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## Ski patrollers: Reluctant role models for helmet use

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## Abstract

**Objective**—Ski helmets reduce the risk of traumatic brain injury (TBI), but usage rates are low. Ski patrollers could serve as role models for helmet use, but little is known about their practices and beliefs.

**Design**—A written survey was distributed to ski patrollers attending continuing education conferences.

**Questions addressed**—helmet use rates; prior TBI experiences; perceptions of helmet risks and benefits; and willingness to serve as safety role models for the public. To assess predictors of helmet use, odds ratios were calculated, after adjusting for skiing experience.

**Subjects**—Ninety-three ski patrollers participated.

**Main Outcome**—Self-reported helmet use of 100% while patrolling.

**Results**—Helmet use was 23% (95% CI 15–32%). Common reasons for non-use included impaired hearing (35%) and discomfort (29%). Most patrollers believed helmets prevent injuries (90%; 95%

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CI 84–96%) and that they are safety role models (92%; 95% CI 86–98%). However, many believed helmets encourage recklessness (39%; 95% CI 29–49%) and increase injury risks (16%; 95% CI 7–25%). Three factors predicted 100% helmet use: perceived protection from exposure (OR = 9.68; 95% CI 3.14–29.82) or cold (OR = 5.68; 95% CI 1.27–25.42); and belief that role modeling is an advantage of helmets (OR = 4.06; 95% CI 1.29–12.83). Patrollers who believed helmets encourage recklessness were 8 times less likely to wear helmets (OR = 0.13; 95% CI 0.03–0.58).

**Conclusions**—Ski patrollers know helmets reduce serious injury and believe they are role models for the public, but most do not wear helmets regularly. To increase helmet use, manufacturers should address hearing- and comfort-related factors. Education programs should address the belief that helmets encourage recklessness and stress role modeling as a professional responsibility.

## Keywords

traumatic brain injury; helmets; ski patrollers; skiing; snowboarding

## 1. Introduction

Alpine skiing and snowboarding are popular recreational activities, although they are associated with some degree of risk. There were an estimated 10.6 million snowsports participants in the United States during the 2006–2007 season; there were 22 reported fatalities, representing 0.40 fatalities per million participant-days (National Ski Association, [www.nsaa.org/nsaa/press/facts-ski-snbd-safety.asp](http://www.nsaa.org/nsaa/press/facts-ski-snbd-safety.asp)). For comparison, the fatality rate among recreational bicyclers (0.42 fatalities per million participant-days) is almost identical (National Ski Association, [www.nsaa.org/nsaa/press/facts-ski-snbd-safety.asp](http://www.nsaa.org/nsaa/press/facts-ski-snbd-safety.asp)).

A large proportion of skier and snowboarder fatalities are attributable to traumatic brain injury (TBI). One study of 149 fatal skier and snowboarder injuries in Colorado attributed death to TBI in 42.2% of adults and 66.7% of children (Xiang & Stallones, 2003; Xiang, Stallones, Smith, 2004). A separate trauma registry review found that 29% of skiing- and snowboarding-related hospital admissions and 87.5% of fatalities were caused by TBI (Levy, Hawkes, Hemminger, Lee & Knight, 2002).

Not surprisingly, the issue of helmet use in skiing and snowboarding has been the target of mainstream media coverage as well as extensive clinical, epidemiologic and biomechanics research (Brooke, 1998, January 7; Janofsky 2002, March 31; Kenworthy, 1998, January 1). In 1999 the United States Consumer Product Safety Commission estimated that 44% of all snowsports-related TBIs (and 53% in children) could be prevented by helmet use (Consumer Product Safety Commission, 1999). More recent studies have demonstrated a 29–60% TBI risk reduction (and a 66% reduction in severe TBI) among helmet users (Hagel, Pless, Goulet, Platt & Robitaille, 2005; Sulheim, Holme, Ekland & Bahr, 2006).

Helmet use among recreational skiers and snowboarders remains suboptimal, although it has increased in recent years. In a 2006–2007 survey of more than 68,000 skiers and snowboarders, 40% indicated that they were wearing a helmet at the time of sampling, compared with only 25% in 2002 (National Ski Areas Association, 2007). A variety of strategies have been proposed to increase helmet use among skiers and snowboarders, including educational campaigns, helmet use requirements, legislation and helmet giveaway programs (McClellan, 2002, May 1; Michigan House Bill 5628, 94th legislature, regular session of 2008; National Ski Areas Association, [www.LidsOnKids.org](http://www.LidsOnKids.org); National Ski Areas Association, [www.nsaa.org/nsaa/press/0708/nsaw-08-events.asp](http://www.nsaa.org/nsaa/press/0708/nsaw-08-events.asp); Pennington, 2007, January 26; Utah Department of Health, 2004, December 3; Vermont Snow Sports Research Team, 2007). Yet, little attention has been paid to ski patrollers, who could serve as highly visible role models for helmet use. Indeed, according to the “prestige bias” theory from social psychology,

members of a population will preferentially copy those whom they view as prestigious or highly skilled (Henrich & Gil-White, 2001; Richerson & Boyd, 2005). However, little is known about the attitudes and practices of ski patrollers regarding helmet use, nor about their willingness to serve as role models for the skiing and snowboarding public.

The overall objective of this study was to assess the practices, attitudes and beliefs of ski patrollers regarding helmet use. Specifically, we sought to determine: a) self-reported helmet use among ski patrollers; b) ski patrollers' beliefs regarding the benefits, risks or discomforts associated with helmet use; c) whether ski patrollers' use of helmets was associated with age, ski patrol experience, prior head injury or other factors; d) common reasons for helmet non-use; and e) the degree to which ski patrollers accept, or reject, the argument that they should serve as role models for safe skiing and snowboarding.

## 2. Methods

A 16-item questionnaire was distributed to a convenience sample of volunteer and paid ski patrollers who were attending continuing education lectures covering a variety of ski patrol-related medical topics. The survey was offered between 2004 and 2006 to members of four different Colorado ski patrols. The survey was also sent by email to the entire distribution list of one additional volunteer ski patrol. None of the ski areas required that patrollers wear helmets when on duty. All participants were 18 years of age or older. The survey was voluntary and took approximately five minutes to complete. Informed consent was obtained from all participants. The study was reviewed and approved as exempt by the institutional review board.

### 2.1. Survey instrument

The survey included demographic and personal variables addressing age, gender, skiing or snowboarding ability level and seasons of experience. Respondents were asked if they have children who ski or snowboard and if they require their children to wear a helmet. The remaining questions were designed to measure ski patrollers' experiences, attitudes, practices, and beliefs in four domains: a) helmet ownership and frequency of use while patrolling; b) helmet use during other recreational activities; c) history of a skiing- or snowboarding-related injury or TBI involving the ski patroller or "someone close;" and d) beliefs regarding the risks, benefits and discomforts of helmet use. We also asked participants whether ski patrollers should serve as role models for safety. Two questions addressed this topic: a) "Do you see yourself as a positive role model for children and adults who are learning to ski or snowboard?" and b) "Is serving as a positive role model an advantage to wearing a helmet?"

The majority of the survey questions were presented in a yes-no format. For example, participants were asked, "Do you believe that ski helmets reduce serious injuries?" and "Have you or someone close to you been seriously injured while skiing or snowboarding?" For the variable "age," participants were asked to select one of four categories: 18–25; 26–35; 36–45; or over 45 years. Skiing or snowboarding proficiency was categorized by participants as I (Beginner), II (Intermediate) or III (Advanced). Experience (total seasons skiing or snowboarding) was recorded as a continuous variable. Participants were provided a list of potential reasons for helmet non-use (for example, "cannot hear my radio" and "I am an expert skier") and were instructed to "check all that apply." After pilot testing, the questions and response options were revised to improve clarity and content validity.

### 2.2. Outcome measures

The principal objective of this study was to measure full-time helmet use during patrol-related skiing and snowboarding. Therefore, "helmet use" was defined as wearing a helmet 100% of the time. All other responses (0–99%) were considered helmet non-use.

### 2.3. Data analysis

The analysis of the survey data proceeded in two steps. First, demographic characteristics of participants and their survey responses were summarized using means and standard deviations or medians and ranges for continuous variables and proportions and 95% confidence intervals for categorical variables.

Second, bivariate analyses were performed to test for associations between the principal outcome (100% helmet use) and a variety of ski patroller characteristics. These included: age; gender; skiing or snowboarding experience; parental status; and beliefs regarding the risks and benefits of helmet use. To measure the strength of the associations between each of these variables and helmet use, odds ratios (ORs) and 95% confidence intervals were calculated, after adjusting for skiing experience. Adjustment was performed using standard Cochran-Mantel-Haenszel statistics, after defining two strata of experience (less than 20 seasons vs. 20 seasons or more). The decision to calculate experience-adjusted ORs was made *a priori*, as it was felt that seasons of skiing or snowboarding experience is likely to influence the knowledge, experiences and attitudes of ski patrollers regarding helmets as well as the decision to wear a helmet. Survey participants were not required to answer every question. Question-specific response rates ranged from 74–100%.

## 3. Results

### 3.1. Characteristics of study subjects

Surveys were returned by a convenience sample of 93 ski patrollers. Two-thirds of the patrollers were men, and 70% were 45 years of age or younger (Table 1). Most participants were skiers (72%) and were highly experienced (median = 27, range = 4–28 seasons); almost all (97%) considered themselves to be experts. Almost half of survey participants (49%) had prior experience with a serious injury involving themselves or someone close to them; 23% of participants reported a prior experience with a serious TBI.

### 3.2. Helmet use: Practices, attitudes and beliefs

Only 23% (95% CI 15–32%) of ski patrollers reported that they always wore a helmet during patrol skiing; 26% (95% CI 17–35%) reported they were part-time users (1–99%), and 51% (95% CI 40–61%) reported never wearing one.

As summarized in Table 2, most participants (94%; 95% CI 89–99%) believed there is some safety advantage to wearing a helmet; the majority also believed that helmets reduce the risk of a serious injury (90%; 95% CI 84–96%). However, 39% (95% CI 29–49%) of survey participants believed that helmet use encourages reckless skiing and snowboarding, while 16% (95% CI 7–25%) believed that helmets can increase injury severity.

Seventeen percent of participants said they had children under age 18 who ski or snowboard; the majority of these parents (75%; 95% CI 54–96%) required that their children wear helmets.

The reasons cited by patrollers for not wearing a helmet are listed in Table 3. The most common reasons were related to hearing and comfort, while factors such as style and price were the least often mentioned.

### 3.3. Factors associated with 100% helmet use

Helmet use was not associated with age, gender, ability level, snowsports experience, TBI experience or having children involved in snowsports. Helmet use was also not associated with the belief that there are safety advantages to wearing a helmet or with the belief that helmets reduce injury risks.

As shown in Table 4, three factors were positively associated with 100% helmet use: the belief that helmets protect against environmental exposure (OR = 9.68; 95% CI 3.14–29.82); the belief that helmets provide warmth (OR = 5.68; 95% CI 1.27–25.42); and the belief that “serving as a role model” is an important advantage of wearing a helmet (OR = 4.06; 95% CI 1.29–12.83). One belief was strongly associated with helmet *non-use*: Patrollers who believed that wearing a helmet encourages reckless skiing or snowboarding were almost eight times more likely *not* to wear a helmet regularly while patrolling (OR = 0.13; 95% CI 0.03–0.58).

### 3.4. Factors associated with belief that ski patrollers are positive role models

More than 92% (95% CI 86–98%) of ski patrollers viewed themselves as a “positive role model for children and adults who are learning to ski or snowboard.” However, there was no association between acceptance of this role and helmet use (OR = 1.46; 95% CI 0.16–13.71). There was also no association between belief that ski patrollers are positive role models and any of the other predictor variables (age, gender, snow sport type, ability level, experience, professional or volunteer patrol status, prior injury to self or someone close, prior TBI to self or someone close or having children who ski or snowboard).

## 4. Limitations

This study has several important limitations. It is based on a small convenience sample, collected from a limited number of ski areas in a single state. The small sample size limits the precision of our results and the power to detect associations between experiences, attitudes and beliefs and helmet use. Additionally, we could not collect any information about the larger population of ski patrollers from whom our small sample was drawn; therefore, we cannot assess the direction or magnitude of any nonparticipation bias. Also, all of the data were derived from self-reports of helmet use, experiences and beliefs, and there is no assurance that the responses are reliable or valid. The survey did not include detailed definitions of terms such as “serious traumatic brain injury,” “serious injury,” or “reckless skiing.” Finally, the survey was distributed at medical education conferences. There is the possibility that selection bias was introduced, because conference attendees may have been more aware of skiing- and snowboarding-related hazards or other medical issues. Recall bias (of previous TBI experiences) may also have resulted from the medical nature of the conferences.

## 5. Discussion

This study provides new information about the practices and beliefs of ski patrollers regarding helmet use, and about their willingness to serve as role models for the skiing and snowboarding public. We are not aware of any other published studies examining this topic.

The results suggest that there is a discordance between the beliefs of ski patrollers and their behavior. Patrollers are convinced that helmets reduce serious injury, that they serve as role models for other skiers and snowboarders, and that serving as a role model is a benefit of wearing a helmet. Nevertheless, only a minority (23%) wear helmets all of the time. They cited hearing- and comfort-related factors most often as reasons for helmet non-use. While a large majority knew that helmets reduce the risk of TBI, sizeable proportions felt that helmets also encourage reckless skiing or increase the risk of injury.

Importantly, the belief that helmets encourage recklessness was a strong predictor of helmet non-use. Thus, this study suggests that a large proportion of ski patrollers adhere to the “risk compensation,” or “risk homeostasis,” theory. This idea posits that individuals who use helmets – like those who use safety belts, gun safety locks, back country avalanche beacons or other protective devices – will respond to the intervention by increasing their risk-taking behavior to meet an intrinsic level of acceptable risk, negating the overall preventative effects of the

intervention (Hagel, 2004; Hedlund, 2000). To date, research specific to skiing and snowboarding has not demonstrated a significant increase in at-risk behaviors or in non-head traumatic injuries (reflecting speed or recklessness) among helmet users (Hagel, Pless, Goulet, Platt & Robitaille, 2005; Macnab, Smith, Gagnon & Macnab, 2002; Scott et al., 2007). Nonetheless, this misconception was prevalent among the ski patrollers we questioned, and it was strongly associated with helmet non-use. Education programs aimed at countering this belief could be an effective method to increase helmet use among professional ski patrollers.

The current study also demonstrated that a large proportion of ski patrollers accepted the label of “positive role model” for safe skiing and snowboarding, and a majority of respondents felt that acting as a role model is a reason to wear a helmet. However, no one has measured whether role modeling or helmet use by ski patrollers is important or influential from the skiing and snowboarding public’s point of view.

#### 4.1. Implications for injury prevention

This study identifies a number of interventions that could increase helmet use by ski patrollers. Manufacturers should be encouraged to address hearing, vision and comfort-related factors, since patrollers identified these as the most common barriers to regular helmet use. Educational programs for ski patrollers should also be designed to address the misconceptions identified in this study. The patrollers in our sample were well aware that helmets reduce the risk of TBI. However, 16% of patrollers believed that helmets increase the risk of serious injury, and nearly 40% believed that helmets encourage reckless skiing (the risk compensation theory). The latter perception was a strong predictor of helmet non-use. These beliefs should be addressed in ski patrollers’ educational curricula, using the best available scientific evidence. Indeed, current biomechanical and epidemiologic data demonstrate that helmets reduce the incidence and severity of TBI, which accounts for a large portion of morbidity and mortality among skiers and snowboarders.

Helmet use among the skiing and snowboarding public remains suboptimal, and further measures are needed to increase helmet use and decrease the risk of TBI. This study identifies ski patrollers as potential role models for helmet use. Most ski patrollers accept this role, and educational interventions could be developed to reinforce the role of wearing a helmet as part of ski patrollers’ professional responsibilities. At the same time, additional studies should be performed to measure the impact of ski patrollers’ behavior on the attitudes and behaviors of the general public.

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#### References

1. Brooke J. High-profile skiing deaths put spotlight on head injury prevention. *New York Times*. 1998 January 7;

2. Consumer Product Safety Commission. Skiing helmets: An evaluation of the potential to reduce head injury. Washington, DC: US Government Printing Office; 1999.
3. Hagel BE, Meeuwisse W. Risk compensation: A “side effect” of sport injury prevention? *Clin J Sport Med* 2004;14(4):193–6. [PubMed: 15273524]
4. Hagel BE, Pless IB, Goulet C, Platt R, Robitaille Y. Effectiveness of helmets in skiers and snowboarders: case-control and case crossover study. *BMJ* 2005;330(7486):281. [PubMed: 15632094]
5. Hagel BE, Pless IB, Goulet C, Platt R, Robitaille Y. The effect of helmet use on injury severity and crash circumstances in skiers and snowboarders. *Accid Anal Prev* 2005;37(1):103–8. [PubMed: 15607281]
6. Hedlund J. Risky business: safety regulations, risk compensation, and individual behavior. *Inj Prev* 2000;6(2):82–90. [PubMed: 10875661]
7. Henrich J, Gil-White F. The evolution of prestige freely conferred deference as a mechanism for enhancing the benefits of cultural transmission. *Evolution and Human Behavior* 2001;22:165–96. [PubMed: 11384884]
8. Janofsky M. Record Colorado ski deaths prompt calls for helmets. *New York Times*. 2002 March 31;
9. Kenworthy T. Michael Kennedy dies in accident on Aspen slopes. *Washington Post*. 1998 January 1;
10. Levy AS, Hawkes AP, Hemminger LM, Lee M, Knight S. An analysis of head injuries among skiers and snowboarders. *J Trauma* 2002;53(4):695–704. [PubMed: 12394869]
11. McClellan, D. Colorado ski areas consider ski school helmet mandates. 2002 May 1. Retrieved March 31, 2008 from Outdoor Retailer Web site: <http://www.allbusiness.com/retail-trade/miscellaneous-retail-miscellaneous/4254702-1.html>
12. Macnab AJ, Smith T, Gagnon FA, Macnab M. Effect of helmet wear on the incidence of head/face and cervical spine injuries in young skiers and snowboarders. *Inj Prev* 2002;8(4):324–7. [PubMed: 12460972]
13. Michigan House Bill 5628, 94<sup>th</sup> legislature, regular session of 2008. (2008, January 18) Retrieved March 31, 2008 from <http://legislature.mi.gov/doc.aspx?2008-hb-5628>
14. National Ski Areas Association. Events for National Safety Awareness Week. 2008. Retrieved March 31, 2008 from <http://www.nsa.org/nsaa/press/0708/nsaw-08-events.asp>
15. National Ski Areas Association. Facts about skiing/snowboarding safety. 2007. Retrieved March 31, 2008 from [www.nsa.org/nsaa/press/facts-ski-snb-safety.asp](http://www.nsa.org/nsaa/press/facts-ski-snb-safety.asp)
16. National Ski Areas Association. LidsOnKids.org. 2008. Retrieved March 31, 2008 from <http://www.lidsonkids.org>
17. National Ski Areas Association. National Demographic Survey. Boulder, CO, USA: RRC Associates; 2007.
18. Pennington B. Showing young skiers that ‘really cool’ athletes wear helmets. *New York Times*. 2007 January 26;
19. Richerson, P.; Boyd, R. Not by genes alone: How culture transformed human evolution. Chicago: University of Chicago Press; 2005. p. 124
20. Scott MD, Buller DB, Andersen PA, Walkosz BJ, Voeks JH, Dignan MB, Cutter GR. Testing the risk compensation hypothesis for safety helmets in alpine skiing and snowboarding. *Inj Prev* 2007;13(3):173–7. [PubMed: 17567972]
21. Sulheim S, Holme I, Ekland A, Bahr R. Helmet use and risk of head injuries in alpine skiers and snowboarders. *JAMA* 2006;295(8):919–24. [PubMed: 16493105]
22. Utah Department of Health. Utah Department of Health offers free ski/snowboard helmets [press release]. Salt Lake City, Utah, USA: Utah Department of Health; 2004 December 3.
23. Vermont Snow Sports Research Team. PHAT: Protect Your Head On All Terrain. 2007. Retrieved March 31, 2008 from <http://www.skihelmetsafety.org>
24. Xiang HY, Stallones L. Deaths associated with snow skiing in Colorado: 1980–1981 to 2000–2001 ski seasons. *Injury* 2003;34(12):892–96. [PubMed: 14636729]
25. Xiang H, Stallones L, Smith GA. Downhill skiing injury fatalities among children. *Inj Prev* 2004 Apr. 10;2:99–102. [PubMed: 15066975]

**Table 1**

Characteristics of participants (n = 93).

Characteristic		Number	Percent
Age in years	18–25	14	15
	26–35	26	28
	36–45	25	27
	> 45	28	30
Gender (male)*		61	79
Snowsports discipline	ski	67	72
	snowboard	6	6
	telemark	20	22
Experience (number seasons)	< 20	27	29
	20 or more	66	71
Ability level †	beginner	0	0
	intermediate	3	3
	expert	87	97
Prior serious injury “to self or someone close”		36	49
Prior serious traumatic brain injury “to self or someone close” <sup>a</sup>		17	23

\* Gender was reported by 77 of the 93 survey participants.

† Ability level was reported by 90 of the 93 participants.

<sup>a</sup> Prior serious traumatic brain injury to self or someone close was reported by 74 of 93 survey participants.



**Table 2**

Beliefs of ski patrollers regarding helmet use.

<b>Wearing a helmet while skiing or snowboarding:</b>	<b>Number</b>	<b>Percent</b>	<b>95 Percent CI</b>
Provides “some” advantage (93)	87	93	88% – 98%
Provides a safety advantage (93)	87	94	89% – 99%
Reduces risk of major injuries (90)	81	90	84% – 96%
Encourages reckless skiing (87)	34	39	29% – 49%
Increases risk of serious injury (69)	11	16	7% – 25%
Provides advantage of warmth (93)	62	67	57% – 77%
Provides advantage of being a positive role model (93)	48	52	42% – 62%

Note: Numbers in parentheses refer to number of ski patrollers responding to the question.

**Table 3**

Reasons ski patrollers do not wear helmets (n = 93).

Reason	Number	Percent	95 Percent CI
Cannot hear	33	35	25% – 45%
They are hot	28	30	21% – 29%
They are uncomfortable	27	29	20% – 38%
Interfere with vision	22	24	15% – 33%
Cannot hear radio	21	23	14% – 30%
I am cautious	16	17	9% – 25%
I am an expert	15	16	9% – 23%
There are no benefits	11	12	5% – 19%
Not stylish	10	11	5% – 17%
Socially unacceptable	9	10	4% – 16%
They are expensive	7	8	2% – 14%

**Table 4**

Experiences and beliefs associated with helmet use.

<b>Belief</b>	<b>Odds Ratio *</b>	<b>95 Percent CI</b>
Belief that helmets protect against exposure	9.68	3.14 – 29.82
Belief that helmets offer the advantage of warmth	5.68	1.27 – 25.42
Belief that role modeling is an advantage to helmet use	4.06	1.29 – 12.83
Belief that helmets encourage reckless skiing	0.13	0.03 – 0.58

\* Odds ratios are adjusted for number of seasons of skiing or snowboarding experience.