

Helmets Could Cut Trauma Risk in Snow Sports

BY HEIDI SPLETE
Senior Writer

Use of helmets by skiers and snowboarders could reduce head injury risk—a leading cause of injury and death in this population—by as much as 60%, according to the findings of a meta-analysis.

To characterize traumatic brain injuries (TBI) and spinal cord injuries (SCI) in skiers and snowboarders and to assess prevention strategies, Alun Ackery, a medical student at the University of Toronto and colleagues reviewed 24 articles from 10 countries published between January 1990 and December 2004 that were associated with skiing, snowboarding, or both.

The findings show an increasing incidence of both TBI and SCI, in part because of the growing popularity of high-speed and acrobatic maneuvers on skis and snowboards (*Inj. Prev.* 2007;13[6]:368-75).

A study from the United States found that 88% of all skiing and snowboarding deaths resulted from head injuries, based on data from a trauma registry. And a Canadian study found that a majority of SCIs occurred among expert snowboarders during jumps ranging from 2 feet to 25 feet.

Young men sustain the most head and spine injuries from skiing and snowboarding, according to several studies in the meta-analysis. A study of data from two complete ski seasons in British Columbia, Canada, found that 70% of

SCIs in skiers and 100% of SCIs in snowboarders occurred in men. The mean age of the injured male skiers was 35 years and the mean age of the injured snowboarders was 22 years.

In addition, data from a 10-year study conducted by researchers at the Innsbruck (Austria) University Hospital showed an increase in winter sports injuries between 1982 and 1992 that could be attributed to speed and collisions, and that nearly 40% of spinal injuries from winter sports occurred in young men aged 15-25 years.

Data from the Consumer Product Safety Commission showed an increased percentage of head injuries in skiers from 12% in 1993 to 15% in 1997, and the estimated number of head injuries in snowboarders jumped from 1,000 in 1993 to 5,200 in 1997. Head injuries accounted for 14% of all ski and snowboard injuries in children and teens aged 15 years and younger.

Additional data from the commission suggest that wearing a helmet could prevent 44% of head injuries while skiing or snowboarding and reduce head injuries in children and teens aged 15 years and younger by 53%. But many countries have no standards for helmet use in these sports.

The researchers recommended the use of helmets “by all skiing and snowboarding participants [and] the promotion



Most countries do not require skiers or snowboarders to wear a helmet, even though doing so would reduce head injuries.

and enforcement of standards for ski and snowboarding helmets in countries in which these activities are common.”

Although some concerns have been raised about increased risk of cervical spine injuries in children caused by helmet use, the accident data don't support this risk. And parents should be cautioned that helmets should be properly fitted to the child's current size, not bought larger to allow “room to grow,” the researchers noted. ■

Surgical Technique Improves Hamstring Rupture Outcomes

BY TIMOTHY F. KIRN
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Chronic proximal hamstring ruptures that are repaired surgically with a reconstruction technique that involves an Achilles allograft and interference screw fixation can result in patients' return to full activity, according to a report on 26 patients.

Hamstring strains account for 25%-30% of all muscle strains, and—often after a lengthy convalescence—recovery is complete and uneventful. Complete rupture of the proximal hamstring tendon, however, is more serious and often requires surgical treatment, whether the rupture is acute or chronic. Although two prior studies on reconstructions in chronic injuries have shown “less than optimal results,” the investigators, Dr. Greg J. Folsom and Dr. Christopher M. Larson, who are orthopedic surgeons in Eden Prairie, Minn., note that prior published reports on chronic ruptures are retrospective and have small sample sizes because this injury is rare.

In this study, 26 patients with a mean age of 44 years (range, 16-58 years) were randomized as having an acute or chronic rupture.

A total of five patients had ruptures that had occurred 4-116 months prior to surgery, and thus qualified as chronic ruptures.

At follow-up, some of those patients had limitations, but all reported being more active and feeling stronger than before surgery. Three of the patients in the chronic group had a complete recovery and returned to athletic en-

deavors. Of those, two were classified as recreational athletes (defined as engaging in a highly physical activity at least once a week), and one was classified as an elite athlete.

One patient returned to sporting activities but was unable to jog long distances. The final patient complained of pain with vigorous activity and reported being unable to jog.

All patients reported satisfaction with the results, but one indicated the intention to decline the surgery a second time (*Am. J. Sports Med.* 2007 [Epub doi:10.1177/0363546507312167]).

The mean time of follow-up in the chronic patients was 17 months (range, 6-33 months).

In the group of 21 patients who underwent surgery acutely (defined as within 4 weeks of the injury), 9 patients returned to full activity and 15 returned to sports activity. Five patients did not return to sporting activity because of their injury, and one patient was lost to follow-up.

Four of the acute surgery patients reported pain with activity, six reported muscle spasms, one reported poor leg control, and one reported that the leg was giving way.

Mean follow-up in the acute group was 14 months (range, 5-43 months).

No adverse events occurred in the chronic-rupture group, but three major adverse events occurred in the acute group. One patient fell 4 months after surgery and reinjured the hamstring, one developed a complex regional pain syndrome with frequent spasms, and one developed a deep infection. ■

Electrical Stimulation Fails to Speed Stress Fracture Healing

BY HEIDI SPLETE
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Capacitively coupled electrical field stimulation did not significantly shorten the healing time when it was used to treat tibial stress fractures, according to the results of a randomized trial.

Tibial stress fractures have become an increasingly common problem, especially among athletes and military recruits. Few effective management techniques exist to treat stress fractures, but electrical stimulation has been shown to enhance healing of regular fractures, Belinda R. Beck, Ph.D., of Griffith University in Queensland, Australia, and her colleagues wrote.

The investigators conducted a randomized trial that yielded complete results for 19 men and 24 women with acute posteromedial tibial stress fractures. The average ages of the 8 men who received treatment and 11 men who received the placebo were 28 years and 26 years, respectively. The average ages of the 14 women who received treatment and the 10 women who received the placebo were 28 years and 24 years, respectively. More than half of the subjects (10 men and 14 women) reported distance running as their primary sporting activity.

The patients were randomized to receive either actual or sham electrical field stimulation for 15 hours/day until the stress fracture was healed. Healing was defined as the time when a patient could hop on the injured leg to a height of 10 cm for 30 seconds without pain.

Treatment was delivered via a portable, battery-powered capacitively coupled electrical field (CCEF) device worn around the lower leg (*Am. J. Sports Med.* 2007 [Epub doi: 10.1177/0363546507310076]). In addition,

all patients were instructed to consume one 500-mg chewable calcium supplement each day and to avoid weight-bearing activities.

Overall, no difference in the average time to healing was found between the treatment and placebo groups (29 days vs. 26 days), although women in the treatment group took significantly longer to heal, compared with the men in the treatment group (31 days vs. 23 days). No sex differences in healing times were noted in the placebo group.

But those patients in either group who were the most compliant with their treatment protocols healed significantly faster than those who were less compliant.

More hours of daily device use were significantly associated with a shorter healing time within the test group. Specifically, patients who used the device for more than 12.25 hours/day healed significantly faster than those who used the device for less than 12.25 hours/day. No similar association was noted in the placebo group.

Engaging in more weight-bearing activity (which was noncompliant with instructions to rest and avoid excessive weight-bearing activity) was significantly associated with a longer healing time from baseline in the test group, compared with the placebo group.

Although there were no discernible effects of injury severity on healing within the treatment group, the patients with grades 3 and 4 tibial stress fractures in the treatment group healed 24.5 days faster than patients with grades 3 and 4 tibial stress fractures in the placebo group.

The researchers had no financial conflicts to disclose, but the Ortho-Pak devices used in the study were supplied by Bioelectron Inc. ■