better, have some effect on pain levels, and there are few harms associated with their use.



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Heat therapy

Heat is an effective and safe treatment for most aches and pains.

Heat can be applied in the form of:

- A wheat bag (warmed in the microwave).
- Heating pads.
- Deep heat cream.
- Hot water bottle.
- Heat lamp.

Heat causes the blood vessels to open wide (dilate). This brings more blood into the area to stimulate healing of damaged tissues. It has a direct soothing effect and helps to relieve pain and spasm. It can also ease stiffness by making the tissues more supple.

How to apply heat therapy

- When heat is applied to your skin, it should not actually be hot; gentle warmth is enough. If too much heat is applied there is a risk of **burns and scalds**. A towel can be placed between the heat source and your skin for protection. You should check your skin at regular intervals.
- Heat therapy is particularly useful for neck and back pain. A lot of the pain in these cases is caused by muscle spasms rather than tissue damage, so heat is often helpful. Studies have shown that nearly 9 out of 10 people using heat on back and neck pain report that it helps reduce their pain levels.
- Apart from in neck and back pain, you should not use heat therapy with new acute injuries. The heat can increase the blood flow to the area and increase inflammation and swelling. Heat therapy can be considered after the first 3 days.

Heat is also often helpful for the following types of pain:

- Aching muscles from over-exertion.
- Aching pains from **fibromyalgia** and other chronic pain conditions.



- Cramping or spasm pains such as period pains.

Cold therapy

Ice has traditionally been used to treat soft tissue injuries where there is swelling. However, there is a growing body of evidence which suggests that applying ice packs to most injuries does not contribute to recovery. It may delay healing because it reduces inflammation which is the body's immune system response to an injury. However, it may still be useful to numb the pain and reduce swelling. This may be useful even if it delays the healing of the injury.

How cold therapy helps

During immediate treatment, the aim is to limit the body's response to injury. Ice will:

- Reduce bleeding into the tissues.
- Prevent or reduce swelling (inflammation).
- Reduce muscle pain and spasm.
- Reduce pain by numbing the area and by limiting the effects of swelling.

These effects all help to prevent the area from becoming stiff, by reducing excess tissue fluid that gathers as a result of injury and inflammation.

In the later, or rehabilitation, phase of recovery the aim changes to restoring normal function. At this stage the effects of ice can enhance other treatments, such as exercise, by reducing pain and muscle spasm. This then allows better movement. If you are doing exercises as part of your treatment, it can be useful to apply an ice pack before exercise. This is so that after the ice pack is removed the area will still be a little numb. The exercises can also be done with the ice pack in place. This reduces pain and makes movement around the injury more comfortable, although it can also make the muscles being exercised stiffer.

When cold therapy doesn't help (the limitations of cold therapy)

When we have an injury, the area often becomes red, swollen and painful. This is known as inflammation. Ice therapy has been used to reduce this inflammation but we now know that inflammation is an important part of the healing process – it is the body's response to an injury and is necessary to help our body repair the damaged



tissue. There are new studies which now suggest that using ice slows down this healing process. More studies are being done to look into this but it is probably best (for now) not to use ice for more than 20 minutes and to use it to numb the pain rather than to try and reduce your body's inflammatory response.

How do you make ice packs?

Ice packs can be made from ice cubes in a plastic bag or wet tea towel. A packet of frozen peas is also ideal. These mould nicely and can go in and out of the freezer. Purpose-made cold packs can also be bought from pharmacies. Take care when using ice and cold packs from a deep freeze, as they can cause ice burns quickly if used without care and proper protection.

How are ice packs used?

- Ideally, rub a small amount of oil over the area where the ice pack is to go (any oil can be used, even cooking oil). If the skin is broken or there are stitches in place, do not cover in oil but protect the area with a plastic bag. This will stop the open wound from getting wet.
- Wrap the ice pack in a cloth.
- Check the colour of the skin after five minutes. If it is bright pink or red remove the pack. If it is not pink, replace the bag for a further 5–10 minutes.
- Ice can be left on for 20 minutes but there is little benefit to be gained by leaving it on for longer. You run the risk of damaging the skin if ice is left on the skin for more than 20 minutes at a time. It also can cause more discomfort and slow down the healing process.
- The effect of the ice pack is thought to be improved if it is pressed gently on to the injured area.

Note: ice can burn or cause **frostbite** if the skin is not protected with oil or other protection such as a wet flannel.

How long should ice be applied for?

Ideally, ice should be applied within 5–10 minutes of injury and for 20 minutes. If your pain is severe then this can be repeated every 2–3 hours or so, whilst you are awake, for the next 24–48 hours.



After the first 48 hours, when bleeding should have stopped, the aim of treatment changes to getting the tissues remobilised with exercise and stretching. Ice can help with pain relief and relaxation of muscle tissue.

When you should not use hot and cold therapy

Do not use heat or cold packs:

- On areas of skin that are in poor condition.
- On areas of skin with poor sensation to heat or cold.
- On areas of the body with known poor circulation.
- If you have diabetes and have diabetic complications to your feet.
- In the presence of infection.

Frequently asked questions

What is a warm compress?

The article uses the terms 'heat' and 'hot therapy' interchangeably with 'warmth' or 'gentle warmth'. A warm compress would therefore align with the methods described for heat therapy, such as a wheat bag warmed in a microwave, a heating pad, or a hot water bottle. The key is that it provides gentle warmth, not actual intense heat, to prevent burns.

When should I use hot therapy on an injury?

You should not use hot therapy on new, acute injuries for the first three days, as it can increase blood flow, inflammation, and swelling. After the first 3 days, or for existing issues like aching muscles from over-exertion, fibromyalgia pain, neck and back pain, or period cramps, heat therapy can be beneficial. It helps to bring more blood to the area to aid healing, soothe pain, relieve spasms, and ease stiffness.



Can I use cold therapy for pain relief if I'm exercising?

Yes, cold therapy can be useful before or during exercise as part of rehabilitation. Applying an ice pack before exercising can numb the area, making movement more comfortable. You can also exercise with the ice pack in place, which reduces pain and makes movement around the injury easier, although it might make the muscles being exercised feel stiffer.

How can I prevent ice burns or frostbite when using cold therapy?

To prevent ice burns or frostbite, rub a small amount of oil over the area where the ice pack will be applied. If the skin is broken or has stitches, protect the area with a plastic bag instead of oil to keep the wound dry. Always wrap the ice pack in a cloth. Check your skin after five minutes and remove the pack if it's bright pink or red. Do not leave ice on for more than 20 minutes at a time.

What are the risks of leaving ice on for too long?

Leaving ice on for more than 20 minutes offers little additional benefit and increases the risk of damaging the skin, such as causing ice burns. It can also lead to more discomfort and potentially slow down the healing process, as inflammation is a necessary part of the body's repair mechanism.

These questions and answers have been generated from the information in this article.

Further reading and references

- **Importance of heat therapy in the treatment of pain in the daily clinical practice** [🔗](https://www.sciencedirect.com/science/article/pii/S1360859224000299) (<https://www.sciencedirect.com/science/article/pii/S1360859224000299>); T Hotfiel et al; Science Direct
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- **Ice should no longer be applied to injuries, and here's why** [\[link\]](https://rehabhub.co.uk/2023/05/14/you-should-no-longer-be-applying-ice-to-your-injury-and-heres-why/) (https://rehabhub.co.uk/2023/05/14/you-should-no-longer-be-applying-ice-to-your-injury-and-heres-why/); Rehab Hub

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Article history

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