The dangerous realities that exist on the slopes

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From slope rage to blown ACLs to crashing into trees to drowning in tree wells, ski slopes can be a dangerous place.

This year, four people have died, including the latest on Jan. 20, a 33-year-old snowboarder who was killed in an accident at Breckenridge’s terrain park. The doctor from Kansas fractured his neck after going airborne in the ski area’s terrain park. He was wearing a helmet.

And last week, a skier at Steamboat died after apparently falling into a tree well head first and suffocating.

These latest accidents prove just how dangerous the slopes can be. But are skiing/snowboarding any more dangerous than other high-energy sports? No, industry experts claim. And for the most part that's true.

National Safety Awareness Week just wrapped up. So how safe are the slopes?

Let's take a look at who, when, where and how people get hurt and die on the slopes, according to the most recent studies, and how to prevent you from joining that crowd.

Are collisions between people on the slopes increasing?

Yes, according to research unveiled at the 2007 International Symposium on Skiing Trauma and Safety (www.ski-injury.com/isss.htm.)

A large-scale study in France showed that 10 percent of injuries on the slope were caused by collisions between people. Jasper Shealy, professor at the Rochester Institute of Technology in Rochester, N.Y. who has studied skiing safety for many years, reported that for the past 30 years the rate had held steady at 6.4 percent of injuries. The French report also found that since 1992, collisions with a static object, such as ski fence, pylon or tree decreased by one-third. It also found that injuries incurred in people-to-people collisions to be more severe compared to noncollision injuries. Head injuries were more than 3 times higher in these accidents and rate of hospitalization was 1.5 times higher.

Who is more likely to be involved in the accident, skiers or snowboarders?

According to findings at the 2007 International Symposium on Skiing Trauma and Safety, the most common type of collision “by far” is snowboarder hitting another snowboarder while skiers most often collide with skiers. According to Shealey’s 1993 study, 7.7 percent of all ski injuries were the result of skiers running into skiers, while 2.6 percent of snowboard accidents are caused this way. Of course, that was before snowboarding had reached its present popularity.

Is the rate of skiing injuries increasing?

Thanks to better equipment, the overall rate of reported skiing injuries has declined by 50 percent over the past 40 years, according to Shealy.

Is the rate of snowboard injuries increasing?

Yes, nearly doubling, according to research, which dates to the 2000/01 season. The rate was nearly 7 injuries per 1,000 visits compared to 3.37 in 1990/91.

What are some trends regarding injuries?

Broken lower legs, once one of the most common injuries to skiers, has decreased by 95 percent from 35 years ago. And after years of an increase in the number of knee injuries, especially ACL, the International Society for Skiing Safety Congress reported that since 2003 knee injuries have been on the decline. The reason for the 35 percent decline in
serious knee injuries is believed to be due to the increased use of shorter skis. However, the number of mid-shaft tibia fractures has increased over the past 20 years after dramatically declining through the mid-1980s. The reason for the increase in tibia fractures appears to be a function of ski-binding-boot systems. Researchers believe that those numbers could be reduced if more people had their skies inspected by qualified ski technicians.

Where do most fatal accidents happen?

Well-groomed blue cruiser trails where the average speed of skiers is 25 to 40 mph.

Have the increased use of helmets decreased the number of serious and fatal head injuries?

Helmet use has been estimated to be about 40 percent of users and has been increasing about 5 percent annually over the past several years. While the use of helmets reduces the number of head injuries by 30 percent to 50 percent, that decrease is generally limited to the less serious injuries. However, according to Shealy's research, there has been no significant reduction in fatalities due to head injury over the past nine seasons despite the increase in helmet use. Still, non-helmet users were greater than two times more likely to have died of head injuries among accidents in which helmet use was known. Just more than one-third of the deaths involved those wearing a helmet, with about half of them also suffering fatal head injuries.

Why no reduction in fatalities?

There are several reasons. Helmets are designed to protect your head up to 12 mph, however, most collisions with trees involve the skier/boarder traveling at least twice to three times that speed. Studies have shown that those wearing helmets ski faster than those without helmets. For non-helmeted skiers, 23 percent of all potentially serious head injuries are more serious than a mild concussion. For helmeted skiers, 67 percent of their potentially serious head injuries are more severe than a mild concussion. Another reason is that two-third of fatalities by those who wear helmets are due to multiple causes or injuries. For those who die while wearing a helmet, only about one-third have a head injury as the first cause of death. Basically, the severity of the incident simply overwhelms the ability of the helmet to prevent death.

What kind of helmet should you get?

A helmet designed for recreational snowsports and that conform to the American Society of Testing and Materials (ASTM) standard F2040. Then you need to wear it correctly.

Who gets fatally injured while skiing and snowboarding?

It should come as no surprise that it's the same people who typically engage in high-risk behavior, namely males in their late teens to 30s. According to Shealy's studies, fatal accidents include 85 percent males and 70 percent are from their late teens to late 30s. Males comprise about 60 percent of skiing participants, and more than 75 percent of snowboarding participants. Also, most of those fatally injured are above-average skiers and snowboarders who are going at high rates of speed on the margins of intermediate trails.

What impact on injuries have the advent of terrain parks had?

Again, France has the largest database for such results. The latest French study found that 2.8 percent of all winter sports accidents occur in terrain parks with snowboarders comprising 65 percent of injuries, which equates to 7 percent of all snowboarding injuries. Terrain park injuries were likely to be more severe than injuries on slopes. Contrary to snowboarding injuries on the slopes, they were less likely to affect the wrist, the No. 1 injury to all snowboarders, and more frequently ACL injuries, the fourth-most common snowboarder injury on slopes.

What are the most common skier and snowboarder injuries?

For skiers, 33.2 percent to the knee, 13.7 percent to the head/face, 9.1 percent to the shoulder, 7.6 percent to lower leg, 5.4 to wrist and 4.9 percent to thumb. For snowboarders, 24.9 percent of injuries were to the wrist, 14.3 percent to head/face, 13.1 to shoulder, 11.8 percent to knee, 5.9 percent to ankle and 4.6 percent to back.

Do wrist guards help prevent injuries, if so what kind, and do people actually wear them?

According to findings at the 2007 International Symposium on Skiing Trauma and Safety, they do work and are well
worth the money. The best ones are those that are not rigid, extend up the forearm and ideally sits along the back of your hand and wrist, not under your palm. Wear rates range from 10 percent to 20 percent of snowboarders. Common concerns about wrist guards are comfort and fear of injury from the guard. Unlike helmets, there are no organizations that have set wrist guard standards. ISSS doctors have created two wrist guards recommended - the Flexmeter and Biomex protection (found in Level gloves).

What are the ski areas doing to improve safety?

Sensing the need to improve safety, ski areas have undertaken several programs to increase ski safety, ranging from establishing family ski areas to more strictly enforcing rules and regulations on the slopes.

Following "Your Responsibility Code" is the key to promoting your and others' safety. If you choose to wear a helmet or use other types of equipment to protect yourself, be sure you understand the limits and proper use of that equipment. Don't let any safety equipment give you a false sense of security.

Recently a man reportedly died at Steamboat after falling into a tree well. How common is this?

About 5 percent of all skiing/snowboarding fatalities are caused by people falling into tree wells, which are created where the boughs of low-hanging conifers create wells below them, mostly in ungroomed areas on the edges of groomed trails. The snow is like quicksand, the more the victim struggles, the deeper they bury themselves and usually suffocate, especially if falling in head first, which usually is the case. Colorado accounts for 17 percent of these kinds of fatalities in North America, trailing British Columbia (24 percent) and California (19 percent). Over the past seven years, snowboarders were twice as likely as skiers to be involved in these accidents.

When do most of the tree well accidents happen?

During or just after big snowfalls when skiers and snowboarders venture off of the groomed trails in search of powder. December and January have more of the documented cases due to the loose and unconsolidated snowpack conditions generally associated with early season.

How do you get out of a tree well?

According to the Northwest Avalanche Institute, Mount Baker Ski Area, Crystal Mountain and Dr. Robert Cadman, in experiments with skilled volunteers, 90 percent couldn't get out and had to be saved. If a partner is not there to get the person out, as in avalanche rescue, the odds are against you getting out alive. If you see or find your partner caught in a tree well, yell for help but do not leave for help. You are there chance of survival by digging or pulling them out. Time is of the essence. Try and uncover the person's head first to help create an airway. Then make sure there is no snow in the mouth to help the person breath. Staying in visual contact with your partner on the slope is critical to you being able to help them.

What if you're by yourself and need to self-rescue?

First, remove your pole straps before heading down an ungroomed powder slope, as pole straps can hamper creating air space should you fall into a tree well. As you ski or ride, avoid looking at the trees, rather look at the areas in between them. Your body usually will go toward where you are looking. If you find yourself heading into a tree well, do anything and everything you can to avoid going head first, such as grabbing branches, hugging the tree or rolling your body to get your feet below you. Try to stay calm and resist the urge to struggle violently as this will only suck you deeper into the well. Create breathing space around your face then move your body carefully in a rocking manner.