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## Adolescent Injury Rates

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## Adolescent Injury Rates

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## **Adolescent Athlete Injury Rates**

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### **OBJECTIVE**

To describe the frequency of adolescent athlete injury based upon injury location, injury diagnosis, activity, playing surface, weather condition, and sport.

### **DESIGN and SETTING**

A retrospective cohort study using electronic medical records to analyze injuries across five Central Ohio school districts, including middle and high schools.

### **PARTICIPANTS**

Using a HIPAA compliant, electronic medical record system, de-identified medical records of injured athletes were analyzed from five Central Ohio school districts. Participant ages ranged from 11-19 years old, and each was a member of at least one sports team during the 2021-22 fall, winter, or spring seasons. To be included participants must have reported a new injury that was evaluated by the contracted athletic trainer within the associated school district. Most injuries were reported by academic juniors (25%), whereas seniors, sophomores, and freshmen each represented 18%. Participants in the 8<sup>th</sup> and 7<sup>th</sup> grades accounted for 12% and 9% of reported injuries, respectively.

### **INTERVENTION**

Healthy Roster was used to document all new, non-recurrent injuries reported to the athletic trainer at one of five different Central Ohio school districts. At the conclusion of each sport season (ie., fall, winter and spring), a hospital based Healthy Roster administrator created a de-identified data query representing the following injury-related fields: (1) academic rank, (2) injury location, (3) injury diagnosis, (4) activity (ie, game,

practice), (5) playing surface (eg., natural grass, turf, court, etc.), (6) weather condition (ie., wet or dry), and (7) sport.

### **MAIN OUTCOME MEASUREMENT**

Injury frequency per injury location, diagnosis, activity, and playing surface were determined. Injury location and diagnosis frequency were reported by weather condition. Injuries per 1000 athletic exposures were analyzed by sport.

### **RESULTS**

Throughout the 2021-2022 sport seasons, 1216 injuries were reported. The most common injury locations were knee (16.4%) and ankle (16.4%), followed by thigh/hip (10.9%). Sprains (22.4%) were the mostly often reported diagnosis, followed by contusions (13.3%) and strains (13.3%). Of the injuries reported, 64.0% occurred in practices and 35.9% in games or competitions. Most injuries occurred on natural grass (26.9%). When considering weather conditions, most injuries were overwhelmingly suffered in dry conditions (98.1%), with ankle injuries (17.1%) most commonly occurring in dry conditions. There was no discernible pattern to injury location based upon wet conditions. Sprains were the diagnosis most reported in dry (23.5%) and wet (43.9%) conditions. The rate of injuries per 1000 athletic exposures as reported by sport is not yet available but will be reported in the poster.

### **CONCLUSION**

The frequency of knee injuries is consistent with recent epidemiology reports indicating that knee injuries account for over 15% of all

youth injuries and rank the highest in reported frequency (Swenson et al, 2013; Ritzer et al, 2021). As reported in this study and previous studies, sprains were reported as the most common injury (Ritzer et al, 2021). Our study also aligned with previously reported data indicating practice events and natural grass surfaces contributed to the highest number of injuries (Ritzer et al, 2021). Weather condition did not appear to influence injury location or diagnosis. However, the small number of

injuries reported in wet conditions (n=21) indicates that athletic practices and games may be moved indoors or cancelled during inclement weather. Many current epidemiology studies focus upon high school-aged athletes; this study included middle school-aged athletes. The prevalence of growth-related diagnoses may warrant a study tracking middle school injury epidemiology independent of high school-aged athletes.

**KEY WORDS:** *adolescent athletes, injury rate, injury per exposure*