

A Comparison of Skiing/Snowboarding Injuries to Other Recreational Activities

December 18, 2003

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Ecosign Mountain Resort Planners Ltd. of Whistler, B.C., has undertaken a literature review of published papers to compare injuries in alpine skiing and snowboarding to other sports, for the Canada Ski Council. There have been many studies conducted in North America and Europe documenting the injury rates of various recreational activities. Skiing is generally accepted to include both alpine skiing and snowboarding.

It should be noted that skiing injury rates have declined by one half in the United States over the last 27 years, as noted in a presentation by Dr. Edward Heneved MD. FACEP to the Wilderness Medical Society's Summer Conference in August 2000¹.

The Canadian Hospital's Injury Reporting and Prevention Program (CHIRPP) is an emergency hospital based injury surveillance program. British Columbia data between 1992 and 1999 was evaluated for different recreational activities². This study found that downhill skiing was rated 10th compared to other activities, as illustrated in Plate 1.

**SPORTS BY FREQUENCY OF INJURY
CHIRPP 1992 TO 1999**

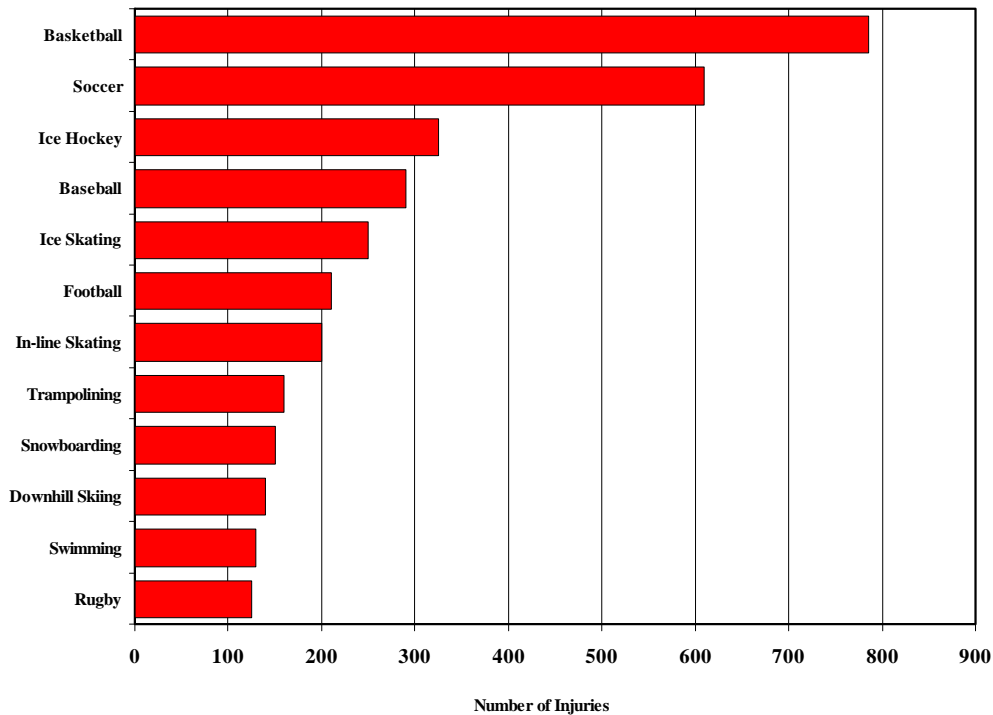


PLATE 1

In the United States, there is a similar injury surveillance system. In 1998, the National Electronic Injury Surveillance System of the U.S Consumer Product Safety Commission, published a study³ which evaluated the number of injuries associated with different recreational activities for different age groups between 0 and 24 years old. The survey is based on accident victims treated at 100 hospitals in the United States. A total of 39 different recreational activities were reported. In the school age grouping 5 to 14 years old, skiing ranked 21st behind activities such as bicycling, basketball, soccer, softball, volleyball, etc., as illustrated in Plate 2 and listed in Appendix 1. In the 15 to 24 years of age grouping, skiing ranked 16th behind basketball, football, bicycling, volleyball, dancing, etc.

**NATIONAL ELECTRONIC INJURY SURVEILLANCE SYSTEM
NUMBER OF INJURIES 1998
5 TO 14 YEAR OLD AGE GROUP**

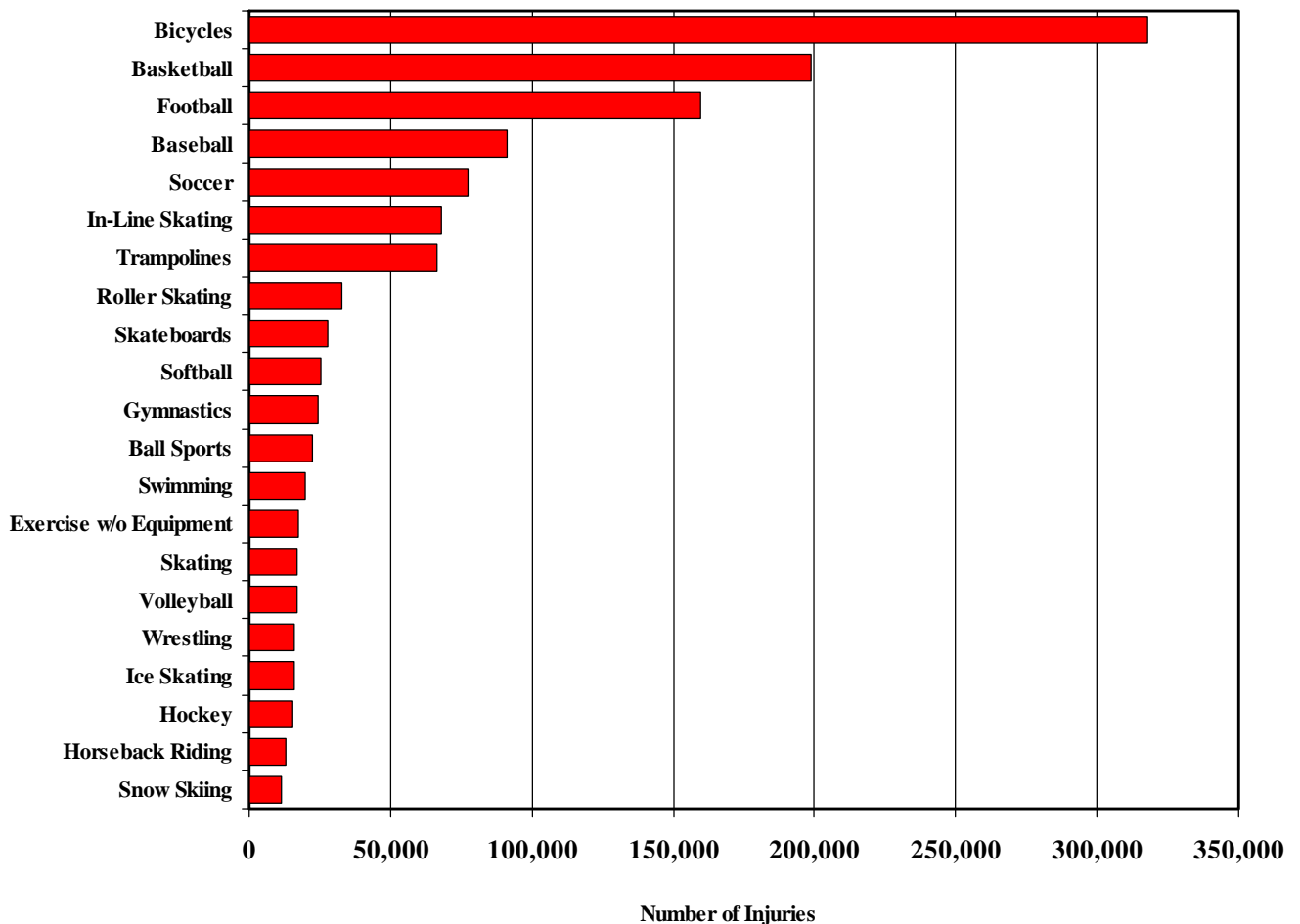


PLATE 2

The 1995 Alberta Sport and Recreation Injury Survey⁴ evaluated the top ten sports related injuries and found that Alpine skiing was ranked as 9th, as illustrated in Plate 3. This study had results similar to those in the United States.

**ALBERTA SPORT AND RECREATION INJURY SURVEY
1995**

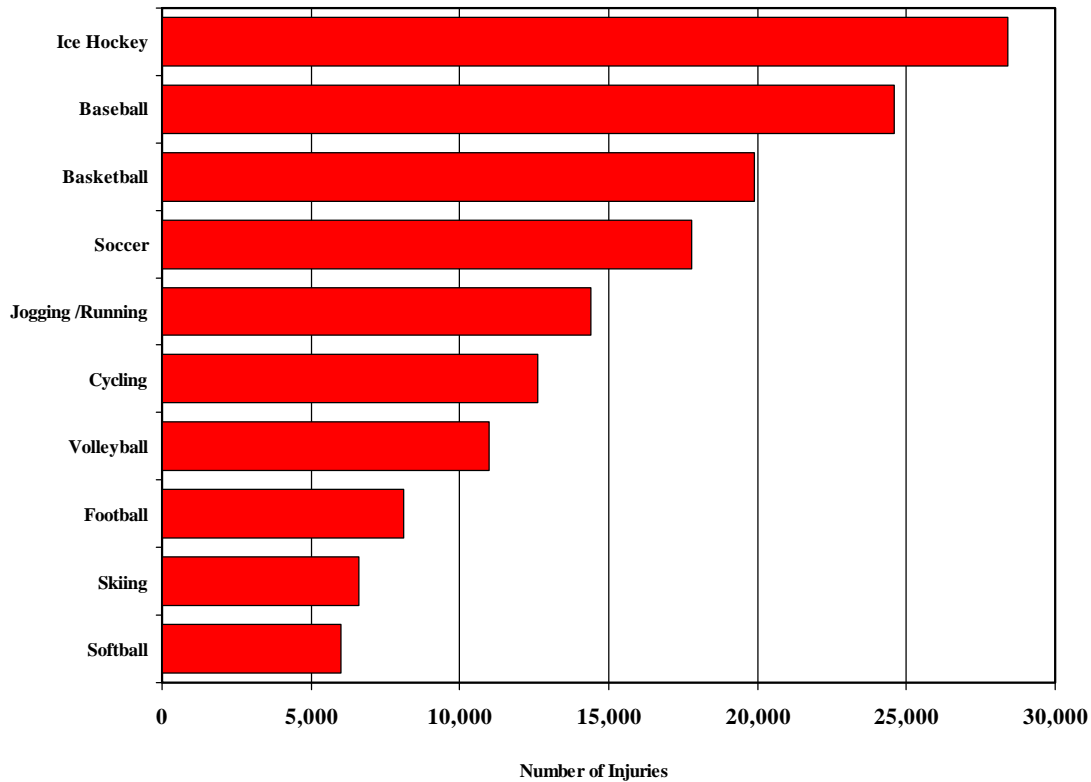


PLATE 3

In terms of fatalities from on-slope activities, Dr. Heneved notes that during the 15 year period up to the year 2000, there were an average of 34 fatalities per year among skiers and snowboarders and during the 1999/2000 ski season, a total of 30 fatalities were recorded in the U.S. out of 52.2 million skier/snowboarder visits. This translates to a fatality rate of 0.57 per million visits, or 2.88 deaths per million on-slope participants. This fatality rate of 2.88 per participant compares to 31.9 for scuba diving, 25.9 for swimming, 64.7 for boating and 21.2 for bicycling.

An article in Skiing Magazine in November of 1989 by Al Greenberg⁵ found similar results. The article stated that skiing had a death rate of 2.1 fatalities per million participants, compared to swimming with 26 per million, bicycling with 12 per million and soccer with 6 fatalities per million. He even noted that commercial aviation, with between 100 to 150 deaths per year, exceeds the 25 to 35 fatalities resulting from skiing.

The National Ski Areas Association (NSAA), an association of North American ski area operators, states that “skiing and snowboarding are no more dangerous than other high-energy participation sports, and less so than some common activities”⁶. According to their records, during the 2002 season, a total of 45 fatalities were recorded out of 54.4 million skier/snowboarder visits, a fatality rate of 0.83 per million. Bicycling and swimming had a 5 times greater fatality rate than did skiing/snowboarding. Scuba diving had a fatality rate that was 13 times greater than skiing and snowboarding.

In conclusion, the data from many surveys in both the United States and Canada reveals that skiing has a lower injury rate than many of the other activities. Skiing is not a high risk sport when compared to other common school activities such as basketball, soccer and volleyball.

Appendix 1

Rank	Sport	Estimated # of Cases	Number of Injuries			
			Age 0 - 4	Age 5 - 14	Age 15 -24	Over 24
1	Bicycles	577,621	41,011	317,692	87,798	131,120
2	Basketball	631,186	3,787	198,824	293,501	135,074
3	Football	355,247	1,066	159,861	153,111	41,209
4	Baseball	180,582	8,126	91,013	42,076	39,367
5	Soccer	169,734	849	77,568	63,820	27,497
6	In-Line Skating	110,783	775	67,688	20,716	21,603
7	Trampolines	95,239	9,143	66,286	13,333	6,476
8	Roller Skating	53,681	1,181	32,477	6,710	13,313
9	Skateboards	54,532	1,472	27,648	21,540	3,872
10	Softball	132,625	398	25,464	39,920	66,843
11	Gymnastics	31,446	1,195	24,308	5,031	912
12	Ball Sports	41,534	2,367	22,553	8,348	8,265
13	Swimming	49,331	2,565	19,782	10,212	16,773
14	Exercise w/o Equipment	123,177	493	17,122	32,396	73,167
15	Skating	27,481	660	16,901	4,452	5,469
16	Volleyball	66,191	66	16,680	28,197	21,247
17	Wrestling	43,917	571	15,986	22,705	4,655
18	Ice Skating	33,741	810	15,656	6,343	10,932
19	Hockey	42,285	1,015	15,307	14,588	11,375
20	Horseback Riding	64,692	970	13,068	9,898	40,756
21	Snow Skiing	81,787	409	11,614	13,004	56,760
22	Golf	46,019	2,945	10,584	3,451	29,038
23	Bleachers	19,161	2,778	9,638	2,376	4,369
24	Exercise Equipment	33,320	5,798	8,597	3,232	15,694
25	Cheerleading	18,858	-	8,448	10,334	75
26	Ice Hockey	22,231	133	7,848	8,314	5,936
27	Dancing	38,427	1,345	7,378	13,949	15,755
28	Weight Lifting	60,039	3,542	7,265	20,834	28,398
29	Track and Field	15,560	-	6,364	8,496	700
30	Martial Arts	23,018	253	5,409	7,044	10,312
31	Diving or Diving Boards	11,124	256	4,539	3,471	2,859
32	Tennis	22,665	227	4,261	4,352	13,826
33	Bowling	23,130	1,157	4,117	3,863	13,994
34	Field Hockey	4,666	79	2,020	2,300	266
35	Squash, Racquet or Paddle Ball	8,984	-	800	2,363	5,822
36	Boxing	9,183	-	790	4,996	3,398
37	Archery	3,110	87	706	855	1,462
38	Water Skiing	14,487	-	681	4,766	9,040
39	Rugby	8,361	-	8	5,510	2,843
TOTAL		3,349,155	97,530	1,342,949	1,008,207	900,469

SOURCES

1. “Skiing and Snowboarding Injuries in the Year 2000” Edward Heneved, MD, FACEP presented at the Wilderness Medical Society’s Summer Conference and Annual meeting, August 2000, Park City Utah. Updated with most recent winter season Karl Neumann Editor, Wilderness Medicine Letter.
2. Susan G, MacKenzie, Ivan B. Pless, CHIRPP Canada’s principle injury surveillance program, Injury and Prevention 1999: 5:208-213
3. Product Summary Report for the Calendar Year 1998, National Electronic Injury Surveillance System. The Product Report is a compilation of information derived from product-associated injuries treated in hospital emergency rooms participating in the National Electronic Injury (NEISS). The NEISS estimates are calculated from a sample of hospitals which are statistically representative of institutions with emergency treatment departments located within the United States and its Territories. There are approximately 100 hospitals participating in the surveillance system.
4. Alberta Center for Well-Being (ACFWB) in collaboration with the Sports Medicine Council of Alberta (SMCA) – W.K. Mummery, PhD and J.C. Spence, PhD, completed the Alberta Sports and Recreation Injury Survey with a sample of 1,478 households and 3,790 individuals.
5. How Safe is Skiing, Al Greenberg, Skiing Magazine November 1989
6. Fact about Skiing/Snowboarding Safety, National Ski Areas Association, Nov. 2003.