

INJURIES IN NORWEGIAN SKI RESORTS 2000 - 2002

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Introduction The Norwegian Ski lift Association has since 1996 conducted a central registration of the injuries occurring in the major Norwegian ski resorts to survey the injury types.

Material & Methods The injuries occurring on the slopes of 8 Norwegian ski resorts were recorded by ski patrols the seasons 2000/2001 and 2001/2002. The number of lift transports in the period was recorded, and 10 lift transports were defined as one skier day. A control material of 3002 randomly sampled skiers was collected from the same ski resorts throughout the 2001/2002 season.

Results A total of 6138 injured skiers were recorded. The number of skier days in the two seasons was 4002.170, and the injury rate was 1.5 injuries per 1.000 skier days. 39% of the injured skiers were females and 61% males. The age distribution was 13% 12 years or younger, 38% aged 13-19 years and 49% 20 years or older. Most of the injuries occurred during alpine skiing (49%) and snowboarding (45%), whereas telemark skiing accounted for only 6% of the injuries. The injury rate for snowboarders (2.3 injuries pr. 1.000 skier day) was significantly higher than that of alpine skiers (1.1) and telemarkers (0.7) ($P < 0.001$). 61% of the injuries required physician or hospital treatment. The injury rate for these was 0.9 injury per 1.000 skier days. Many of the injuries were similarly distributed among skiers and snowboarders, but the following significant differences were observed ($P < 0.001$).

Injury location (%)	Alpine skiers	Snowboarders	Telemarkers
Arm	4	10	4
Wrist	4	26	4
Hand	8	5	8
Back	6	9	7
Knee	28	6	13
Fracture	20	33	19
Lower leg fracture	6	1	3

The percentage of knee injuries was almost double as high for females as for males in all three disciplines ($P < 0.001$). Lower leg fractures was only recorded for 3% of the injured alpine skiers 20 years and older, whereas this injury accounted for 17% of the injuries among alpine skiers 12 years and younger ($P < 0.001$). Most of the injuries were caused by own falls (84%), but collision was more often the injury cause for alpine skiers (16%) than for telemarkers (11%) and snowboarders (9%) ($P < 0.001$). Head injuries accounted for 16% of all skiing injuries. 84% of those with head injuries did not use a protective helmet compared to 78% of the control material of uninjured skiers ($P < 0.001$, OR=1,5).

Conclusion: Injured alpine skiers were prone to knee injuries, and lower leg fracture was still a common injury in children. Snowboarders were prone to wrist injuries and fractures and had an injury rate more than twice as high as the other disciplines. The percentage of knee injuries among females was twice that of males, and helmets seemed to protect against head injuries.