

# ALPINE SKIING AND SNOWBOARDING INJURIES



## AOSSM SPORTS TIPS

The popularity of skiing has increased dramatically in the past century. Since its inception in the 1960s, snowboarding has become increasingly popular as well. In fact, almost 40 percent of all “sliding snow” sports participants today are snowboarders.

Skiing and snowboarding are both wonderful sports. As with most any physical activity, however, there is an element of risk. By following some basic guidelines and learning more about the risks, it is possible to decrease those risks. Remembering the following information can minimize your risks and allow more fun on the slopes.

### HOW DO SKIERS GET HURT?

Many variables affect injury rates in skiers, most commonly ability, age, gender, physical conditioning and snow conditions. Beginners have three times the injury rate of experts, but their injuries are less severe. Experts have less frequent but more severe injuries (head injuries, fractures and high grade ligament sprains). This is probably due to their higher speed on the ski slope. Intermediate skiers fall somewhere in-between.

Another key factor is age. The highest injury rate is among 11 to 13 year olds. Their ability is intermediate, but their judgment is not as good as adults'. Injuries in teenagers (13 to 20 year olds) are slightly less frequent, but more severe. Many have the skill levels of adults with immature judgment. Finally, children younger than 12 years old have twice the injury rate of adults, but fewer than that of adolescents.

Females have twice the injury rate of males, which is thought to stem

from conditioning. One study looking at female ski racers found that their anterior cruciate ligament (ACL) injury rate was six times that of their male counterparts.

Physical conditioning may have a significant impact on injury rates — that is, the better shape a skier is in, the less frequent the injuries. Most studies focus on destination ski resorts, where most skiers are vacationers. Injuries are most likely to occur on:

- the first day of ski week;
- in the early morning when the skier is not warmed up;
- in the late morning and late in the day when fatigue sets in; and
- at the end of the week when the cumulative effects of the vacation make the skier tired.

Snow conditions affect injury patterns, as well. Hard pack snow generally yields high-speed and impact injuries. Powder and heavy snow is associated with more torsional or twisting injuries. Quick changes in snow conditions, such as hitting the line between groomed and ungroomed snow, may cause a fall that leads to an injury.

### EQUIPMENT-RELATED INJURIES

Skis have a rigid coupling with the foot that increases the forces to the leg and knee. These forces are often greater than our bodies can absorb. This boot-binding interface is the most common cause of equipment-related injury. The modern bindings, which release in a multidirectional pattern, have decreased the incidence of fractures by more than 80 percent. Unfortunately, knee liga-

ment sprains have not decreased and have actually increased over the last 20 to 30 years. Bindings are continuing to improve every year. If you have only one piece of equipment that is new, it should be your ski binding.

To improve the safety of your skiing, your bindings should be no more than 3 to 4 years old. The release properties should be tested each year in a certified shop. You can also perform a self-release test each day of skiing by kicking out of your bindings. It is also very important to make sure that you have no dirt or grit in your binding or in the boot/binding interface.

Boots are less important in the prevention of injuries, though you should be mindful of their proper fit and the amount of external wear on your boots. When buying boots, be sure to get a proper fit from a knowledgeable salesperson. Check that the toe and heel of your boots have little external wear and are clean. This will allow proper release from the binding.

Proper ski length may also affect injury rate. Shorter skis are easier to turn and control but may be less stable at high speeds. Newer skis have more sidecut (the curve on the sides of your ski). This helps skiers of all ability levels carve turns more easily. Some research suggests that this feature may cause more twisting injuries to the knee. Regardless, it is important to keep your ski edges in good condition to allow for proper carving of a turn and to control your speed, especially on hard pack or icy conditions.

Ski poles can influence thumb and hand injuries. When a skier falls on an outstretched hand that is holding a ski pole, the pole can cause a tear of the

ulnar collateral ligament of the thumb. This is one of the most common injuries in skiing. The best way to prevent this injury is to drop your pole when you fall. It is important to not wear your ski pole straps. This allows the pole to fall away when you drop it. In deep powder snow this may not be as important.

Ski clothing, goggles, and headgear are important as well. It is important to dress in layers to allow for adjustment to changing weather conditions. Goggles and sunglasses will protect your eyes from UV radiation, wind, snow and other hazards you may find on the slope. One important trend is the use of helmets on the ski mountain, which is analogous to biking helmets. After all, most of us would not go biking without a helmet, particularly at speeds in excess of 30 miles per hour. Head injuries are the most common cause of death from skiing collisions. Many of these may be prevented by wearing a helmet.

## ACL INJURIES

One of the most common injuries in skiing is the ACL tear. Some experts say that incidence of this injury has tripled over the last 20 years. Vermont Safety Research has instituted a program to prevent ACL injuries in ski professionals. Their techniques, which have been shown to significantly reduce the ACL injury rate, are available from <http://www.vermontskisafety.com/>.

## SNOWBOARDING INJURY TRENDS

Snowboarding has a slightly higher potential for upper extremity injuries, but it may be safer on the knees. There is an increased rate of foot and ankle injuries associated with snowboarding. The lead foot has twice the number of injuries than the back foot. One study showed that the hybrid or “mid-stiffness” boots were the safest style of boots. There may be more high-energy injuries such as femur fractures, high-speed injuries and injuries caused by getting “big air.”

## GENERAL INJURY PREVENTION

- Prepare for the season and get in shape.
- Get your equipment checked at a certified shop.
- Self-release your bindings each day you ski.
- Warm up and stretch before skiing.
- Don't ski while intoxicated.
- Wear a helmet.

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