

Ski Injury Prevention

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Preventing On-Slope Injuries

Be strong to ski strong – and get your gear on your side too.

By Claire Walter

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There are two, arguably three, main factors in ski and snowboarding injuries. First is what you, as a skier or rider, bring to the mountains – what physical shape you are in, what level of skill you possess and how sensible you are at matching your terrain and speed to your skill. The second involves equipment. The third, the arguable one, is fate, kismet, luck of the draw, call it what you will. You do maintain control over your body and your gear, and as for fate, we'd just better not go there, even though neither the highest level of skill nor the best gear money can prevent injury if it's just not your day.

Consider Picabo Street, America's Olympic and World Championship downhill ace. Strong, skilled and superbly outfitted as she is, she was hurt three times in as many years. She tore the anterior cruciate ligaments (ACL) of both knees in separate crashes, but her most terrifying injury occurred on a Friday the 13th just a month after winning a gold medal in the 1998 Winter Olympics. She smashed her femur so badly that she was off snow for a year and off the race course for two. Many people with such an injury would probably never walk right again, but Picabo has been training, hoping to be able to race again.

Different studies have come up with different numbers, but according to various researchers, women are anywhere from two to six times more likely than men to sustain knee injuries, and beginners are significantly more likely to get hurt than experienced skiers. So if you're starting out, invest in a few lessons and don't get too brave too fast – no matter how good you are at other sports. Still, the vast majority of the nation's 12 million or so skiers and riders never get hurt, and when they do, their injuries are normally far less terrifying than Picabo's.

In fact, her two popped ACLs put her in the league with the rest of us, because at least one-quarter of all ski injuries involve the knee, and the ACL is the part of the knee that is most often hurt. The knee generally and the ACL particularly are most vulnerable in the kind of falls that skiers tend to take. The slow, twisting fall is the number-one ACL popper, followed by sudden hyperflexion, caused by landing a jump on flat terrain. If you like to get air, scout the landing before leaping.

The ACL is thick, cord-like ligament connecting the back of the thigh bone (the femur) and the top of the shin bone (the tibia) and gives literal stability to the knee. The ACL is powerful and capable of withstanding immense stress. But when it ruptures, it really goes (people who blow out an ACL often describing hearing "a pop" when it

went), and because it has few blood vessels, it cannot heal itself. Fortunately, thanks in large part of Vail's Dr. Richard Steadman, arthroscopic surgery to repair ACL damage and effective rehab programs have become routine. However, it's better not to need it in the first place.

Dr. Jeffrey Hadley, a certified ski instructor and researcher with the Johns Hopkins Center for Injury Research, says that the majority of on-slope injuries occur when a skier has lost his or her balance. Therefore, lower-body conditioning (notably hamstring, inner thigh and quadricep) helps prevent knee injuries. Strong quads make for strong, controlled skiing to begin with, while hamstring and inner thigh strength enable you to recover if you catch an edge. In addition, injuries can occur during a backward fall where the hips end up lower than the knees while the skier's weight remains on and stresses the downhill leg, a typical beginner move, or if the downhill ski slides out from under you or if you catch an edge.

Leg exercises are featured in every ski-conditioning class, but it's too late for those this year, so talk to a trainer, read a book or spend extra time on those muscles during your regular workout. Dr. Kevin Stone, a San Francisco sports medicine specialist, recommends a 20-minute program specifically to strengthen the knee and the muscles that stabilize it. He particularly likes the single-stance knee bend. Stand on one leg without locking the knee and with the other leg comfortably flexed behind you. Hold on to a stable object for support and bend and straighten your knee between 30 and 80 degrees – about the middle third of its range of motion – for three minutes, and then repeat on the other leg. Work up to five minutes per leg.

If you do twist your knee, call it a day on the slopes and have a doctor look at it to determine whether it has sprained or snapped. After an injury, medical experts recommend R.I.C.E.— Rest (stay off the leg), Ice (ice the joint), Compression (use a snug but not constricting elastic bandage to control swelling) and Elevation (prop the knee up) – which sometimes is enough to help it heal. A knee brace can help a serious ligament sprain, while a torn ACL requires surgery.

A Vail inventor named Walter Dandy developed a device called CADS, short for Constant-Force Articulated Dynamic Struts, to reduce skier fatigue and injuries. CADS, a pair of dorky-looking rods reaching from the boot to the butt, extend and retract as the knee straightens and flexes, sort of like a car's shock absorbers. They were designed to reduce stress on the joints, quadricep fatigue and therefore, reportedly, reduce knee injuries. CADS look weird, but some skiers, especially people with knee or back problems, swear by them. For info, call (970) 949-4533 or log onto www.cads.com.

Equipment helps prevent some injuries. Most importantly, have a certified ski mechanic adjust your bindings for your body weight, gender, age and skill. When correctly set and properly maintained, bindings hold your boots to your skis but release during a potentially injury-producing fall. However, bindings have little to do with the most common ski injury, which is an ulnar collateral ligament rupture of the thumb — in lay terms, a jammed thumb. If you fall, your natural reaction is to break your fall with your downhill hand. If your thumb snags in a pole strap or jams into the snow, you could do that ulnar thing. Various ski-pole models are designed to protect the thumb. And if you ski the trees, remove your pole straps so that they don't snag and wrench your shoulder back.

With two fixed bindings on a single board, snowboarders obviously aren't subject to the same knee twist as skiers. Their most common injury is a sprained wrist. Equipment is the rider's friend. Invest in gloves with wrist guards that prevent hyperextension of that joint and if you don't have them, get in the habit of breaking your falls by clenching your fist and hitting the snow with your knuckles rather than your palms.

Of the 50 million-plus days spent on the slopes, nationwide, in an average winter (and this winter is on track to be way above average), about 150,000 people get hurt – just .03 percent. However, if you're one of the unlucky ones, you might want to have some good come out of it. Johns Hopkins School of Public Health is conducting a web-based study of ski and snowboard injuries to help cut the number down even more in the future. To participate, log onto www.injury-study.org.

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