

LESSON 4: Common Skiing and Snowboarding Injuries

Introduction

Participation in skiing, and especially snowboarding, continues to rise. Skiing and snowboarding are two of the most popular winter sports, with more than 9 million active participants in the 2017-2018 season. The rise in snowboarding happened much later, because it was first introduced in the 1970s and did not become an Olympic sport until 1998. As participation and level of competition in these winter sports increase, the number of injuries increases as well. Upper-extremity injuries are more common in snowboarding, whereas lower-extremity injuries are more common in skiing. Head injuries, particularly concussions, are common in both sports. Special attention in these sports should be given to environmental conditions, such as high altitude and ultraviolet radiation. The potential for severe injuries in these sports is high, so it is important to quickly recognize an injury that needs to be assessed and treated urgently. It is also important to think about prevention strategies that may minimize risk of injury.

Typically, injured ski and snowboard athletes are initially managed on the slope by ski patrol. After triage, athletes may be seen in a clinic at the resort, in a clinic nearby, or at a nearby emergency department. However, removal of sport-specific equipment, particularly boots, can be a challenge in these athletes. Only persons with the highest level of experience with ski and snowboard equipment should handle equipment removal. If ski patrol personnel are available, their expertise in this area may be useful.

Musculoskeletal Injuries

Upper-extremity Injuries

Wrist fractures are the most common fracture in snowboarders and are commonly seen in skiers as well. They are usually sustained from a fall, landing onto an outstretched hand. This injury is commonly seen in younger, inexperienced snowboarders.

Injuries to the thumb, also known as “skier's thumb,” are more commonly seen in skiers than snowboarders. The mechanism of this injury is typically a sudden force to the thumb after a fall, such as when a skier falls to the ground with a ski pole still in hand.

Clavicle fractures in snow sports are usually the result of jumping and impact with the snow surface, particularly increased in those who frequently use

terrain parks. Shoulder joint dislocations are common in both skiers and snowboarders.

Lower-extremity Injuries

Lower-extremity injuries are more common in skiing than in snowboarding. The main reasons for this are differences in equipment and fall mechanisms. Foot and ankle injuries are the most common lower-extremity injuries seen in snowboarders. They sustain ankle sprains more often probably because they use softer boots than skiers. There is also the so-called 'snowboarder's ankle', which is an injury relatively unique to this sport. Knee injuries are more common lower-extremity injuries in skiers, but also in experienced snowboarders who perform freestyle tricks and jumps. Lower leg fractures are common in both skiers and snowboarders who wear hard boots.

Non-musculoskeletal and Severe Injuries

Even though musculoskeletal injuries are the most common type of injury in snow sports, severe injuries are more likely to affect the head, face, spine, chest, and abdomen. For both skiing and snowboarding, severe injuries are more likely to occur on days with 5 cm or less of snowfall. More severe injuries, including injuries to the spine, chest, and kidneys, are more likely to occur from collisions rather than falls.

Environmental Injuries

Altitude illness is very common in these sports, because most recreational skiers and snowboarders travel to high-altitude resorts from lower altitudes. Typically seen in unacclimatized individuals climbing above 2,500 m, Acute Mountain Sickness (AMS) is the most common form of acute altitude illness. Symptoms of AMS include headache, poor appetite, nausea, vomiting, fatigue, and dizziness. Other altitude illnesses include high-altitude pulmonary edema and high-altitude cerebral edema, which are rare. The primary treatment for all types of altitude illness is descent to a lower altitude.

Levels of UV radiation can also be high at ski resorts, which is why it is recommended that alpine athletes be educated on the need for UV protection and the use of sun-protection factor 30 sunscreen or more, especially on body parts with the highest exposure, such as the nose and the lips.

Skiers and snowboarders are also at risk of cold-related injuries, including hypothermia, which is defined as a drop in body temperature to or below 35°C. Frostbite is a local freezing injury primarily of peripheral body parts. It

can occur due to cold exposure of isolated body parts, and it is often seen in recreational skiers and snowboarders.

Injury Prevention

Skiing and snowboarding place athletes at risk of different injuries, so it is important to develop prevention strategies. Beginners are at the highest risk of injury, which is why they need proper education, sports-specific instruction, and education on risk awareness. Education should include use of protective equipment, and proper lift technique. Helmet use is the best way to reduce the risk and severity of head injuries in both skiing and snowboarding. Athletes also often use back protectors to prevent spine injuries.

Adapted from:

Weinstein, Sarah DO; Khodaei, Morteza MD, MPH, FACSM; VanBaak, Karin MD. Common Skiing and Snowboarding Injuries. *Current Sports Medicine Reports* 18(11): pp. 394-400, November 2019. | DOI: 10.1249/JSR.0000000000000651

https://journals.lww.com/acsm-csmr/fulltext/2019/11000/common_skiing_and_snowboarding_injuries.8.aspx