

# Pre-Travel Advice for Skiers

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As we sit at our desks the thoughts of many of us, and those of our patients, turn from the wet greyness out-side our windows to dreams of swooping down sparkling white pistes under a clear blue sky with a backdrop of dramatic snow-clad peaks. Like other sports, however, skiing is not to be undertaken with-out prior preparation. We would not expect to attempt a sub-10 second 100 metres or play in a Cup Final at Wembley without a considerable amount of training, but are our patients properly prepared for their winter sports holiday, and are we properly prepared to advise them? In this article we will look at some of the factors that should be taken into consideration when advising would-be skiers.

### Previous experience

Enquiring about previous experience of the activities to be undertaken by any traveller is essential at a pre-travel consultation for two reasons. Firstly, it is necessary before giving advice to carry out an individual risk assessment for each traveller, and the nature of the intended activities and the degree of previous experience are an important part of this risk assessment. Secondly, it may save embarrassment for the travel adviser in avoiding giving elementary advice to someone who clearly knows more about the activity than his or her adviser.

### Physical fitness

Skiing is a physically demanding activity. Downhill skiing uses 400 to 600 calories per hour, depending on the degree of exertion involved, and cross country skiing 500 to 900 calories per hour, the equivalent of running about 5 miles each hour. This demands both a reasonable level of general fitness and an appropriate degree of muscular strength.

### General fitness

General fitness can best be achieved by whatever form of aerobic activity most appeals. Running outdoors or on a treadmill, cycling, step aerobics and similar activities or even brisk walking should be carried out several times a week for around 30 minutes, with one longer period of activity for an hour or more each week to improve stamina for long days on the slopes.

### Muscular strength

Skiing makes use of all muscle groups, but, some are used more than others. Having properly trained muscles will not only make skiing more enjoyable and less painful, it will also help to avoid injury.

The principal groups that need to be worked on prior to skiing are:

- **Quadriceps.** The quadriceps are in continuous use during skiing and are of the greatest importance, maintaining and stabilising the flexed posture of the all-important knee joints.
- **Hamstrings and gluteal muscles.** Similarly, the hamstrings and gluteal muscles are important in stabilising the flexed posture of the knee and hip joints.
- **Adductor and abductor muscles.** The muscles responsible for adduction and abduction of the hips are used in maintaining alignment of the skis and in steering.
- **Calves.** Calf muscles, in conjunction with the anterior tibial muscles, stabilise the position of the ankle joint.
- **Abdominal muscles,** together with
- **Back muscles** are important in maintaining core stability.
- **Upper body,** especially the arms, which are in continuous use manipulating ski poles.

An experienced gym instructor will be able to advise on suitable exercise programmes, and examples of appropriate exercises can be found at website such as:

- [www.news.bbc.co.uk/sport2/hi/other\\_sports/winter.../4261932.stm](http://www.news.bbc.co.uk/sport2/hi/other_sports/winter.../4261932.stm)
- [www.skinet.com/ski/galleries/get-gym-fitness-skiers?i=59675](http://www.skinet.com/ski/galleries/get-gym-fitness-skiers?i=59675)
- [www.igluski.com/ski-tips/fitness](http://www.igluski.com/ski-tips/fitness)

In addition to exercise directed at specific muscle groups, core stability exercises are also very useful, and many sports centres and gyms hold core stability classes.

### **Pre-existing medical conditions**

Patients with severe cardiorespiratory conditions such as ischaemic heart disease, cardiac failure or severe COPD, or with severe musculoskeletal conditions such as osteo- or rheumatoid arthritis would probably not be capable of the exertion or range of movement required to ski. Those with conditions such as hypertension, well controlled asthma, well controlled diabetes mellitus, stable cardiorespiratory problems and milder degrees of musculoskeletal condition may well be capable of undertaking a skiing holiday, given adequate preparation. They may, however, find it difficult to obtain insurance cover for their proposed trip. Insurance cover offered by tour operators is seldom a best buy for any traveller, and those with pre-existing medical conditions are likely to find that such insurers will refuse them. There are specialist travel insurers who will provide cover for most types of medical condition and some who specialise in travellers with special needs. Links to some of these insurers can be found on the Links page of the British Global and Travel Health Association's website, [www.bgtha.org](http://www.bgtha.org).

### **Insurance**

One of the most important pieces of advice that any travel health adviser can give to a traveller, whatever the nature of the journey, is to obtain adequate travel insurance. This is particularly true of winter sports holidays. Mountains are a high risk environment, and any activity carried out on mountains has a relatively high level of risk. Many insurance companies offer winter sports cover, but as outlined above, some individuals may not be able to obtain cover. Even those without any pre-existing medical conditions would be well advised to shop around, as the cover offered with their holiday may not give the best benefits or the most competitive premium. The purchaser should ensure that all likely costs are covered, including res-cue, evacuation, by helicopter if necessary, all necessary treatment, whether in hospital or elsewhere, repatriation if required, and repatriation of the body in the event of death. Women in the later stages of pregnancy are unlikely to contemplate a winter sports holiday, though they may accompany a spouse or partner on the trip, and some women whose pregnancies are less advanced may well wish to ski. They should be warned that although they may be able to obtain cover for complications of pregnancy, especially from specialist insurers, there is no cover under such a policy for any infant born prematurely, be it for specialist perinatal or neonatal care or repatriation under specialist supervision.

### **Skiing injuries**

The most common skiing injury is injury to the knee, especially the anterior cruciate ligament. Other common injuries, in descending order of frequency, are<sup>1,2</sup>

- Shoulder injuries
- Lower limb fractures
- Spinal injuries
- Head injury
- Injury to the wrist, hand or thumb

Modern ski boots and bindings have helped to reduce the incidence of lower limb fractures but have not decreased that of knee injuries.<sup>3</sup> In spite of the commonly held belief that wearing safety equipment may encourage risk-taking behaviour, the use of ski helmets has been shown to reduce the risk of head injury.<sup>4</sup> Shoulder injuries, especially dislocation, are frequently the result of external rotation and abduction of the shoulder by the ski pole during a fall, and thumb injuries, mainly sprains of the first metacarpophalangeal joint, are caused by traction on the thumb by the pole grip and strap.<sup>5</sup>

### **Injuries caused by environmental conditions**

#### ***Sunlight***

Skiers are exposed to more intense ultraviolet (UV) radiation at high altitude and this is further increased by reflection of UV light from snow. It is essential to use an effective high factor sunblock preparation, applied to all exposed skin surfaces and re-applied at intervals according to the manufacturer's instructions. Snow blindness, or UV induced keratitis, is caused by UV burns to the cornea. It causes pain, redness and watering of the eyes. Pain is often so severe as to cause spasm of the eyelids and inability to open them, hence its name of snow blindness. It can be avoided by using effective UV absorbing goggles or enclosed wrap-around sunglasses. Conventional sunglasses are not adequate as they allow UV radiation access to the eyes around the edges of the lenses.

## **Cold**

Accidental hypothermia may occur in skiers even in relatively temperate environments.<sup>6</sup> Heat loss from the body is exacerbated by wind chill or the slipstream effect during downhill skiing, and by extreme physical exertion during cross-country skiing. The use of alcohol and drugs, especially antipsychotic drugs,<sup>7</sup> increases susceptibility to hypothermia, and the risk is also increased by trauma. Frostbite is the result of cold injury to the extremities. If severe it can cause permanent tissue loss, but the less severe form, frostnip, recovers fully. It results from vasoconstriction, vascular occlusion and ice formation within cells. The most commonly affected areas are fingers, toes, ears and the nose. Badly fitting boots may impair peripheral circulation and predispose to cold injury.

The risk of both hypothermia and cold injury can be reduced by wearing warm and windproof clothing and adequately insulated well-fitting boots and socks when skiing. Warm hats and adequately insulated and waterproof gloves are very important, and care must be taken not to lose gloves and to remove them only for very short period when absolutely necessary. It is vital to ensure that an injured skier is protected from further heat loss by covering the body with as many layers of insulation as possible and placing insulating layers between the casualty and the snow. Potentially frostbitten extremities should be kept warm and must not be rubbed, as this causes further tissue damage.

A useful; guide to the symptoms and treatment of hypothermia and cold injury can be found at <http://www.princeton.edu/~oa/safety/hypocold.shtml>

## **Dealing with injuries abroad**

Many ski resorts are situated in the European Union (EU), and skier, like all travellers to the EU, skiers should ensure that they carry an up to date European Health Insurance Card (EHIC) which can be obtained online from [www.nhs-e111-ehic.org.uk](http://www.nhs-e111-ehic.org.uk). This card should be carried at all times. It entitles the holder not to the same benefits as would be provided by the NHS but to the same health care in state institutions provided for citizens of the member state in which it is used. It does not necessarily cover all the costs of treatment. Up-front payment may be required and reimbursement, in whole or in part applied for later, or there may be payment in part or in whole without reimbursement for some elements of treatment.

Private treatment and repatriation to the UK are not covered by the EHIC, and insurance is still necessary for those elements of treatment not covered by state provision, any elements given in a private clinic, and for repatriation.

Skiers should carry their travel insurance details at all times. Many insurers provide a credit-card sized card bearing the policy number and emergency contact number, and this is the most convenient way to carry the necessary information. In the event of injury they should contact their insurer's emergency helpline at the earliest possible opportunity to discuss how the matter will be handled.

Skiers must be aware of how to summon help in case of accident or injury. If visiting a new or unfamiliar area they should investigate what emergency services are available and how they can be contacted. In popular skiing areas mobile ski patrols operate and are often at the scene of an accident very quickly, and are skilled in emergency treatment and evacuation of injured skiers. Hospitals in popular skiing areas such as France and Switzerland are usually very skilled in dealing with skiing injuries and can be relied upon to provide good standards of care without the necessity for immediate repatriation to the UK for treatment.

In more remote or wilderness environments or in less developed ski resorts help may not be as readily available. If travelling to such areas skiers must plan carefully, discovering what is and is not available and what communication exist. If there is no mobile telephone coverage, satellite phones can be rented or radio communications may need to be established. It is possible to carry small electronic devices that emit a signal enabling rescuers to locate an accident or avalanche victim, but rescuers would need to know that such a device is being carried and would need to possess the appropriate receiver to pick up the signal. This limits the usefulness of such devices. GPS devices are useful to enable rescuers to be given a precise location when communications have been established, and it may also be possible to locate an individual by tracking a mobile phone. Hospitals in remote areas or less developed ski resorts may not have the same degree of experience or expertise as those in the European Alps, and injured skiers may wish in these circumstances to discuss with their insurers the possibility of repatriation to the UK or transport to another closer country possessing the appropriate facilities and experience for their initial treatment.

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### **Key points**

- Skiing is a physically demanding activity
- A good level of general physical fitness is required
- Exercising specific groups of muscles will help to reduce the incidence of injury
- Skiers should wear warm and windproof clothing, protective helmets and well-fitting hard shell ski boots
- Pre-existing medical conditions do not necessarily preclude skiing but they must be covered by travel insurance
- All skiers must have adequate travel insurance and carry details with them
- Skiers in EU countries should carry the EHIC card
- Travellers to remote skiing areas must be aware of the availability of rescue and treatment facilities and have access to communications equipment

### **References**

- 1 Hagel B. Skiing and snowboarding injuries. *Med Sport Sci* 2005;48:74-119.
- 2 Meyers MC, Laurent CM Jr, Higgins RW, Skelly WA. Downhill ski injuries in children and adolescents. *Sports Med* 2007;37(6):485-99.
- 3 Natri A, Beynnon BD, Ettlinger VF, Kohson RJ, Shealy JE. Alpine ski bindings and injuries. *Sports Med.* 1999 Jul;28(1):35-48.J.
- 4 Johns Hopkins Medicine. [http://www.hopkinsmedicine.org/news/media/releases/helmets\\_save\\_lives\\_of\\_skiers\\_and\\_snowboarders](http://www.hopkinsmedicine.org/news/media/releases/helmets_save_lives_of_skiers_and_snowboarders) (accessed 09/02/2013).
- 5 Ritting AW, Baldwin PC, Rodner CM. Ulnar collateral ligament injury of the thumb metacarpophalangeal joint. *Clin J Sport Med.* Mar 2010;20(2):106-12.
- 6 Sherry E, Richards D. Hypothermia among resort skiers: 19 cases from the Snowy Mountains. *Med J Aust.* 1986 Apr 28;144(9):457-61.
- 7 van Marum RJ, Wegewijs MA, Anton J. M. Loonen AJM, Erna Beers E. Hypothermia following antipsychotic drug use. *Eur J Clin Pharmacol.* 2007 June; 63(6): 627-631.

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