

## Winter sports and cold-related injuries

Exercising in cold weather places extra demands on the body. For example, a drop in core body temperature of just 1°C causes the muscles to shiver, which in turn can lead to low blood sugar levels (hypoglycaemia) and reduced sporting performance. Most cold-related injuries can be prevented with planning, adequate preparation and proper equipment.

### Common cold-related injuries

Cold-related injuries common to winter sports include:

- **Blisters** – badly fitting shoes or the friction of wet socks can cause blisters on the toes, feet and heels.
- **Sprains and strains** – cold muscles and connective tissue are more prone to injury. Sports such as skiing and skating place particular demands on the knees, ankles and feet.
- **Sunburn** – what many people think of as ‘windburn’ is actually sunburn. Ultraviolet radiation is still present in cold and cloudy conditions.
- **Snow blindness** – this is sunburn of the cornea of the eye, caused by ultraviolet radiation. Symptoms include painful, watery eyes and temporary blurring of vision.
- **Frostbite** – occurs when the tissues of the skin freeze. Ice crystals in and around skin cells block the movement of blood through the fine blood vessels (capillaries), which means the skin is deprived of oxygen and nutrients and dies.
- **Hypothermia** – the core temperature of the average human body is around 37°C. Hypothermia occurs when the body’s temperature falls below 35°C. Symptoms include shivering, drowsiness and lack of coordination. The person may lie down to rest, lapse into unconsciousness and, if not quickly rescued, will die.

### Prepare for winter sport

Suggestions include:

- If you haven’t exercised regularly in months, don’t expect your body to perform sporting miracles during a weekend on the ski slopes. The best way to avoid many sports-related injuries in winter is to maintain an adequate fitness level all year round.
- Condition the muscles particular to your chosen winter sport for a few weeks or months beforehand. For example, downhill skiing places great demands on the quadriceps (the muscles located on the front of the thigh), so condition these muscles with regular pre-season training sessions of step aerobics or stair climbing.
- Acclimatise yourself to exercising in colder weather. For example, before you hit the ski slopes, try training outdoors for a few weeks instead of inside a warm gymnasium.
- Cold muscles, tendons and ligaments are vulnerable to injury. Warm up thoroughly before playing your chosen winter sport.
- Remember to take cold temperatures into account and spend more time warming up than usual.
- Make sure you cool down thoroughly afterwards. Include plenty of slow, sustained stretching.

### General safety suggestions

Suggestions include:

- Never participate in winter sports alone. With a partner (or two), you can use the ‘buddy system’ and check each other for signs of hypothermia, for example.
- Ensure that your clothing and sporting equipment (including shoes and skis) fit you correctly. Wrongly adjusted skis, for example, can put extra strain on your knee and ankle joints, which makes strains and sprains more likely.
- Be aware that you are exposed to UV radiation even on cold and cloudy days. Apply broad spectrum 30+ sunscreen to all areas of exposed skin. Reapply regularly.
- Wear close-fitting sunglasses or goggles that meet the Australian Standard AS1067.

- Drink plenty of water before, during and after sport.
- Don't drink alcohol. While an alcoholic drink seems to warm you up, it actually narrows your blood vessels, particularly those of the hands, which can increase your risk of hypothermia.
- Don't push yourself until you are exhausted. Rest at regular intervals to avoid fatigue-related injuries.

### **Keep warm and dry**

Without adequate clothing, cold temperatures can quickly lead to hypothermia and frostbite. Suggestions include:

- Lightweight, multiple layers of clothing trap more body heat than one bulky layer. Various items of clothing also allow you to add or subtract layers according to your comfort.
- Avoid getting wet. Wear waterproof outer layers.
- Wear insulated and waterproof boots.
- Take spare gloves, socks and hat in case the ones you are wearing get wet.
- Wear adequate headgear since a lot of body heat is lost through the scalp.
- Listen regularly to weather reports. Avoid weather extremes – for example, a predicted snowstorm.

### **Protect your feet**

Feet are particularly vulnerable to cold-related injuries. Suggestions include:

- Treat any ailments you may have, such as bunions, before taking part in winter sports.
- If you have a pre-existing medical condition that can affect your feet, such as diabetes, see your doctor for information and advice before engaging in winter sports.
- Make sure that your feet don't get cold. Wear appropriate footwear (such as insulated and waterproof shoes) and wear a blend sock that 'wicks' sweat away from the skin.
- If your feet get wet, seek shelter as soon as you can. The skin tissues of wet, cold feet are in danger of freezing (frostbite).
- Make sure all footwear fits you properly, especially if you are skiing or skating. Footwear that is too tight or too loose will cause a wide range of avoidable injuries, including impaired blood circulation (which could contribute to frostbite) and blisters.
- Winter sports such as skiing and winter running place great demands on the Achilles tendon, which connects the calf muscle to the ankle. Make sure you thoroughly warm-up your calves beforehand to avoid injuries such as Achilles tendonitis.

### **Be alert for signs of hypothermia and frostbite**

Seek shelter and medical attention immediately if you, or anyone with you, experiences any of the following symptoms:

- Grey or blue facial skin
- Cold, hard and white skin
- Numb patches on the skin
- Swollen and blistering skin
- Uncontrollable shivering, followed by lack of shivering
- Loss of physical coordination
- Speaking difficulties, such as slurring
- Loss of control over the small muscles – for example, the muscles of the fingers
- A strong yearning for sleep.

### **Where to get help**

- A physiotherapist
- Australian Physiotherapy Association Tel. (03) 9092 0888 or Find a Physio
- Mountain rescue services

### **Things to remember**

- Exercising in cold weather places extra demands on the body.
- Protect against hypothermia and frostbite by wearing warm and waterproof clothing and footwear appropriate to your sport.

- Remember that you can still get sunburned in cold and cloudy weather, so cover up with clothing, apply sunscreen to exposed skin and wear close-fitting sunglasses.
- Thoroughly warm up and cool down to reduce the risk of muscle sprains and strains.
- Seek out local experts and follow their advice.

**This page has been produced in consultation with, and approved by:**

Australian Physiotherapy Association

**Copyright** © 1999/2009 State of Victoria. Reproduced from the Better Health Channel ([www.betterhealth.vic.gov.au](http://www.betterhealth.vic.gov.au)) at no cost with permission of the Victorian Minister for Health. Unauthorised reproduction and other uses comprised in the copyright are prohibited without permission.

- This Better Health Channel fact sheet has passed through a rigorous approval process. For the latest updates and more information visit [www.betterhealth.vic.gov.au](http://www.betterhealth.vic.gov.au).