

Helmet and wrist protectors in snow sport: effect and specifications

Owing to the high number of accidents, the prevention of snow-sport accidents is one of the key aspects of Swiss Council for Accident Prevention bfu work in the field of sport. In a study, the extent of injuries was analysed and the importance of a helmet and other protective articles in snow sports clarified. The specifications which wrist protectors for snowboarders must satisfy are also presented.



Problem and Objective

According to the extrapolations of the Swiss Council for Accident Prevention bfu, every year around 67 000 skiers and snowboarders (approximately 42 000 skiers and 25 000 snowboarders) injure themselves so badly as to need medical treatment. Based on statistical analyses containing details of sport accidents and supported by a comprehensive overview of literature on head and wrist injuries in snow sport, it must be assumed that approximately 15% of skiing and snowboarding casualties suffer injuries to their head or neck. 20% of snowboarding accidents result in wrist injuries. According to a representative bfu survey from March 2003, 13% of skiers and 20% of snowboarders wear helmets and 36% of snowboarders wear wrist protectors.

With this study, bfu aims to close the gaps in the knowledge of specifications for protective gear for skiers and snowboarders. The knowledge and experience of a group of experts from Germany, Austria, France and Switzerland was collated to this purpose.

Using a Delphi survey, i.e. a structured series of surveys of experts, a consensus was sought on personal protective gear in snow sport, corresponding to the informed opinion of the majority of experts. Experts from various specialized snow-sports sectors participated in the survey. Information was gathered on which articles of protective equipment were practical and which should be worn and actively promoted in work on accident-prevention. Questions were also put on whether a ski helmet should differ from a snowboarding helmet and which functions wrist protectors should perform for snowboarders.

Results

Almost all the 30 snow-sport experts questioned are convinced of the advisability of wearing a helmet and for all skiers and snowboarders regardless of age or level of skill. They are of the opinion that a ski helmet, which conforms to the EN SN Norm 1077, is suitable for both skiers and snowboarders.

The experts also believe that measures should be taken to increase the proportion of snowboarders wearing wrist protection. The experts were intensively involved with the question of requirements for snowboarding wrist protectors. Based on their feedback, the bfu has drawn up ten requirements.

Specifications for snowboarding wrist protectors

1. The wrist protector must have a palmar-positioned stabilizing element (inner hand, wrist and forearm).
2. The stabilizing element must stretch in a distal direction (towards the hand) proximal to the metacarpophalangeal joint but no further.
3. The stabilizing element must reach in a proximal direction (towards the elbow) to the middle of the forearm.
4. The stabilizing element must have a dorsal curvature of 25° to 30°.
5. The stabilizing element must be designed so that it dampens impact on the wrist and the underside of the forearm.
6. The middle section of the stabilizing element must be fairly rigid.
7. The ends of the stabilizing element must be slightly less rigid than the middle section. They may not have a sharp edge and should be fairly broad in shape.
8. The stabilizing element must be firmly fixed on the hand, the wrist and the forearm, whereby the anchorage must be continuously adjustable.
9. The stabilizing element must be thermostable.
10. The wrist protector
 - must be made of material, which does not irritate the skin,
 - must be able to largely absorb moisture caused by perspiration,
 - must be washable.

Conclusions

The experts consider the wearing of a helmet while skiing or snowboarding and the use of wrist protectors while snowboarding to be essential measures for the avoidance of injury. A ski helmet conforming to the EN SN Norm 1077 is suitable for both skiers and snowboarders. This bfu list of specifications for wrist protectors can form the basis for the design of an effective product, serve as a purchasing guide for the consumer and provide the bfu with the basis for assessment of wrist protectors for the awarding of the bfu safety mark.

Source

Brügger, O. (2004). *Helm und Handgelenkschutz im Schneesport: Wirkung und Anforderungen (bfu-Report Nr. 54, with summary in English)*. Berne: Swiss Council for Accident Prevention bfu.

Imprint

bfu, Laupenstrasse 11
CH-3008 Berne
Phone 031 390 22 22
Fax 031 390 22 30
www.bfu.ch

Contact:
Othmat Brügger
Phone 031 390 21 64
o.bruegger@bfu.ch

© Reproduction is
welcome indicating
the source.