Epidemiology of American Football Injuries at Universities in the United Kingdom

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Background: College-level American football injury data are routinely collected; however, data relating to American football injuries at universities in the United Kingdom have never been reported.

Purpose: To describe the epidemiology of UK university American football injuries.

Study Design: Descriptive epidemiology study.

Methods: An online survey tool was used to collect the injury data of 410 players from 56 UK university teams who participated in the 2014-2015 British Universities and College Sports American football season. Survey data were collected from January to February 2016 and were analyzed to determine the incidence and patterns of injury.

Results: Overall, 710 injuries and 204 concussions were self-reported among the 410 participants, of which 334 (81.5%) were injured and 131 (32.0%) experienced concussion symptoms. The rate of injury per 100 athlete-seasons was greater in defensive players (195.3) than offensive players (155.1). The most common injuries were knee and ankle ligament injuries. Most injuries were classified as severe (time loss of >4 weeks).

Conclusion: UK university American football injuries differ markedly from those reported for US colleges. UK university players appear to have less playing experience, greater concussion risks, more severe injuries, and a greater proportion of injuries in defensive players versus offensive players.

Keywords: football (American); head injuries/concussion; general sports trauma; epidemiology

American football is the most popular collegiate sport in the United States, with 72,788 players from 670 teams participating in the 2014-2015 season[31] and National Collegiate Athletic Association (NCAA) Division I games attracting an average attendance of 44,603.[28] The game is less popular, but growing, in the United Kingdom university system. American football was first played between UK universities in 1985 as a 4-team league. This league has since been

accepted under the British Universities and Colleges Sport (BUCS) governing body and had expanded to encompass an 80-team league by the 2015-2016 season.[5]

Within the United States, players are brought up through age-grade systems playing American football and need to perform at a high level to move from high school to college teams.[29] In countries such as Japan or the United Kingdom, a large proportion of players first play American football at the university level,[21] as other sports are predominantly played at the youth level.[18,32] College players outside of the United States therefore start with less experience, and higher practice injury rates suggest that coaches put a greater emphasis on full-contact scrimmages.[19,21] Lack of player experience in combination with an increased exposure to contact may lead to a higher injury rate[19]; however, later sports specialization may actually reduce injury risk.[27] In Japanese collegiate football, the practice injury rate is over twice that in US colleges, suggesting that these factors in combination increase injury risk.[10,19] Differences in training facilities, medical and rehabilitation facilities, officiating, playing equipment, and coaching quality due to funding disparities further separate US college teams from those in other countries. Distinct playing populations and environments may mean that injury patterns in UK university American football differ from those observed in US colleges.

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Injuries in US collegiate American football are recorded by the NCAA Injury Surveillance Program. There is no such data collection system in place in the UK, and there is no literature available describing injuries in the UK American football playing population. This study therefore aimed to characterize the incidence and patterns of injury in UK university American football during the 2014-2015 season to set the foundation for future research aimed at developing injury prevention strategies to make the sport safer to play in the United Kingdom.

METHODS

Study Design

Injury data and player information were retrospectively collected from a voluntarily recruited sample using an anonymized online survey platform. Players who participated in the 2014-2015 BUCS American football season and who were at least 18 years of age were eligible, regardless of whether they acquired an injury during the season. The 2014-2015 BUCS American football season consisted of 7 regular-season games and up to 2 playoff games per team, running from September 2014 to March 2015. Teams practiced on average 1 to 2 times per week depending on their upcoming fixtures. A total of 78 teams were identified via the BUCS website,[5] and contact was made via corresponding email addresses and Facebook pages. Facebook was then used as the primary distribution platform of the survey access link, as it is considered the most popular social network among university students and is an effective communication platform.[7] The survey was distributed to teams from January to February 2016 for voluntary completion by players. Mass survey send-outs took place when the survey opened and 3 weeks after opening, and teams were individually followed up multiple times throughout the survey period to improve the response rate. Approval for this study was obtained from the ethics committee of our institution.

Survey Tool

The Bristol Online Surveys questionnaire tool was used to design and distribute the survey.[4] The questionnaire was distributed electronically instead of using paper-based methods, since response rates are higher for electronic surveys.[2] The questionnaire was developed based on data collected by previous injury studies[9,15,19] and consensus statements on injury data collection.[12,13] Anatomic location and injury type categories from previous research were used.[12] Before filling out the questionnaire, players were required to accept a statement to confirm their consent. All responses were anonymous. Questions asked in the questionnaire are summarized in Table 1 and shown in full in the Appendix.

The questionnaire was validated before distribution with an internal pilot test. The primary feedback was that the survey was unfeasibly long; thus, the format was

TABLE 1
Summary of Topics and Questions
Asked in the Questionnaire

Topic	Questions
Player profile	Age, sex, team, number of injuries, playing position, playing experience
Injury characteristics	Body site injured, injury type, recurrence of injury, mechanism of injury, type of athletic exposure (game or practice), position played, time loss of injury
Concussion information	Number of concussions, history of concussion

condensed. This reduced data entry time helped to improve the response rate.[17]

Operational Definitions

For the purposes of this study, an injury was defined as a physical complaint that occurred as a direct result of participation in an organized training session or match from the 2014-2015 BUCS American football season and resulted in time missed from training or matches. This definition was used to include all time-loss injuries and was adapted from a previous definition.[12] Absences due to illness and non–sport related medical conditions were not included in the study. Players described the injury characteristics of their most recent injury (details in the Injury Characteristics section of the questionnaire; see the Appendix). Injuries were classified into 4 categories of severity: slight (time loss, 1-3 days), minor (time loss, 4-7 days), moderate (time loss, 1-4 weeks), and severe (time loss, >4 weeks). These injury severity categories have been previously used in the literature.[23] Concussion diagnosis requires a full assessment by a medical professional.[16] Because of the lack of athletic trainers in BUCS American football teams and the underdiagnosis of concussions in sport,[26] participants were presented with a lay concussion description drawn from the Scottish Sports Concussion Guidance[34] to aid them in determining the number of concussions they had acquired over the course of the season. This description notes the various symptoms indicative of concussion after a direct blow to the head (details in the Concussion Information section of the questionnaire; see the Appendix). One athlete participating in 1 BUCS American football season was defined as 1 athlete-season. Each participant was considered to have played for 1 athlete-season.

Statistical Analysis

The required survey sample size was estimated using the Creative Research Systems online survey sample size calculator.[8] Assuming a total sample population of 3900 (78 teams with an assumed roster of 50 players per team), we required a return rate of at least 350 players to offer a reflective sample base with a confidence level of 95% and
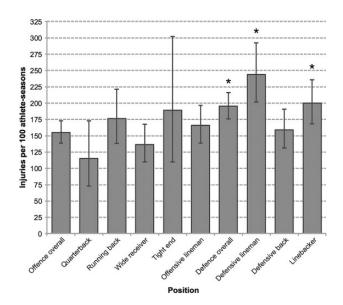
Figure 1. Injury rates by player position. *$P < .05$, based on 95% CIs, compared with another mutually exclusive group within the same category.
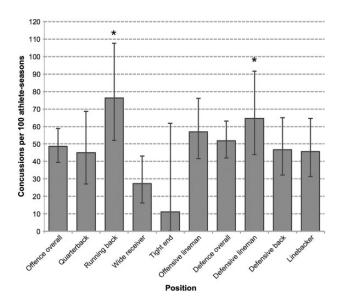

Figure 2. Concussion rates by player position. *$P < .05$, based on 95% CIs, compared with another mutually exclusive group within the same category.

a confidence interval (CI) of 5%. In practice, we aimed for the largest response rate possible. Players were grouped by position (quarterback, running back, wide receiver, tight end, offensive lineman, defensive lineman, linebacker, defensive back, and special teams) and by playing experience (0, 1, 2, 3, or ≥ 4 years). All data were nonparametric and arranged into either scale variables or nominal groups by frequency counts. Incidence rates, incidence proportions, rate differences, rate ratios, and risk ratios for injuries and concussions were calculated using formulas described in the literature.[20] The 95% CIs were calculated for incidence rates, incidence proportions, rate ratios, and risk ratios. Incidence rates were calculated per 100 athlete-seasons. Players' injuries were categorized by the injury characteristics in Table 1 and are reported as numbers and percentages. Chi-square (χ^2) cross-tabulation and 1-sample tests were conducted to determine statistically significant associations between injury characteristics and player groups. The strength of association was quantified using phi (ϕ) for χ^2 cross-tabulation tests. Statistical significance for χ^2 tests with expected cell frequencies less than 5 used either Fisher exact test (χ^2 cross-tabulation tests) or an exact goodness-of-fit test (χ^2 1-sample tests). The α value was set at $P < .05$. Risk and rate ratios with confidence intervals not including 1.00 were considered statistically significant. Analysis was carried out using SPSS Version 22 (IBM Corp).

RESULTS

Characteristics

A total of 422 players responded from 56 of 78 UK university American football teams. Twelve players were

excluded from analysis because of inadequate completion of the survey or not meeting eligibility criteria, leaving 410 player responders (11% of the estimated population) for analysis. The mean age of the participants was 21.3 years (range, 18-37 years). In total, 95.6% of the participants were 18 to 25 years of age, and 99.3% were men (407 men, 3 women). Of the participants, 341 (83.2%) started playing American football at university and 162 (39.5%) had never played American football before the 2014-2015 season.

Injury and Concussion Rates

A total of 710 injuries and 204 concussions were reported among the 410 participants, of which 334 (81.5%) were injured and 131 (32.0%) were concussed during the 2014-2015 season. In total, the injury and concussion rates were 173.2 injuries per 100 athlete-seasons (95% CI, 160.7-186.4) and 49.8 concussions per 100 athlete-seasons (95% CI, 43.2-57.1). Injury and concussion rates by player position and playing experience are shown in Figures 1 and 2 and Table 2.

There were no significant differences in injury or concussion rates by playing experience. Overall, defensive players had a significantly higher injury rate than offensive players (rate ratio, 1.26; 95% CI, 1.11-1.40), acquiring 40.2 more injuries per 100 athlete-seasons. Defensive and offensive players had a roughly equal concussion rate (rate ratio, 1.07; 95% CI, 0.79-1.34). Defensive linemen had the highest injury rate, which was significantly higher than that of offensive linemen, defensive backs, wide receivers, and quarterbacks ($P < .05$). Linebackers had the second highest injury rate, which was significantly higher than that of wide receivers ($P < .05$). Running backs, defensive linemen and special teams players had the highest

TABLE 2
Number and Incidence Rate of Injuries and Concussions by Player Position and Playing Experience

	No. of Exposures, Athlete-Seasons[a]	Injuries		Concussions	
		No. of Injuries	Incidence Rate (95% CI)[b]	No. of Concussions	Incidence Rate (95% CI)[b]
Player position					
Offense overall	216	335	155.1 (138.9-172.6)	105	48.6 (39.8-58.8)
Quarterback	20	23	115.0 (72.9-172.6)	9	45.0 (27.1-68.6)
Running back	42	74	176.2 (138.3-221.2)	32	76.2 (52.1-107.6)[c]
Wide receiver	66	90	136.4 (109.7-167.6)	18	27.3 (16.2-43.1)
Tight end	9	17	188.9 (110.0-302.4)	1	11.1 (0.3-61.9)
Offensive lineman	79	131	165.8 (138.6-196.8)	45	57.0 (41.5-76.2)
Defense overall	191	373	195.3 (176.0-216.1)[c]	99	51.8 (42.1-63.1)
Defensive lineman	48	117	243.8 (201.6-292.1)[c]	31	64.6 (43.9-91.7)[c]
Defensive back	73	116	158.9 (131.3-190.6)	34	46.6 (32.2-65.1)
Linebacker	70	140	200.0 (168.2-236.0)[c]	32	45.7 (31.3-64.5)
Special teams	3	2	66.7 (8.1-240.8)	2	66.7 (8.1-240.8)
Playing experience, y					
0	162	277	171.0 (151.4-192.4)	54	33.3 (25.0-43.5)
1	106	199	187.7 (162.6-215.7)	56	52.8 (39.9-68.6)
2	65	102	156.9 (128.0-190.5)	34	52.3 (36.2-73.1)
3	30	52	173.3 (129.5-227.3)	30	100.0 (67.5-142.8)
≥4	47	80	170.2 (135.0-211.8)	30	63.8 (43.1-91.1)

[a]Total exposures = 410 athlete-seasons.
[b]Per 100 athlete-seasons.
[c]$P < .05$, based on 95% CIs, compared with another mutually exclusive group within the same category.

concussion rates. Running back and defensive linemen had significantly higher concussion rates than those of wide receivers ($P < .05$).

Risk of Injury and Concussion

The risks that a player would sustain at least 1 injury over the course of the season was 81% (95% CI, 77.7%-85.2%), and the risk that a player would sustain at least 1 concussion over the course of the season was 32% (95% CI, 27.6%-36.6%). Injury and concussion incidence proportions and risks by player position and playing experience are shown in Table 3.

In total, 168 (41.0%) players had acquired a concussion before the season. Of these players, 76 (45.2%) acquired a concussion during the season. On the other hand, of the 242 players with no concussion history, only 55 (22.7%) acquired a concussion during the season (Figure 3). There was a statistically significant association between having a concussion before the season and acquiring a concussion during the season, $\chi^2(1) = 23.111$ ($P < .001$). The association had a small-to-moderate effect size ($\phi = 0.237$; $P < .001$; risk ratio, 1.99; 95% CI, 1.50-2.65).

Injuries by Body Part and Injury Type

The most commonly injured body parts were the knee (20%), shoulder (17%), and hand (13%). Head injuries occurred significantly more in games (90.9%) compared with other body parts ($P < .001$). Hand and upper leg injuries occurred significantly more in practices (67.4% and 76.9%, respectively) compared with other body parts (P

= .015 and .026, respectively). Significantly more knee injuries were severe (50.0%) compared with other body parts ($P = .002$).

The most common injury types were ligament injuries (28%), muscle strains (19%), and bone fractures (15%). Concussions occurred significantly more in games (91.3%) than in practices compared with other injury types ($P < .001$). Significantly fewer muscle strains were severe (17.5%) compared with other injury types ($P = .015$). The most commonly injured body part and injury type combinations, their proportions of all severe injuries, the most common type of athletic exposure, and the most common injury mechanisms are shown in Table 4.

Injury Characteristics

Of the injuries reported, 101 (30.2%) were recurrent, 266 (79.6%) were caused by an impact, and 66 (19.8%) occurred from overuse. In total, 172 (51.5%) of the injuries occurred in games and 162 (48.5%) occurred in practices. The type of exposure during which injury occurred, by player position, is shown in Figure 4.

Wide receivers were injured significantly more in practices (63.8%) compared with other positions ($P = .041$). Cornerbacks had significantly more overuse injuries (33.3%) compared with other positions ($P = .048$).

The most common time loss category for an injury was >4 weeks (31.1%), indicative of severe injury. No significant differences in injury severity or recurrence of injury were found between positions.

TABLE 3
Incidence Proportion and Risk for Injuries and Concussions by Player Position and Playing Experience

		Injuries			Concussions		
	Total No. of Players	No. of Players Injured	Incidence Proportion (95% CI)	Risk of Acquiring ≥1 Injuries, %[a]	No. of Players Concussed	Incidence Proportion (95% CI)	Risk of Acquiring ≥1 Concussions, %[a]
Player position							
Offense overall	216	174	0.806 (0.748-0.853)	81	66	0.306 (0.248-0.370)	31
Quarterback	20	15	0.750 (0.531-0.888)	75	6	0.300 (0.145-0.519)	30
Running back	42	37	0.881 (0.750-0.948)	88	18	0.429 (0.291-0.578)	43
Wide receiver	66	51	0.773 (0.658-0.857)	77	12	0.182 (0.107-0.291)	18
Tight end	9	7	0.778 (0.453-0.937)	78	1	0.111 (0.020-0.435)	11
Offensive lineman	79	64	0.810 (0.710-0.881)	81	29	0.367 (0.269-0.477)	37
Defense overall	191	158	0.827 (0.767-0.874)	83	64	0.335 (0.272-0.405)	34
Defensive lineman	48	45	0.938 (0.832-0.979)	94	17	0.354 (0.234-0.496)	35
Defensive back	73	52	0.712 (0.600-0.803)	71	21	0.288 (0.197-0.400)	29
Linebacker	70	61	0.871 (0.773-0.931)	87	26	0.371 (0.268-0.489)	37
Special teams	3	2	0.667 (0.208-0.939)	67	1	0.333 (0.061-0.792)	33
Playing experience, y							
0	162	131	0.809 (0.741-0.862)	81	36	0.222 (0.165-0.292)	22
1	106	96	0.906 (0.835-0.948)	91	37	0.349 (0.265-0.444)	35
2	65	51	0.785 (0.670-0.867)	79	24	0.369 (0.262-0.491)	37
3	30	21	0.700 (0.521-0.833)	70	15	0.500 (0.332-0.668)	50
≥4	47	35	0.745 (0.605-0.847)	75	19	0.404 (0.276-0.547)	40

[a]Risks are calculated as the risk over the course of 1 season.
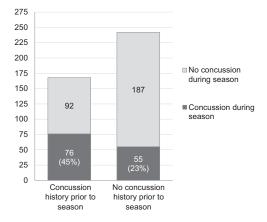

Figure 3. Rate of concussion during the season for players with versus without a history of concussion.

DISCUSSION

This is the first study to document American football injuries in university players in the United Kingdom. Compared with US players, UK university players had less playing experience, greater concussion risks, and more severe injuries, and a greater proportion of injuries were seen in defensive players. We highlight a very different, more amateur setup for American football in UK universities compared with US colleges, with substantial differences in player experience, strength and conditioning, funding, coaching, officiating, and medical facilities.

Almost 2 in 5 players had no experience before the 2014-2015 season, and more than 4 in 5 played American football for the first time at university. This is entirely different from the competitive situation in the United States, where only 6.5% of high school players make it on to college teams[29] and organized football starts at the grade school level. Less experienced players, such as those in the United Kingdom, are less likely to have developed good tackling technique compared with more experienced players, as it requires proper training and consolidated practice.[33] This may explain why defensive players were found to have higher injury rates than offensive players, which is in marked contrast to the United States and Japan, where offensive players have the higher injury rates.[10,19,33] Defensive and offensive players in the United Kingdom had a roughly equal concussion rate overall, which is consistent with findings in the United States.[12] Similar to previous studies,[1,10,19,33] running backs and linebackers were among the positions with the highest injury rates. These positions are often injured because of their involvement in high-speed tackles.[33] Injury rates in offensive and defensive linemen were proportionally higher than in US collegiate players.[33] This is likely due to teams in the United Kingdom having small roster sizes (similar to US high schools) and linemen having to play for entire games, unlike in US colleges, where second- and third-string substitutes are available.[1,11]

Approximately 1 in 3 UK university players (32%) sustained at least 1 concussion over the course of the season, which is over 3 times the risk reported in US American football (4%-10%).[11] The high concussion risk reported by this study should be interpreted with caution because of

TABLE 4
Most Common Body Part and Injury Type Combinations With Percentages of All Injuries, All Severe Injuries,
Most Common Type of Athletic Exposure, and Most Common Injury Mechanism[a]

Body Part	Injury Type	Frequency	Percentage of All Injuries	Percentage of All Severe Injuries	Most Common Type of Athletic Exposure (%)	Most Common Injury Mechanism (%)
Knee	Ligament injury	34	10.2	24.6	Game (65)	Impact (85)
Ankle	Ligament injury	28	8.4	10.1	Equal (50)[b]	Impact (79)
Hand	Bone fracture	23	6.9	7.2	Practice (70)	Impact (100)
Head	Concussion	22	6.6	5.8	Game (91)	Impact (100)
Shoulder	Dislocation/subluxation	17	5.1	11.6	Practice (53)	Impact (94)
Shoulder	Ligament injury	13	3.9	7.2	Practice (54)	Impact (92)
Upper leg	Muscle-tendon strain	12	3.6	5.8	Practice (75)	Overuse (67)
Shoulder	Muscle-tendon strain	11	3.3	2.9	Game (55)	Impact (91)
Low back/pelvis	Muscle-tendon strain	10	3.0	1.4	Practice (60)	Impact (80)

[a]Only injuries with a frequency count >10 are included.
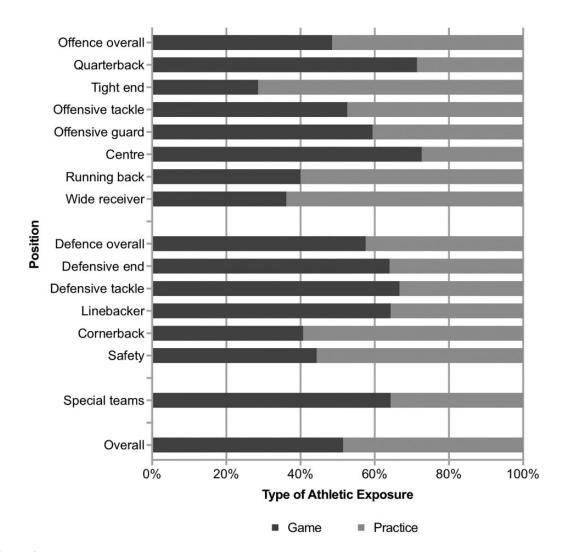[b]The numbers of game and practice injuries were equal.

Figure 4. Type of exposure during which injury occurred, by player position.

the self-diagnosed and self-reported data it is based on; however, the high number of players reporting concussion symptoms is extremely concerning, especially in light of the second-impact syndrome[24] and potential long-term neurodegenerative effects.[25] UK players with a history of concussion had almost twice the risk of acquiring a concussion during the season compared with those with no history, which is consistent with findings in US players.[15] There is no enforced return-to-activity protocol after concussion in the United Kingdom. It is at the discretion of players to return to activity safely if advised to do so by match-day medical staff, who have no affiliation or continuity with teams. By contrast, NCAA football players in the United States are started on a detailed return-to-activity protocol by their medical teams and monitored to ensure compliance.[30]

Knee, shoulder, and hand injuries made up a greater proportion of injuries compared with US high school and college injuries.[33] The knee was the most common injury site among offensive players in the United Kingdom and makes up a similar proportion of injuries to offensive players in the United States.[33] Defensive players in the United Kingdom were most injured at the shoulder, whereas US defensive players most commonly had head injuries. More shoulder injuries in defensive players could be another indication of poor tackling technique in the United Kingdom, with players failing to protect their shoulders when tackling.[33]

Consistent with US high school and college injuries,[33] ligament injuries and muscle strains were the most common injury types. Also in keeping with findings in the United States,[10] knee and ankle ligament injuries were the most common injuries and made up a similar proportion of all severe injuries. Hand fractures made up a much larger proportion of UK injuries (6.9%) than they did of US injuries (1%), and many of these fractures occurred in practices (70%). This may be due to more contact in practices in the United Kingdom, similar to practices in Japan.[19,21]

The time loss spread by position was similar to that shown in US high schools.[1] However, the most common time loss category (>4 weeks) was much longer than that in US colleges and high schools (≤6 days).[1,33] This may be due to underreporting of minor injuries, as is common in self-reported retrospective injury data.[14] More severe injuries may also be a result of a lack of formal player strengthening and conditioning or to match officials who are less experienced at policing illegal contact.

The implementation of an injury surveillance program similar to that used in the NCAA[9] or BUCS Super Rugby[6] would allow for a more comprehensive description of injuries, from which targeted injury prevention strategies could then be recommended. Since we lack higher-resolution data at present, broad injury prevention strategies should be considered based on the findings of this study. These could include designated team personnel to monitor injuries and concussion protocols, limited contact at practices, improved coach and referee training, strength and conditioning programs, and a period of technique development before participation in competitive contact.

Limitations

The primary limitations of this study are the retrospective survey design, the lack of exposure data, and the nonresponder rate. Survey data have well-established responder biases that may overrepresent the true injury incidence and underrepresent minor injuries. We place particular caution on the concussion response data, as this was a self-report of concussion symptoms as opposed to a medical diagnosis. The response rate accounted for only 11% of the estimated population; however, this is a reasonable response rate for a population survey tool.[2] The wider representativeness of the data is unknown, as this was the first survey reported in a UK university football population, but the injury rates reported seem broadly credible in comparison with the wider literature.

Future surveys, ideally on an annual basis, are vital to evaluate the validity and reliability of this initial data report. More detailed collection of exposure data would have allowed for the calculation of injury rates using athlete-exposures, which are more comparable with the literature than athlete-seasons, and this should also be a focus of future research. Additionally, collection of data on the factors that separate UK and US football will aid in the comparison of injury data and identification of contributors to injury. Once an injury surveillance system has been established, data on other factors known to affect injury rates, such as player size,[3,22] playing surface,[15] time of year,[10] and type of play,[33] can be collected to enhance understanding of the contributors to injury in the United Kingdom.

CONCLUSION

This was the first study to document and analyze American football injuries in UK university players. UK university players appear to have less playing experience, greater concussion risks, more severe injuries, and a greater proportion of injuries to defensive players than their US counterparts. These results suggest that injury rate and type may be related to skill and tackling technique. The introduction of a national injury surveillance system in UK university American football would be a sensible first step to developing a comprehensive injury mitigation strategy.

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APPENDIX
Player Questionnaire

Player Profile

1. What is your date of birth?_____

2. What is your gender?
   a. Male
   b. Female
   c. Other

3. What team did you play for in the 2014/15 season?_____

4. How many injuries did you sustain playing American football during the 2014/15 season? For the purposes of this survey, this is the definition of injury: "*A physical complaint that occurred as a direct result of participation in an organized American football training session or match and resulted in time missed from training or matches.*"
   a. 0
   b. 1
   c. 2
   d. 3
   e. 4
   f. 5+

5. What was the main position you played during the 2014/15 season? (most time spent playing)

a. Quarterback
b. Running back
c. Wide receiver
d. Tight end
e. Center
f. Offensive guard
g. Offensive tackle
h. Linebacker
i. Defensive tackle
j. efensive end
k. Safety
l. Cornerback
m. Kicker
n. Special teams

6. For how many complete seasons have you played American football? (including the 2014/15 season, but NOT including the current 15/16 season)
    a. 1
    b. 2
    c. 3
    d. 4
    e. 5+

7. For how many years had you played American football prior to university?
    a. 0
    b. 1
    c. 2
    d. 3
    e. 4
    f. 5+

Injury Characteristics

1. What body part did you injure?
    a. Head
    b. Neck
    c. Sternum/ribs
    d. Upper back
    e. Abdomen
    f. Lower back/pelvis
    g. Shoulder
    h. Upper arm
    i. Elbow
    j. Forearm
    k. Wrist
    l. Hand
    m. Upper leg
    n. Knee
    o. Lower leg
    p. Ankle
    q. Foot

2. What type of injury was it? (If you do not think your injury fits in to any of these categories, do your best to describe your injury in as much detail as possible after selecting "Other.")
    a. Concussion
    b. Bone fracture (broken bone)
    c. Dislocation/subluxation
    d. Ligament injury/sprain/tear
    e. Meniscal tear
    f. Cartilage damage
    g. Muscle rupture/strain/tear/cramps
    h. Tendon rupture/tendinosis/bursitis
    i. Bruise
    j. Abrasion (graze/light cut)
    k. Laceration (deep cut)
    l. Nerve injury
    m. Dental injury
    n. Other

3. Prior to your injury, had you experienced the same injury at the same site before?
    a. Yes
    b. No

4. Was the injury due to an impact (eg, a tackle) or non-impact/overuse (eg, cramp) event?
    a. Impact
    b. Nonimpact/overuse

5. Did the injury occur in training or during a match?
    a. Training
    b. Match

6. What position were you playing when you were injured?
    a. Quarterback
    b. Running back
    c. Wide receiver
    d. Tight end
    e. Center
    f. Offensive guard
    g. Offensive tackle
    h. Linebacker
    i. Defensive tackle
    j. Defensive end
    k. Safety
    l. Cornerback
    m. Kicker
    n. Special teams

7. How much time did you miss from full-contact training/ matches as a result of the injury?
    a. 1 to 3 days
    b. 4 to 7 days
    c. 1 to 4 weeks
    d. >4 weeks

Concussion Information

1. How many concussions did you suffer from playing American football during the 2014/15 season? *Presence of any of the following symptoms as a result of a direct blow to the head or to other parts of the body resulting in rapid movement of the head may suggest concussion:*
    - *Headache*
    - *Dizziness*
    - *Mental clouding, confusion, or feeling slowed down*
    - *Visual problems*

- *Nausea or vomiting*
- *Fatigue*
- *Drowsiness/feeling like "in a fog"/difficulty concentrating*
- *"Pressure in the head"*
- *Sensitivity to light or noise*

And/or a diagnosis of concussion by a medical professional.

    a. 0
    b. 1
    c. 2
    d. 3
    e. 4
    f. 5+

2. Had you ever had a concussion (from any activity) prior to the 2014/15 season?

    a. Yes
    b. No