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Epidemiology of Injuries in National Collegiate Athletic Association Men's Track and Field: 2014–2015 Through 2018–2019

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Context: College athletes have been competing in championship track and field events since 1921; the numbers of competing teams and participating athletes have expanded considerably.

Background: Monitoring injuries of men's track and field athletes using surveillance systems is critical in identifying emerging injury-related patterns.

Methods: Exposure and injury data collected in the National Collegiate Athletic Association Injury Surveillance Program during the 2014–2015 through 2018–2019 academic years were analyzed. Injury counts, rates, and proportions were used to describe injury characteristics; injury rate ratios were used to examine differential injury rates.

Results: Overall, men's track and field athletes were injured at a rate of 2.37 per 1000 athlete-exposures; injuries occurred at a higher rate during competition compared with practice. Most injuries were to the thigh (26.2%), lower leg (17.3%), or knee (10.7%) and were caused by noncontact (37.2%) or overuse (31.5%) mechanisms. The most reported injury was hamstring tear (14.9%).

Summary: The etiologies of thigh and lower-leg injuries warrant further attention in this population. Future researchers should also separately examine injury incidence during indoor and outdoor track and field seasons.

Key Words: collegiate, sport-related, surveillance

Key Points

- Overall, and across five years, the competition injury rate was higher than the practice injury rate.
- The overall preseason injury rate was not different than the regular season injury rate.
- Nearly half of all competition-related injuries were diagnosed as strains and were ankle-related.

Though not considered a contact or collision sport, track and field combines running, throwing, and jumping field events, making athletes susceptible to both acute and chronic injuries. Running events include long-distance, sprinting, and hurdle events, and field events include throwing as well as horizontal and vertical jumping. Each of these requires rigorous and event-specific training, leading to a wide spectrum of possible injuries. Importantly, the popularity of men's track and field events has steadily grown at the collegiate level. Over the past 3 decades in particular, participation in men's track and field within the National Collegiate Athletic Association (NCAA) has increased from 422 to 734 teams in indoor track and field and from 577 to 834 teams in outdoor track and field.[1] Given the observed popularity of and participation in men's track and field, it is important to continue surveying injury incidence in this complex and growing sport.

Sports injury surveillance allows for the continuous monitoring of injury-related patterns[2,3] and has been integrated into the NCAA since 1982[4] via the NCAA Injury Surveillance Program (ISP).[5] Using the ISP, previous researchers have been able to describe injury incidence and outcomes in men's track and field, yet there exists a paucity of epidemiologic evidence in this population. In the extant literature, it has been previously noted that overuse injuries impose a particular burden among NCAA men's track and field athletes.[6] It has also been noted that the lower extremity is most affected in this population,[6,7] with hamstring strains accounting for the majority of both injury and outdoor injuries.[7] As men's track and field continues to grow, it is important to update these findings in order to identify injury incidence patterns and better inform injury prevention practices. Accordingly, the purpose of this study is to describe the epidemiology of track and field–related injuries captured among NCAA men's track and field athletes between 2014–2015 and 2018–2019.

The articles in this issue are published as accepted and have not been edited.

METHODS

Study Data

Men's track and field–related (indoor and outdoor) exposure and injury data collected in the NCAA-ISP

Table 1. Reported and National Estimates of Injuries, Athlete-Exposures (AEs), and Rates per 1000 AEs by Event Type Across Divisions[a]

Division	Overall: Reported	Overall: National Estimate	Practices: Reported	Practices: National Estimate	Competitions: Reported	Competitions: National Estimate
	Number AEs Rate per 1000 AEs (95% CI)					
I	523	26 812	380	19 337	143	7475
	178 962	8 855 757	154 172	7 713 464	24 790	1 142 294
	2.92 (2.67, 3.17)	3.03 (2.78, 3.28)	2.46 (2.22, 2.71)	2.51 (2.26, 2.75)	5.77 (4.82, 6.71)	6.54 (5.60, 7.49)
II	222	8796	169	6015	53	2780
	132 278	5 230 799	114 069	4 477 599	18 209	753 200
	1.68 (1.46, 1.90)	1.68 (1.46, 1.90)	1.48 (1.26, 1.70)	1.34 (1.12, 1.57)	2.91 (2.13, 3.69)	3.69 (2.91, 4.47)
III	336	21 820	251	16 278	85	5543
	144 368	8 390 659	120 012	7 227 064	24 356	1 163 595
	2.33 (2.08, 2.58)	2.60 (2.35, 2.85)	2.09 (1.83, 2.35)	2.25 (1.99, 2.51)	3.49 (2.75, 4.23)	4.76 (4.02, 5.51)
Overall	1081	57 427	800	41 630	281	15 798
	455 609	22 477 216	388 254	19 418 127	67 355	3 059 089
	2.37 (2.23, 2.51)	2.55 (2.41, 2.70)	2.06 (1.92, 2.20)	2.14 (2.00, 2.29)	4.17 (3.68, 4.66)	5.16 (4.68, 5.65)

[a] Data presented in the order of reported number, followed by athlete exposures (AEs), estimated injury rates, and associated 95% Confidence Intervals (CIs) for each cross-tabulation of division and event types. Data pooled association-wide are presented overall, and separately for practices and competitions. National estimates were produced using sampling weights estimated on the basis of sport, division, and year. All CIs were constructed using variance estimates calculated on the basis of reported data. A reportable injury was one that occurred due to participation in an organized intercollegiate practice or competition, and required medical attention by a team Certified Athletic Trainer or physician (regardless of time loss). Only scheduled team practices and competitions were retained in this analysis.

during the 2014–2015 through 2018–2019 academic years were analyzed in this study. The methods of the NCAA-ISP have been reviewed and approved as an exempt study by the NCAA Research Review Board. The methods of the surveillance program are detailed separately within this special issue. Briefly, certified athletic trainers (ATs) at participating institutions contributed relevant injury and exposure data using their clinical electronic medical record systems. A reportable injury was one that occurred because of participation in an organized intercollegiate practice or competition and required medical attention by a team AT or physician (regardless of time loss [TL]).[8] Scheduled team practices and competitions were considered reportable exposures for this study. Data from 13 participating programs (2% of membership) in 2014–2015, 9 (1% of membership) in 2015–2016, 10 (1% of membership) in 2016–2017, 20 (2% of membership) in 2017–2018, and 49 (6% of membership) in 2018–2019 qualified for inclusion in analyses. Qualification criteria are detailed in the methods manuscript.[8]

Statistical Analysis

Injury counts and rates (per 1000 athlete-exposures [AEs]; 1 AE was defined as 1 athlete participating in 1 exposure event) were evaluated by event type (practice, competition), competition level (Division I, Division II, Division III), season segment (preseason, regular season, postseason), and TL (TL, non-time loss [NTL]). Weighted and unweighted rates were estimated, and results are presented in terms of unweighted rates because of low frequencies of injury observations across levels of certain covariates unless otherwise specified. Temporal patterns (changes in injury incidence over time) in injury rates across the study period were evaluated using rate profile plots stratified across the aforementioned variables. Similarly, temporal trends in rates of most commonly reported injuries were also examined across the study period. Injury counts and proportions were examined by TL, body part injured, injury mechanism, injury diagnosis, playing position, and activity. Injury rate ratios (IRRs) were used to examine differential injury rates across event type, competition level, and season segment. Injury rate ratios with associated 95% CIs excluding 1.00 were considered statistically significant. All analyses were conducted using SAS (version 9.4; SAS Institute).

RESULTS

A total of 1081 men's track and field injuries from 455 609 AEs were reported to the NCAA-ISP between 2014–2015 and 2018–2019 (rate = 2.37 per 1000 AEs). This equated to a national estimate of 57 427 injuries overall (Table 1). A total of 281 injuries were reported from competition events during the study period, and the competition injury rate was significantly higher than the practice injury rate (IRR = 2.02; 95% CI = 1.77, 2.32). Practice injury rates increased from 2014–2015 to 2015–2016; a noteworthy decrease was observed between 2015–2016 and 2016–2017, and a slight increase between 2017–2018 and 2018–2019 (Figure A). Conversely, competition injury rates increased from 2014–2015 to 2015–2016, then continued to decrease until 2018–2019 (Figure A). The overall Division I injury rate (2.92 per 1000 AEs) was higher than the Division II (1.68 per 1000 AEs) and Division III (2.33 per 1000 AEs) injury rates; statistically significant differences were observed between Divisions I and II (IRR = 1.74; 95% CI = 1.49, 2.04), Division I and III (IRR = 1.26; 95% CI = 1.09, 1.44), and Divisions II and III (IRR = 0.72; 95% CI = 0.61, 0.85).

Injuries by Season Segment

Across the study period, 322 preseason injuries (national estimate = 16 600), 715 regular-season injuries (national

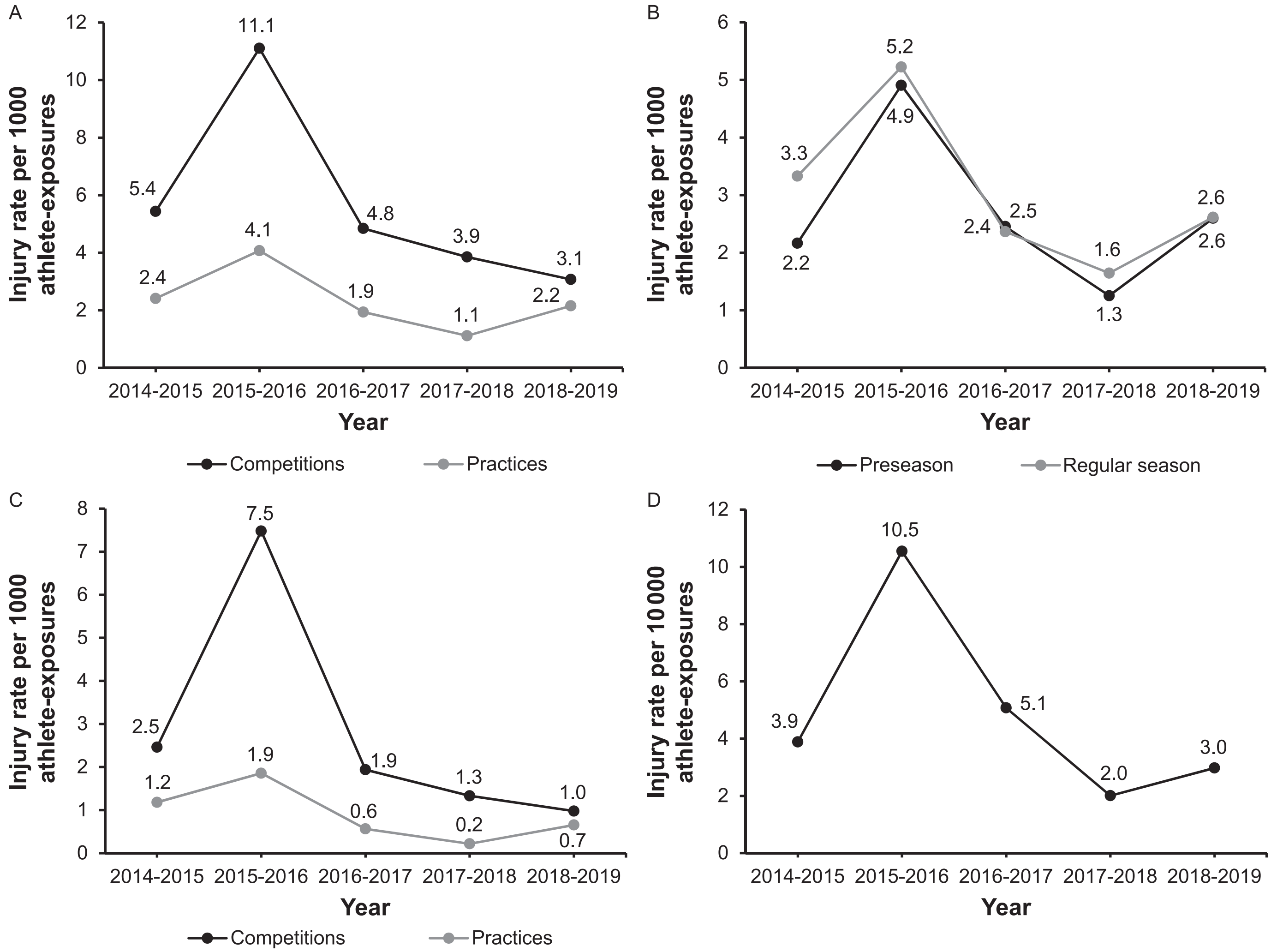

Figure. Temporal patterns in injury rates between 2014–2015 and 2018–2019. A, Overall injury rates (per 1000 athlete-exposures [AEs]) stratified by event type (practices, competitions). B, Injury rates (per 1000 AEs) stratified by season segment. C, Rates of time-loss injuries stratified by event type (practices, competitions) (per 1000 AEs). D, Rates (per 10 000 AEs) of most commonly reported injuries: partial or complete hamstring tears. Rates presented in all figures are unweighted and based on reported data.

estimate = 37 418), and 44 postseason injuries (national estimate = 3409) were reported in men's track and field athletes (Table 2). Notably, injury rates among all 3 season segments increased during the final year of the study. The injury rate was significantly higher in the preseason (IRR = 2.59; 95% CI = 1.89, 3.55) and regular season (IRR = 2.88; 95% CI = 2.13, 3.91), as compared with the postseason. Preseason and regular-season injury rates varied comparably across the study period (Figure B). Postseason injury rates were not calculated because of low injury counts across the study period.

Time Loss

More than one-third (36.3%) of all reported injuries resulted in TL of 1 day or more (approximately 26% of all injuries were missing TL information). The prevalence of TL injuries was higher among competition (41.3%) than practice-related (34.5%) injuries. Rates of practice-related TL injuries were lower than rates of competition-related TL, and practice-related TL injury rates were markedly more stable across the study period (Figure C).

Injury Characteristics

Overall, the most commonly injured body parts were the thigh (26.2%), lower leg (17.3%), and knee (10.7%). During competition, the most prevalently injured body parts were the thigh (36.3%), ankle (12.5%), and knee (10.3%). In practice, the most prevalently injured body parts were the thigh (22.6%), lower leg (20.4%), and knee/trunk (10.9%). Lower leg injuries accounted for a greater proportion of practice (20.4%) than competition (8.5%) injuries (Table 3). Noncontact (37.2%) and overuse (31.5%) injuries were the most frequently reported mechanisms of injury overall. Notably, the prevalence of overuse injuries was higher in practice (35.8%) than in competition (19.2%), whereas a greater proportion of competition (17.4%) as compared with practice injuries (8.1%) was attributed to surface contact.

Between 2014–2015 and 2018–2019, the most frequently reported injuries were strains (33.6%), inflammatory conditions (musculoskeletal pathologies with degenerative characteristics in the tissue involved, such as bursitis, capsulitis, etc; 18.6%), and sprains (9.4%). The prevalence of strains was higher in competition (42.4%) than in

Table 2. Reported and National Estimates of Injuries, Athlete-Exposures (AEs), and Rates per 1000 AEs by Season Segment Across Divisions[a]

Division	Preseason Reported	Preseason National Estimate	Regular Season Reported	Regular Season National Estimate	Post Season Reported	Post Season National Estimate
	Number AEs Rate per 1000 AEs (95% CI)					
I	167 65 450 2.55 (2.16, 2.94)	9042 3 525 428 2.56 (2.18, 2.95)	348 106 279 3.27 (2.93, 3.62)	17 153 4 861 797 3.53 (3.18, 3.87)	8 7234 1.11 (0.34, 1.87)	617 468 532 1.32 (0.55, 2.08)
II	94 47 926 1.96 (1.56, 2.36)	3903 1 913 523 2.04 (1.64, 2.44)	122 78 041 1.56 (1.29, 1.84)	4419 3 054 277 1.45 (1.17, 1.72)	6 6311 0.95 (0.19, 1.71)	474 262 999 1.80 (1.04, 2.56)
III	61 22 725 2.68 (2.01, 3.36)	3656 2 263 085 1.62 (0.94, 2.29)	245 87 016 2.82 (2.46, 3.17)	15 847 4 496 549 3.52 (3.17, 3.88)	30 34 627 0.87 (0.56, 1.18)	2318 1 631 025 1.42 (1.11, 1.73)
Overall	322 136 101 2.37 (2.11, 2.62)	16 600 7 702 037 2.16 (1.90, 2.41)	715 271 336 2.64 (2.44, 2.83)	37 418 12 412 623 3.01 (2.82, 3.21)	44 48 172 0.91 (0.64, 1.18)	3409 2 362 556 1.44 (1.17, 1.71)

[a] Data presented in the order of reported number, followed by athlete exposures (AEs), estimated injury rates, and associated 95% Confidence Intervals (CIs) for each cross-tabulation of division and season segments. Data pooled association-wide are presented overall, and separately for preseason, regular season, and post season. National estimates were produced using sampling weights estimated on the basis of sport, division, and year. All CIs were constructed using variance estimates calculated on the basis of reported data. A reportable injury was one that occurred due to participation in an organized intercollegiate practice or competition and required medical attention by a team certified athletic trainer or physician (regardless of time loss). Only scheduled team practices and competitions were retained in this.

practice (30.5%), whereas the prevalence of inflammatory conditions was higher in practice (22.3%) than in competition (8.2%). The prevalence of spasms was similar in competition (8.9%) and in practice (8.3%). The most commonly reported injuries during the study period were partial or complete hamstring tears (14.9%), partial or complete lateral ligament complex tears (ankle sprains) (5.0%), hamstring spasms (4.1%), and medial tibial stress syndrome (4.1%). The rate of hamstring tears fluctuated across the study period (Figure D). Temporal patterns in rates of lateral ligament complex tears, hamstring spasms, and medial tibial stress syndrome are not reported because of low injury frequencies ($n < 5$) observed in certain years across the study period.

Injuries by Track and Field–Specific Activities and Positions

Most reported injuries in men's track and field between 2014–2015 and 2018–2019 occurred during sprinting activities (29.9%) and distance running (21.3%). A higher prevalence of sprinting injuries was observed in competition (36.3%) than in practice (27.6%). Distance-running injuries were more prevalent in practice (24.0%) compared with competition injuries (13.5%). Overall, most injuries were reported among runners (60.9%), jumpers (14.7%), and throwers (11.1%). Comparable proportions of competition and practice injuries were reported among runners (Table 4). Injuries to jumpers accounted for a higher proportion of competition (18.5%) than practice injuries (13.4%).

SUMMARY

We have described the epidemiology of NCAA men's track and field–related injuries reported to the NCAA-ISP between 2014–2015 and 2018–2019. Overall, the competition injury rate was significantly higher than the practice injury rate, similar to findings observed in other populations of track and field athletes and in other sports.[9,10] However, it is important to acknowledge that this may be considered paradoxical in men's track and field given the inherent mechanics of the sport. For instance, in men's track and field events, there is typically minimal contact with other competitors or unanticipated events during competition.[11] Examining injury rates by year reveals that overall and TL competition (and practice) injury rates increased markedly from 2014–2015 to 2015–2016, and subsequently decreased reflexively and stabilized (Figure C). A possible contributing factor to the observed injury rate inflection may be related to AT nuances in the reporting of injuries (potentially due to insufficient definitional clarity in certain circumstances) having had a greater impact on the observed estimates during years in which participation in the NCAA-ISP among track and field programs was low.[12] Moreover, it has been proposed that improvements in shoe technology,[13–15] amendments to NCAA track and field rules,[16] and advancements in preventative injury practices and rehabilitation techniques[17] may have influenced the overall injury rate decline previously described. In examining the temporal patterns (changing injury incidence over time) in injury incidence across the present study period, it may be noted that estimates from the latter years of the study are likely more indicative of injury incidence in this population, given the increased number of participating schools. National Collegiate Athletic Association ISP recruitment strategies have evolved over time, and the improvements in participation reflect the success of recently used recruitment strategies (for instance, support and communication from the NCAA Sport Science Institute). Therefore, it is important to continue monitoring injury incidence in men's

Table 3. Distribution of Injuries by Body Part, Mechanism, and Injury Diagnosis, Stratified by Event Type[a]

	Overall		Competitions		Practices	
	Injuries Reported (%)	National Estimates (%)	Injuries Reported (%)	National Estimates (%)	Injuries Reported (%)	National Estimates (%)
Injury site						
Head/face	21 (1.94)	1001 (1.74)	8 (2.85)	347 (2.20)	13 (1.63)	654 (1.57)
Neck	3 (0.28)	77 (0.13)	1 (0.36)	36 (0.23)	2 (0.25)	41 (0.10)
Shoulder	20 (1.85)	1058 (1.84)	2 (0.71)	127 (0.80)	18 (2.25)	931 (2.24)
Arm/elbow	17 (1.57)	958 (1.67)	5 (1.78)	238 (1.51)	12 (1.50)	721 (1.73)
Hand/wrist	17 (1.57)	731 (1.27)	5 (1.78)	152 (0.96)	12 (1.50)	579 (1.39)
Trunk	106 (9.81)	6343 (11.05)	19 (6.76)	1496 (9.47)	87 (10.88)	4847 (11.64)
Hip/groin	92 (8.51)	4144 (7.22)	22 (7.83)	1023 (6.48)	70 (8.75)	3121 (7.50)
Thigh	283 (26.18)	16 331 (28.44)	102 (36.30)	5581 (35.33)	181 (22.63)	10 750 (25.82)
Knee	116 (10.73)	6880 (11.98)	29 (10.32)	2169 (13.73)	87 (10.88)	4711 (11.32)
Lower leg	187 (17.30)	9706 (16.90)	24 (8.54)	1255 (7.94)	163 (20.38)	8451 (20.30)
Ankle	95 (8.79)	4417 (7.69)	35 (12.46)	1746 (11.05)	60 (7.50)	2671 (6.42)
Foot	111 (10.27)	4872 (8.48)	26 (9.25)	1490 (9.43)	85 (10.63)	3381 (8.12)
Other	13 (1.20)	910 (1.58)	3 (1.07)	139 (0.88)	10 (1.25)	771 (1.85)
Mechanism						
Noncontact	402 (37.19)	27 147 (47.27)	108 (38.43)	7417 (46.95)	294 (36.75)	19 730 (47.39)
Contact with player	10 (0.93)	621 (1.08)	8 (2.85)	555 (3.51)	2 (0.25)	67 (0.16)
Contact with surface	114 (10.55)	4770 (8.31)	49 (17.44)	2051 (12.98)	65 (8.13)	2719 (6.53)
Contact with apparatus	45 (4.16)	1952 (3.40)	14 (4.98)	521 (3.30)	31 (3.88)	1430 (3.44)
Contact with out-of-bounds object	7 (0.65)	324 (0.56)	1 (0.36)	20 (0.13)	6 (0.75)	303 (0.73)
Overuse	340 (31.45)	15 446 (26.90)	54 (19.22)	2550 (16.14)	286 (35.75)	12 896 (30.98)
Illness/infection	11 (1.02)	737 (1.28)	1 (0.36)	79 (0.50)	10 (1.25)	658 (1.58)
Other/unknown	152 (14.06)	6431 (11.20)	46 (16.37)	2605 (16.49)	106 (13.25)	3825 (9.19)
Diagnosis						
Abrasion/laceration	10 (0.93)	702 (1.22)	4 (1.42)	162 (1.03)	6 (0.75)	540 (1.30)
Concussion	15 (1.39)	550 (0.96)	8 (2.85)	347 (2.20)	7 (0.88)	204 (0.49)
Contusion	48 (4.44)	2394 (4.17)	20 (7.12)	1185 (7.50)	28 (3.50)	1209 (2.90)
Dislocation/subluxation	5 (0.46)	317 (0.55)	0 (0)	0 (0)	5 (0.63)	317 (0.76)
Entrapment/impingement	8 (0.74)	270 (0.47)	2 (0.71)	93 (0.59)	6 (0.75)	177 (0.43)
Fracture	28 (2.59)	1575 (2.74)	6 (2.14)	333 (2.11)	22 (2.75)	1242 (2.98)
Illness/infection	2 (0.19)	345 (0.60)	0 (0)	0 (0)	2 (0.25)	345 (0.83)
Inflammatory condition	201 (18.59)	9401 (16.37)	23 (8.19)	1418 (8.98)	178 (22.25)	7982 (19.17)
Spasm	91 (8.42)	4787 (8.34)	25 (8.90)	1040 (6.58)	66 (8.25)	3746 (9.00)
Sprain	102 (9.44)	5027 (8.75)	34 (12.10)	1868 (11.82)	68 (8.50)	3159 (7.59)
Strain	363 (33.58)	21 349 (37.18)	119 (42.35)	6845 (43.33)	244 (30.50)	14 503 (34.84)
Other	208 (19.24)	10 712 (18.65)	40 (14.23)	2507 (15.87)	168 (21.00)	8205 (19.71)

[a] Data presented in the order of reported number, followed by the proportion of all injuries attributable to a given category. Data pooled across event types are presented overall, and separately for practices and competitions. National estimates were produced using sampling weights estimated on the basis of sport, division, and year. A reportable injury was one that occurred due to participation in an organized intercollegiate practice or competition, and required medical attention by a team Certified Athletic Trainer or physician (regardless of time loss). Only scheduled team practices and competitions were retained in this analysis.

track and field after 2018–2019 in order to appraise the evolving burden of injury in this population.

Preseason and regular-season injury rates were comparable across the study period, an observation that differs from other NCAA sports, in which higher preseason injury rates, compared with regular-season and postseason segments, are regularly observed.[10] The NCAA track and field season is markedly longer than that of other NCAA sports, as it incorporates indoor (October–February) and outdoor (March–June) seasons, and athletes can compete in both seasons. We suggest that the year-round nature of the sport demands the athlete be continually conditioned. This potentially circumvents the sudden increase in workload that is often associated with an augmented risk of injury during the preseason, consequently predisposing athletes to a higher risk of overuse injuries. It is important to mention that this study did not examine potential differences in injury rates between indoor and outdoor track seasons, as these data are not separated in ISP data collection. This is an inherent limitation of the ISP in its current form, and differential injury rates between the 2 seasons should be investigated in future studies. Subsequent authors should also examine the percentage of athletes that compete in both seasons and explore off-season season training characteristics. This will facilitate a comprehensive and accurate explanation of injury rates and trends among these athletes.

Describing the distribution of injuries via body parts, mechanisms, and activities offers greater insight into the injury characteristics of this biomechanically diverse, demanding sport. Not surprisingly, the body parts most often reported injured were in the lower extremities in both practice and competition, particularly muscular thigh injuries. Competition-related thigh injuries are likely the result of high-intensity workload coupled with high-risk maneuvers that result in changes to an athlete's running technique in an effort to increase speed. These changes, although minor, can lead to greater than optimal muscle

Table 4. Distribution of Injuries by Injury Activity and Playing Position, Stratified by Event Type[a]

	Overall		Competitions		Practices	
	Injuries Reported (%)	National Estimates (%)	Injuries Reported (%)	National Estimates (%)	Injuries Reported (%)	National Estimates (%)
Activity						
Jumping	194 (17.95)	10 995 (19.15)	72 (25.62)	4374 (27.69)	122 (15.25)	6622 (15.91)
High jump	38 (3.52)	2651 (4.62)	15 (5.34)	1068 (6.76)	23 (2.88)	1584 (3.80)
Long jump	55 (5.09)	3062 (5.33)	22 (7.83)	1180 (7.47)	33 (4.13)	1883 (4.52)
Triple jump	40 (3.70)	2586 (4.50)	19 (6.76)	1354 (8.57)	21 (2.63)	1232 (2.96)
Pole vaulting	61 (5.64)	2696 (4.69)	16 (5.69)	772 (4.89)	45 (5.63)	1923 (4.62)
Running	644 (59.57)	33 268 (57.93)	171 (60.85)	8727 (55.24)	473 (59.13)	24 541 (58.95)
Distance running	230 (21.28)	10 766 (18.75)	38 (13.52)	2102 (13.31)	192 (24.00)	8665 (20.81)
Hurdles	74 (6.85)	3916 (6.82)	23 (8.19)	1335 (8.45)	51 (6.38)	2582 (6.20)
Sprints	323 (29.88)	17 866 (31.11)	102 (36.30)	5016 (31.75)	221 (27.63)	12 850 (30.87)
Relays	13 (1.20)	586 (1.02)	4 (1.42)	141 (0.89)	9 (1.13)	445 (1.07)
Steeplechase	4 (0.37)	134 (0.23)	4 (1.42)	134 (0.85)	0 (0)	0 (0)
Throwing	84 (7.77)	5501 (9.58)	20 (7.12)	2019 (12.78)	64 (8.00)	3482 (8.36)
Hammer	23 (2.13)	1561 (2.72)	5 (1.78)	620 (3.92)	18 (2.25)	941 (2.26)
Discus	6 (0.56)	315 (0.55)	0 (0)	0 (0)	6 (0.75)	315 (0.76)
Javelin	31 (2.87)	2033 (3.54)	9 (3.20)	1029 (6.51)	22 (2.75)	1004 (2.41)
Shot put	24 (2.22)	1591 (2.77)	6 (2.14)	370 (2.34)	18 (2.25)	1222 (2.94)
Other or unknown	73 (6.75)	3234 (5.63)	13 (4.63)	575 (3.64)	6.3872	60 (7.50)
Conditioning	72 (6.66)	3392 (5.91)	1 (0.36)	20 (0.13)	71 (8.88)	3372 (8.10)
Weight	14 (1.30)	1037 (1.81)	4 (1.42)	82 (0.52)	10 (1.25)	955 (2.29)
Position						
Decathlete	37 (3.42)	2530 (4.41)	10 (3.56)	1052 (6.66)	27 (3.38)	1478 (3.55)
Heptathlete	10 (0.93)	670 (1.17)	10 (3.56)	670 (4.24)	0 (0)	0 (0)
Jumper	159 (14.71)	10 330 (17.99)	52 (18.51)	3355 (21.24)	107 (13.38)	6974 (16.75)
Pentathlete	1 (0.09)	20 (0.03)	0 (0)	0 (0)	1 (0.13)	20 (0.05)
Pole vaulter	52 (4.81)	2143 (3.73)	8 (2.85)	310 (1.96)	44 (5.50)	1833 (4.40)
Runner	658 (60.87)	32 293 (56.23)	168 (59.79)	8428 (53.35)	490 (61.25)	23 865 (57.33)
Thrower	120 (11.10)	7207 (12.55)	25 (8.90)	1542 (9.76)	95 (11.88)	5665 (13.61)
Unknown or other	44 (4.07)	2234 (3.89)	8 (2.85)	440 (2.79)	36 (4.50)	1794 (4.31)

[a] Data presented in the order of reported number, followed by the proportion of all injuries attributable to a given category. Data pooled across event types are presented overall, and separately for practices and competitions. National estimates were produced using sampling weights estimated on the basis of sport, division, and year. A reportable injury was one that occurred due to participation in an organized intercollegiate practice or competition, and required medical attention by a team Certified Athletic Trainer or physician (regardless of time loss). Only scheduled team practices and competitions were retained in this analysis.

lengthening that subsequently increases intramuscular strain.[18] Given the relationships between performance, stride length, and stride frequency, the musculature of the thigh is under exceptional stress during competition.[18] This, combined with bouts of high-intensity and -workload movements often associated with competition, may provide additional context as to why thigh injuries constitute a high proportion of competition-related injuries. The complex control required to perform rapid acceleration and achieve target velocity may also account for the high prevalence of muscular thigh injuries among both practice- and competition-related injuries. Conversely, lower leg injuries from practice may be the result of greater volumes of repetitive bouts at lower-intensity workload thresholds. Importantly, the high prevalence of noncontact and overuse mechanisms of injury for this athlete population is consistent with prior research.[9,17,19] These findings together emphasize the importance of monitoring the accumulation of workload in practice settings. This can be achieved using wearable devices to capture workload. Workload monitoring using wearable devices can augment exposure ascertainment by more precisely capturing at-risk exposure time at the athlete level. This can subsequently improve the precision of the injury incidence estimates presented above as well. This is outside the current scope of ISP data collection, although researchers should consider targeted studies using wearable devices to capture workload and examine the relationships between workload accumulation and injury risk.

Track and field comprises a variety of events with athletes competing (and training) for diverse biomechanics-specific domains. Future researchers may analyze injuries by more granular position or activity descriptions (for instance, short, middle, distance runner, multievent athletes, etc) rather than by aggregate. With that said, rigorous continual monitoring using surveillance-based systems that are routinely updated to facilitate high-fidelity data capture (with operational audits and periodic training for reporters) is vital in elucidating NCAA men's track and field injury trends. Surveillance-based systems can identify developing patterns that subsequent smaller sampled studies can be aimed at describing. This can be subsequently used to inform prophylactic and preventative injury objectives that reduce the burden of injury in this population.

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