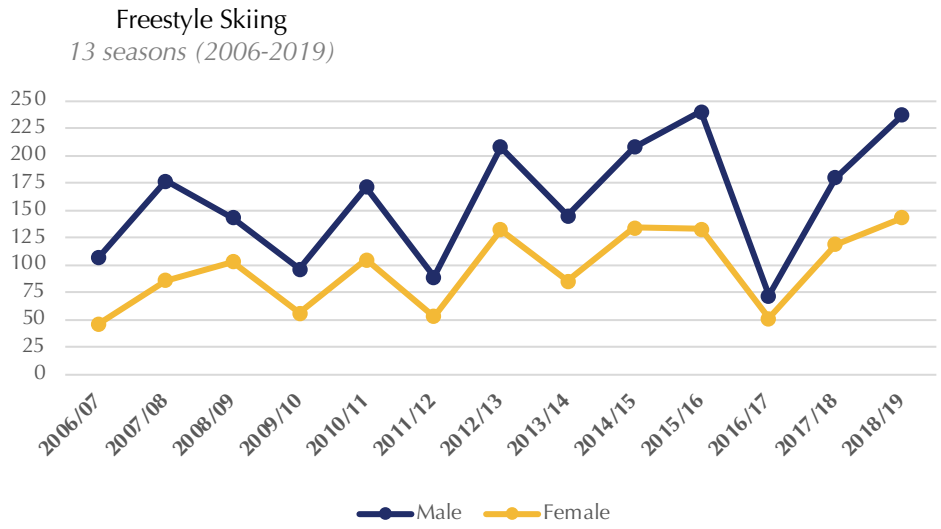
FIS Injury Surveillance System

Freestyle Skiing Injury Profile (2006-2019)

Injury Profile (n = 1,083 injuries)

Key injury pattern: A hybrid risk profile combining skiing's knee risks with acrobatics' impact risks: elevated head, shoulder, and back injuries alongside the knee burden.



Injury Location

Freestyle skiing presents a **more distributed anatomical profile**, reflecting the diverse demands of aerials, moguls, ski cross, halfpipe, and slopestyle.

While the **knee** remains the most commonly injured body part (32.1%), yet what distinguishes freestyle is the substantially **greater upper body involvement**: shoulder and clavicle injuries account for 12.0% of cases.

Head and face injuries reach **14.2%**. The **7.0%** lower back/pelvis rate and **4.0%** chest/rib rate reflect the high-impact landings inherent to aerial disciplines.

Injury Severity

The severity distribution shows that **39.7% of freestyle injuries are severe**, slightly lower than alpine World Cup (41.3%) but still representing a substantial burden. Combined with moderate time-loss injuries, 61.2% of all freestyle injuries result in more than one week of absence.

Of 405 knee injuries, 259 (**65.7%**) result in **more than 28 days absence**. Shoulder injuries show concerning severity: of 152 shoulder/clavicle injuries, 59 (**40.4%**) are **severe**. **Head injuries**, while frequent, show a different pattern: only 35 of 179 (20.7%) result in more than 28 days absence.

Body Region	No Absence	1-3 Days	4-7 Days	8-28 Days	> 28 Days*
Head/Face	9.50%	11.20%	20.70%	37.90%	20.70%
Neck/Cervical	41.20%	17.60%	5.90%	5.90%	29.40%
Shoulder/Clavicle	13.70%	7.50%	11.60%	26.70%	40.40%
Upper Arm	0.00%	0.00%	0.00%	14.30%	85.70%
Elbow	17.40%	21.70%	13.00%	26.10%	21.70%
Forearm	12.50%	25.00%	12.50%	0.00%	50.00%
Wrist	25.90%	14.80%	7.40%	18.50%	33.30%
Hand/Finger	52.00%	9.30%	8.00%	16.00%	14.70%
Chest/Ribs	20.40%	18.40%	8.20%	26.50%	26.50%
Abdomen	0.00%	25.00%	50.00%	0.00%	25.00%
Back/Pelvis	23.30%	15.10%	11.60%	19.80%	30.20%
Hip/Groin	28.60%	5.40%	14.30%	23.20%	28.60%
Thigh	41.20%	11.80%	5.90%	17.60%	23.50%
Knee	6.10%	5.30%	5.60%	17.30%	65.70%
Lower Leg/Achilles	25.50%	10.60%	10.60%	17.00%	36.20%
Ankle	13.60%	9.10%	21.20%	21.20%	34.80%
Foot/Toe	25.00%	14.30%	7.10%	25.00%	28.60%
TOTAL	**15.8%**	**9.1%**	**10.5%**	**21.5%**	**39.6%**

** >28 days: Severe injury*

Injury Type

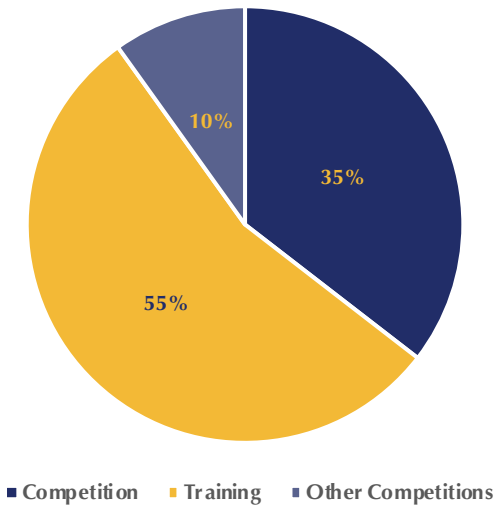
The discipline shows the **highest rate of concussion and nervous system injuries** among all skiing disciplines at **12.8%** (162 injuries).

The **contusion** rate (8.7%) is also notably high, consistent with the high-energy impacts involved in freestyle disciplines. **Joint and ligament injuries** remain the predominant type at **43.4%**.

Injury Type	Count	Percentage
Joint/Ligament	548	43.4%
Fracture/Bone Stress	284	22.5%
Muscle/Tendon	162	12.8%
Concussion/Nervous System	118	9.4%
Contusion	110	8.7%
Skin/Laceration	10	0.8%

Injury Circumstances

Training environments generate the **majority of freestyle injuries at 54.6%**.



The **10% "Other Competitions"** category is also notable, and may reflect injuries in non-FIS events such as X-Games, where freestyle athletes also compete.

Key Takeaways for Prevention Focus

- The **hybrid profile** requires attention to knee injuries (32.1%) alongside the elevated head (14.2%) and shoulder (12.0%) **burden**.
- The **12.8% concussion rate** demands robust concussion awareness and management protocols.
- **Training** accounts for 55% of injuries; this is likely reflecting the extensive practice required to master aerial manoeuvres and the risk inherent in trick progression and new skill learning.
- Although less than 20% of **head injuries** show an absence longer than a month, the full impact of concussion may be underestimated given gradual return-to-play protocols.
- The higher concussion rate may reflect the aerial nature of many freestyle events: moguls, aerials, halfpipe, slopestyle, where head impacts are more common.