INJURY CHARACTERISTICS AMONG NCAA DIVISION I FOOTBALL PLAYERS OVER THE COURSE OF ONE YEAR

Emma E. Worley, Sten O. Stray-Gundersen, Alexa J. Chandler, Gianna F. Mastrofini, Nestor F. Urrea, Blaine S. Lints, Shawn M. Arent

Arnold School of Public Health, Department of Exercise Science, University of South Carolina, Columbia, SC.

ABSTRACT

INTRODUCTION: Injury surveillance may be a useful tool for maintaining optimal health and performance of American football players. Monitoring injury rates throughout the year can help identify periods of higher injury risk. This information may guide necessary adjustments to training programs in attempts to decrease injury risk and maximize in-season performance. PURPOSE: To outline the differences in the rate and type of injury between season segments among NCAA Division I football players. METHODS: Football-related athlete exposure (AE) and injury data were collected throughout 2023 from 120 athletes (age = 20.9±1.7 y, height = 187.96±5.9 cm, weight = 107.7±21.3 kg). One AE was defined as one athlete participating in one exposure event, which was defined as a team strength and conditioning session, practice session, or game session. An injury was defined as an occurrence that required medical attention during an exposure event. A time-loss injury was defined as any injury in which an athlete missed either >2 practice sessions or >1 game sessions. Injury characteristics were compiled, and injuries were categorized by the segment of the season during which they occurred: winter off-season, spring season, summer off-season, preseason, and fall season. Injury rates are presented as the number of injuries per 1000 AEs. RESULTS: The overall injury rate was 6.52 per 1000 AEs with a total of 183 injuries from 28,080 AEs throughout the year. The majority of injuries occurred during preseason (12.34 per 1000 AEs), followed by fall season (11.48 per 1000 AEs), summer off-season (4.92 per 1000 AEs), spring season (0.69 per 1000 AEs), and winter off-season (0.19 per 1000 AEs). The majority of injuries occurred during practice sessions (51.91%), followed by games (33.33%), and team strength and conditioning sessions (14.75%). Time-loss injuries accounted for 27.87% of all reported injuries with 31.37% of time-loss injuries being season-ending. Knees (24.04%), shoulders (13.66%), and hamstrings (9.29%) were the most commonly reported injured body parts. CONCLUSION: The highest injury rates occurred during the preseason period when athletes typically experience dramatic increases in workload and contact forces or may be impacted by the workload of the summer segment. Given the majority of injuries occurred during preseason with knee and shoulder injuries being the most common, coaches and practitioners may want to focus on specific prehabilitation exercises leading up to and during preseason. Future work should also consider these findings within the context of the number of contact events as well as external and internal workloads during each season segment. PRACTICAL APPLICATION: NCAA DI football players appear to have the highest injury risk during preseason and in-season segments of the year. Strength coaches and athletic trainers can help mitigate these risks by developing off-season strength and conditioning programs, especially targeting knees and shoulders, to appropriately prepare athletes for the increased physical demands experienced during preseason and in-season while also facilitating adaptation. Future studies should investigate workloads during the different segments of the year to better understand the variable demands placed on these athletes. In addition, coaches should appropriately periodize training programs to adjust for the heightened risk of injury during preseason and in-season segments.

MAIN FINDINGS

Highest injury rates occurred during preseason

- This may be due to increases in workload and contact forces associated with preseason and/or summer training.

Knee and shoulder injuries were the most common

- Coaches and practitioners may want to focus on specific prehabilitation exercises leading up to and during preseason.

Future research should consider these findings within the context of number of contact events as well as external and internal workloads during each season segment

INTRODUCTION

- Injury surveillance, or the tracking of injuries throughout an athletic season or career, may contribute to maintaining optimal health and performance in athletes by identifying periods when injury risk is elevated.
- Therefore, we sought to identify the rate and type of injury between different season segments amount NCAA Division I football players.

METHODS

Participants

- Male football players (n = 120)
- Age = 20.9±1.7 y
- Height = 187.96±5.9 cm
- Weight = 107.7±21.3 kg

Athlete Exposure

- One athlete exposure (AE) = one athlete participating in one exposure event
- Exposure event = team strength and conditioning session, practice session, or game session

Injury Characteristics

- An injury was defined as an occurrence that required medical attention during an exposure event.
- A time-loss injury was defined as an injury in which an athlete missed either >2 practice sessions or >1 game session.
- Injuries were categorized by the segment of the season in which they occurred: winter off-season, spring season, summer off-season, preseason, and fall season.
- Injury rates are presented as the number of injuries per 1000 AEs.

RESULTS

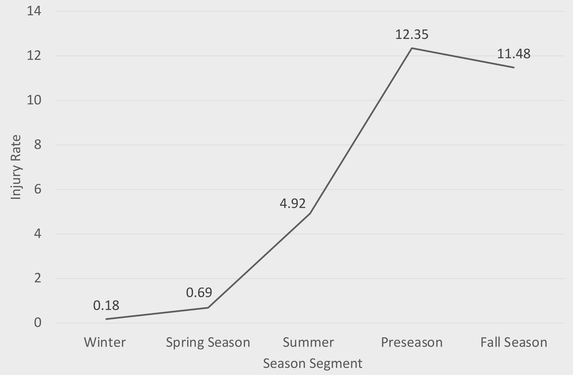

Figure 1. Injury rate (per 1000 AE) for each season segment

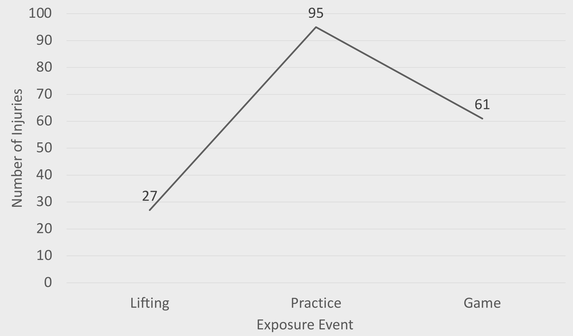

Figure 2. Number of injuries for each exposure event

Table 1. Location of Lower Limb Injuries

Location	Number of Injuries
Toe	4
Foot	10
Ankle	18
Knee	44
Quad	7
Hamstring	17
Hip flexor	3
Hip	6
Calf	5
Achilles	2
Tibia	2
Groin	5

Table 2. Location of Torso and Upper Limb Injuries

Location	Number of Injuries
Lower back	4
Abs	2
Chest	1
Rib	3
Trap	1
Fingers	3
Wrist	6
Hand	2
Elbow	2
Shoulder	25
Neck	2

- 183 injuries from 28,080 AEs
- Overall injury rate of 6.52 per 1000 AEs
- Time-loss injuries accounted for 27.87% of total injuries
  - 31.37% of time-loss injuries were season ending
- Knee (24.04%), shoulder (13.66%), and hamstring (9.29%) injuries were the most commonly reported injuries

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