

Video analysis of head injuries in WC snowboarding, freestyle skiing and alpine skiing

Analyst: _____

Date: _____

Injury information

Injury nr: _____ Specific diagnosis: _____

Male: _____ Competition: _____
Female: _____ Official training: _____

Discipline:
Alpine: Downhill _____
Super-G _____
Giant slalom _____
Slalom _____

Freestyle: Ski cross _____
Half pipe _____
Moguls _____
Big air _____
Slopestyle _____
Aerials _____

Snowboard: Snowboard cross: _____
Parallel _____
Half pipe _____
Big air _____
Slopestyle _____
Rider stance Regular
Goofy

For analyst:

How many visible head impacts are there 0
1
2
3
4
Unsure
Not visible

Which head impact is the **main impact** 0
(if several main impacts, rank order: 1
#1 = first main impact) 2
3
4
Unsure
Not visible

At which frame number(s) do(es) the **main** head impact(s) occur: *Live* *Replay (slow motion)*
1st main impact- Frame number: _____

2nd main impact -Frame number: _____

THE FOLLOWING QUESTIONS RELATE TO THE MAIN HEAD IMPACT(S) ONLY

**1. Athlete situation preceding head impact:
i.e. the event(s) leading to the crash/injury situation**

<p>Alpine</p> <p>Prior to head impact the athlete is:</p> <p>Turning <input type="checkbox"/></p> <p>Gliding/straight skiing <input type="checkbox"/></p> <p>Traversing <input type="checkbox"/></p> <p>On bumps <input type="checkbox"/></p> <p>In a compression <input type="checkbox"/></p> <p>Approaching jump <input type="checkbox"/></p> <p>Jumping - take off <input type="checkbox"/></p> <p>Landing after jump <input type="checkbox"/></p> <p>Has already crashed/fallen <input type="checkbox"/></p> <p>The athlete then:</p> <p>Falls/crashes <input type="checkbox"/></p> <p>Does not fall <input type="checkbox"/></p> <p>If fall/crash:</p> <p>Before crashing, the skier is:</p> <p>Out of balance backward <input type="checkbox"/></p> <p>Out of balance forward <input type="checkbox"/></p> <p>In balance in the sagittal plane <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p> <p>Out of balance to the right/left <input type="checkbox"/></p> <p>In balance in the frontal plane <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p> <p>Out of balance in the transverse plane (yawing) <input type="checkbox"/></p> <p>In balance in the transverse plane <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p>	<p>Freestyle</p> <p>Prior to head impact the athlete is:</p> <p>Turning <input type="checkbox"/></p> <p>Bank turning <input type="checkbox"/></p> <p>Gliding/straight skiing <input type="checkbox"/></p> <p>Traversing <input type="checkbox"/></p> <p>On bumps <input type="checkbox"/></p> <p>In a compression <input type="checkbox"/></p> <p>Approaching jump/element <input type="checkbox"/></p> <p>Jumping - take off <input type="checkbox"/></p> <p>Landing after jump <input type="checkbox"/></p> <p>In between elements <input type="checkbox"/></p> <p>Has already crashed/fallen <input type="checkbox"/></p> <p>The athlete then:</p> <p>Falls/crashes <input type="checkbox"/></p> <p>Does not fall <input type="checkbox"/></p> <p>If fall/crash:</p> <p>Before crashing, the skier is:</p> <p>Out of balance backward <input type="checkbox"/></p> <p>Out of balance forward <input type="checkbox"/></p> <p>In balance in the sagittal plane <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p> <p>Out of balance to the right/left <input type="checkbox"/></p> <p>In balance in the frontal plane <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p> <p>Out of balance in the transverse plane (yawing) <input type="checkbox"/></p> <p>In balance in the transverse plane <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p>	<p>Snowboard</p> <p>Prior to head impact the athlete is:</p> <p>Turning <input type="checkbox"/></p> <p>Bank turning <input type="checkbox"/></p> <p>Gliding/straight riding <input type="checkbox"/></p> <p>Traversing <input type="checkbox"/></p> <p>On bumps <input type="checkbox"/></p> <p>In a compression <input type="checkbox"/></p> <p>Approaching jump/element <input type="checkbox"/></p> <p>Jumping - take off <input type="checkbox"/></p> <p>Landing after jump <input type="checkbox"/></p> <p>In between elements <input type="checkbox"/></p> <p>Has already crashed/fallen <input type="checkbox"/></p> <p>The athlete then:</p> <p>Falls/crashes <input type="checkbox"/></p> <p>Does not fall <input type="checkbox"/></p> <p>If fall/crash:</p> <p>Before crashing, the athlete is:</p> <p>Out of balance backward <input type="checkbox"/></p> <p>Out of balance forward <input type="checkbox"/></p> <p>In balance in the sagittal plane <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p> <p>Out of balance to the right/left <input type="checkbox"/></p> <p>In balance in the frontal plane <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p> <p>Out of balance in the transverse plane (yawing) <input type="checkbox"/></p> <p>In balance in the transverse plane <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p> <p>Did the athlete catch an edge prior to falling:</p> <p>Yes <input type="checkbox"/></p> <p>No <input type="checkbox"/></p> <p>Unsure <input type="checkbox"/></p> <p>If yes, which edge:</p> <p>Front edge <input type="checkbox"/></p> <p>Back edge <input type="checkbox"/></p>
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All disciplines - if a fall/crash is the cause of the head impact:

Body rotation preceding head impact (can choose several):

Body rotation around perpendicular axis (yaw)

Body rotation around longitudinal axis (roll)

Body rotation around lateral axis (pitch)

None

Not visible

Body rotation preceding head impact is:

Minor (<90 deg. in any direction)

Moderate (90 to 180 deg. in any direction)

Substantial (>180 deg. in any direction)

Description of the crash circumstances:

Forward fall

Backward fall

Sideways fall

Collision

Other

Not visible

All disciplines:

Prior to crashing, the athlete has inappropriate gate contact:

- No
 Yes

Yes, and cause of injury:

- Yes
 No
 Unsure

Prior to crashing, the athlete makes a technical error:

- Yes
 No
 Unsure
 Not visible

If yes, the error is caused by a personal mistake (technical/tactical)

- Yes
 No
 Unsure
 Not visible

If yes, the error is caused by another athlete (e.g opponent contact in SBX/SX):

- Yes
 No
 Unsure
 Not visible

If yes, the error is caused by other factors:

Please specify:

Crash situation at frame of impact

The slope in relation to the helmet at the frame of impact is:

- Downward slope
 Upward slope
 Flat
 Not visible
 Other

Specify: _____

2. Description of main head impact

Does the helmet impact an object or surface other than snow (eg. gate panel, advertising board, another person, a tree etc.)

- Yes
 No
 Not visible

If yes, which object: _____

Does the helmet impact on snow

- Yes
 No
 Not visible

Where is the impact location on the helmet

- Top
 Back
 Side
 Front
 Face
 Unsure
 Not visible

If side: Left
 Right

Does helmet slide along surface post- impact

- Yes
 No
 Unsure
 Not visible

Does helmet fall off

- Yes
 No
 Not visible

Does chin strap release

- Yes
 No
 Unsure
 Not visible

3. Crash circumstances

Please rank order of skis/board and bodyparts` contact with surface during landing and crash sequence until main helmet contact (1,2,3,4 etc):
#1 = first contact to snow

- Skis/board
- Head/helmet
- Neck
- Face
- Trunk/chest
- Back
- Buttocks/pelvis
- Upper extremity
- Lower extremity
- Unsure

4. Post-impact: security net contact

Security net

Does the athlete hit the security net? :

- Yes
- No

If yes: type of net

- A net
- B net
- C net

If yes: did the security net function adequately

- Yes
- No, please describe _____

Was the security net correctly placed?:

- Yes
- No
- Unsure

5. Please describe the injury mechanism in your own words

Empty text area for describing the injury mechanism.