Patients (or Participants) Skiers and snowboarders who played in Niseko were subjected in this study.

Interventions (or Assessment of Risk Factors) Interview survey was carried out in Niseko. We investigated the number of injuries in Niseko ski resort and the situation of severe ski accidents in Japan.

Main Outcome Measurements The type, part, and cause of injury and the effort for preventing accidents in Niseko ski resort.

Results About 50 severe backcountry skiing injuries occur every year in Japan, and 20 of them were fatal. Severe injuries means head injury, back injury and suffocation. During 1985 and 2000, there were 9 skiing fatalities in Niseko every year. All fatalities were caused by avalanches. 8 fatalities were backcountry skiing. These Niseko ski resorts prohibited out of bounds skiing (‘Niseko Rule’). The Niseko Rule was promulgated in 2001. No fatalities have occurred since 2001 for backcountry skiing. Only 20% of skiers wear helmets in Japan, however approximately over 60% people wear the helmet.

Conclusions The unique point of the Niseko Rule is that Niseko resorts and the local community respect the freedom of mountain users and place a strong emphasis on the sage usage of the mountain. Ski Patrol checks the conditions of each ski resort for the boundaries of the Niseko Rule. Niseko resorts are increasing the rate of wear the skiing helmets. It was influenced by foreign tourist. It will contribute to skiing safety.

Background Egregious cases of athlete abuse continue to demonstrate the link between human rights and sport. However, it is unclear if athletes see themselves as rights-holders in the sports context, and what this means for preventing intentional injury (harassment and abuse).

Objective Assess athletes’ knowledge, attitudes, and beliefs about their human rights in the Olympic and Paralympic Movements.

Design Cross-sectional web-based survey.

Setting Web-based communication and social media platforms used to assess elite athletes.

Participants 645 athletes participating in the Olympic and Paralympic movements, representing 70 countries.

Intervention Athletes and sport organizations distributed the survey to Para and non-disabled athletes. Data was collected from February to September 2020.

Main Outcomes Part 1 (Knowledge construct) used yes/no questions to test athletes’ knowledge of five rights from the IOC Declaration. Part 2 (Attitudes/Beliefs construct) used Likert scales to test agreement with eight plain language right statements. Correlation analysis examined the relationship between athletes’ knowledge and their attitudes/beliefs. Demographic data were analyzed for trends.

Results Athletes’ knowledge of the right to protect their name, image, and performance, as well as their right to unbiased redress for rights violations, was weakest. There were varied perceptions about freedom of expression and how acceptable ‘pressure’ from coaches and teammates was. There was low correlation between athletes’ knowledge of a right and their positive attitudes and beliefs about embodying that right in sport-specific scenarios. Gender and union membership significantly impacted athletes’ rights-experience.

Conclusions Athletes have incomplete knowledge and mixed perceptions of their rights in the sports realm. Furthermore, knowledge of their rights does not guarantee athletes’ confidence in defending those rights during real-life sport experiences. To prevent athlete harassment and abuse, a culture change is required in sport. This cannot happen until athletes’ rights are clearly understood and guaranteed by all.
The accurate tracking of knee joint motions during maneuvers associated with non-contact ACL injury is important for identifying injury mechanisms. Objective We tested the hypothesis that motion capture and inertial measurement unit (IMU) measures of 3D changes in tibiofemoral angle and velocity are interchangeable in the ~70 ms weight acceptance phase of a 3–4 ×BW dynamic jump landing movement involving knee flexion and tibial internal rotation.

Design Two APDM IMUs and NDI Certus marker triads were rigidly attached to the mid-tibial and -femoral bone of cadaver knees to record motions during simulated jump landings. The initial knee angle was 15 degrees maintained by preparatory quadriceps muscle forces and tensile stiffness for the landing. The Bland-Altman Limits of Agreement (LoA) was used to compare the 3D data from 852 trials.

Setting University biomechanics research laboratory.

Patients Nine cadaveric knees harvested from six male and three female adult human donors.

Main Outcome Measurements The 3D knee angle changes from motion capture system were considered the gold standard and compared to calculated IMU data from the fusion algorithm provided by APDM Opal. The 3D tibial and femoral angular velocity changes measured by the IMUs were considered the gold standard and compared to the differentiated Certus angular data.

Results Although the mean peak IMU knee angle changes were slightly underestimated in all three orthogonal planes, the LoA bands were large, ranging from 35.9% to 49.8%. Certus had acceptable accuracy in the camera plane for angular velocity changes, with LoAs of ±54.9°/sec and ±32.5 °/sec, respectively, for the tibia and femur.

Conclusions These IMUs could not reliably measure the peak 3D knee angle changes. Certus measurements of tibiofemoral angular velocity changes were comparable to IMU measures in the camera plane, and when velocities were sufficiently large.