Incidence and risk factors for turf toe injuries in intercollegiate football

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Introduction
Turf toe injuries, or injuries to the first metatarsophalangeal (MTP) joint complex, typically occur during a hyperextension moment at the first MTP joint. Long-term morbidity secondary to turf toe injury has been reported, and includes persistent pain with athletic activities, restricted range of motion, hallux valgus and early hallux rigidus. Newer shoe designs and third generation artificial surfaces have purportedly reduced the incidence of turf toe injuries in elite competitive football. The purpose of this investigation was to evaluate recent National Collegiate Athletic Association (NCAA) data to determine the incidence, epidemiology and risk factors for turf toe injuries in collegiate football players.

Methods
We examined data from the NCAA’s Injury Surveillance System (ISS) for five football seasons (2004-2005 through 2008-2009), including all preseason, regular season and postseason practice and competition data. Injury rate (number of injuries divided by number of Athlete Exposures [A-Es]) was computed for practice and game competition exposures for turf toe injuries. Pair-wise two-sample tests of equality of proportions were used to estimate risk factors.

Results
The overall incidence of turf toe injuries in NCAA football players was 0.062 per 1000 athlete exposures (A-E). Athletes were nearly 14 times more likely to sustain the injury during games compared to practices (p < 0.01). The mean time lost from injury was 10.14 +/- 2.2 days. Fewer than 2% of turf toe injuries resulted in surgical intervention. There was a significantly higher injury rate on third generation artificial surfaces compared to natural grass (p < 0.01). The majority of injuries occurred as a result of contact with the playing surface (35.4%) or contact with another player (32.7%). Running backs and quarterbacks were the most common positions to suffer turf toe injury.

Conclusion
Our data suggest a decreased rate of turf toe injury during the recent seasons evaluated in this study compared to published data from previous decades. We also found a significantly higher rate of turf toe injuries during game competitions compared to practice in NCAA football, which is consistent with previously reported injury data. Turf toe most commonly occurs in offensive players, with running backs and quarterbacks at greater risk than other positions. While we found a higher incidence of turf toe injury on artificial surfaces compared to natural grass, the overall decrease in turf toe injuries may suggest a benefit from recent changes to cleats and newer generations of artificial playing surfaces. Turf toe injuries warrant thorough acute evaluation and appropriate management to prevent long-term dysfunction.