

Health and safety in ski-slope operations



Introduction

This leaflet has been prepared in consultation with the British Ski Slope Operators Association and is aimed at all those who own or operate skiing facilities. It provides basic information on the safe use of facilities for activities such as skiing, snowboarding and snowblading. For simplicity, the term skiing is generally used but should be taken to include snowboarding etc. Natural snow slopes, artificial dry surfaces and artificial wet surfaces are all described as 'facilities'.

Some parts of the leaflet deal with topics of particular relevance to artificial or natural snow-slope facilities and other parts are relevant to all types of facilities. Some sites may also incorporate equipment such as toboggan rides that use fixed tracks. These are items of fairground equipment and this guidance does not deal with them (see the 'Further reading' section for additional sources of information). This leaflet also contains information relevant to private clubs operating facilities to which the public have access. In both cases the Health and Safety at Work etc Act 1974 (HSW Act) applies.

Activities such as skiing, even if all reasonably practicable steps have been taken to comply with the law, still carry a risk of injury to participants. However, this leaflet can help you to minimise that risk.

Involvement of employees in health and safety management

If you have employees, you must involve them in matters that affect their health and safety at work. By involving your employees, you are also able to make use of their knowledge of your operations. Staff from ski centres were involved in the writing of this guidance.

Application of the HSW Act to private clubs

The Act places general duties of care on employers and the self-employed to conduct their undertakings without risk to the health and safety of others. Some of those to whom this guidance is addressed may not fall within this group of duty holders, but their activities may create risks to themselves, those who help them on a voluntary basis and members of the public. HSE considers it good practice for those who carry out such activities to provide the same level of health and safety protection as they would if they were duty holders under the Act.



The Act also places certain duties on any person to provide plant and equipment that is safe, so far as is reasonably practicable, for the use by other people, ie the general public.

Legislation

The main legal requirements covering skiing facilities are the HSW Act and the Management of Health and Safety at Work Regulations 1999 (the Management Regulations). The Management Regulations require a suitable and sufficient risk assessment to be carried out by employers (or self-employed people) to assess the risks to employees and others who may be harmed by their activities and to determine the control measures necessary to reduce them to an acceptable level. The Regulations also require effective planning, organisation, control, monitoring and review of the control measures determined by the risk assessment. See 'Further reading' for details of publications that contain these and other relevant pieces of legislation.

Managing health and safety

Health and safety can be easily achieved and effectively managed by adopting the following key stages.

Setting your policy

Prepare a clear health and safety policy statement. Attach details of the organisation and arrangements (rules) for the health and safety of everyone involved.

Organising yourself

If you apply a system of steps and checks for all activities undertaken, you will ensure that you operate safely.

Planning and implementation

It is recommended that you appoint a person who has the authority to ensure that the established procedures are followed. Many accidents are caused by human factors rather than equipment failures. Ensure that everyone involved in operations is competent, ie they have suitable training, knowledge, experience and personal qualities for any tasks they undertake.



Measuring your performance

You need to monitor your health and safety record on a continuous basis and particularly after any incident that has caused an accident or near miss.

Reviewing performance and making changes

You need to carry out a review whenever circumstances show that it is necessary, and think about what changes are needed, if any.

Risk assessment

You should carry out a risk assessment - this is a careful examination of what, in your operation, could cause harm to people, whether they are employees, contractors or members of the public.

- Identify the hazards - anything that could cause harm.
- Decide who might be harmed and how.
- Evaluate the risk - the chance, high or low, that somebody will be harmed by the hazard - and decide whether existing precautions are adequate or more should be done. Precautions that are appropriate at one site may not be appropriate at another.
- Record your significant findings.
- Review your assessment and revise it if necessary.

You should carry out a risk assessment regularly and review it at least every three years, or sooner if modifications or new equipment change the way you operate.

Employee training

- You should ensure that all employees, including instructors, have received appropriate training. Training should include the facility's normal and emergency operating procedures.
- Some employees, such as instructors, ski patrollers and ski technicians, will require specialist training. This should include an objective assessment of employee competence. You may need to supplement this with site-specific training.
- Where training is provided by specialist training organisations, you should keep records of this training and the certification of staff (if



appropriate). It is recognised that different slopes will have different training requirements and therefore the arrangements for maintaining and refreshing training will differ. However, records of refresher training should always be kept.

Equipment hire

- It is important that ski bindings are set correctly, so far as reasonably practicable, to enable the binding to perform in accordance with the manufacturer's design. Reference should be made to the binding manufacturer's information when determining settings but even correctly set bindings cannot be guaranteed to release under any, or all, circumstances.
- Correctly fitting equipment is essential. Boots should be the correct size for the user and should be able to be fastened properly. Skis and boards should be appropriate to the activity to be undertaken and the competence of the user.
- Users should be made aware of the importance of ensuring that boots and bindings are clear of snow, ice or grit etc when putting skis on.
- The advent of short skis (snowblades or groms) means that there can be minimum height recommendations for users when non-releasing bindings are used on these items. You should refer to the manufacturer's recommendations.
- All hire equipment should be regularly and correctly maintained in accordance with the manufacturer's instructions and this should be recorded.
- Hire equipment should be checked and individually set at the start of a period of hire and should be inspected again on return in case it has been damaged in use. Any defective equipment should be tagged and removed from hire stock and this should be recorded. Once repair has been undertaken, the equipment can be returned to stock.

Workplace and welfare

- All parts of the centre should be appropriately maintained. This includes making arrangements for cleaning.
- There should be access to suitable toilet and washing facilities.
- Facilities should be provided for changing clothing and provision should be made for employees to dry wet clothing, for example a staff locker room with appropriate heating.



- Sources of further information on workplace and welfare can be found under 'Further reading'.

Facility layout and access control

- Customer reception and equipment issue is normally at the bottom of the slope. At such sites users then need a certain amount of skill to negotiate ski tows or lifts to access the slope.
- If reception is at the top or middle of the slope, consideration should be given to management systems and operating procedures to ensure that users are initially directed to the appropriate part of the facility for their ability.

Skier ability on artificial slopes and management of artificial slope use

It is important that you have a system to assess the ability of users before they are allowed onto the hill. You need to decide what the minimum standard of performance is for your hill and it should be set at such a level as to ensure the safety of



the user and others on the slope. You may wish to record achievement of this standard on membership cards or by some other means. Those receiving lessons should not be allowed to practice on their own unless a qualified instructor is satisfied that they meet the minimum standard. If you need to remove someone from your facility for failure to meet the required standard, you should consider recording this as a means of demonstrating that your policies are being implemented correctly.

The use of an artificial slope needs to be carefully managed and monitored:

- you may need to set a maximum number of users for each slope, depending on the mix of users;



- sometimes it may be necessary to limit the use of the slope to a single group, for example when racing is taking place. During such activities only those participating or directly involved should be permitted to access the area.

Slope construction, inspection and maintenance

- Slope design is a specialist area and is beyond the scope of this booklet. However, any slope design must take account of the intended use and user group and you should ensure that users can decelerate or stop in a controlled manner.
- Slopes should be designed with areas where spectators can watch activities safely.
- Slopes should be inspected at least daily for damage or the presence of debris.
- More detailed inspection of slope surfaces should be carried out according to manufacturers' recommendations.
- Slope maintenance and repair should be in accordance with manufacturers' instructions.
- Records should be kept of all inspections, maintenance and repairs.

Considerations for natural slopes and indoor slopes (where relevant)

- The design and preparation of pistes is beyond the scope of this booklet, and specialist advice should be sought.
- Narrow areas of pistes or places such as bridges over streams should be clearly signed.
- The surface of tow tracks should be kept as even as possible.
- Before pistes are opened for use, a competent person should assess their condition and any necessary warnings for users should be posted.
- Pistes should be inspected frequently for damage or deterioration of the surface. Particular attention should be paid to heavily used and narrow sections.
- Broken areas of snow cover should be promptly marked to draw users' attention to the existence of a broken area and, where possible, the surface should be repaired by the use of fresh snow.
- Extensive deterioration of the piste may require its closure.
- Piste-grooming machines should preferably only be used on closed pistes. Where this is not possible, warning signs or barriers should be used to alert skiers to the presence of machines.

- If grooming machines are travelling on a piste, they should do so only slowly and at the sides of the piste. Warning alarms and lights should be used.

Protection of fixed and temporary obstructions

- As far as possible, the presence of fixed objects that skiers may hit should be avoided during slope or piste design.
- Where fixed objects or other obstructions cannot be avoided, you should provide adequate protection, by using nets, padding or other methods, where your risk assessment shows that this is required.
- You may need to protect people queuing at tows or lifts and provide means of reducing skier speed close to queues.
- Padding or nets should be provided at the ends of pistes where necessary, both to indicate the end of the piste and to prevent users leaving the end of the piste, except where it is safe to do so or to join another piste or connecting trail.
- Nets or padding need to be of suitable design and strength to absorb the energy of a moving skier and bring them to a stop without posing a risk of significant injury.
- The selection of protective measures is complex and the advice of a competent person should be sought. The thickness of padding will depend on various factors such as the size of any deceleration area, the possible impact speeds and the nature of the foam. Over time, foam can deteriorate and may no longer provide adequate protection. It should be subject to appropriate inspection.
- The most appropriate materials and method of construction should be selected on the basis of a risk assessment.

Ski tow installation, operation and maintenance

- Ski tows and lifts should be installed, operated and maintained in accordance with manufacturers' instructions.
- Uplift equipment should only be started and operated by competent persons.
- Emergency stops should be provided at the loading point, the unloading point and at appropriate intermediate positions. Account should be taken of the manufacturer's recommendations.
- Emergency stops should not be reset until the reason for their activation has been discovered.



- Where failure to dismount poses the risk of entrapment in lift equipment, measures should be taken to ensure that tows will be halted if a skier fails to dismount at the top. This can be achieved



- by the use of trip switches that will be activated when the skier passes beyond a certain point.
- You should ensure that no one can access dangerous moving parts of a tow or lift (eg driving wheels, bull or return wheels, in-running nips at guide rollers, tension weights), either during normal operation or during maintenance. Methods of safeguarding can include safe positioning of items, fixed guarding, interlocked or photosensitive guards. The use of a permit-to-work system may be appropriate for some maintenance activities.
- Modifications to tows and lifts should only be carried out by competent persons and in consultation with the manufacturer or their agent.
- If second-hand equipment is to be installed, you should ensure, so far as reasonably practicable, that it is safe and that all necessary documentation is available. This may need to be translated.
- You should have a procedure for the safe evacuation of tows and lifts should the need arise. Lift evacuation should be practised on a regular basis and you may wish to work with the emergency services on this.
- Where the safety of users may be affected, you should consider having alternative means of powering lifts should the primary power supply fail.
- Procedures should be devised for dealing with situations such as a driving wire coming off the guide pulleys. Such an event may require evacuation of a chair-lift.
- Chair-lifts should not be operated in wind speeds above the manufacturer's recommended upper limit. Any wind-measuring equipment should be kept in good working order.

Particular considerations for natural slopes

- Procedures should be prepared for the evacuation of the hill in the event of adverse weather conditions. You should ensure that all employees are aware of the procedure and its implementation.
- Where warning signals such as sirens are used to alert users to evacuate the hill, signs to that effect should be clearly posted.
- Using signs is an effective means of managing slope use and you should make appropriate use of signs such as 'Slow Down', 'Caution', 'Crossing' etc. If bottlenecks develop during busy periods, it may be necessary to provide additional signs and to monitor the area.
- Ski patrollers should be alert for overcrowding developing on pistes, particularly during the home run at the end of the day. They should act to control the speed of skiers.
- Skiers who act irresponsibly and endanger their own or others' safety may need to be removed from the hill. This can easily be done by withdrawal of their lift pass.

Piste-grooming equipment

- Piste-grooming equipment should only be operated by people who are appropriately trained.
- Equipment should be fitted with warning lights and alarms and these should be kept in good working order.

Welfare arrangements

In addition to the normal requirements for welfare provision in the workplace, special consideration needs to be given to welfare aspects of workers on the hill.

- Lift and tow facilities should be provided with means of heating. Any heating appliances must be maintained in good working order. Particular attention should be paid to ventilation where gas-fired appliances are used.
- Hill staff should have access to toilet and washing facilities.
- Arrangements should be made to cover for staff operating lifts and tows for meal breaks and toilet breaks.
- Employees should be able to change clothing and to dry any wet clothing.

- As employees will work in adverse weather conditions, appropriate protective clothing should be provided.

First-aid and emergency arrangements

Snow sports do give rise to injuries and so particular attention should be paid to your first-aid and emergency arrangements. There is a legal duty to make appropriate first-aid provision for your employees. Though you have no legal responsibilities for non-employees, HSE strongly recommends you include them in your first-aid provision.

- Instructors may hold a current first-aid certificate as a condition of their instructor status. However, you should consider the provision of first-aid training to other members of staff on duty in the facility.
- You need to ensure there are arrangements for summoning a first-aider to the site of an accident.
- Ski patrollers should also be qualified in first aid as part of their training.
- Everyone who holds a first-aid qualification should receive refresher training at appropriate intervals.
- Someone should be appointed to ensure that first-aid supplies are maintained.
- For artificial ski facilities, the most appropriate way of dealing with a seriously injured person will be calling for an ambulance. However, you should establish with the ambulance service whether they will require assistance or facilities if they have to deal with a casualty on the slope.
- For those operating natural snow facilities, the need to deal with a casualty in a remote location should be considered. Those likely to be involved in the evacuation of casualties from the hill should receive appropriate training in the techniques and equipment to be used. This should be practised regularly. Every centre should have a casualty evacuation procedure that includes handover to the emergency services, as appropriate.
- You should make appropriate liaison arrangements with the local emergency services, particularly where evacuation of suspected spinal injury cases is involved.
- You should provide an appropriate first-aid room or facilities.

Maintenance activities

You need to ensure the safety of your employees or contractors undertaking maintenance activities.

- Employees undertaking inspection and maintenance activities should be competent to do so. They may need special training.
- You should take steps to ensure that you only use competent contractors.
- Control of contractors - you should establish an appropriate system to ensure that contractors cannot work in your facility without appropriate permission. It should ensure that contractors' activities do not pose a risk to the health and safety of your employees or customers. A suitable system will also ensure that any other operations on-site do not pose a risk to the contractors.
- Some maintenance activities, such as work on standby generators, tow and lifts, may require a permit-to-work system to ensure the safety of those involved. Details of a permit-to-work system are beyond the scope of this booklet and advice should be sought from your enforcing authority.
- Maintenance often involves work at height and you should ensure that this can be done safely. You may need to provide items such as mobile elevating working platforms ('cherry-pickers'), scaffolding or safety harnesses. The correct selection of equipment should be made after a risk assessment has been carried out. Particular attention should be paid to ground conditions and slopes when using any equipment to work at height. You may need specialist advice when selecting access equipment.
- Some maintenance activities may require the closure of a part of a slope or all of it.
- Any equipment used for lifting loads, including people, is subject to specific requirements regarding its inspection and maintenance (see the Approved Code of Practice on the Lifting Operations and Lifting Equipment Regulations 1998, listed in 'Further reading').

Security

- Steps need to be taken to prevent, so far as is reasonably practicable, unauthorised use of the hill. This is particularly important outside opening hours.

- Movable equipment should be locked away or otherwise secured at the end of the day.
- Lifts and tows should be isolated.
- You should consider using CCTV.

Accident reporting and investigation

Accident reporting and investigation are important aspects of health and safety management.

- Every accident that you know to have happened on your hill should be recorded.
- Certain accidents and dangerous occurrences must be reported to the enforcing authority. Details of what type of incidents and how to report them can be found in the HSE publications *A guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995* and *RIDDOR explained* (see 'Further reading').
- Proper investigation of accidents can reveal problems or hazards that might not otherwise be apparent. Investigation is an important means of identifying ways of improving health and safety. An investigation may lead to a review of your risk assessment or to a change in your procedures.
- New skiers and boarders should be made aware of the correct method of carrying equipment and be introduced to the Skiers' Code (*FIS Rules*, sometimes referred to as the skiers' responsibility code, published by FIS and the Home Nation Governing Bodies).

Further reading

Health and Safety at Work etc Act 1974 Ch37 The Stationery Office 1974
ISBN 0 10 543774 3

Management of health and safety at work. Management of Health and Safety at Work Regulations 1999. Approved Code of Practice and guidance L21 (Second edition) HSE Books 2000 **ISBN 0 7176 2488 9**

Successful health and safety management HSG65 (Second edition) HSE Books 1997 **ISBN 0 7176 1276 7**

Workplace health, safety and welfare. Workplace (Health, Safety and Welfare) Regulations 1992. Approved Code of Practice L24 HSE Books 1992
ISBN 0 7176 0413 6

An introduction to health and safety: Health and safety in small firms Leaflet INDG259 HSE Books 1997 (single copy free)

Five steps to risk assessment Leaflet INDG163(rev1) HSE Books 1998 (single copy free or priced packs of 10 **ISBN 0 7176 1565 0)**

Safe use of lifting equipment. Lifting Operations and Lifting Equipment Regulations 1998. Approved Code of Practice and guidance L113 HSE Books 1998
ISBN 0 7176 1628 2

Safe use of work equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and guidance L22 (Second edition) HSE Books 1998 **ISBN 0 7176 1626 6**

A guide to risk assessment requirements: Common provisions in health and safety law Leaflet INDG218 HSE Books 1996 (single copy free or priced packs of 5 **ISBN 0 7176 1211 2)**

Managing health and safety: Five steps to success Leaflet INDG275 HSE Books 1998 (single copy free)

A guide to the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 L73 (Second edition) HSE Books 1999 **ISBN 0 7176 2431 5**

RIDDOR explained Leaflet HSE31 HSE Books 1999 (single copy free or priced packs of 10 ISBN 0 7176 2441 2)

First aid at work. The Health and Safety (First Aid) Regulations 1981. Approved Code of Practice and guidance L74 HSE Books 1997 ISBN 0 7176 1050 0

Fairgrounds and amusement parks Entertainment Information Sheet ETIS5 HSE Books 1997

The amusement devices inspection procedures scheme (ADIPS) Entertainment Information Sheet ETIS8 HSE Books 1999

FIS Rules (also known as the Skiers' Code) available from www.fis-ski.com or Home Nation Governing Bodies

While every effort has been made to ensure the accuracy of the references and web addresses listed in this publication, their future availability cannot be guaranteed.

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Further information

HSE priced and free publications are available by mail order from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA Tel: 01787 881165 Fax: 01787 313995 Website: www.hsebooks.co.uk (HSE priced publications are also available from bookshops and free leaflets can be downloaded from HSE's website: www.hse.gov.uk.)

For information about health and safety ring HSE's Infoline Tel: 08701 545500 Fax: 02920 859260 e-mail: hseinformationservices@natbrit.com or write to HSE Information Services, Caerphilly Business Park, Caerphilly CF83 3GG.

This leaflet is available in priced packs of 10 from HSE Books, ISBN 0 7176 2598 2. Single free copies are also available from HSE Books.

This leaflet contains notes on good practice which are not compulsory but which you may find helpful in considering what you need to do.

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