

## **Epidemiology of Lower Extremity Injuries in Collegiate Student-Athletes: Insights from the Pac-12 Health Analytics Program.**

LK Ross (MD, SOM), M Tuffiash, K Robell, and KJ Hunt.

Sports injury surveillance, the collection of data characterizing factors associated with athletic injuries, provides the ability to monitor and identify risk factors related to sport participation. While sports injury surveillance systems are currently utilized by populations ranging from youth sports programs to professional athletics organizations, surveillance systems at the NCAA collegiate level have historically been limited by lack of standardization, scale, and access. By standardizing metrics across all Pac-12 institutions and providing unprecedented database access to sports medicine researchers, the Pac-12 Health Analytics Program (HAP) addresses this need and now stands as the largest scale sports injury database providing this level of detail at the collegiate varsity level. This retrospective epidemiological study aims to demonstrate the role the HAP might play in identifying trends in sports injuries.

Investigators utilized a HAP dataset to provide a proof-of-concept characterization of lower extremity sports injuries sustained by NCAA Pac-12 student-athletes between 2017 and 2020. Each injury record was assessed for completeness by institutional sports medicine staff and deidentified prior to being sent to the HAP. Injury record characteristics analyzed include gender, sport/team, number of days elapsed from injury date to exam date, body part injured, type of injury, onset of symptoms, general mechanism of injury, season, event order of occurrence, and injury outcome. 9444 student-athletes sustained 33432 injuries over this 4-year period. Of these 33432 injuries, 13316 lower extremity musculoskeletal injuries were considered for further analysis. 41 distinct types of lower extremity injury were characterized across 31 varsity sports. Knee injuries occurred the most frequently (3328 injuries, 24.99% of total injuries), followed by ankle (2921, 21.43%) and foot (1389, 10.43%). The most frequent identifiable general mechanisms of injury included running (2187, 16.42%), contact with other player (1558, 11.70%) and cutting/change of direction (1106, 8.31%). Among student-athletes who sustained a lower extremity injury, 89.5% either experienced no sport interference or returned to previous activity level within the current season, 2.0% returned to either a restricted activity level or previous activity level in the following season, and 0.9% were unable to return to previous activity level. Our findings suggest that the HAP has the ability to characterize injuries sustained by collegiate student athletes to a degree not previously demonstrated in collegiate-level sports medicine. Follow-up investigations analyzing injuries sustained during specific events (practice, weightlifting, competition, etc.) may elucidate activity-specific relative risk factors and form the foundation for developing effective injury prevention strategies at the national or even global level.