

THINKFIRST CANADA'S ALPINE SKIING & SNOWBOARDING INJURY PREVENTION TIPS



Skiing and snowboarding are popular sport and recreation activities for Canadians. In 2007, approximately 4.3 million Canadians 12 years and older participated in one or more forms of skiing (alpine or cross-country), snowboarding, or a combination of those sports.¹ Unfortunately, like all sport and recreational activities, there is an element of risk and injury.

ThinkFirst Canada's tip sheet provides information on helmet use, injuries, top tips and efforts to reduce your chances of sustaining a catastrophic injury while skiing and boarding.



Vancouver Charter on Skiing Safety

Launched by Safe Kids Canada², the [Vancouver Charter on Skiing Safety](#) encourages the use of helmets during skiing and snowboarding activities. The aim of the Charter is to promote a safe, healthy and active sporting and recreational culture, making its principles visible to the public, citizens and institutions.

DID YOU KNOW...

- The Vancouver Charter on Skiing Safety is based on the Turin Charter on Skiing and Snowboarding Safety, which was created during the 2006 Turin Winter Olympic Games. Following the Games, Italy passed National legislation making it mandatory for children under the age of 14 to wear a helmet while skiing or snowboarding.
- British Columbia is the first Province to endorse the Charter, which was created in the context of the 2010 Winter Olympic Games.
- To learn more about the Vancouver Charter visit: <http://www.safekidscanada.ca>

Before Skiing and Boarding...**THINKFIRST!**

Safe skiing and snowboarding involves wearing and using the right gear. Key factors to remember are:

- always wear a certified helmet
- make sure the equipment is maintained and in good working order
- it is the responsibility of skiers and snowboarders to use the right equipment for the type of skiing and snowboarding they like to do, as well as the skill level that they are at. Ask a professional for assistance with selecting the right equipment.

Helmets reduce the severity of some injuries, but they are only one piece of the injury prevention puzzle.

WEAR THE RIGHT GEAR! DID YOU KNOW...

- Wrist guards are underused by snowboarders.³
- Wrist guards are effective at significantly reducing the risk of wrist injuries, as well as preventing wrist injuries among snowboarders.³

thinkfirst.ca

Before you Play & Return to Play!

Helmet Use in Canada

thinkfirst



pensez d'abord
CANADA
thinkfirst.ca

The National Consumer Profile and Satisfaction Survey conducted by the Canadian Ski Council (CSC) found⁴:

- helmet use by Canadian skiers and riders increased from 67% in 2006 to 71% in 2010; 14% higher than helmet usage by American skiers and riders (57%)
- improvements were found in helmet usage by several age groups (see Table 1)

Before Skiing and Boarding...
THINK FIRST!

- Taking a lesson is the best way for skiers and snowboarders to learn and become familiar with safe alpine behaviour and practices.
- Follow the [Alpine Responsibility Code](#) (ARC), which is a set of rules of conduct for skiers and snowboarders and includes the following:
 - never ski alone
 - stay on marked trails
 - stay away from trees, poles, fences and pylons
 - be alert to physical and environmental hazards
 - ski and snowboard on hills that are within ability and skill level
 - if beginning to feel tired, stop skiing/boarding

Learning and following the Code is every skier and snowboarder's responsibility!

Table 1: Helmet Usage by Age Group⁴

Age Group (years)	Helmet Usage		
	2005	2006	2010
10-14	---	75%	95%
15-17	---	65%	85%
18-24	---	63%	63%
25-34	---	---	59%
35-44	---	69%	69%
45-55	58%	---	75%
55-64	39%	---	76%

The Canadian Ski Council⁵ (CSC) recommends wearing helmets for skiing and riding, and encourages education on the benefits and limitations of helmet usage. The primary safety consideration and obligation under the Alpine Responsibility Code is to ski and ride in a controlled and responsible manner.

This is a national policy that has been adopted by the regional ski area operator associations, including Canada West Ski Areas Association, Ontario Snow Resorts Association, Quebec Ski Areas Association and the Atlantic Ski Area Association. This policy is endorsed by the Canadian Ski Patrol System.

FAST FACT!

The [Canadian Standards Association](#): published *Z263.1 Recreational Alpine Skiing and Snowboarding Helmets* in 2008 with the intention of providing head injury risk reduction for alpine skiers and snowboarders.

thinkfirst.ca

Before you Play & Return to Play!

thinkfirst



pensez d'abord

CANADA
thinkfirst.ca

DID YOU KNOW...

- Head injuries are the leading cause of death among skiers and snowboarders. Snowboarding-related traumatic brain and spinal cord injuries may be increasing.⁶
- Estimates from numerous countries have found head injuries account for 9% - 19%, and neck injuries for 1% - 4%, of all injuries reported by ski patrols and emergency departments.^{7,8,9}
- Head and neck injury rates have been reported between 0.09 and 0.46 per 1000 outings.¹⁰
- Research has shown helmets are effective in reducing head injury risk among skiers and snowboarders. There is no significant association between helmet use and an increased risk of neck injury.⁹
- There is a 35% reduction in head injury risk with helmet use while skiing or snowboarding.⁹

FAST FACT!

Helmet usage is highest in⁴:

- New Brunswick: 95%
- Quebec: 77%
- Newfoundland: 75%
- Alberta: 73%

Helmet usage is lowest in⁴:

- Ontario: 67%
- British Columbia: 66%

In 2011, Nova Scotia became the first jurisdiction to legislate mandatory ski helmet use on their slopes.

Health Canada does not have the authority to require skiers and snowboarders to wear helmets. The responsibility for helmet use falls under municipal or provincial jurisdiction

Reduce the Risk of Skiing & Snowboarding Injuries by THINKING FIRST!

To minimize risk of injury^{11,12}:

- engage in pre-conditioning to improve physical capacity and maintain control. Always warm up and stretch before heading out on the slopes.
- monitor snow and weather conditions. Stay alert for hazards and changes in visibility.
- avoid frostbite and UV ray exposure by dressing right. Wear Sunglasses/goggles and sunscreen.
- be extremely cautious on your first and last run of the day, when the risk of injury is highest
- stop before it gets too dark or you become too tired
- never drink while on the slopes
- never ski or snowboard alone
- be cautious of jumps and skiing and boarding at high speeds
- stay on designated paths and trails, and follow all rules and signs
- choose runs which suit your ability and experience

thinkfirst.ca

Before you Play & Return to Play!

SKIING AND SNOWBOARDING INJURY PREVENTION INITIATIVES

thinkfirst



pensez d'abord
CANADA
thinkfirst.ca

Several organizations have made great strides in preventing skiing and snowboarding injuries, specifically head injuries. Education initiatives such as tip sheets, websites, videos, policy changes, contests and campaigns, to name a few, have been developed to empower parents and youth with the tools necessary to reduce their injury risk on the slopes. A variety of skiing and snowboarding injury prevention initiatives are highlighted below. Please contact ThinkFirst Canada to add to our list of skiing and snowboarding injury prevention programs!

Canadian Ski Council's: myhelmet.ca/moncasque.ca

The CSC created myhelmet.ca/moncasque.ca to inform the skiing and snowboarding community and provide them with the resources needed to make wearing a helmet a natural part of participating in these great winter sports. This website:

- provides the latest information on using helmets when skiing and snowboarding and tips to help make wearing a helmet comfortable and enjoyable
- includes the latest helmet statistics, the CSC's policy statement on wearing helmets, tips for parents, tutorials on how to pick out the right helmet and more!

Wipe Out

The Brain Injury Association of Canada (BIAC), British Columbia Brain Injury Association and ThinkFirst Canada launched the documentary "[Wipe-out](#)." This film:

- highlights the dangers and consequences of head injuries in extreme sports through the eyes of accident victims
- addresses issues such as helmet buying, fitting, and advocacy; brain anatomy and injury (e.g. concussion), risk taking attitudes and behaviours, and more!

Wipe Out was produced by Knowledge Network in partnership with the Community Against Preventable Injuries and Worksafe BC.

Visit preventable.ca to hear from Dr. Shelina Babul on the slogan "You're probably not expecting to need a helmet today!" and how efforts are being taken to get into the heads of skiers and snowboarders and consider their attitude to risk.

Injury Prevention Organizations such as [SmartRisk](#) and [Safe Kids Canada](#), are dedicated to preventing injuries and saving lives by providing resources, such as tip sheets and programs, to influence attitudes and behaviour in sport, school and other environments. Check out their websites for skiing and boarding related resources.

Q: What do all helmet-wearing skiers and snowboarders have in common?

A: *They all have really bad helmet hair!*

Wear It Proud! Campaign

- In Nova Scotia, helmets are worn by 70 - 80% of skiers and snowboarders.
- To increase helmet usage among those not wearing helmets, the Atlantic Collaborative on Injury Prevention (ACIP) and Ski Martock, Wentworth and Ben Eoin partnered to promote the "*Wear It Proud!*" campaign.
- The campaign celebrates the official hairdo of Canadian winters – helmet hair, by asking skiers and boarders to wear their helmet hair proud and show everyone that real skiers and boarders wear helmets.
- *Wear It Proud* asks Nova Scotia ski and snowboard helmet wearers to submit photos of their helmet hair to wearitproud.org where people can vote for the "best" worst hair.

A Little Respect...ThinkFirst

This bilingual program:

- teaches individuals to respect themselves and their abilities by introducing ways to recognize and manage risks on the slopes, including tips from professional skiers;
- covers what skiers and snowboarders need to know to prevent serious injuries; and
- consists of a DVD, skiing/snowboard helmet card and leader's guide, all downloadable for free from <http://www.thinkfirst.ca/index.aspx>.

Lids On Kids

- In 2002, the **National Ski Areas Association** (NSAA) with the help of others in the ski industry, developed *Lids on Kids* to educate parents about putting helmets on their children while they're on the slopes.
- Visit lidsonkids.org to learn about: proper helmet use, fitting and sizing; slope safety information, and other safety tips!

thinkfirst.ca

Before you Play & Return to Play!

Safety Standards and Regulations for Ski and Snowboarding Helmets¹³

thinkfirst



pensez d'abord
CANADA
thinkfirst.ca

Several **voluntary industry standards** have been developed in the United States (ASTM) and in Europe (EN) for skiing and snowboarding helmets. The standards have different performance requirements and these are outlined in the Table below. There is a newer Canadian standard that has been developed (see page 2). Regulation of helmets is in federal jurisdiction. The government of Canada has not yet regulated ski and snowboard helmets.

Skiing and Snowboard Helmet Standards Comparison ⁷				
	CSA Z.263.1 Recreational Alpine Skiing & Snowboarding Helmets	ASTM-2040 Standard Helmets Used for Recreational Snow Sports	EN 1077 European Standard Helmets for Alpine Skiers & Snowboarders	Snell RS-98 Standard Protective Headgear for Recreational Skiing & Snowboarding
Shock Absorption	<ul style="list-style-type: none"> The peak acceleration of any impact shall not exceed 250 g 	<ul style="list-style-type: none"> The peak acceleration of any impact shall not exceed 300 g. 	<ul style="list-style-type: none"> The peak acceleration of any impact shall not exceed 250 g 	<ul style="list-style-type: none"> The peak acceleration of any impact shall not exceed 300 g
Head Forms	<ul style="list-style-type: none"> Variable head form sizes used, with variable mass 	<ul style="list-style-type: none"> Variable head form sizes used, but mass is constant 	<ul style="list-style-type: none"> Variable head form sizes used, but mass is constant 	<ul style="list-style-type: none"> Variable head form sizes used, but mass is constant
Field of Vision	<ul style="list-style-type: none"> 105 degrees to the left and right sides of the median plane 	<ul style="list-style-type: none"> 105 degrees to the left and right sides of the median plane 	<ul style="list-style-type: none"> 105 degrees to the left and right sides of the median plane 	<ul style="list-style-type: none"> 105 degrees to the left and right sides of the median plane
Impact Tests	<ul style="list-style-type: none"> Multiple impact test procedure (4 impact sites, three impacts per site) 	<ul style="list-style-type: none"> Single impact per site. Two impact sites using flat anvil One impact site for hemispherical anvil One impact site for edge anvil 	<ul style="list-style-type: none"> Single impact test procedure (2 impact sites per sample) 	<ul style="list-style-type: none"> Each sample will be subjected to no more than four test impacts (single impact per site)
Anvils	<ul style="list-style-type: none"> Flat 	<ul style="list-style-type: none"> Flat, Hemispherical and Edge 	<ul style="list-style-type: none"> Flat 	<ul style="list-style-type: none"> Flat, Hemispherical and Edge

"g" is the acceleration due to Earth's gravity

thinkfirst.ca

Before you Play & Return to Play!



References:

1. Print Measurement Bureau of Canada. www.pmb.ca/public/e/resource/overview.shtml
2. Safe Kids Canada. Safe Kids Canada Launches National Charter on Helmet Safety for Winter Ski Sports to Help Reduce Devastating Injuries. www.safekidscanada.ca/professionals/newsroom/media-releases/2009/vancouver-charter-on-skiing-safety.aspx
3. Russell, K., B. Hagel, and L.H. Francescutti, The effect of wrist guards on wrist and arm injuries among snowboarders: a systematic review. *Clinical J of Sport Med*, 2007; 17: 145-150.
4. My Helmet.ca. Helmet Usage and Statistics. www.skicanada.org/myhelmet/index.cfm?DSP=Chapter&ID=126
5. Canadian Ski Council. Helmets and Ski Safety Facts and Stats: November 2009. www.skicanada.org/_assets/files/Helmet%20Information%20Nov%202nd%20final.pdf
6. BC Injury Research and Prevention Unit. Preventing Winter Sports Injuries: Skiing, Snowboarding, Tobogganing. www.injuryresearch.bc.ca/admin/DocUpload%5C3_20100312_161317Winter%20Sports%20Factsheet.pdf
7. Hagel BE, Pless IB, Platt RW. Trends in emergency department reported head and neck injuries among skiers and snowboarders. *Can J Public Health* 2003; 94:458-62.
8. Bridges EJ, Rouah F, Johnston KM. Snowblading injuries in Eastern Canada. *Br J Sports Med* 2003; 37:511-5.
9. Russell K, Christie J, Hagel BE. The effect of helmets on the risk of head and neck injuries among skiers and snowboarders: a meta-analysis. *CMAJ* 2010; 182(4): 333-340.
10. Hagel BE, Goulet C, Platt RW, et al. Injuries among skiers and snowboarders in Quebec. *Epidemiology* 2004;15:279-86.
11. Simson, H. & Tator, C.H. (2008). Chapter 23: Alpine Skiing. In: *Catastrophic Injuries in Sports and Recreation: Causes and Prevention – A Canadian Study*. University of Toronto Press, Toronto, ON.
12. Skiing and Snowboarding Injuries. Ontario Injury Compass, SmartRisk . January 2010, 7(1). www.oninjuryresources.ca/downloads/Compass/2010/2010-01-01Compass-Ski%3ASnowboardFinal.pdf
13. Health Surveillance and Epidemiology Division, Public Health Agency of Canada. Injuries Associated with Downhill Skiing and Snowboarding: Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) database, 1990-91 to 2006-07.