Convenience Sample Summary Report

NATIONAL HIGH SCHOOL SPORTS-RELATED INJURY SURVEILLANCE STUDY

2022-23 School Year

Compiled by:
Christy Collins, PhD
Megan Anderson, MPH
Todd Burus, MAS

High School RIO™

High School Sports-Related Injury Surveillance Study

ACKNOWLEDGEMENTS

We thank the certified athletic trainers (ATs) for their hard work and dedication in providing us with complete and accurate data. Without their efforts, this study would not have been possible. We would like to thank the National Federation of State High School Associations (NFHS) for their support of this project. The content of this report was funded in part by the Centers for Disease Control and Prevention (CDC) grants #R49/CE000674-01 and #R49/CE001172-01. The content of this report is solely the responsibility of the authors and does not necessarily represent the official views of the CDC. We would also like to acknowledge the generous research funding contributions of the National Federation of State High School Associations (NFHS), National Operating Committee on Standards for Athletic Equipment (NOCSAE), and DonJoy Orthotics.

NOTE

The analyses presented here provide only a brief summary of collected data, with the feasibility of a more detailed presentation limited by the extensive breadth and detail contained in the dataset. The principal investigator, Christy Collins, PhD, is happy to provide further information or to discuss research partnership opportunities upon request.

For reprints/further information contact:

Christy Collins, PhD
President
Datalys Center for Sports Injury Research and Prevention

6151 Central Ave
Indianapolis, IN 46220
1-855-832-4222
highschoolrio@datalyscenter.org

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I. Introduction & Methodology

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1.1 Project Overview

To combat the epidemic of obesity among youth in the United States (US), adolescents must be encouraged to get up off the couch and participate in physically active sports, recreation, and leisure activities. Participation in high school sports, one of the most popular physical activities among adolescents, has grown rapidly from an estimated 4.0 million participants in 1971-72 to over 7.8 million in 2022-23. While the health benefits of a physically active lifestyle including participating in sports are undeniable, high school athletes are at risk of sports-related injury because a certain endemic level of injury can be expected among participants of any physical activity. The challenge to injury epidemiologists is to reduce injury rates among high school athletes to the lowest possible level without discouraging adolescents from engaging in this important form of physical activity. This goal can best be accomplished by investigating the etiology of preventable injuries; by developing, implementing, and evaluating protective interventions using such science-based evidence; and by responsibly reporting epidemiologic findings while promoting a physically active lifestyle among adolescents.

1.2 Background and Significance

High school sports play an important role in the adoption and maintenance of a physically active lifestyle among millions of US adolescents. Too often injury prevention in this population is overlooked as sports-related injuries are thought to be unavoidable. In reality, sports-related injuries are largely preventable through the application of preventive interventions based on evidence-based science. The morbidity, mortality, and disability caused by high school sports-related injuries can be reduced through the development of effective prevention strategies and through programmatic decisions based on injury prevention. However, such efforts rely upon accurate estimates of injury incidence, injury rate calculations, and risk and protective factor data. Previously, no injury surveillance system capable of providing researchers with the needed quality of injury and exposure data for high school sports-related injuries existed.

Since the 2005-06 school year, the National High School Sports-Related Injury Surveillance Study has monitored injuries among US high school athletes participating in boys' football, boys' and girls' soccer, girls' volleyball, boys' and girls' basketball, boys' wrestling, boys' baseball, and girls' softball. Other sports were added in subsequent years including girls' field hockey, girls' gymnastics, boys' volleyball, boys' ice hockey, boys' and girls' lacrosse, boys' and girls' swimming & diving, boys' and girls' track & field, boys' and girls' tennis, boys' and girls' cross country, and cheerleading (boys' volleyball, girls' gymnastics, and boys' and girls' tennis are no longer under surveillance). The study data have been collected using the time- and cost-efficient RIO (Reporting Information Online) surveillance system. Through the generous contributions of the National Federation of State High School Associations (NFHS) and the NFHS Foundation, the National High School Sports-Related Injury Surveillance Study was able to be continued during the 2022-23 school year. Previous years of this study were funded by the Centers for Disease Control and Prevention (CDC), National Federation of State High School Associations (NFHS), the National Operating Committee on Standards for Athletic Equipment (NOCSAE), the Research Institute at Nationwide Children's Hospital, DonJoy Orthotics, EyeBlack, and The Ohio State University.

During the 2019-20 school year, the National High School Sports-Related Injury Surveillance Study transitioned from Dr. Dawn Comstock at the University of Colorado to Dr. Christy Collins at the Datalys Center for Sports Injury Research and Prevention, Inc. Dr. Collins worked with Dr. Comstock on the National High School Sports-Related Injury Surveillance Study during the 2005-06 through 2013-14 school years and is carrying on the important work of this surveillance system.

1.3 Specific Aims

The continuing objective of this study is to maintain the National High School Sports-Related Injury Surveillance Study among a convenience sample of US high schools. The specific aims of this study are:

A. To determine the incidence (number) of injuries among US high school boys' football, boys' and girls' soccer, girls' volleyball, boys' and girls' basketball, boys' wrestling, boys' baseball, girls' softball, girls' field hockey, boys' ice hockey, boys' and girls' lacrosse, boys' and girls' swimming & diving, boys' and girls' track & field, boys' and girls' cross country, and cheerleading athletes.
B. To calculate the rate of injuries per 1,000 athlete-competitions, per 1,000 athlete-practices, and per 1,000 athlete-exposures for US high school athletes in the 20 sports of interest.
C. To provide detailed information about the injuries sustained by US high school athletes including the type, site, severity, initial and subsequent treatment/care, outcome, etc.
D. To provide detailed information about the injury events including athlete demographics, position played, phase of play/activity, etc.
E. To identify potential risk or protective factors.

1.4 Project Design

The National High School Sports-Related Injury Surveillance Study defined an injury as:

A. An injury that occurred as a result of participation in an organized high school competition or practice and
B. Required medical attention by a team physician, certified athletic trainer, personal physician, or emergency department/urgent care facility and
C. Resulted in restriction of the high school athlete's participation for one or more days beyond the day of injury OR
D. Any fracture, concussion, dental injury, or exertional heat event regardless of whether or not it resulted in restriction of the student-athlete's participation.

An athlete exposure was defined as one athlete participating in one practice or competition where he or she is exposed to the possibility of athletic injury. Exposure was expressed in three parts:

A. Number of athlete-practices = the sum of the number of athletes at each practice during the past week. For example, if 20 athletes practiced on Monday through Thursday and 18 practiced on Friday, the number of athlete-practices would equal 98.
B. Number of athlete-competitions = the sum of the number of athletes at each competition during the past week. For example, if 9 athletes played in a Freshman game, 12 in a JV game, and 14 in a Varsity game, the number of athlete-competitions would equal 35.
C. Number of athlete-performances = the sum of the number of cheerleading athletes at each performance during the past week. For example, if 9 cheerleading athletes performed 3 times in one weekend, the number of athlete-performances would equal 27.

1.5 Sample Recruitment

Certified athletic trainers (AT) who provide care to high school athletes were eligible to participate. Eligible ATs received an email introducing the study and inviting them to participate. A three-stage sampling methodology was used to select study schools from all schools with ATs who expressed an interest in participating as reporters.

A. All schools were categorized into 8 sampling strata by geographic location (northeast, midwest, south, and west) and high school size (enrollment <= 1,000 or > 1,000 students). Participant schools were then randomly selected from each substrata to obtain 100 study schools to report for each of the 9 sports included in the original National High School Sports-Related Injury Surveillance Study (boys' football, soccer, basketball, wrestling, and baseball and girls' soccer, volleyball, basketball, and softball). This subset of 100 study schools were the randomly selected, nationally representative sample.
B. All schools not selected in step 1 who offered any of the more rarely offered 9 sports included in the expansion of the National High School Sports-Related Injury Surveillance Study (boys' ice hockey and lacrosse and girls' field hockey and lacrosse) were selected for the convenience sample in an attempt to obtain as large a sample as possible reporting for these more rarely offered sports.
C. A random sample of all schools not selected in step 1 or step 2 who offered the remaining sports of interest in the expansion of the National High School Sports-Related Injury Surveillance Study (boys' and girls' track & field, swimming & diving, cross country, and cheerleading) were selected in an attempt to ensure at least 100 schools were reporting for each of the 20 sports of interest.

This three-step sampling methodology resulted in a large, nationally disperse convenience sample of US high schools. Participating ATs were offered a $300-$350 honorarium depending on the number of sports reported along with individualized school injury report and 10 Category B CEUs following the study's conclusion. As a result of the convenience sample methodology, different schools reported for the different sports of interest. See the table below:

School Participation by Sport, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	# Schools in Random Sample	# Schools in Convenience Sample	# Schools Total
Original Sports			
Football	82	30	112
Boys' Soccer	77	22	99
Girls' Soccer	77	19	96
Girls' Volleyball	75	29	104
Boys' Basketball	84	29	113
Girls' Basketball	82	28	110
Boys' Wrestling	75	21	96
Boys' Baseball	78	24	102
Girls' Softball	79	26	105
Convenience Sports			
Girls' Field Hockey	22	10	32
Boys' Ice hockey	9	7	16
Boys' Lacrosse	30	7	37
Girls' Lacrosse	26	8	34
Boys' Swimming and Diving	25	8	33
Girls' Swimming and Diving	24	7	31
Boys' Track and Field	46	22	68
Girls' Track and Field	44	21	65
Boys' Cross Country	43	18	61
Girls' Cross Country	40	16	56
Cheerleading	41	19	60
Total	**86**	**44**	**130**

1.6 Data Collection

ATs enrolled in the National High School Sports-Related Injury Surveillance Study received an email every Monday throughout the study period reminding them to enter their school's data into the RIO surveillance system. Each participating AT was asked to complete 48 weekly exposure reports: one for each week from July 25, 2022 through June 25, 2023. Exposure reports collected exposure information (number of athlete-competitions, athlete-practices, and athlete-performances for cheerleading) and the number of reportable injuries sustained by student athletes for each sport currently in session at their school. For each reportable injury, the AT was asked to complete an injury report. The injury report collected detailed information about the injured player (e.g., age, year in school, etc.), the injury (e.g., site, type, severity, etc.) and the injury event (e.g., position played, phase of play, etc.). The internet-based surveillance tool provided ATs with the ability to view all their submitted data throughout the study and update reports as needed (e.g., need for surgery, days till resuming play, etc.).

1.7 Data Management

In an effort to decrease loss-to follow up, a log of reporters' utilization of the internet-based injury surveillance system was maintained throughout the study period. Reporters who repeatedly failed to log on to complete the weekly exposure and injury reports or who had errors with their reporting were contacted by the study staff and either reminded to report, asked to correct errors, or assessed for their willingness to continue participating in the study.

1.8 Data Analysis

Data were analyzed using SAS software, version 9.4. Although fractures, concussions, dental injuries, and exertional heat illnesses resulting in <1 day time loss were collected, unless otherwise noted, analyses in this report excluded these injuries.

Injury rates were calculated as the ratio of unweighted case counts per 1,000 athlete-exposures, and they were compared using rate ratios (RR) with 95% confidence intervals (CIs). The following is an example of the RR calculation comparing the rate of injury in boys' soccer to the rate of injury in girls' soccer:

$$RR = \frac{\text{\# boys' soccer injuries / total \# boys' soccer athlete-exposures}}{\text{\# girls' soccer injuries / total \# girls' soccer athlete-exposures}}$$

Injury proportions were compared using injury proportion ratios (IPR) and corresponding 95% CIs. The following is an example of the IPR calculation comparing the proportion of boys' soccer concussions to the proportion of girls' soccer concussions:

$$IPR = \frac{\text{\# boys' soccer concussions / total \# boys' soccer injuries}}{\text{\# girls' soccer concussions / total \# girls' soccer injuries}}$$

An RR or IPR >1.00 suggests a risk association while an RR or IPR <1.00 suggests a protective association. CIs not including 1.00 were considered statistically significant.

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II. Overall Injury Epidemiology

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Table 2.1 Injury Rates by Sport and Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Event Type	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Overall	***Total***	***5,634***	***2,681,502***	***2.10***
	Competition	3,063	683,582	4.48
	Performance	15	21,143	0.71
	Practice	2,556	1,976,777	1.29
Boys' Football	***Total***	***1,913***	***500,212***	***3.82***
	Competition	1,122	86,388	12.99
	Practice	791	413,824	1.91
Boys' Soccer	***Total***	***368***	***197,689***	***1.86***
	Competition	240	61,306	3.91
	Practice	128	136,383	0.94
Girls' Soccer	***Total***	***375***	***153,043***	***2.45***
	Competition	261	46,728	5.59
	Practice	114	106,315	1.07
Girls' Volleyball	***Total***	***238***	***174,811***	***1.36***
	Competition	108	60,842	1.78
	Practice	130	113,969	1.14
Boys' Basketball	***Total***	***486***	***253,860***	***1.91***
	Competition	252	73,878	3.41
	Practice	234	179,982	1.30
Girls' Basketball	***Total***	***382***	***167,730***	***2.28***
	Competition	245	49,890	4.91
	Practice	137	117,840	1.16
Boys' Wrestling	***Total***	***550***	***176,175***	***3.12***
	Competition	231	44,343	5.21
	Practice	319	131,832	2.42

Boys' Baseball	***Total***	***253***	***195,822***	***1.29***
	Competition	132	67,837	1.95
	Practice	121	127,985	0.95
Girls' Softball	***Total***	***195***	***128,017***	***1.52***
	Competition	97	44,185	2.20
	Practice	98	83,832	1.17
Girls' Field Hockey	***Total***	***78***	***42,595***	***1.83***
	Competition	42	14,420	2.91
	Practice	36	28,175	1.28
Boys' Ice Hockey	***Total***	***46***	***33,595***	***1.37***
	Competition	42	11,662	3.60
	Practice	4	21,933	0.18
Boys' Lacrosse	***Total***	***186***	***76,720***	***2.42***
	Competition	114	23,053	4.95
	Practice	72	53,667	1.34
Girls' Lacrosse	***Total***	***110***	***49,492***	***2.22***
	Competition	65	15,133	4.30
	Practice	45	34,359	1.31
Boys' Swimming and Diving	***Total***	***7***	***35,460***	***0.20***
	Competition	0	6,341	0.00
	Practice	7	29,119	0.24
Girls' Swimming and Diving	***Total***	***3***	***36,434***	***0.08***
	Competition	2	6,573	0.30
	Practice	1	29,861	0.03
Boys' Track and Field	***Total***	***181***	***155,981***	***1.16***
	Competition	68	28,887	2.35
	Practice	113	127,094	0.89

Girls' Track and Field	***Total***	***110***	***107,657***	***1.02***
	Competition	23	20,075	1.15
	Practice	87	87,582	0.99
Boys' Cross Country	***Total***	***40***	***55,896***	***0.72***
	Competition	6	9,871	0.61
	Practice	34	46,025	0.74
Girls' Cross Country	***Total***	***36***	***41,712***	***0.86***
	Competition	5	7,195	0.69
	Practice	31	34,517	0.90
Cheerleading	***Total***	***77***	***98,601***	***0.78***
	Competition	8	4,975	1.61
	Performance	15	21,143	0.71
	Practice	54	72,483	0.75

* Only includes injuries resulting in ≥1 day time loss.

Table 2.2 Proportion of Injuries Resulting in Time Loss, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	< 1 Day Time Loss	≥ 1 Day Time Loss	Time Loss Data Missing	Total
	%	%	%	%
Overall	***2.9%***	***93.8%***	***3.3%***	***100.0%***
Boys' Football	3.8%	92.2%	4.0%	100.0%
Boys' Soccer	0.5%	95.8%	3.6%	100.0%
Girls' Soccer	2.2%	93.1%	4.7%	100.0%
Girls' Volleyball	2.8%	96.0%	1.2%	100.0%
Boys' Basketball	3.1%	94.7%	2.1%	100.0%
Girls' Basketball	4.5%	91.2%	4.3%	100.0%
Boys' Wrestling	2.1%	94.2%	3.8%	100.0%
Boys' Baseball	1.9%	97.7%	0.4%	100.0%
Girls' Softball	2.9%	93.3%	3.8%	100.0%
Girls' Field Hockey	1.2%	96.3%	2.5%	100.0%
Boys' Ice Hockey	5.8%	88.5%	5.8%	100.0%
Boys' Lacrosse	1.6%	96.4%	2.1%	100.0%
Girls' Lacrosse	5.9%	93.2%	0.8%	100.0%
Boys' Swimming	0.0%	100.0%	0.0%	100.0%
Girls' Swimming	50.0%	50.0%	0.0%	100.0%
Boys' Track	0.0%	98.4%	1.6%	100.0%
Girls' Track	0.9%	98.2%	0.9%	100.0%
Boys' Cross Country	2.4%	97.6%	0.0%	100.0%
Girls' Cross Country	0.0%	100.0%	0.0%	100.0%
Cheerleading	2.4%	93.9%	3.7%	100.0%

* By study definition, non-time loss injuries were fractures, concussions, dental injuries, and exertional heat events that resulted in < 1 day time loss. These injuries are not included in any other analyses because they accounted for a small proportion of all injuries.

Table 2.3 Demographic Characteristics of Injured Athletes by Sex, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

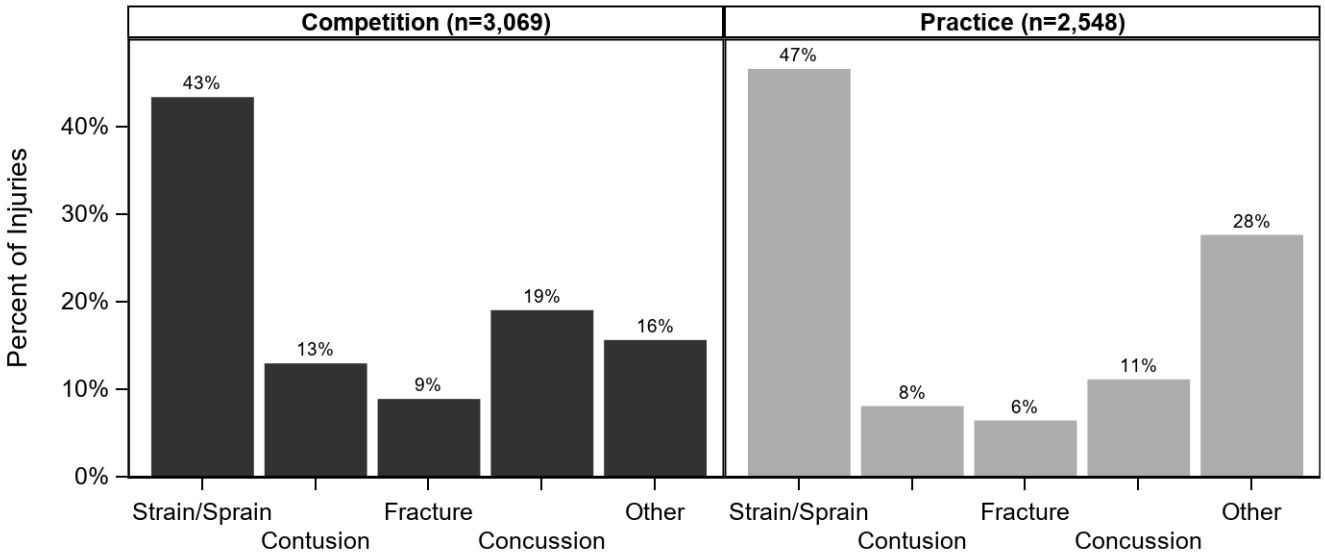
	Male		Female	
Year in School	**n**	**%**	**n**	**%**
Freshman	874	23.1%	410	27.6%
Sophomore	929	24.6%	432	29.1%
Junior	996	26.4%	345	23.2%
Senior	977	25.9%	297	20.0%
Total **	***3,776***	***100.0%***	***1,484***	***100.0%***

Age (years)		
Minimum	12	12
Maximum	19	19
Mean (SD)	15.9 (1.3)	15.6 (1.3)
n	3,203	1,249

BMI		
Minimum	15.2	15.3
Maximum	50.2	44.8
Mean (SD)	24.6 (4.7)	22.2 (3.3)
n	2,330	909

* All analyses in this report present un-weighted data.
** Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 2.1 Injury Diagnosis by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year



* Competition includes cheerleading performance related injuries.

Table 2.4 Body Site of Injury by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	679	22.1%	364	14.2%	1,043	18.5%
Ankle	524	17.0%	440	17.2%	964	17.1%
Knee	483	15.7%	357	14.0%	840	14.9%
Hip/Thigh/Upper Leg	307	10.0%	317	12.4%	624	11.1%
Hand/Wrist	260	8.5%	232	9.1%	492	8.7%
Shoulder	237	7.7%	175	6.8%	412	7.3%
Lower Leg	125	4.1%	212	8.3%	337	6.0%
Trunk	135	4.4%	144	5.6%	279	5.0%
Arm/Elbow	125	4.1%	93	3.6%	218	3.9%
Foot	82	2.7%	118	4.6%	200	3.6%
Other	62	2.0%	29	1.1%	91	1.6%
Neck	34	1.1%	32	1.3%	66	1.2%
Systemic	22	0.7%	43	1.7%	65	1.2%
Total	***3,075***	***100.0%***	***2,556***	***100.0%***	***5,631***	***100.0%***

* Competition includes cheerleading performance related injuries. These were not summarized individually due to them totaling less than 1.0% of all injuries. Totals and n's are not always equal due to slight rounding or missing responses.

Table 2.5 Most Commonly Injured Ankle Structures, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Male (n=585)		Female (n=335)		Overall (n=920)	
Ankle Ligament Injuries	**n**	**%**	**n**	**%**	**n**	**%**
Anterior Talofibular Ligament	417	71.3%	269	80.3%	686	74.6%
Calcaneofibular Ligament	156	26.7%	102	30.4%	258	28.0%
Anterior Tibiofibular Ligament	94	16.1%	37	11.0%	131	14.2%
Posterior Talofibular Ligament	36	6.2%	23	6.9%	59	6.4%
Deltoid Ligament	31	5.3%	5	1.5%	36	3.9%
Posterior Tibiofibular Ligament	13	2.2%	3	0.9%	16	1.7%

* Multiple ligament responses allowed per injury report. Totals and n's are not always equal due to slight rounding or missing responses.

Table 2.6 Most Commonly Injured Knee Structures, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Male (n=533)		Female (n=252)		Overall (n=785)	
Knee Ligament Injuries	**n**	**%**	**n**	**%**	**n**	**%**
Patella and/or Patellar Tendon	158	29.6%	87	34.5%	245	31.2%
Anterior Cruciate Ligament	108	20.3%	72	28.6%	180	22.9%
Medial Collateral Ligament	116	21.8%	42	16.7%	158	20.1%
Torn Cartilage (Meniscus)	102	19.1%	43	17.1%	145	18.5%
Lateral Collateral Ligament	30	5.6%	9	3.6%	39	5.0%
Posterior Cruciate Ligament	12	2.3%	2	0.8%	14	1.8%

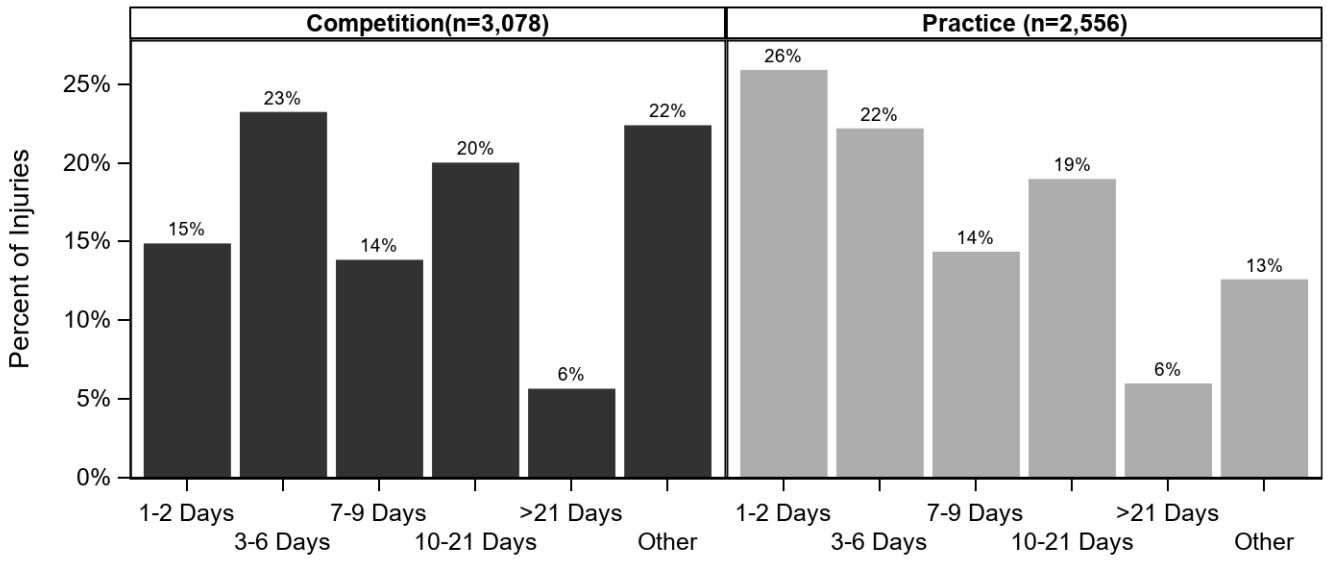
* Multiple ligament responses allowed per injury report. Totals and n's are not always equal due to slight rounding or missing responses.

Table 2.7 Ten Most Common Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition (n=3,067)		Practice (n=2,548)		Overall (n=5,615)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	485	15.8%	410	16.1%	895	15.9%
Head/Face Concussion	583	19.0%	283	11.1%	866	15.4%
Hip/Thigh/Upper Leg Strain/Sprain	193	6.3%	247	9.7%	440	7.8%
Knee Strain/Sprain	259	8.4%	140	5.5%	399	7.1%
Knee Other	150	4.9%	170	6.7%	320	5.7%
Shoulder Other	121	3.9%	93	3.6%	214	3.8%
Hand/Wrist Fracture	104	3.4%	83	3.3%	187	3.3%
Hand/Wrist Strain/Sprain	89	2.9%	85	3.3%	174	3.1%
Shoulder Strain/Sprain	99	3.2%	75	2.9%	174	3.1%
Lower Leg Other	14	0.5%	147	5.8%	161	2.9%

* Competition includes cheerleading performance related injuries. These were not summarized individually due to them totaling less than 1.0% of all injuries.

Figure 2.2 Time Loss by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year



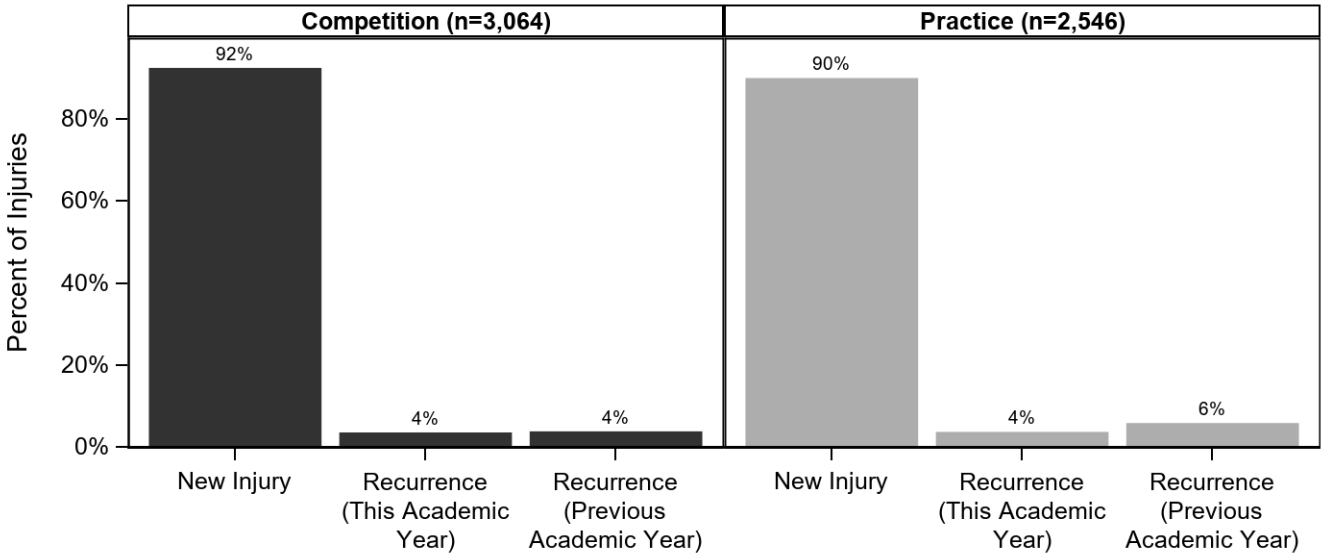
* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play. Competition includes cheerleading performance related injuries

Table 2.8 Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	250	8.2%	105	4.2%	355	6.4%
Did Not Require Surgery	2,793	91.8%	2,422	95.8%	5,215	93.6%
Total	***3,043***	***100.0%***	***2,527***	***100.0%***	***5,570***	***100.0%***

* Competition includes cheerleading performance related injuries. Totals and n's are not always equal due to slight rounding or missing responses.

Figure 2.3 New and Recurring Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year



* Competition includes cheerleading performance related injuries.

Table 2.9 Time during Season of Injury, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	1,070	19.0%
Regular Season	4,272	76.0%
Post Season	253	4.5%
Unknown/Other	27	0.5%
Total	***5,622***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 2.10 Practice-Related Variables, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	191	7.8%
Second 1/2 Hour	319	13.0%
1-2 Hours into Practice	1,084	44.0%
>2 Hours into Practice	103	4.2%
Unknown	764	31.0%
Total	***2,461***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 2.11 Methods for Injury Evaluation and Assessment, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Injuries Evaluated By:	n=5,634	%
Certified Athletic Trainer	5,207	92.4%
Orthopedic Physician	909	16.1%
Physician/Pediatrician	807	14.3%
Other	103	1.8%
Physician's Assistant	75	1.3%
Nurse Practitioner	69	1.2%
Neurologist/Neuropsychologist	26	0.5%
Chiropractor	24	0.4%
School Nurse	14	0.2%

Assessment Method:	n=5,634	%
Evaluation	5,549	98.5%
X-Ray	1,813	32.2%
MRI	559	9.9%
CT-Scan	103	1.8%
Blood Work/Lab Test	54	1.0%
Other	52	0.9%

* Multiple responses allowed per injury report. Totals and n's are not always equal due to slight rounding or missing responses.

III. Boys' Football Injury Epidemiology

Table 3.1 Football Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***1,913***	***500,212***	***3.82***
Competition	1,122	86,388	12.99
Practice	791	413,824	1.91

* All analyses in this report present un-weighted data

Table 3.2 Demographic Characteristics of Injured Football Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	427	22.9%
Sophomore	423	22.7%
Junior	473	25.4%
Senior	541	29.0%
Total	***1,864***	***100.0%***

Age (years)	
Minimum	13
Maximum	19
Mean (SD)	15.8 (1.2)
n	1,563

BMI	
Minimum	15.6
Maximum	50.2
Mean (SD)	26.2 (5.3)
n	1,110

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 3.1 Diagnosis of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

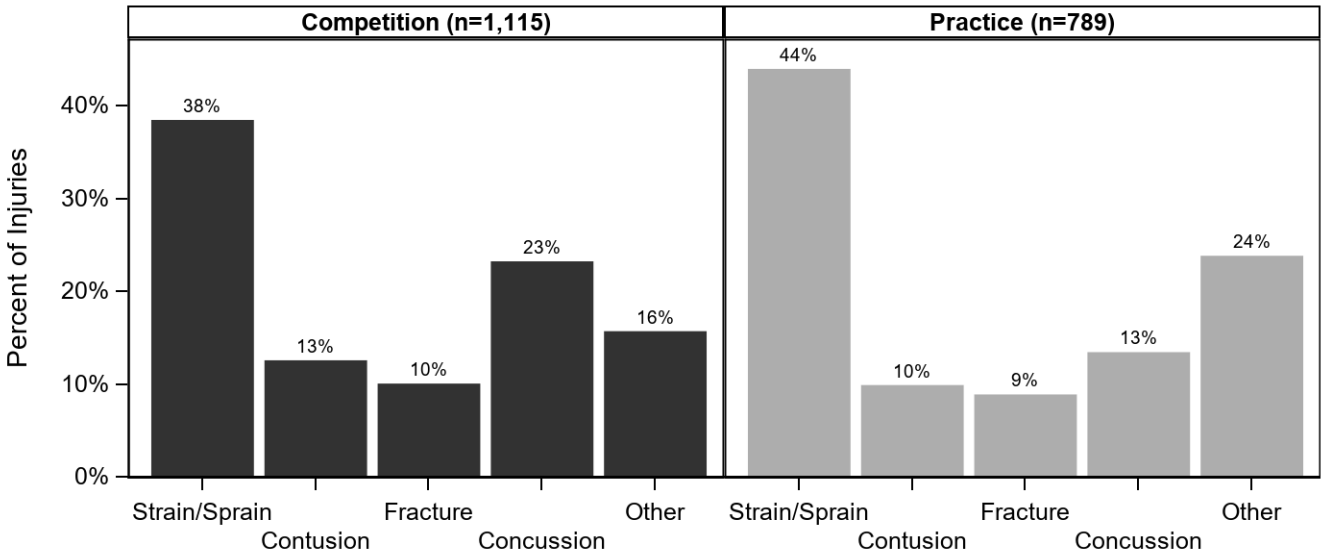


Table 3.3 Body Site of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

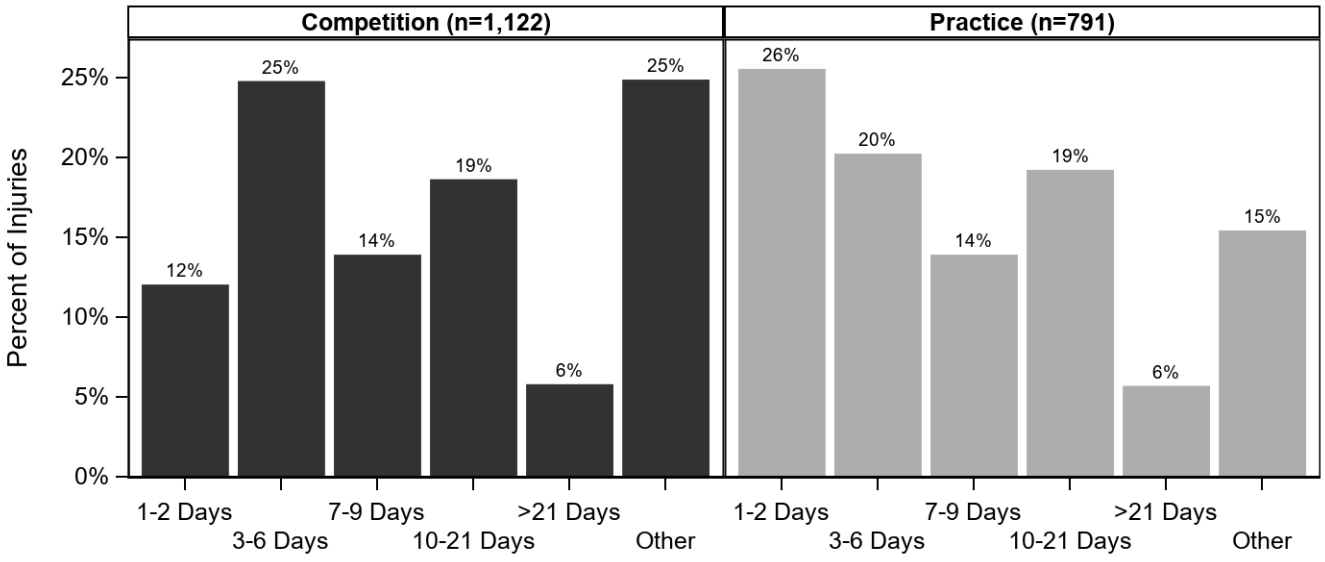
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	263	23.5%	113	14.3%	376	19.7%
Knee	179	16.0%	99	12.5%	278	14.5%
Ankle	135	12.1%	110	13.9%	245	12.8%
Hand/Wrist	114	10.2%	113	14.3%	227	11.9%
Shoulder	119	10.6%	77	9.7%	196	10.3%
Hip/Thigh/Upper Leg	80	7.1%	88	11.1%	168	8.8%
Trunk	58	5.2%	41	5.2%	99	5.2%
Lower Leg	48	4.3%	37	4.7%	85	4.4%
Arm/Elbow	43	3.8%	32	4.0%	75	3.9%
Foot	28	2.5%	33	4.2%	61	3.2%
Other	30	2.7%	12	1.5%	42	2.2%
Neck	17	1.5%	13	1.6%	30	1.6%
Systemic	6	0.5%	23	2.9%	29	1.5%
Total	***1,120***	***100.0%***	***791***	***100.0%***	***1,911***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 3.4 Ten Most Common Football Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=1,114)		Practice (n=789)		Overall (n=1,903)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	259	23.2%	106	13.4%	365	19.2%
Ankle Strain/Sprain	125	11.2%	101	12.8%	226	11.9%
Knee Strain/Sprain	106	9.5%	48	6.1%	154	8.1%
Hip/Thigh/Upper Leg Strain/Sprain	41	3.7%	64	8.1%	105	5.5%
Shoulder Other	60	5.4%	44	5.6%	104	5.5%
Knee Other	52	4.7%	36	4.6%	88	4.6%
Hand/Wrist Fracture	41	3.7%	41	5.2%	82	4.3%
Shoulder Strain/Sprain	52	4.7%	28	3.5%	80	4.2%
Hand/Wrist Strain/Sprain	40	3.6%	39	4.9%	79	4.2%
Hip/Thigh/Upper Leg Contusion	33	3.0%	11	1.4%	44	2.3%

Figure 3.2 Time Loss of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 3.5 Football Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	97	8.8%	39	5.0%	136	7.2%
Did Not Require Surgery	1,008	91.2%	737	95.0%	1,745	92.8%
Total	***1,105***	***100.0%***	***776***	***100.0%***	***1,881***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 3.3 History of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

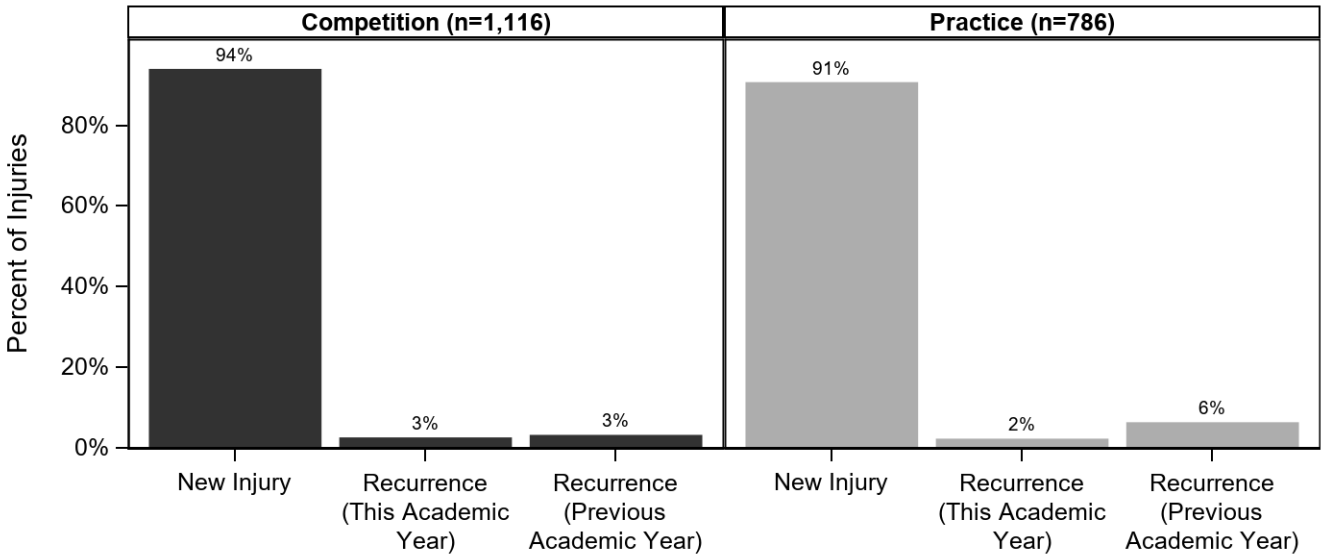


Table 3.6 Time during Season of Football Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	374	19.6%
Regular Season	1,435	75.3%
Post Season	86	4.5%
Unknown/Other	11	0.6%
Total	***1,906***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 3.7 Competition-Related Variables for Football Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	11	1.1%
First Quarter	119	11.4%
Second Quarter	303	29.1%
Third Quarter	328	31.5%
Fourth Quarter	277	26.6%
Overtime	2	0.2%
Total	***1,040***	***100.0%***

Field Location		
End Zone	25	2.4%
Red Zone (20 Yard Line to Goal Line)	149	14.2%
Between the 20 Yard Lines	581	55.2%
Off the Field	10	0.9%
Unknown	288	27.4%
Total	***1,053***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 3.8 Practice-Related Variables for Football Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	56	7.3%
Second 1/2 Hour	103	13.5%
1-2 Hours into Practice	381	49.9%
>2 Hours into Practice	40	5.2%
Unknown	183	24.0%
Total	***763***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 3.4 Player Position of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

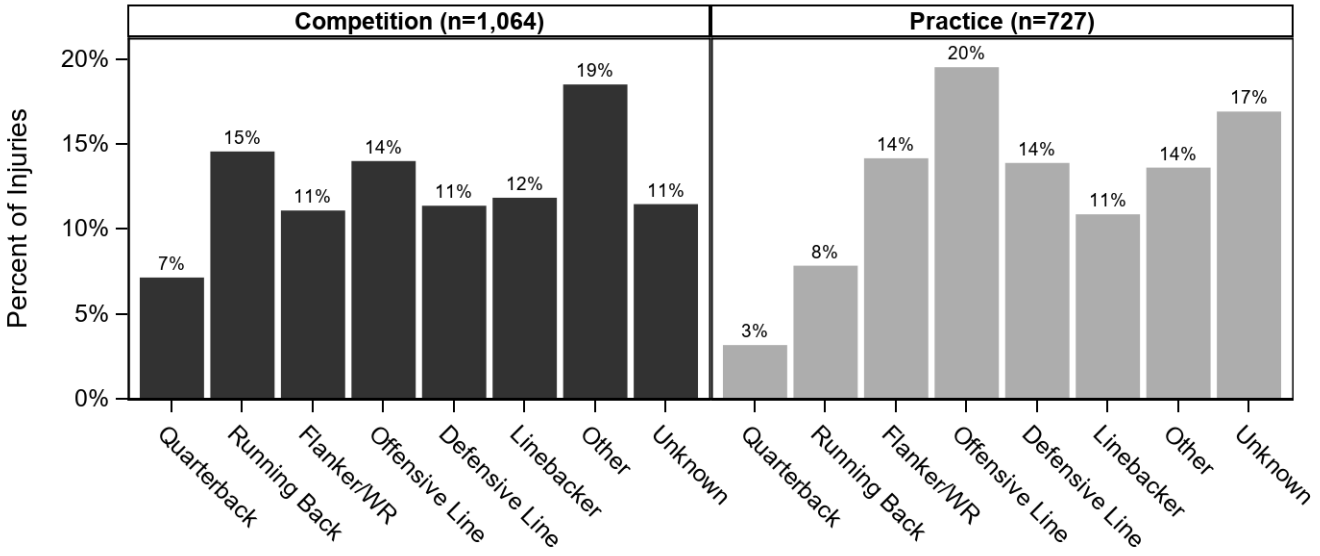


Table 3.9 Activities Leading to Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Being Tackled	316	29.6%	90	12.3%	406	22.6%
Tackling	267	25.0%	105	14.3%	372	20.7%
Blocking	156	14.6%	117	16.0%	273	15.2%
Unknown	87	8.1%	78	10.7%	165	9.2%
Being Blocked	75	7.0%	48	6.6%	123	6.8%
N/A **	16	1.5%	89	12.2%	105	5.8%
Stepped On, Fell On or Kicked	61	5.7%	42	5.7%	103	5.7%
Other	40	3.7%	55	7.5%	95	5.3%
Rotation Around a Planted Foot/Inversion	36	3.4%	54	7.4%	90	5.0%
Contact with Ball	8	0.7%	26	3.6%	34	1.9%
Uneven Playing Surface	5	0.5%	11	1.5%	16	0.9%
Contact with Blocking Sled/Dummy	0	0.0%	15	2.0%	15	0.8%
Contact with Seats, Bleacher or Table	1	0.1%	2	0.3%	3	0.2%
Total	***1,068***	***100.0%***	***732***	***100.0%***	***1,800***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.
** N/A category consists of skin infections, overuse injuries, heat illness, etc.

Table 3.10 Activity Resulting in Football Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Being Blocked	38	5.2%	25	12.0%	6	3.5%	30	9.0%	23	6.7%
Being Tackled	149	20.3%	69	33.0%	45	26.0%	96	28.7%	46	13.4%
Blocking	111	15.1%	22	10.5%	27	15.6%	57	17.0%	56	16.3%
Contact with Ball	13	1.8%	1	0.5%	11	6.4%	1	0.3%	8	2.3%
Contact with Blocking Sled/Dummy	10	1.4%	0	0.0%	3	1.7%	1	0.3%	1	0.3%
Contact with Seats, Bleacher or Table	1	0.1%	1	0.5%	0	0.0%	0	0.0%	1	0.3%
N/A **	33	4.5%	1	0.5%	0	0.0%	0	0.0%	71	20.7%
Other	56	7.6%	4	1.9%	11	6.4%	4	1.2%	19	5.5%
Rotation Around a Planted Foot/Inversion	72	9.8%	3	1.4%	2	1.2%	0	0.0%	13	3.8%
Stepped On, Fell On or Kicked	49	6.7%	31	14.8%	13	7.5%	1	0.3%	9	2.6%
Tackling	123	16.7%	40	19.1%	41	23.7%	101	30.1%	66	19.2%
Uneven Playing Surface	11	1.5%	0	0.0%	2	1.2%	1	0.3%	2	0.6%
Unknown	69	9.4%	12	5.7%	12	6.9%	43	12.8%	28	8.2%
Total	***735***	***100.0%***	***209***	***100.0%***	***173***	***100.0%***	***335***	***100.0%***	***343***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.
** N/A category consists of skin infections, overuse injuries, heat illness, etc.

IV. Boys' Soccer Injury Epidemiology

Table 4.1 Boys' Soccer Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***368***	***197,689***	***1.86***
Competition	240	61,306	3.91
Practice	128	136,383	0.94

* All analyses in this report present un-weighted data.

Table 4.2 Demographic Characteristics of Injured Boys' Soccer Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	63	17.8%
Sophomore	87	24.6%
Junior	97	27.4%
Senior	107	30.2%
Total	***354***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	16.1 (1.2)
n	284

BMI	
Minimum	16.2
Maximum	33.4
Mean (SD)	22.5 (2.8)
n	215

* Throughout this report, totals and n's represent the total un-weighted numbers of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 4.1 Diagnosis of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

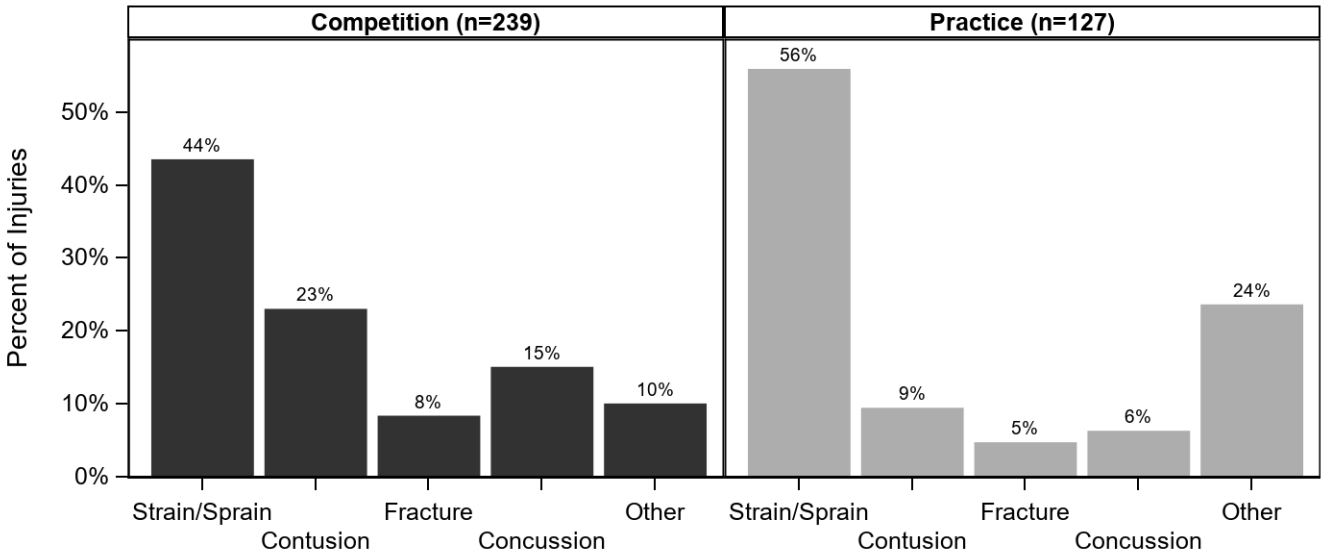


Table 4.3 Body Site of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

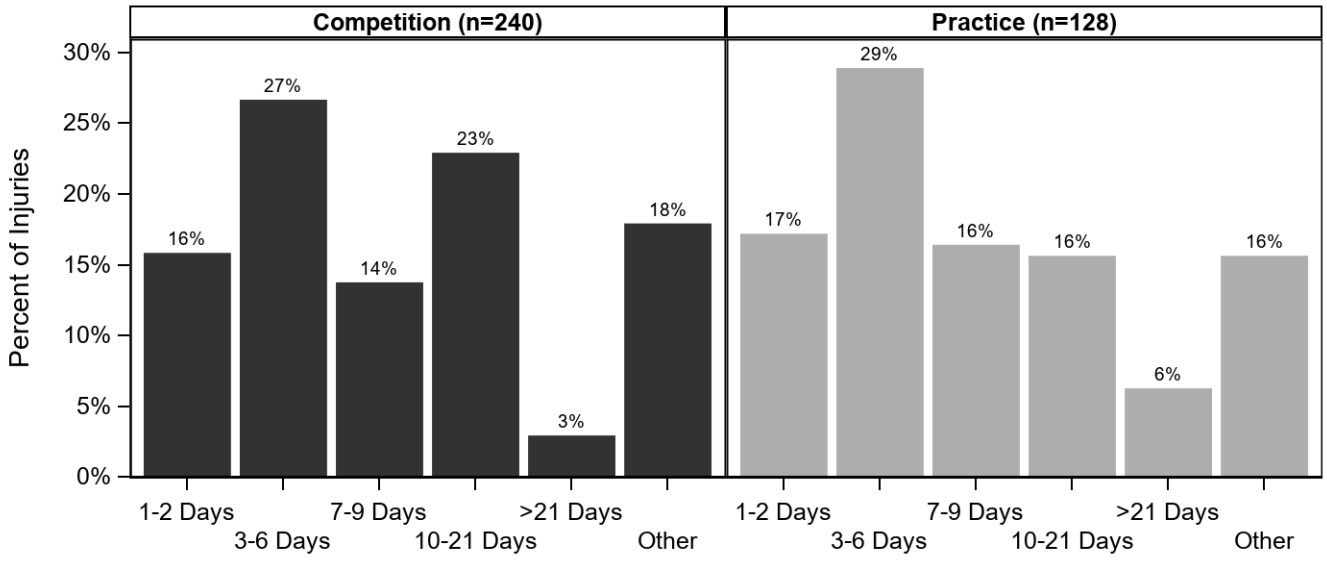
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	46	19.2%	26	20.3%	72	19.6%
Hip/Thigh/Upper Leg	47	19.6%	21	16.4%	68	18.5%
Knee	43	17.9%	19	14.8%	62	16.8%
Head/Face	47	19.6%	10	7.8%	57	15.5%
Lower Leg	16	6.7%	17	13.3%	33	9.0%
Foot	13	5.4%	12	9.4%	25	6.8%
Trunk	8	3.3%	10	7.8%	18	4.9%
Hand/Wrist	9	3.8%	7	5.5%	16	4.3%
Other	3	1.3%	2	1.6%	5	1.4%
Arm/Elbow	3	1.3%	1	0.8%	4	1.1%
Neck	2	0.8%	1	0.8%	3	0.8%
Shoulder	1	0.4%	2	1.6%	3	0.8%
Systemic	2	0.8%	0	0.0%	2	0.5%
Total	***240***	***100.0%***	***128***	***100.0%***	***368***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 4.4 Ten Most Common Boys' Soccer Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=239)		Practice (n=127)		Overall (n=366)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	36	15.1%	23	18.1%	59	16.1%
Hip/Thigh/Upper Leg Strain/Sprain	29	12.1%	20	15.7%	49	13.4%
Head/Face Concussion	36	15.1%	7	5.5%	43	11.7%
Knee Strain/Sprain	22	9.2%	11	8.7%	33	9.0%
Knee Other	11	4.6%	5	3.9%	16	4.4%
Hip/Thigh/Upper Leg Contusion	14	5.9%	1	0.8%	15	4.1%
Foot Contusion	10	4.2%	3	2.4%	13	3.6%
Knee Contusion	9	3.8%	3	2.4%	12	3.3%
Lower Leg Strain/Sprain	7	2.9%	5	3.9%	12	3.3%
Lower Leg Other	2	0.8%	9	7.1%	11	3.0%

Figure 4.2 Time Loss of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 4.5 Boys' Soccer Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	22	9.2%	5	3.9%	27	7.4%
Did Not Require Surgery	217	90.8%	123	96.1%	340	92.6%
Total	***239***	***100.0%***	***128***	***100.0%***	***367***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 4.3 History of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

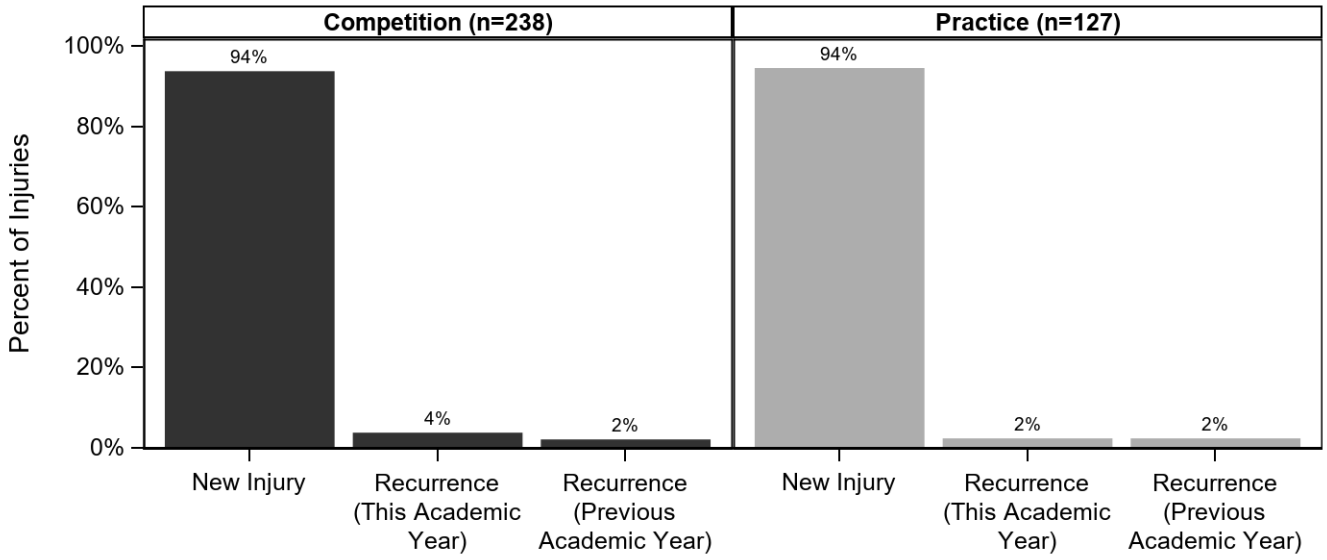


Table 4.6 Time during Season of Boys' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	64	17.4%
Regular Season	286	77.7%
Post Season	18	4.9%
Total	***368***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 4.7 Competition-Related Variables for Boys' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	7	3.2%
First Half	47	21.2%
Second Half	137	61.7%
Unknown	31	14.0%
Total	***222***	***100.0%***

Field Location		
Goal Box (Defense)	31	14.1%
Goal Box (Offense)	14	6.4%
Side of Goal Box (Defense)	13	5.9%
Side of Goal Box (Offense)	4	1.8%
Top of Goal Box Extended to Center Line (Offense)	52	23.6%
Top of Goal Box Extended to Center Line (Defense)	30	13.6%
Off the Field	3	1.4%
Unknown	73	33.2%
Total	***220***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 4.8 Practice-Related Variables for Boys' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	12	9.7%
Second 1/2 Hour	14	11.3%
1-2 Hours into Practice	58	46.8%
>2 Hours into Practice	5	4.0%
Unknown	35	28.2%
Total	***124***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 4.4 Player Position of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

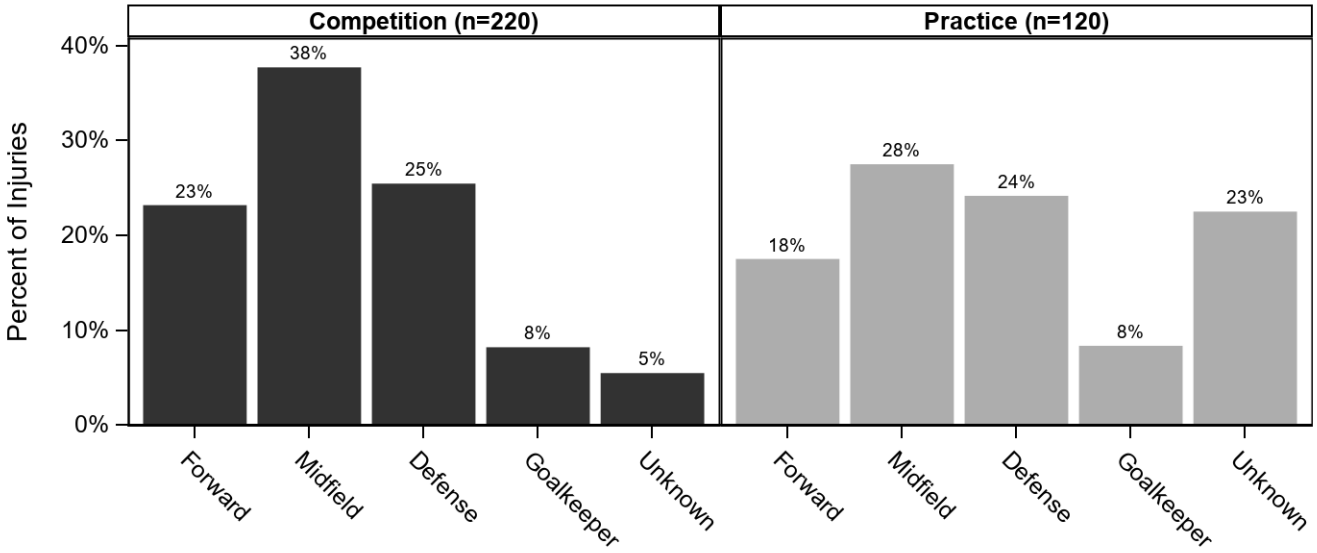


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Table 4.9 Activities Leading to Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	46	20.6%	43	35.0%	89	25.7%
Defending	32	14.3%	14	11.4%	46	13.3%
Unknown	27	12.1%	12	9.8%	39	11.3%
Ball Handling/Dribbling	25	11.2%	10	8.1%	35	10.1%
Chasing Loose Ball	24	10.8%	8	6.5%	32	9.2%
Goaltending	17	7.6%	6	4.9%	23	6.6%
Heading Ball	15	6.7%	6	4.9%	21	6.1%
Shooting	11	4.9%	7	5.7%	18	5.2%
Receiving Pass	7	3.1%	4	3.3%	11	3.2%
Passing	8	3.6%	1	0.8%	9	2.6%
Conditioning	0	0.0%	7	5.7%	7	2.0%
Receiving a Slide Tackle	6	2.7%	0	0.0%	6	1.7%
Other	1	0.4%	3	2.4%	4	1.2%
Blocking Shot	2	0.9%	2	1.6%	4	1.2%
Attempting a Slide Tackle	2	0.9%	0	0.0%	2	0.6%
Total	***223***	***100.0%***	***123***	***100.0%***	***346***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

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Table 4.10 Activity Resulting in Boys' Soccer Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Attempting a Slide Tackle	2	1.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ball Handling/Dribbling	20	12.2%	8	12.5%	3	12.0%	0	0.0%	4	7.8%
Blocking Shot	2	1.2%	0	0.0%	0	0.0%	2	4.9%	0	0.0%
Chasing Loose Ball	13	7.9%	11	17.2%	2	8.0%	3	7.3%	2	3.9%
Conditioning	5	3.0%	0	0.0%	0	0.0%	0	0.0%	2	3.9%
Defending	18	11.0%	10	15.6%	6	24.0%	7	17.1%	5	9.8%
General Play	49	29.9%	11	17.2%	2	8.0%	5	12.2%	22	43.1%
Goaltending	5	3.0%	7	10.9%	3	12.0%	5	12.2%	3	5.9%
Heading Ball	8	4.9%	1	1.6%	1	4.0%	8	19.5%	3	5.9%
Other	2	1.2%	1	1.6%	1	4.0%	0	0.0%	0	0.0%
Passing	6	3.7%	3	4.7%	0	0.0%	0	0.0%	0	0.0%
Receiving Pass	6	3.7%	1	1.6%	1	4.0%	2	4.9%	1	2.0%
Receiving a Slide Tackle	2	1.2%	4	6.3%	0	0.0%	0	0.0%	0	0.0%
Shooting	10	6.1%	5	7.8%	1	4.0%	0	0.0%	2	3.9%
Unknown	16	9.8%	2	3.1%	5	20.0%	9	22.0%	7	13.7%
Total	***164***	***100.0%***	***64***	***100.0%***	***25***	***100.0%***	***41***	***100.0%***	***51***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

V. Girls' Soccer Injury Epidemiology

REPORTING INFORMATION ONLINE

Table 5.1 Girls' Soccer Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***375***	***153,043***	***2.45***
Competition	261	46,728	5.59
Practice	114	106,315	1.07

* All analyses in this report present un-weighted data

Table 5.2 Demographic Characteristics of Injured Girls' Soccer Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	94	26.3%
Sophomore	104	29.1%
Junior	83	23.2%
Senior	77	21.5%
Total	***358***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.7 (1.2)
n	297

BMI	
Minimum	15.7
Maximum	33.7
Mean (SD)	22.0 (2.7)
n	222

* Throughout this report, totals and n's represent the total un-weighted numbers of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 5.1 Diagnosis of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

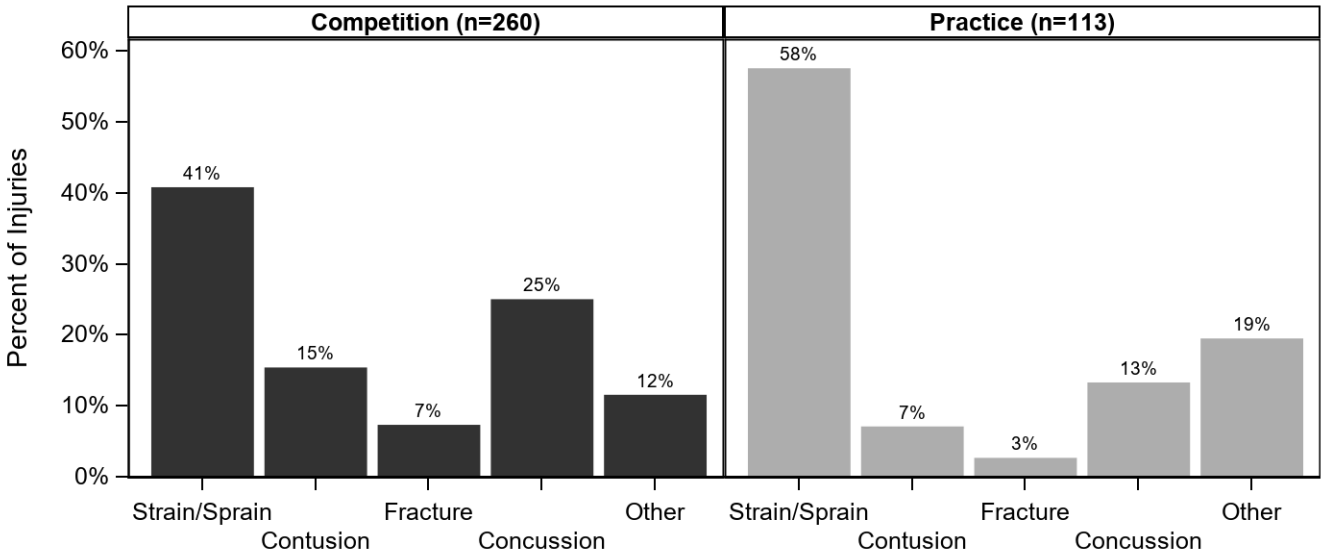


Table 5.3 Body Site of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

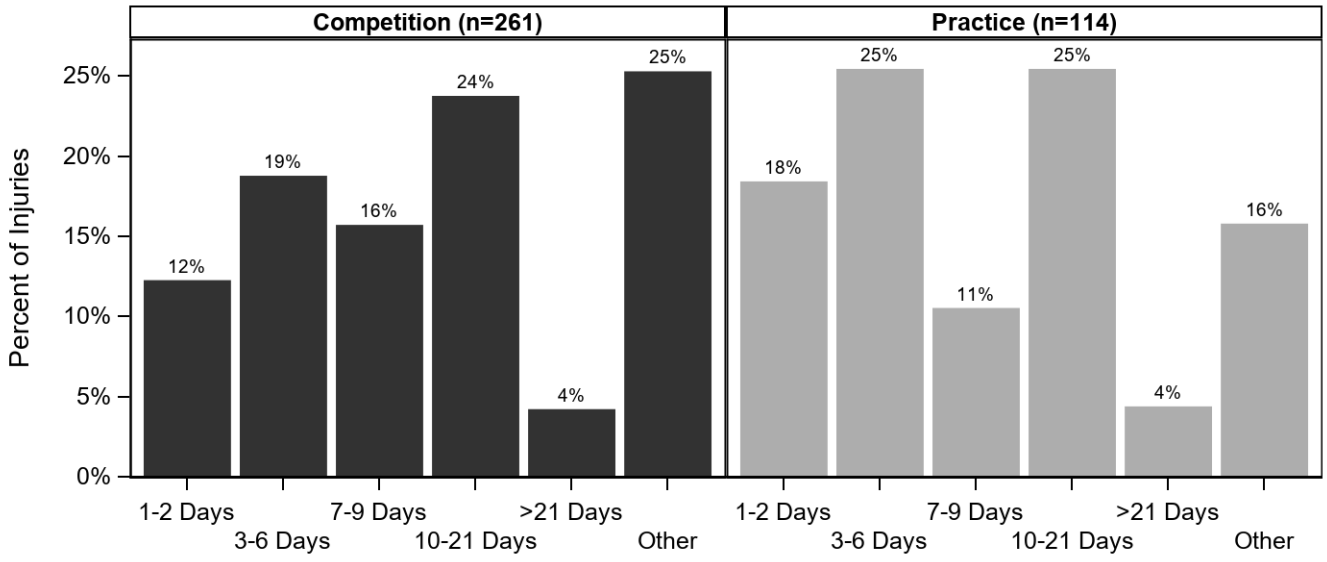
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	71	27.2%	16	14.0%	87	23.2%
Ankle	51	19.5%	33	28.9%	84	22.4%
Knee	51	19.5%	17	14.9%	68	18.1%
Hip/Thigh/Upper Leg	29	11.1%	23	20.2%	52	13.9%
Lower Leg	16	6.1%	13	11.4%	29	7.7%
Foot	13	5.0%	3	2.6%	16	4.3%
Trunk	10	3.8%	0	0.0%	10	2.7%
Hand/Wrist	6	2.3%	3	2.6%	9	2.4%
Arm/Elbow	3	1.1%	3	2.6%	6	1.6%
Other	6	2.3%	0	0.0%	6	1.6%
Systemic	2	0.8%	2	1.8%	4	1.1%
Neck	1	0.4%	1	0.9%	2	0.5%
Shoulder	2	0.8%	0	0.0%	2	0.5%
Total	***261***	***100.0%***	***114***	***100.0%***	***375***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 5.4 Ten Most Common Girls' Soccer Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=260)		Practice (n=113)		Overall (n=373)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	65	25.0%	15	13.3%	80	21.4%
Ankle Strain/Sprain	45	17.3%	31	27.4%	76	20.4%
Hip/Thigh/Upper Leg Strain/Sprain	22	8.5%	16	14.2%	38	10.2%
Knee Strain/Sprain	27	10.4%	9	8.0%	36	9.7%
Knee Other	17	6.5%	5	4.4%	22	5.9%
Lower Leg Contusion	8	3.1%	3	2.7%	11	2.9%
Knee Contusion	7	2.7%	3	2.7%	10	2.7%
Lower Leg Other	3	1.2%	7	6.2%	10	2.7%
Hip/Thigh/Upper Leg Contusion	6	2.3%	2	1.8%	8	2.1%
Foot Contusion	6	2.3%	0	0.0%	6	1.6%

Figure 5.2 Time Loss of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 5.5 Girls' Soccer Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	20	7.7%	7	6.1%	27	7.2%
Did Not Require Surgery	240	92.3%	107	93.9%	347	92.8%
Total	***260***	***100.0%***	***114***	***100.0%***	***374***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 5.3 History of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

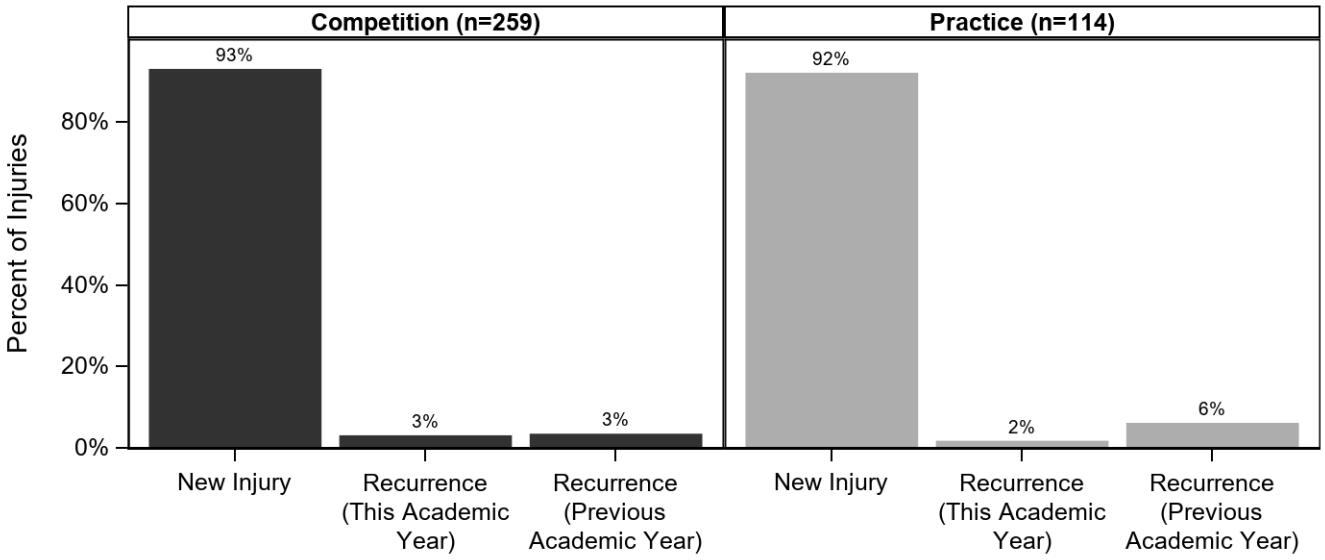


Table 5.6 Time during Season of Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	59	15.8%
Regular Season	286	76.5%
Post Season	28	7.5%
Unknown/Other	1	0.3%
Total	***374***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 5.7 Competition-Related Variables for Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	9	3.6%
First Half	61	24.6%
Second Half	138	55.6%
Overtime	1	0.4%
Unknown	39	15.7%
Total	***248***	***100.0%***

Field Location		
Goal Box (Defense)	18	7.3%
Goal Box (Offense)	12	4.9%
Side of Goal Box (Defense)	15	6.1%
Side of Goal Box (Offense)	13	5.3%
Top of Goal Box Extended to Center Line (Offense)	41	16.6%
Top of Goal Box Extended to Center Line (Defense)	41	16.6%
Off the Field	3	1.2%
Unknown	104	42.1%
Total	***247***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 5.8 Practice-Related Variables for Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	5	4.6%
Second 1/2 Hour	17	15.6%
1-2 Hours into Practice	49	45.0%
>2 Hours into Practice	8	7.3%
Unknown	30	27.5%
Total	***109***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 5.4 Player Position of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

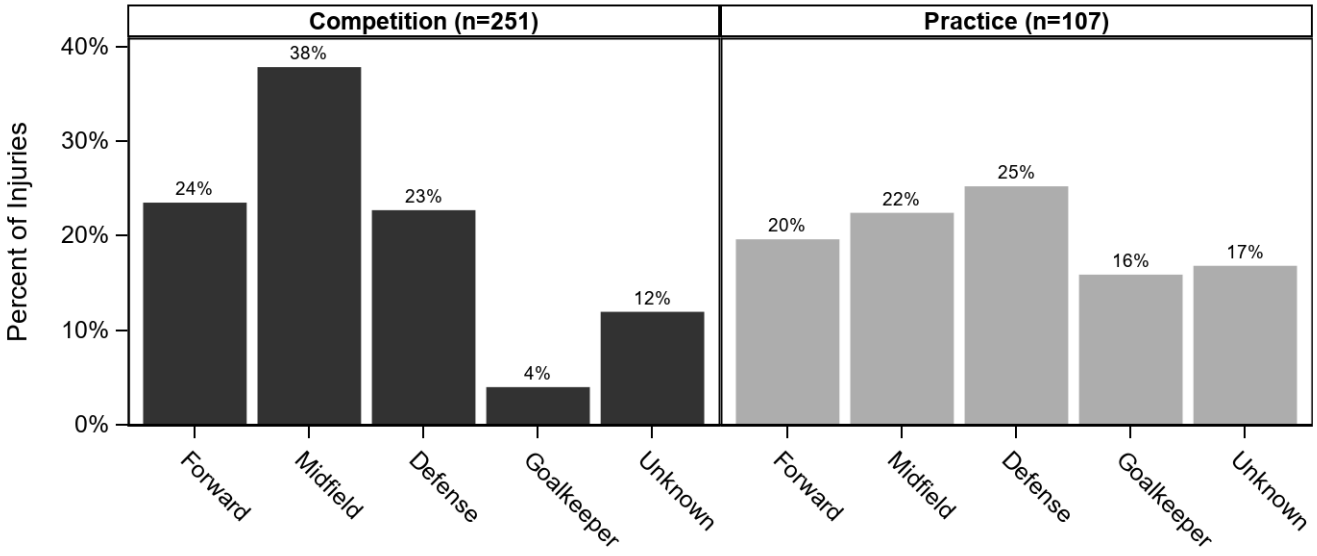


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Table 5.9 Activities Leading to Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	67	26.8%	37	34.3%	104	29.1%
Defending	48	19.2%	14	13.0%	62	17.3%
Unknown	28	11.2%	20	18.5%	48	13.4%
Chasing Loose Ball	29	11.6%	6	5.6%	35	9.8%
Ball Handling/Dribbling	24	9.6%	3	2.8%	27	7.5%
Goaltending	8	3.2%	11	10.2%	19	5.3%
Heading Ball	13	5.2%	1	0.9%	14	3.9%
Shooting	9	3.6%	2	1.9%	11	3.1%
Passing	9	3.6%	2	1.9%	11	3.1%
Receiving Pass	7	2.8%	1	0.9%	8	2.2%
Conditioning	0	0.0%	7	6.5%	7	2.0%
Other	4	1.6%	2	1.9%	6	1.7%
Blocking Shot	1	0.4%	1	0.9%	2	0.6%
Attempting a Slide Tackle	1	0.4%	1	0.9%	2	0.6%
Receiving a Slide Tackle	2	0.8%	0	0.0%	2	0.6%
Total	***250***	***100.0%***	***108***	***100.0%***	***358***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

REPORTING INFORMATION ONLINE

Table 5.10 Activity Resulting in Girls' Soccer Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Attempting a Slide Tackle	2	1.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ball Handling/Dribbling	13	7.9%	5	10.6%	2	10.5%	3	3.9%	4	8.0%
Blocking Shot	2	1.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Chasing Loose Ball	17	10.4%	4	8.5%	2	10.5%	6	7.9%	6	12.0%
Conditioning	6	3.7%	0	0.0%	0	0.0%	0	0.0%	1	2.0%
Defending	25	15.2%	8	17.0%	3	15.8%	20	26.3%	5	10.0%
General Play	46	28.0%	16	34.0%	7	36.8%	14	18.4%	21	42.0%
Goaltending	8	4.9%	2	4.3%	2	10.5%	5	6.6%	2	4.0%
Heading Ball	0	0.0%	1	2.1%	0	0.0%	13	17.1%	0	0.0%
Other	5	3.0%	0	0.0%	0	0.0%	1	1.3%	0	0.0%
Passing	8	4.9%	2	4.3%	0	0.0%	0	0.0%	1	2.0%
Receiving Pass	4	2.4%	3	6.4%	0	0.0%	1	1.3%	0	0.0%
Receiving a Slide Tackle	0	0.0%	1	2.1%	1	5.3%	0	0.0%	0	0.0%
Shooting	6	3.7%	1	2.1%	0	0.0%	1	1.3%	3	6.0%
Unknown	22	13.4%	4	8.5%	2	10.5%	12	15.8%	7	14.0%
Total	***164***	***100.0%***	***47***	***100.0%***	***19***	***100.0%***	***76***	***100.0%***	***50***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

VI. GIRLS' VOLLEYBALL INJURY EPIDEMIOLOGY

Table 6.1 Girls' Volleyball Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***238***	***174,811***	***1.36***
Competition	108	60,842	1.78
Practice	130	113,969	1.14

* All analyses in this report present un-weighted data.

Table 6.2 Demographic Characteristics of Injured Girls' Volleyball Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	60	26.1%
Sophomore	58	25.2%
Junior	60	26.1%
Senior	52	22.6%
Total	***230***	***100.0%***

Age (years)	
Minimum	12
Maximum	18
Mean (SD)	15.6 (1.2)
n	195

BMI	
Minimum	16.2
Maximum	44.8
Mean (SD)	22.3 (3.9)
n	154

* Throughout this report, totals and n's represent the total un-weighted numbers of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 6.1 Diagnosis of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

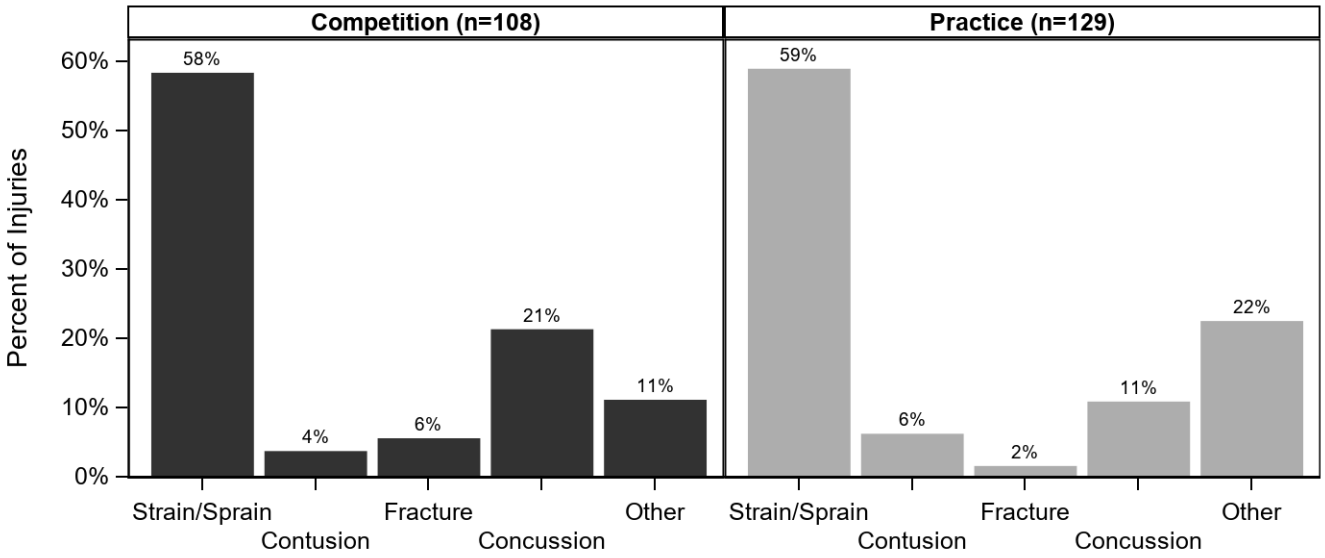


Table 6.3 Body Site of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

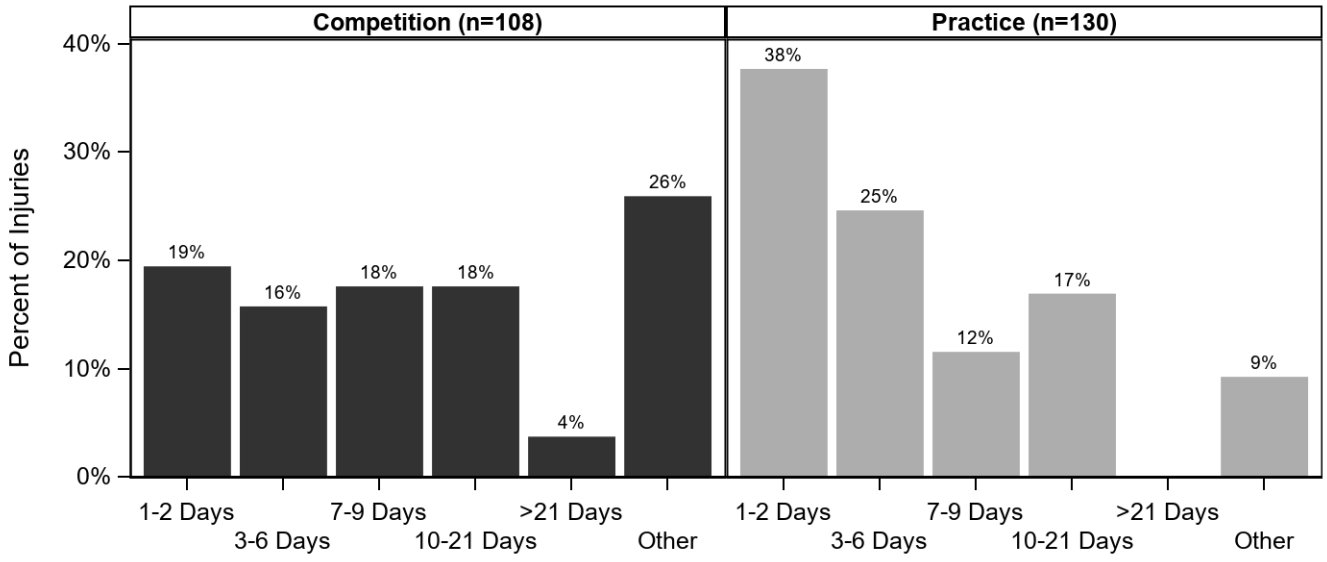
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	39	36.1%	43	33.1%	82	34.5%
Head/Face	25	23.1%	15	11.5%	40	16.8%
Knee	15	13.9%	23	17.7%	38	16.0%
Shoulder	7	6.5%	15	11.5%	22	9.2%
Hand/Wrist	12	11.1%	7	5.4%	19	8.0%
Hip/Thigh/Upper Leg	3	2.8%	5	3.8%	8	3.4%
Lower Leg	2	1.9%	6	4.6%	8	3.4%
Arm/Elbow	3	2.8%	3	2.3%	6	2.5%
Foot	2	1.9%	4	3.1%	6	2.5%
Trunk	0	0.0%	6	4.6%	6	2.5%
Neck	0	0.0%	1	0.8%	1	0.4%
Other	0	0.0%	1	0.8%	1	0.4%
Systemic	0	0.0%	1	0.8%	1	0.4%
Total	***108***	***100.0%***	***130***	***100.0%***	***238***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 6.4 Ten Most Common Girls' Volleyball Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=108)		Practice (n=129)		Overall (n=237)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	37	34.3%	42	32.6%	79	33.3%
Head/Face Concussion	23	21.3%	14	10.9%	37	15.6%
Knee Other	5	4.6%	10	7.8%	15	6.3%
Knee Strain/Sprain	6	5.6%	9	7.0%	15	6.3%
Hand/Wrist Strain/Sprain	9	8.3%	4	3.1%	13	5.5%
Shoulder Other	3	2.8%	9	7.0%	12	5.1%
Shoulder Strain/Sprain	4	3.7%	6	4.7%	10	4.2%
Hip/Thigh/Upper Leg Strain/Sprain	3	2.8%	5	3.9%	8	3.4%
Knee Contusion	3	2.8%	3	2.3%	6	2.5%
Lower Leg Other	0	0.0%	5	3.9%	5	2.1%

Figure 6.2 Time Loss of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 6.5 Girls' Volleyball Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	6	5.6%	3	2.3%	9	3.8%
Did Not Require Surgery	101	94.4%	126	97.7%	227	96.2%
Total	***107***	***100.0%***	***129***	***100.0%***	***236***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 6.3 History of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

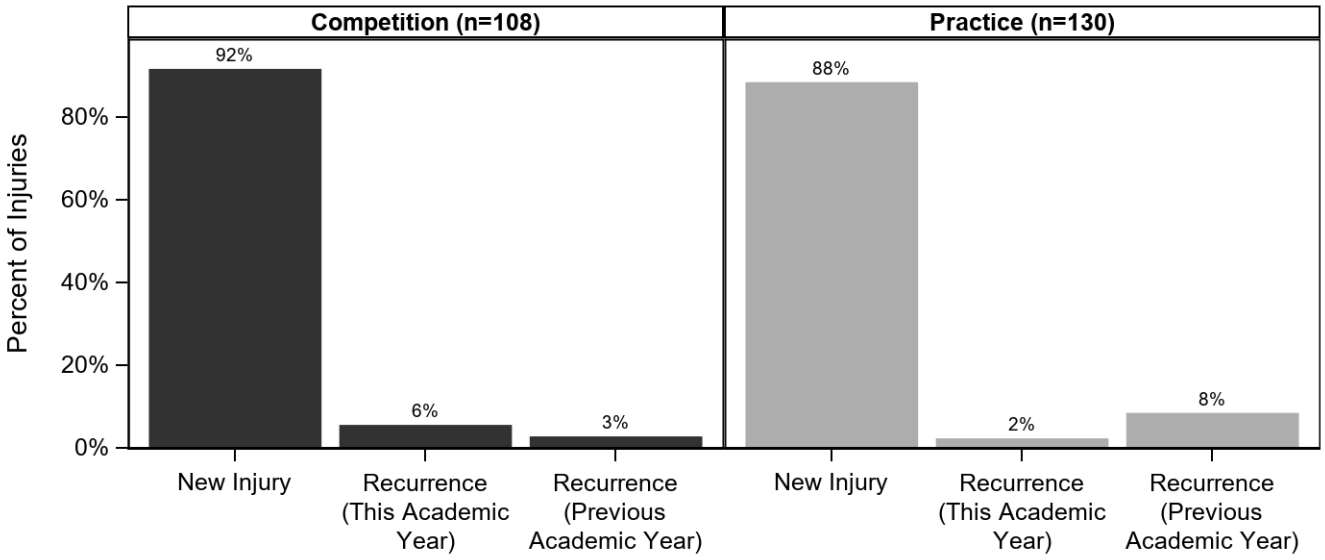


Table 6.6 Time during Season of Girls' Volleyball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	48	20.3%
Regular Season	176	74.3%
Post Season	10	4.2%
Unknown/Other	3	1.3%
Total	***237***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 6.7 Competition-Related Variables for Girls' Volleyball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	14	13.2%
First Set	9	8.5%
Second Set	30	28.3%
Third Set	19	17.9%
Fourth Set	4	3.8%
Fifth Set	2	1.9%
Unknown	28	26.4%
Total	***106***	***100.0%***

Court Location		
Right Back (Server)	5	4.8%
Right Forward	15	14.4%
Outside Court (Your Side)	2	1.9%
Middle Forward	23	22.1%
Left Forward	6	5.8%
Left Back	11	10.6%
At the Net	5	4.8%
Unknown	37	35.6%
Total	***104***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 6.8 Practice-Related Variables for Girls' Volleyball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	11	8.7%
Second 1/2 Hour	26	20.6%
1-2 Hours into Practice	44	34.9%
>2 Hours into Practice	3	2.4%
Unknown	42	33.3%
Total	***126***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 6.4 Player Position of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

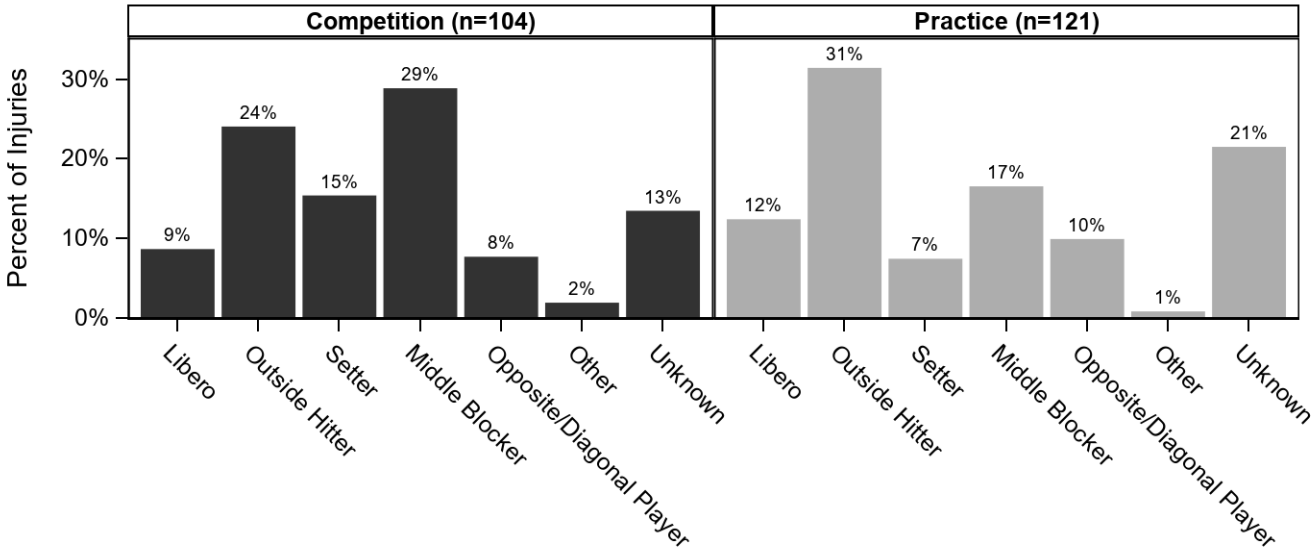


Table 6.9 Activities Leading to Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	15	14.0%	46	37.7%	61	26.6%
Blocking	30	28.0%	20	16.4%	50	21.8%
Digging	22	20.6%	10	8.2%	32	14.0%
Unknown	9	8.4%	16	13.1%	25	10.9%
Spiking	11	10.3%	8	6.6%	19	8.3%
Passing	7	6.5%	6	4.9%	13	5.7%
Serving	5	4.7%	7	5.7%	12	5.2%
Setting	4	3.7%	4	3.3%	8	3.5%
Other	4	3.7%	3	2.5%	7	3.1%
Conditioning	0	0.0%	2	1.6%	2	0.9%
Total	***107***	***100.0%***	***122***	***100.0%***	***229***	***100.0%***

* Totals and n’s are not always equal due to slight rounding or missing responses.

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Table 6.10 Activity Resulting in Girls' Volleyball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Blocking	41	30.6%	2	20.0%	2	25.0%	2	5.6%	3	7.5%
Conditioning	2	1.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Digging	12	9.0%	4	40.0%	1	12.5%	10	27.8%	5	12.5%
General Play	34	25.4%	2	20.0%	1	12.5%	6	16.7%	17	42.5%
Other	3	2.2%	0	0.0%	0	0.0%	2	5.6%	2	5.0%
Passing	4	3.0%	1	10.0%	3	37.5%	5	13.9%	0	0.0%
Serving	8	6.0%	0	0.0%	0	0.0%	2	5.6%	2	5.0%
Setting	7	5.2%	0	0.0%	0	0.0%	1	2.8%	0	0.0%
Spiking	12	9.0%	0	0.0%	0	0.0%	3	8.3%	4	10.0%
Unknown	11	8.2%	1	10.0%	1	12.5%	5	13.9%	7	17.5%
Total	***134***	***100.0%***	***10***	***100.0%***	***8***	***100.0%***	***36***	***100.0%***	***40***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

VII. Boys' Basketball Injury Epidemiology

Table 7.1 Boys' Basketball Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***486***	***253,860***	***1.91***
Competition	252	73,878	3.41
Practice	234	179,982	1.30

* All analyses in this report present un-weighted data.

Table 7.2 Demographic Characteristics of Injured Boys' Basketball Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	111	23.5%
Sophomore	140	29.7%
Junior	112	23.7%
Senior	109	23.1%
Total	***472***	***100.0%***

Age (years)	
Minimum	13
Maximum	19
Mean (SD)	15.9 (1.3)
n	414

BMI	
Minimum	16.7
Maximum	36.2
Mean (SD)	22.9 (3.1)
n	304

* Throughout this report, totals and n's represent the total un-weighted numbers of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 7.1 Diagnosis of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

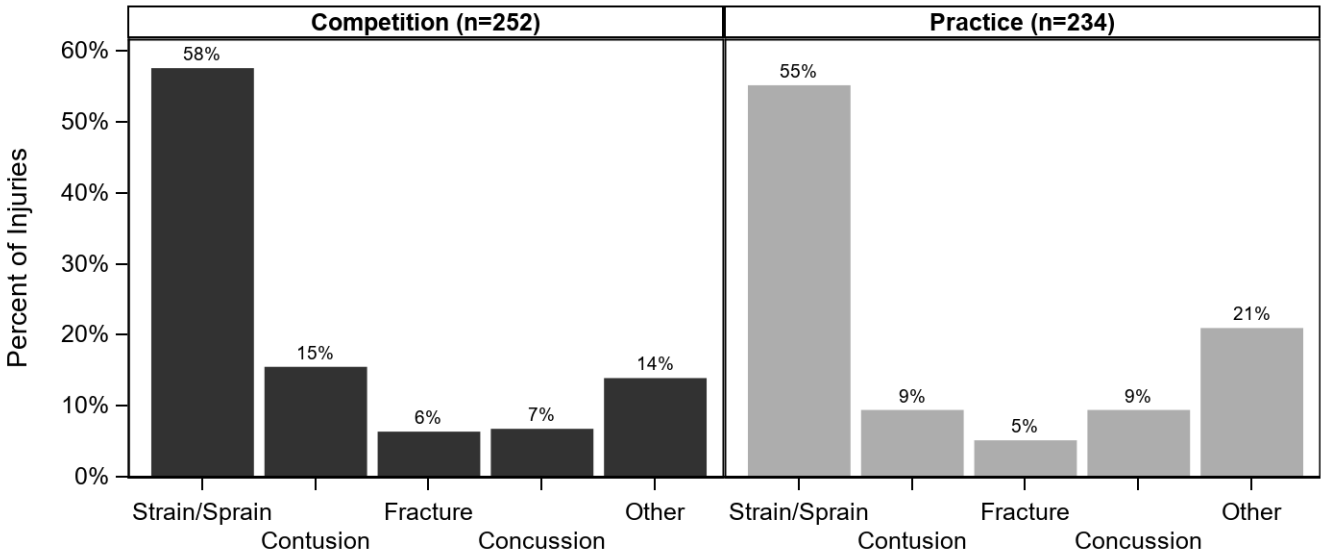


Table 7.3 Body Site of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

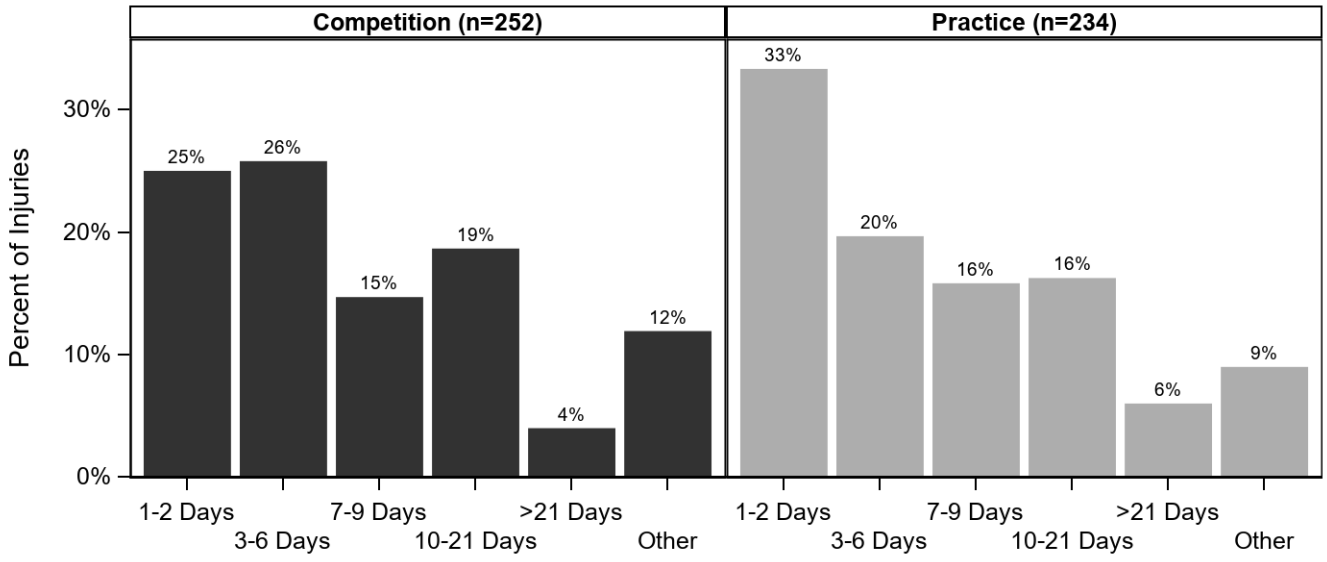
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	101	40.1%	85	36.3%	186	38.3%
Knee	33	13.1%	34	14.5%	67	13.8%
Head/Face	27	10.7%	39	16.7%	66	13.6%
Hip/Thigh/Upper Leg	25	9.9%	20	8.5%	45	9.3%
Hand/Wrist	22	8.7%	13	5.6%	35	7.2%
Trunk	12	4.8%	11	4.7%	23	4.7%
Lower Leg	10	4.0%	10	4.3%	20	4.1%
Foot	6	2.4%	12	5.1%	18	3.7%
Shoulder	10	4.0%	4	1.7%	14	2.9%
Arm/Elbow	3	1.2%	3	1.3%	6	1.2%
Neck	1	0.4%	1	0.4%	2	0.4%
Other	1	0.4%	1	0.4%	2	0.4%
Systemic	1	0.4%	1	0.4%	2	0.4%
Total	***252***	***100.0%***	***234***	***100.0%***	***486***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 7.4 Ten Most Common Boys' Basketball Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=252)		Practice (n=234)		Overall (n=486)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	98	38.9%	83	35.5%	181	37.2%
Head/Face Concussion	17	6.7%	22	9.4%	39	8.0%
Knee Other	11	4.4%	18	7.7%	29	6.0%
Hip/Thigh/Upper Leg Strain/Sprain	9	3.6%	14	6.0%	23	4.7%
Hip/Thigh/Upper Leg Contusion	15	6.0%	5	2.1%	20	4.1%
Knee Strain/Sprain	11	4.4%	9	3.8%	20	4.1%
Head/Face Other	9	3.6%	9	3.8%	18	3.7%
Knee Contusion	11	4.4%	7	3.0%	18	3.7%
Hand/Wrist Strain/Sprain	10	4.0%	6	2.6%	16	3.3%
Hand/Wrist Fracture	9	3.6%	4	1.7%	13	2.7%

Figure 7.2 Time Loss of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 7.5 Boys' Basketball Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	6	2.4%	6	2.6%	12	2.5%
Did Not Require Surgery	244	97.6%	227	97.4%	471	97.5%
Total	***250***	***100.0%***	***233***	***100.0%***	***483***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 7.3 History of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

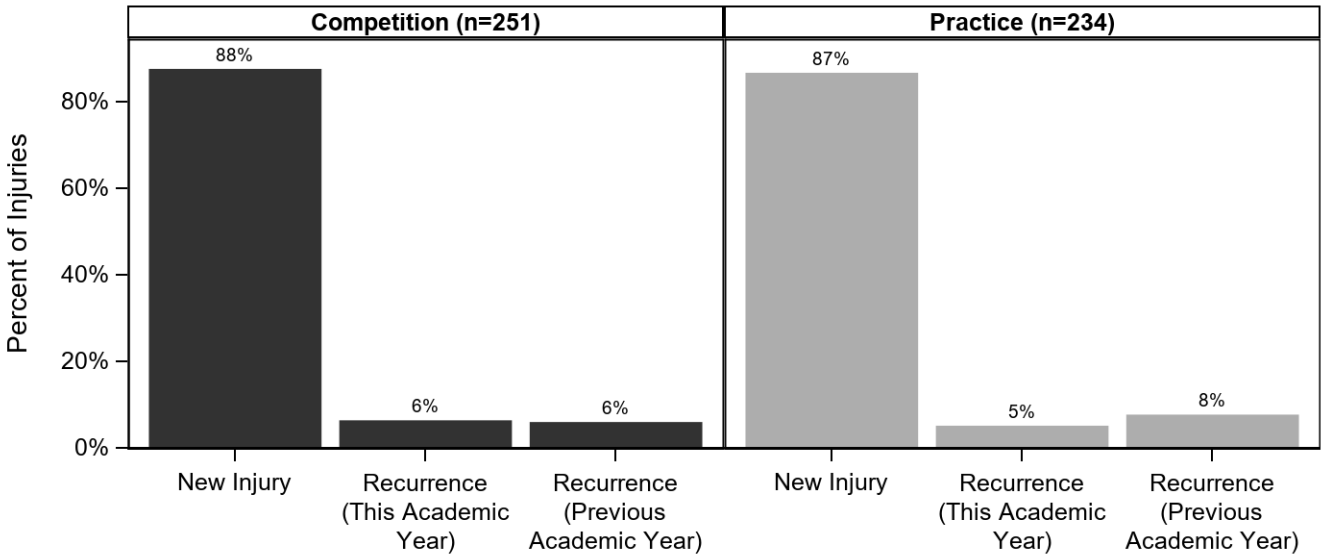


Table 7.6 Time during Season of Boys' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	91	18.7%
Regular Season	381	78.4%
Post Season	9	1.9%
Unknown/Other	5	1.0%
Total	***486***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 7.7 Competition-Related Variables for Boys' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	3	1.2%
First Quarter	29	12.0%
Second Quarter	59	24.4%
Third Quarter	50	20.7%
Fourth Quarter	40	16.5%
Overtime	2	0.8%
Unknown	59	24.4%
Total	***242***	***100.0%***

Court Location		
Inside Lane (Offense)	46	19.1%
Inside Lane (Defense)	45	18.7%
Between 3 Point Arc and Lane (Offense)	17	7.1%
Between 3 Point Arc and Lane (Defense)	17	7.1%
Outside 3 Point Arc (Offense)	10	4.1%
Outside 3 Point Arc (Defense)	11	4.6%
Out of Bounds	3	1.2%
Off the Court	3	1.2%
Backcourt	6	2.5%
Unknown	83	34.4%
Total	***241***	***100.0%***

* Totals and n’s are not always equal due to slight rounding or missing responses.

Table 7.8 Practice-Related Variables for Boys' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	18	7.8%
Second 1/2 Hour	19	8.2%
1-2 Hours into Practice	120	51.9%
>2 Hours into Practice	9	3.9%
Unknown	65	28.1%
Total	***231***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 7.4 Player Position of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

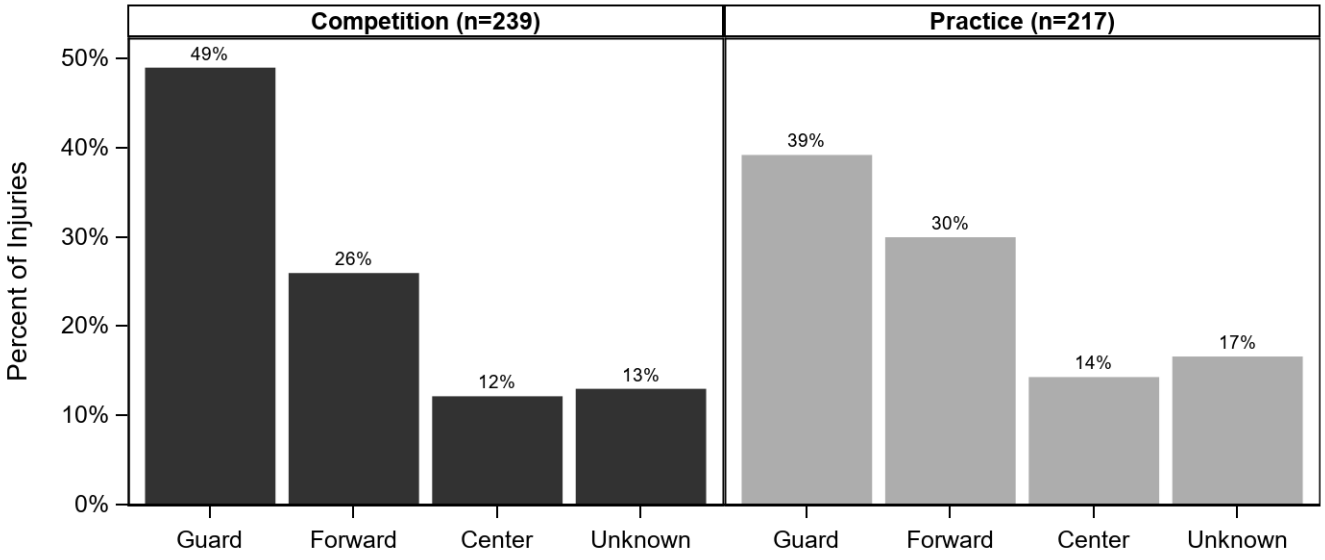


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Table 7.9 Activities Leading to Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Rebounding	59	24.2%	48	22.1%	107	23.2%
Unknown	38	15.6%	37	17.1%	75	16.3%
Defending	36	14.8%	33	15.2%	69	15.0%
General Play	31	12.7%	36	16.6%	67	14.5%
Shooting	30	12.3%	20	9.2%	50	10.8%
Chasing Loose Ball	31	12.7%	19	8.8%	50	10.8%
Ball Handling/Dribbling	12	4.9%	10	4.6%	22	4.8%
Conditioning	0	0.0%	10	4.6%	10	2.2%
Receiving Pass	3	1.2%	3	1.4%	6	1.3%
Other	4	1.6%	1	0.5%	5	1.1%
Total	***244***	***100.0%***	***217***	***100.0%***	***461***	***100.0%***

* Totals and n’s are not always equal due to slight rounding or missing responses.

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Table 7.10 Activity Resulting in Boys' Basketball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	15	5.7%	3	5.0%	0	0.0%	2	5.6%	2	2.6%
Chasing Loose Ball	20	7.6%	7	11.7%	5	18.5%	7	19.4%	11	14.5%
Conditioning	5	1.9%	0	0.0%	0	0.0%	0	0.0%	5	6.6%
Defending	33	12.6%	18	30.0%	3	11.1%	9	25.0%	6	7.9%
General Play	36	13.7%	12	20.0%	4	14.8%	2	5.6%	13	17.1%
Other	3	1.1%	0	0.0%	0	0.0%	0	0.0%	2	2.6%
Rebounding	76	29.0%	7	11.7%	8	29.6%	7	19.4%	9	11.8%
Receiving Pass	5	1.9%	0	0.0%	0	0.0%	0	0.0%	1	1.3%
Shooting	27	10.3%	10	16.7%	5	18.5%	4	11.1%	4	5.3%
Unknown	42	16.0%	3	5.0%	2	7.4%	5	13.9%	23	30.3%
Total	***262***	***100.0%***	***60***	***100.0%***	***27***	***100.0%***	***36***	***100.0%***	***76***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

VIII. Girls' Basketball Injury Epidemiology

Table 8.1 Girls' Basketball Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***382***	***167,730***	***2.28***
Competition	245	49,890	4.91
Practice	137	117,840	1.16

* All analyses in this report present un-weighted data.

Table 8.2 Demographic Characteristics of Injured Girls' Basketball Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	102	27.4%
Sophomore	115	30.9%
Junior	92	24.7%
Senior	63	16.9%
Total	***372***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.5 (1.2)
n	322

BMI	
Minimum	17.4
Maximum	42.4
Mean (SD)	22.3 (3.4)
n	222

* Throughout this report, totals and n's represent the total un-weighted numbers of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 8.1 Diagnosis of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

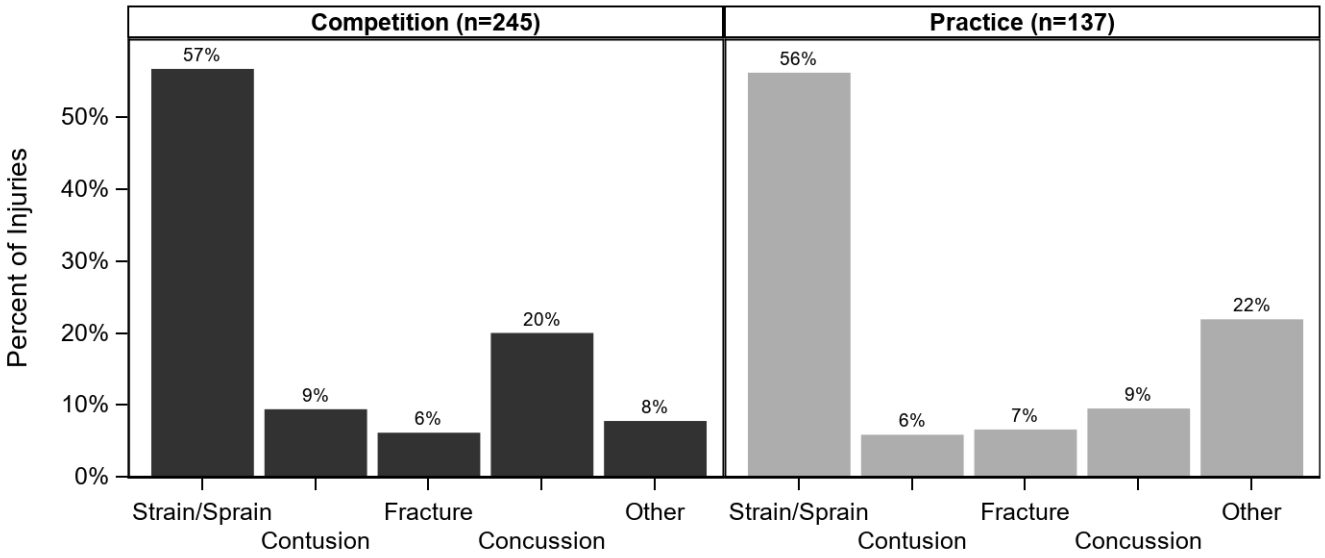


Table 8.3 Body Site of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

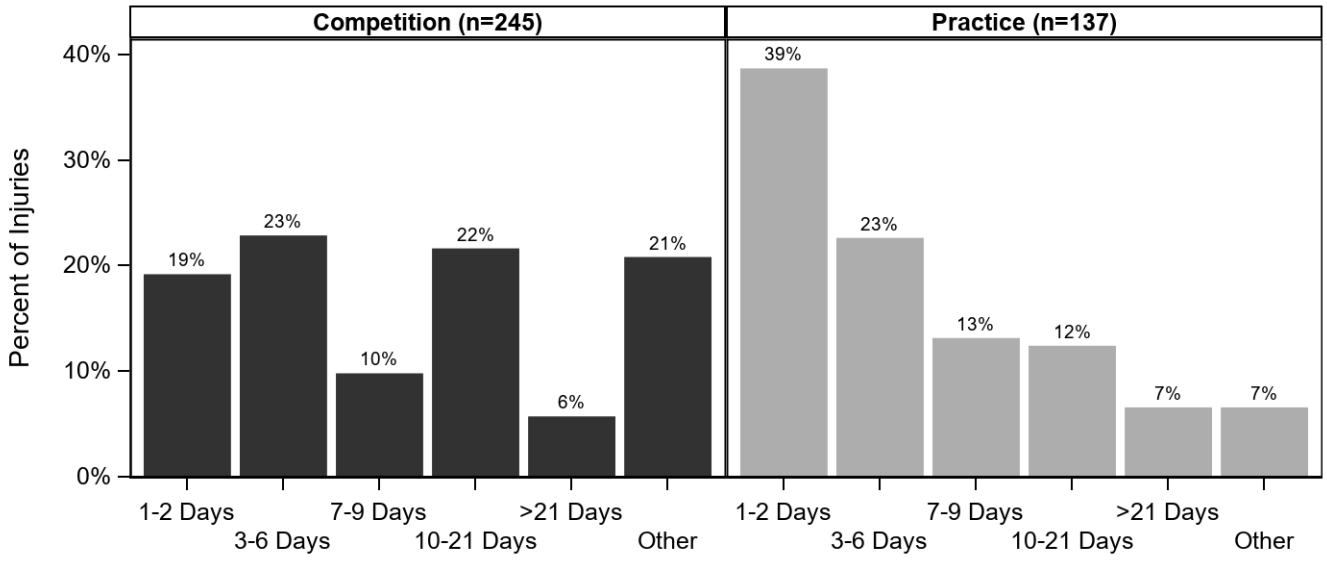
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	79	32.4%	44	32.1%	123	32.3%
Head/Face	57	23.4%	14	10.2%	71	18.6%
Knee	51	20.9%	18	13.1%	69	18.1%
Hand/Wrist	24	9.8%	14	10.2%	38	10.0%
Hip/Thigh/Upper Leg	9	3.7%	13	9.5%	22	5.8%
Lower Leg	4	1.6%	13	9.5%	17	4.5%
Arm/Elbow	7	2.9%	5	3.6%	12	3.1%
Foot	3	1.2%	9	6.6%	12	3.1%
Trunk	2	0.8%	6	4.4%	8	2.1%
Neck	3	1.2%	0	0.0%	3	0.8%
Shoulder	3	1.2%	0	0.0%	3	0.8%
Systemic	2	0.8%	1	0.7%	3	0.8%
Total	***244***	***100.0%***	***137***	***100.0%***	***381***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 8.4 Ten Most Common Girls' Basketball Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=244)		Practice (n=137)		Overall (n=381)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	77	31.6%	43	31.4%	120	31.5%
Head/Face Concussion	48	19.7%	13	9.5%	61	16.0%
Knee Strain/Sprain	37	15.2%	6	4.4%	43	11.3%
Knee Other	7	2.9%	10	7.3%	17	4.5%
Hand/Wrist Fracture	11	4.5%	5	3.6%	16	4.2%
Hip/Thigh/Upper Leg Strain/Sprain	6	2.5%	10	7.3%	16	4.2%
Hand/Wrist Strain/Sprain	7	2.9%	7	5.1%	14	3.7%
Lower Leg Other	0	0.0%	11	8.0%	11	2.9%
Knee Contusion	7	2.9%	2	1.5%	9	2.4%
Lower Leg Strain/Sprain	4	1.6%	2	1.5%	6	1.6%

Figure 8.2 Time Loss of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 8.5 Girls' Basketball Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	31	12.7%	1	0.7%	32	8.4%
Did Not Require Surgery	213	87.3%	136	99.3%	349	91.6%
Total	***244***	***100.0%***	***137***	***100.0%***	***381***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 8.3 History of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

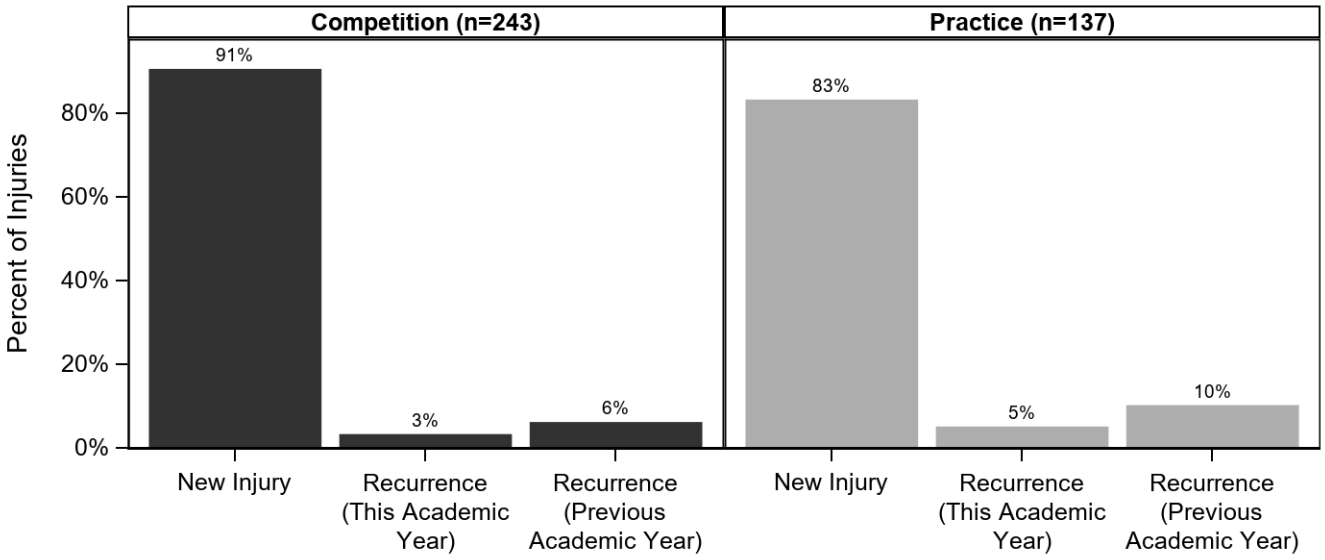


Table 8.6 Time during Season of Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	53	13.9%
Regular Season	320	84.0%
Post Season	8	2.1%
Total	***381***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 8.7 Competition-Related Variables for Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	7	3.0%
First Quarter	20	8.5%
Second Quarter	39	16.6%
Third Quarter	74	31.5%
Fourth Quarter	45	19.1%
Unknown	50	21.3%
Total	***235***	***100.0%***

Court Location		
Inside Lane (Offense)	37	15.7%
Inside Lane (Defense)	41	17.4%
Between 3 Point Arc and Lane (Offense)	14	6.0%
Between 3 Point Arc and Lane (Defense)	17	7.2%
Outside 3 Point Arc (Offense)	15	6.4%
Outside 3 Point Arc (Defense)	15	6.4%
Out of Bounds	7	3.0%
Off the Court	1	0.4%
Backcourt	2	0.9%
Unknown	86	36.6%
Total	***235***	***100.0%***

* Totals and n’s are not always equal due to slight rounding or missing responses.

Table 8.8 Practice-Related Variables for Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	6	4.4%
Second 1/2 Hour	21	15.4%
1-2 Hours into Practice	55	40.4%
>2 Hours into Practice	3	2.2%
Unknown	51	37.5%
Total	***136***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 8.4 Player Position of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

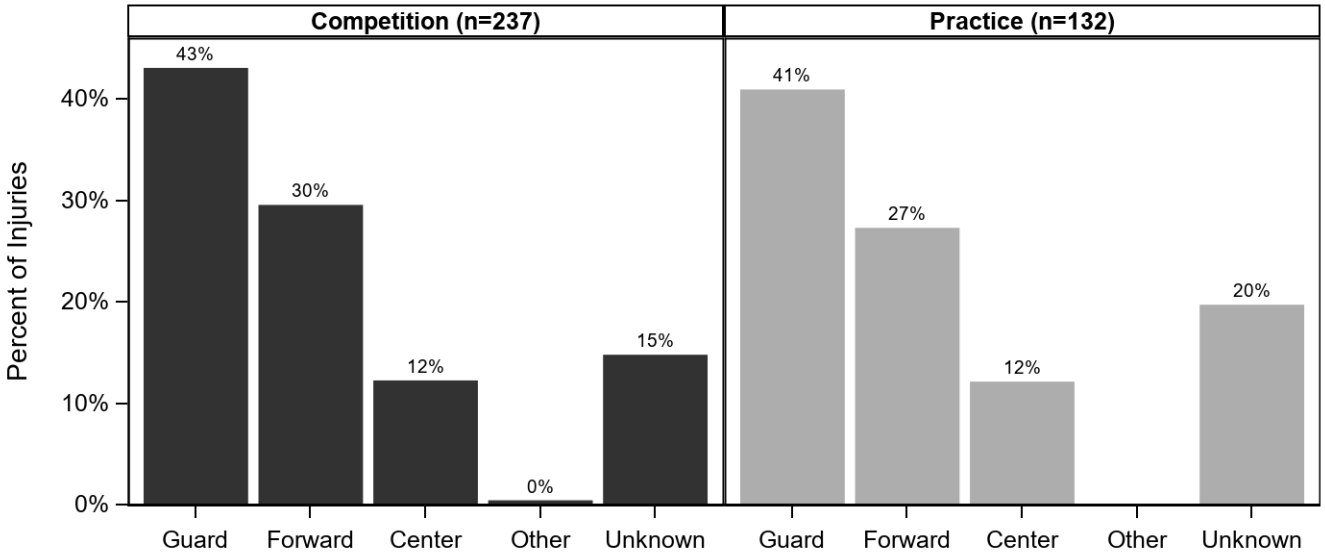


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Table 8.9 Activities Leading to Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	33	13.9%	38	29.0%	71	19.3%
Unknown	33	13.9%	32	24.4%	65	17.7%
Defending	51	21.5%	11	8.4%	62	16.8%
Rebounding	41	17.3%	16	12.2%	57	15.5%
Chasing Loose Ball	32	13.5%	6	4.6%	38	10.3%
Shooting	21	8.9%	3	2.3%	24	6.5%
Ball Handling/Dribbling	17	7.2%	5	3.8%	22	6.0%
Conditioning	0	0.0%	11	8.4%	11	3.0%
Receiving Pass	4	1.7%	6	4.6%	10	2.7%
Passing	3	1.3%	1	0.8%	4	1.1%
Other	2	0.8%	2	1.5%	4	1.1%
Total	***237***	***100.0%***	***131***	***100.0%***	***368***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 8.10 Activity Resulting in Girls' Basketball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	15	7.1%	2	6.5%	0	0.0%	4	7.1%	1	2.1%
Chasing Loose Ball	18	8.5%	7	22.6%	0	0.0%	9	16.1%	4	8.5%
Conditioning	5	2.4%	0	0.0%	3	13.0%	0	0.0%	3	6.4%
Defending	30	14.2%	6	19.4%	2	8.7%	17	30.4%	7	14.9%
General Play	43	20.4%	6	19.4%	4	17.4%	5	8.9%	13	27.7%
Other	2	0.9%	0	0.0%	0	0.0%	1	1.8%	1	2.1%
Passing	3	1.4%	0	0.0%	0	0.0%	1	1.8%	0	0.0%
Rebounding	40	19.0%	1	3.2%	4	17.4%	10	17.9%	2	4.3%
Receiving Pass	2	0.9%	2	6.5%	4	17.4%	2	3.6%	0	0.0%
Shooting	18	8.5%	1	3.2%	2	8.7%	1	1.8%	2	4.3%
Unknown	35	16.6%	6	19.4%	4	17.4%	6	10.7%	14	29.8%
Total	***211***	***100.0%***	***31***	***100.0%***	***23***	***100.0%***	***56***	***100.0%***	***47***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

IX. Boys' Wrestling Injury Epidemiology

Table 9.1 Boys' Wrestling Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***550***	***176,175***	***3.12***
Competition	231	44,343	5.21
Practice	319	131,832	2.42

* All analyses in this chapter present un-weighted data.

Table 9.2 Demographic Characteristics of Injured Boys' Wrestling Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	159	29.6%
Sophomore	125	23.3%
Junior	158	29.4%
Senior	95	17.7%
Total	***537***	***100.0%***

Age (years)	
Minimum	12
Maximum	18
Mean (SD)	15.7 (1.2)
n	456

BMI	
Minimum	17.2
Maximum	44.9
Mean (SD)	23.8 (4.5)
n	346

* Throughout this chapter, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 9.1 Diagnosis of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

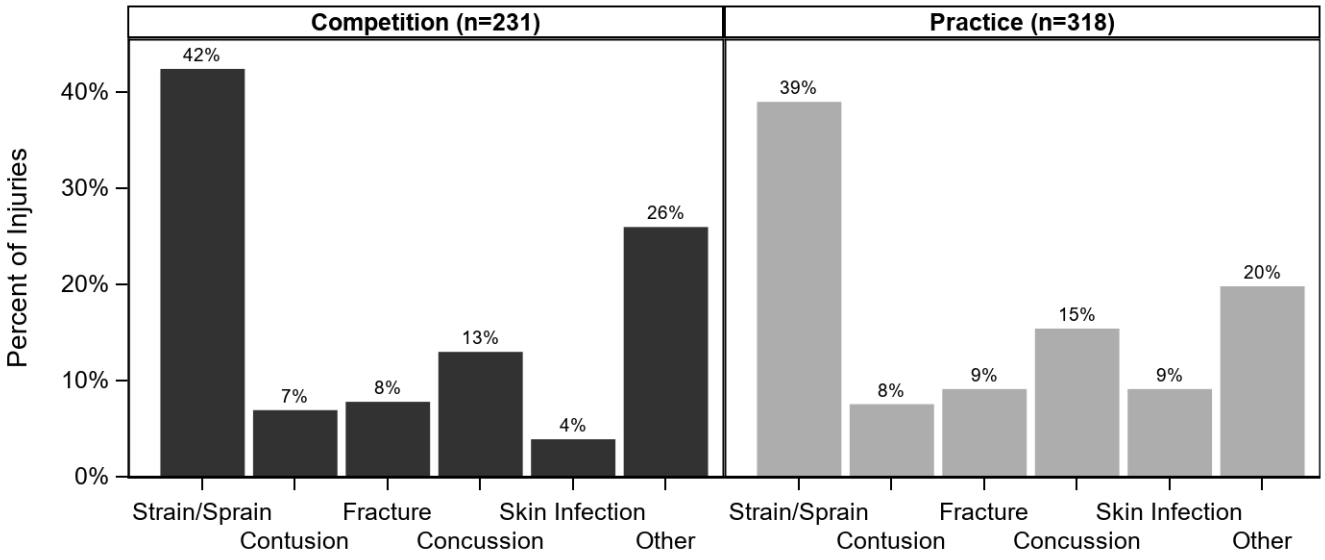


Table 9.3 Body Site of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

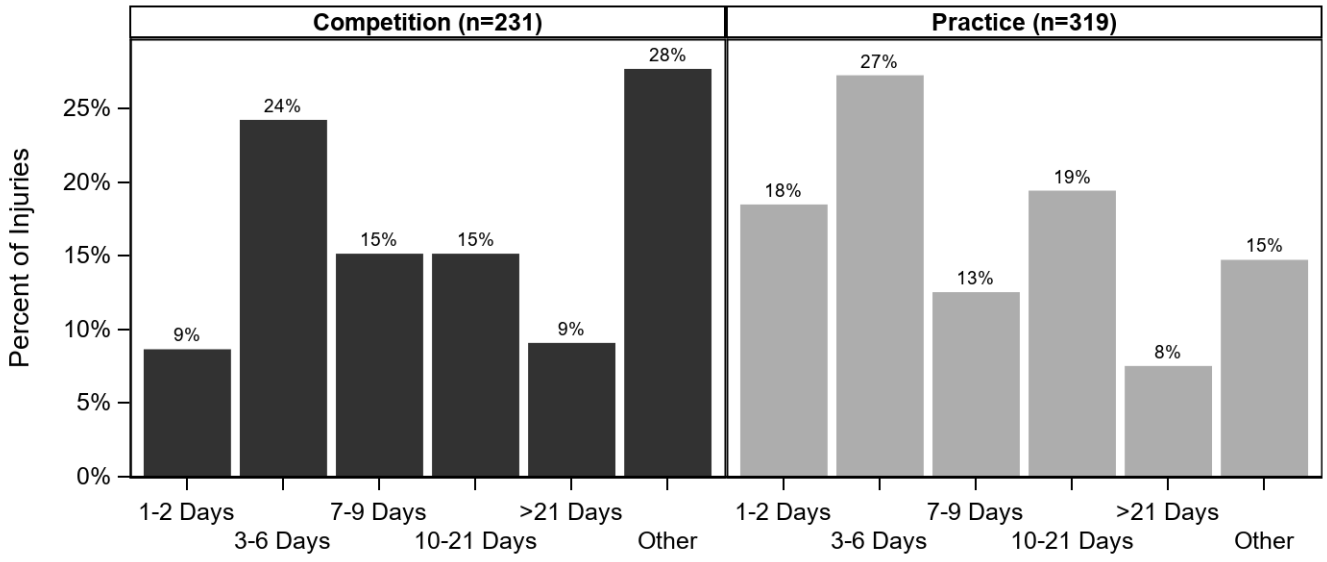
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	41	17.7%	78	24.5%	119	21.6%
Knee	35	15.2%	49	15.4%	84	15.3%
Shoulder	44	19.0%	24	7.5%	68	12.4%
Trunk	16	6.9%	33	10.3%	49	8.9%
Ankle	16	6.9%	31	9.7%	47	8.5%
Arm/Elbow	29	12.6%	18	5.6%	47	8.5%
Hand/Wrist	13	5.6%	31	9.7%	44	8.0%
Hip/Thigh/Upper Leg	10	4.3%	14	4.4%	24	4.4%
Neck	6	2.6%	14	4.4%	20	3.6%
Other	12	5.2%	8	2.5%	20	3.6%
Lower Leg	3	1.3%	10	3.1%	13	2.4%
Foot	4	1.7%	6	1.9%	10	1.8%
Systemic	2	0.9%	3	0.9%	5	0.9%
Total	***231***	***100.0%***	***319***	***100.0%***	***550***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 9.4 Ten Most Common Boys' Wrestling Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=231)		Practice (n=318)		Overall (n=549)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	30	13.0%	49	15.4%	79	14.4%
Ankle Strain/Sprain	16	6.9%	26	8.2%	42	7.7%
Knee Other	16	6.9%	22	6.9%	38	6.9%
Knee Strain/Sprain	15	6.5%	22	6.9%	37	6.7%
Head/Face Other	8	3.5%	26	8.2%	34	6.2%
Shoulder Other	25	10.8%	8	2.5%	33	6.0%
Shoulder Strain/Sprain	18	7.8%	15	4.7%	33	6.0%
Trunk Strain/Sprain	9	3.9%	14	4.4%	23	4.2%
Arm/Elbow Strain/Sprain	16	6.9%	6	1.9%	22	4.0%
Hand/Wrist Strain/Sprain	6	2.6%	13	4.1%	19	3.5%

Figure 9.2 Time Loss of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 9.5 Boys' Wrestling Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	18	7.9%	13	4.1%	31	5.7%
Did Not Require Surgery	211	92.1%	303	95.9%	514	94.3%
Total	***229***	***100.0%***	***316***	***100.0%***	***545***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 9.3 History of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

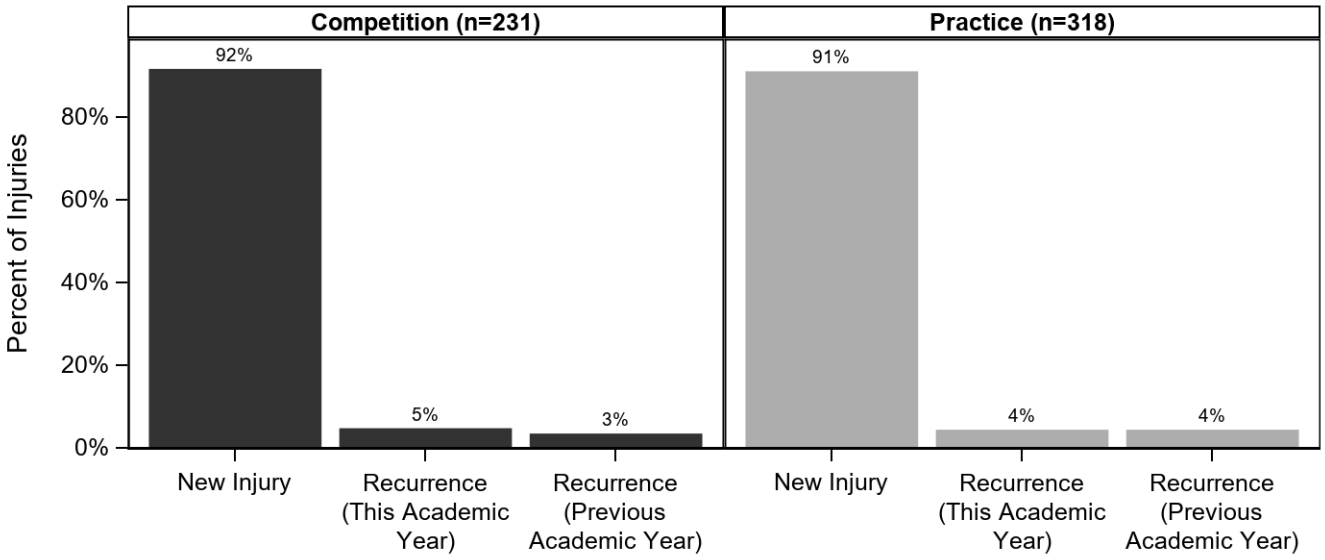


Table 9.6 Time during Season of Boys' Wrestling Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	79	14.4%
Regular Season	422	76.7%
Post Season	43	7.8%
Unknown/Other	6	1.1%
Total	***550***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 9.7 Competition-Related Variables for Boys' Wrestling Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	5	2.4%
First Period	24	11.5%
Second Period	56	26.9%
Third Period	38	18.3%
Overtime	1	0.5%
Unknown	84	40.4%
Total	***208***	***100.0%***

Mat Location		
Within 28ft Circle	294	58.7%
Out of Bounds	7	1.4%
Off Mat	16	3.2%
Unknown	184	36.7%
Total	***501***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 9.8 Practice-Related Variables for Boys' Wrestling Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	21	7.0%
Second 1/2 Hour	49	16.3%
1-2 Hours into Practice	124	41.3%
>2 Hours into Practice	14	4.7%
Unknown	92	30.7%
Total	***300***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 9.9 Activities Leading to Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Takedown	92	42.8%	79	27.6%	171	34.1%
Unknown	38	17.7%	69	24.1%	107	21.4%
Sparring	21	9.8%	53	18.5%	74	14.8%
N/A **	13	6.0%	21	7.3%	34	6.8%
Escape	12	5.6%	9	3.1%	21	4.2%
Conditioning	1	0.5%	18	6.3%	19	3.8%
Fall	8	3.7%	11	3.8%	19	3.8%
Other	6	2.8%	12	4.2%	18	3.6%
Near Fall	14	6.5%	3	1.0%	17	3.4%
Riding	8	3.7%	7	2.4%	15	3.0%
Reversal	2	0.9%	4	1.4%	6	1.2%
Total	***215***	***100.0%***	***286***	***100.0%***	***501***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.
** N/A category consists of skin infections, overuse injuries, heat illness, etc.

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Table 9.10 Activity Resulting in Boys' Wrestling Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	n	%	n	%	n	%	n	%	n	%
Conditioning	10	4.9%	2	5.1%	2	4.8%	2	2.9%	3	2.1%
Escape	9	4.4%	1	2.6%	3	7.1%	2	2.9%	6	4.2%
Fall	12	5.8%	0	0.0%	2	4.8%	2	2.9%	2	1.4%
N/A **	0	0.0%	0	0.0%	0	0.0%	0	0.0%	34	23.6%
Near Fall	9	4.4%	1	2.6%	2	4.8%	0	0.0%	5	3.5%
Other	2	1.0%	2	5.1%	1	2.4%	5	7.2%	8	5.6%
Reversal	2	1.0%	2	5.1%	0	0.0%	0	0.0%	2	1.4%
Riding	11	5.3%	1	2.6%	0	0.0%	0	0.0%	3	2.1%
Sparring	35	17.0%	4	10.3%	5	11.9%	14	20.3%	16	11.1%
Takedown	68	33.0%	19	48.7%	18	42.9%	31	44.9%	35	24.3%
Unknown	48	23.3%	7	17.9%	9	21.4%	13	18.8%	30	20.8%
Total	***206***	***100.0%***	***39***	***100.0%***	***42***	***100.0%***	***69***	***100.0%***	***144***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.
** N/A category consists of skin infections, overuse injuries, heat illness, etc.

X. Boys' Baseball Injury Epidemiology

Table 10.1 Boys' Baseball Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***253***	***195,822***	***1.29***
Competition	132	67,837	1.95
Practice	121	127,985	0.95

* All analyses in this chapter present un-weighted data.

Table 10.2 Demographic Characteristics of Injured Boys' Baseball Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	61	24.5%
Sophomore	65	26.1%
Junior	67	26.9%
Senior	56	22.5%
Total	***249***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	16.1 (1.3)
n	206

BMI	
Minimum	16.5
Maximum	36.6
Mean (SD)	24.2 (3.7)
n	153

* Throughout this chapter, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 10.1 Diagnosis of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

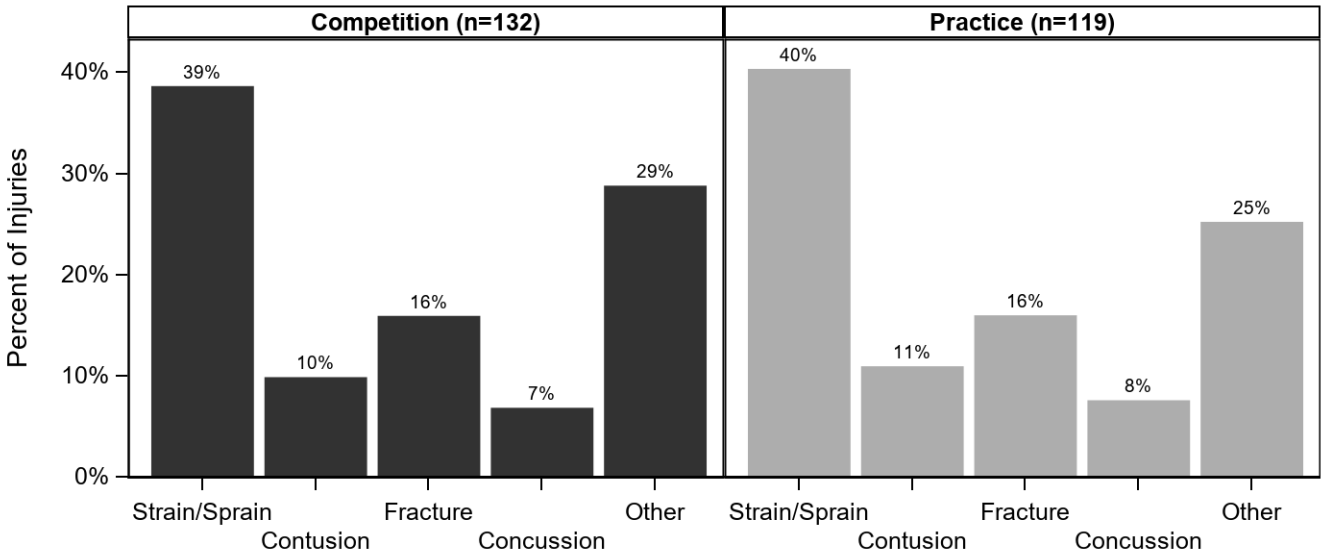


Table 10.3 Body Site of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

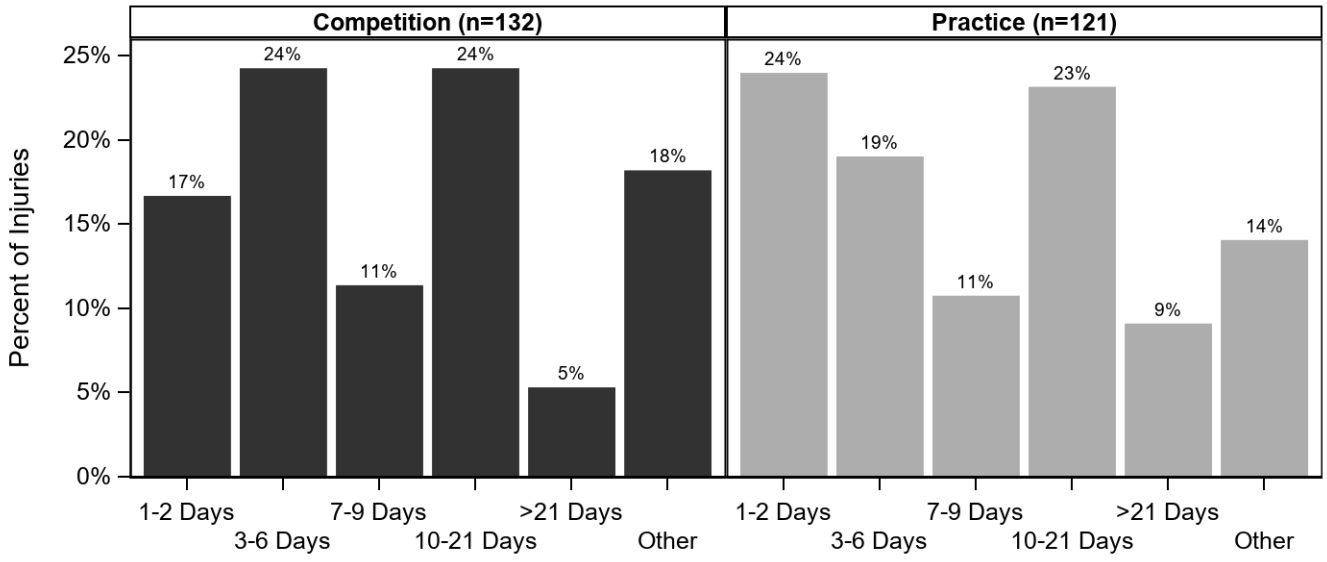
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Shoulder	25	18.9%	20	16.5%	45	17.8%
Hand/Wrist	17	12.9%	22	18.2%	39	15.4%
Head/Face	26	19.7%	13	10.7%	39	15.4%
Arm/Elbow	18	13.6%	15	12.4%	33	13.0%
Hip/Thigh/Upper Leg	16	12.1%	16	13.2%	32	12.6%
Ankle	8	6.1%	12	9.9%	20	7.9%
Knee	12	9.1%	7	5.8%	19	7.5%
Trunk	5	3.8%	6	5.0%	11	4.3%
Lower Leg	3	2.3%	3	2.5%	6	2.4%
Foot	1	0.8%	3	2.5%	4	1.6%
Other	0	0.0%	3	2.5%	3	1.2%
Neck	1	0.8%	0	0.0%	1	0.4%
Systemic	0	0.0%	1	0.8%	1	0.4%
Total	***132***	***100.0%***	***121***	***100.0%***	***253***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 10.4 Ten Most Common Boys' Baseball Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=132)		Practice (n=119)		Overall (n=251)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	12	9.1%	12	10.1%	24	9.6%
Shoulder Other	12	9.1%	10	8.4%	22	8.8%
Hand/Wrist Fracture	8	6.1%	12	10.1%	20	8.0%
Shoulder Strain/Sprain	11	8.3%	9	7.6%	20	8.0%
Ankle Strain/Sprain	8	6.1%	10	8.4%	18	7.2%
Head/Face Concussion	8	6.1%	9	7.6%	17	6.8%
Arm/Elbow Strain/Sprain	8	6.1%	7	5.9%	15	6.0%
Arm/Elbow Other	7	5.3%	4	3.4%	11	4.4%
Head/Face Fracture	9	6.8%	2	1.7%	11	4.4%
Trunk Strain/Sprain	4	3.0%	6	5.0%	10	4.0%

Figure 10.2 Time Loss of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 10.5 Boys' Baseball Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	11	8.5%	9	7.4%	20	8.0%
Did Not Require Surgery	118	91.5%	112	92.6%	230	92.0%
Total	***129***	***100.0%***	***121***	***100.0%***	***250***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 10.3 History of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

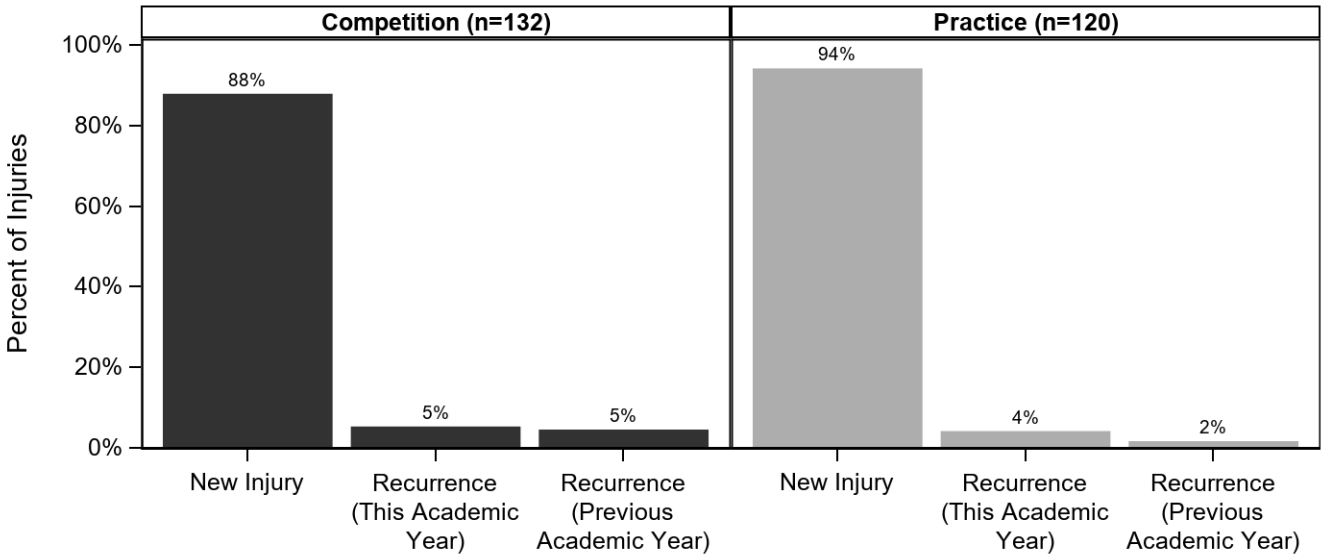


Table 10.6 Time during Season of Boys' Baseball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	57	22.6%
Regular Season	187	74.2%
Post Season	8	3.2%
Total	***252***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 10.7 Competition-Related Variables for Boys' Baseball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	9	7.1%
First Inning	6	4.8%
Second Inning	9	7.1%
Third Inning	13	10.3%
Fourth Inning	17	13.5%
Fifth Inning	17	13.5%
Sixth Inning	6	4.8%
Seventh Inning	7	5.6%
Unknown	42	33.3%
Total	***126***	***100.0%***

Field Location		
Pitchers Mound	22	17.6%
Home Plate	26	20.8%
First Base	16	12.8%
Second Base	21	16.8%
Third Base	9	7.2%
Infield	3	2.4%
Outfield	10	8.0%
Foul Territory	1	0.8%
Other	3	2.4%
Unknown	14	11.2%
Total	***125***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 10.8 Practice-Related Variables for Boys' Baseball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	13	11.0%
Second 1/2 Hour	11	9.3%
1-2 Hours into Practice	53	44.9%
>2 Hours into Practice	4	3.4%
Unknown	37	31.4%
Total	***118***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 10.4 Player Position of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

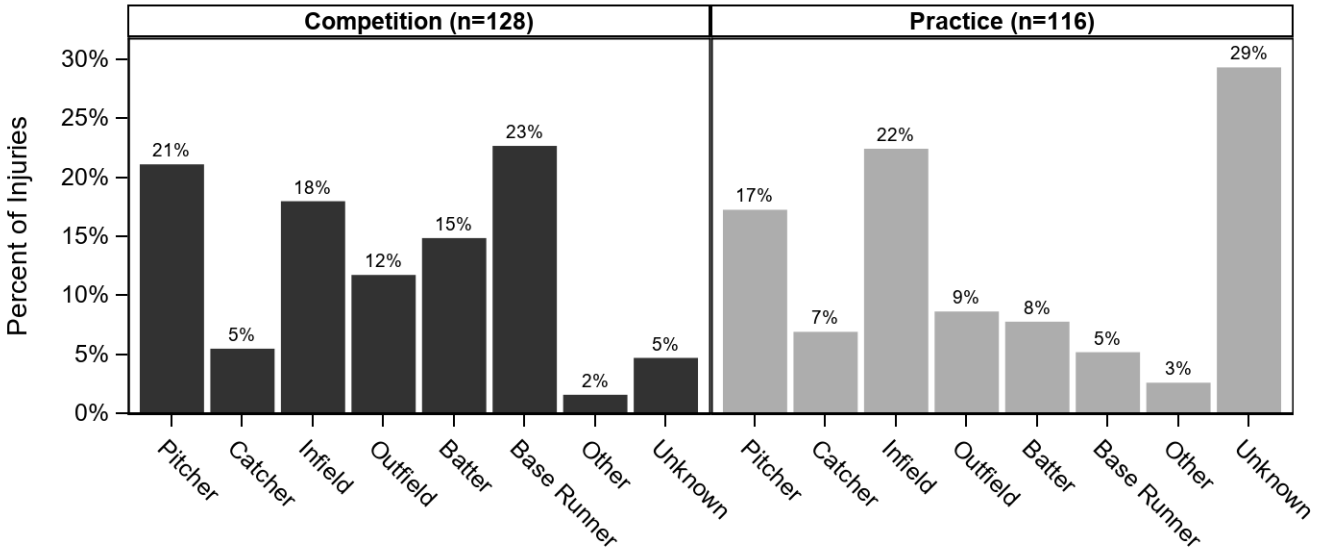


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Table 10.9 Activities Leading to Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running Bases	30	23.4%	18	15.4%	48	19.6%
Pitching	22	17.2%	18	15.4%	40	16.3%
Fielding a Batted Ball	15	11.7%	13	11.1%	28	11.4%
Batting	15	11.7%	10	8.5%	25	10.2%
Sliding	17	13.3%	2	1.7%	19	7.8%
Throwing	6	4.7%	11	9.4%	17	6.9%
Catching	9	7.0%	7	6.0%	16	6.5%
Unknown	4	3.1%	12	10.3%	16	6.5%
Other	5	3.9%	8	6.8%	13	5.3%
Fielding a Thrown Ball	3	2.3%	6	5.1%	9	3.7%
General Play	1	0.8%	8	6.8%	9	3.7%
Conditioning	1	0.8%	4	3.4%	5	2.0%
Total	***128***	***100.0%***	***117***	***100.0%***	***245***	***100.0%***

* Totals and n’s are not always equal due to slight rounding or missing responses.

Table 10.10 Activity Resulting in Boys' Baseball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Batting	2	2.1%	6	24.0%	9	22.5%	3	17.6%	5	7.7%
Catching	7	7.2%	1	4.0%	2	5.0%	3	17.6%	3	4.6%
Conditioning	3	3.1%	0	0.0%	0	0.0%	0	0.0%	2	3.1%
Fielding a Batted Ball	4	4.1%	7	28.0%	7	17.5%	3	17.6%	6	9.2%
Fielding a Thrown Ball	3	3.1%	2	8.0%	4	10.0%	0	0.0%	0	0.0%
General Play	3	3.1%	1	4.0%	1	2.5%	0	0.0%	4	6.2%
Other	6	6.2%	2	8.0%	1	2.5%	2	11.8%	2	3.1%
Pitching	19	19.6%	2	8.0%	2	5.0%	2	11.8%	15	23.1%
Running Bases	30	30.9%	3	12.0%	8	20.0%	1	5.9%	6	9.2%
Sliding	8	8.2%	0	0.0%	4	10.0%	1	5.9%	6	9.2%
Throwing	9	9.3%	0	0.0%	0	0.0%	1	5.9%	7	10.8%
Unknown	3	3.1%	1	4.0%	2	5.0%	1	5.9%	9	13.8%
Total	***97***	***100.0%***	***25***	***100.0%***	***40***	***100.0%***	***17***	***100.0%***	***65***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XI. Girls' Softball Injury Epidemiology

Table 11.1 Girls' Softball Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***195***	***128,017***	***1.52***
Competition	97	44,185	2.20
Practice	98	83,832	1.17

* All analyses in this chapter present un-weighted data.

Table 11.2 Demographic Characteristics of Injured Girls' Softball Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	54	28.7%
Sophomore	68	36.2%
Junior	46	24.5%
Senior	20	10.6%
Total	***188***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.6 (1.1)
n	152

BMI	
Minimum	16.6
Maximum	36.2
Mean (SD)	23.0 (3.3)
n	90

* Throughout this chapter, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 11.1 Diagnosis of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

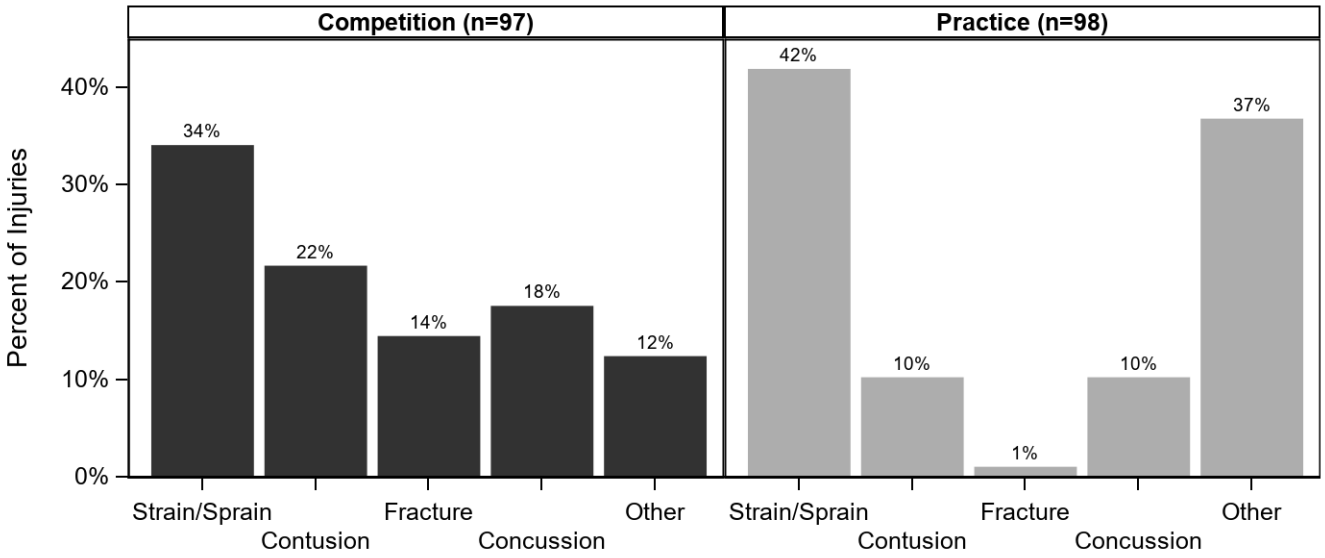


Table 11.3 Body Site of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

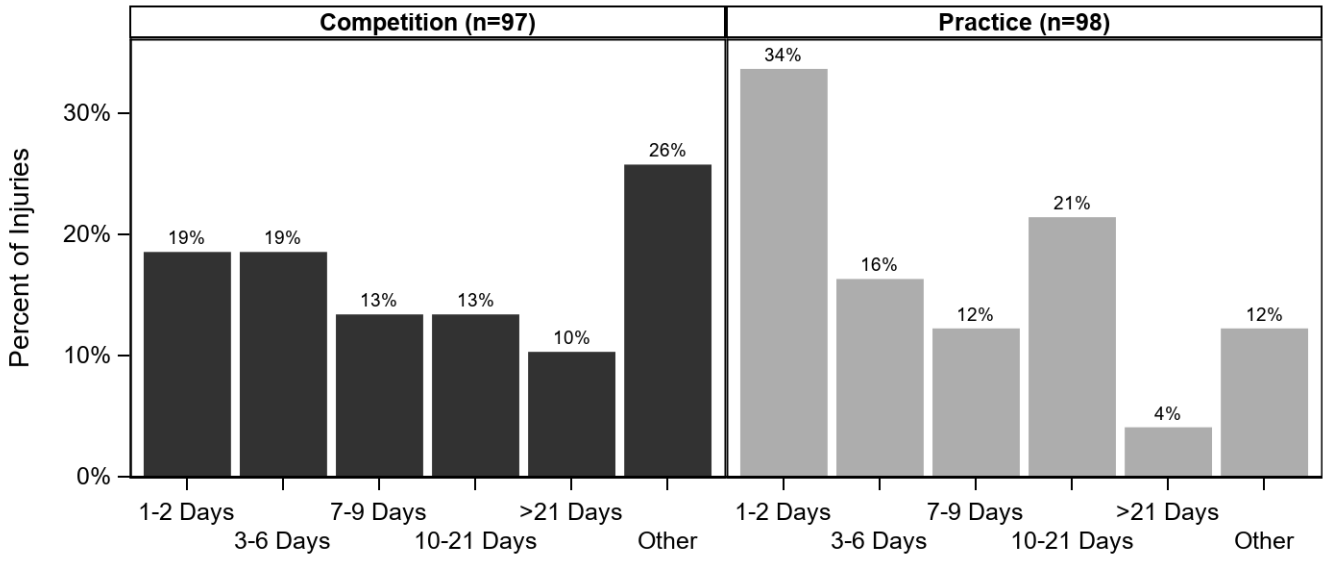
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	28	28.9%	20	20.4%	48	24.6%
Hand/Wrist	19	19.6%	5	5.1%	24	12.3%
Shoulder	4	4.1%	20	20.4%	24	12.3%
Knee	10	10.3%	12	12.2%	22	11.3%
Hip/Thigh/Upper Leg	9	9.3%	11	11.2%	20	10.3%
Ankle	10	10.3%	9	9.2%	19	9.7%
Arm/Elbow	6	6.2%	4	4.1%	10	5.1%
Trunk	6	6.2%	4	4.1%	10	5.1%
Lower Leg	3	3.1%	6	6.1%	9	4.6%
Foot	2	2.1%	4	4.1%	6	3.1%
Systemic	0	0.0%	3	3.1%	3	1.5%
Total	***97***	***100.0%***	***98***	***100.0%***	***195***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 11.4 Ten Most Common Girls' Softball Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=97)		Practice (n=98)		Overall (n=195)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	17	17.5%	10	10.2%	27	13.8%
Ankle Strain/Sprain	8	8.2%	8	8.2%	16	8.2%
Hip/Thigh/Upper Leg Strain/Sprain	6	6.2%	10	10.2%	16	8.2%
Shoulder Other	3	3.1%	11	11.2%	14	7.2%
Head/Face Contusion	6	6.2%	6	6.1%	12	6.2%
Knee Strain/Sprain	6	6.2%	4	4.1%	10	5.1%
Shoulder Strain/Sprain	1	1.0%	9	9.2%	10	5.1%
Hand/Wrist Strain/Sprain	5	5.2%	4	4.1%	9	4.6%
Knee Other	3	3.1%	6	6.1%	9	4.6%
Trunk Strain/Sprain	5	5.2%	4	4.1%	9	4.6%

Figure 11.2 Time Loss of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 11.5 Girls' Softball Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	9	9.5%	5	5.2%	14	7.3%
Did Not Require Surgery	86	90.5%	91	94.8%	177	92.7%
Total	***95***	***100.0%***	***96***	***100.0%***	***191***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 11.3 History of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

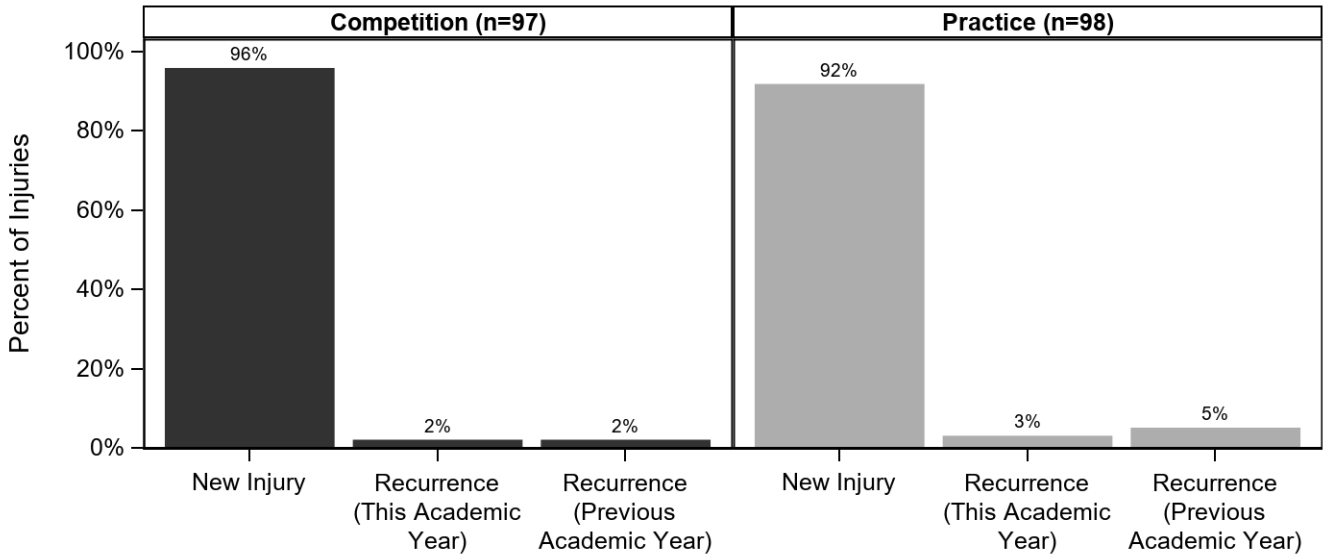


Table 11.6 Time during Season of Girls' Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	46	23.6%
Regular Season	145	74.4%
Post Season	4	2.1%
Total	***195***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 11.7 Competition-Related Variables for Girls' Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	13	14.1%
First Inning	2	2.2%
Second Inning	4	4.3%
Third Inning	12	13.0%
Fourth Inning	15	16.3%
Fifth Inning	9	9.8%
Sixth Inning	3	3.3%
Seventh Inning	2	2.2%
Extra Inning	1	1.1%
Unknown	31	33.7%
Total	***92***	***100.0%***

Field Location		
Pitchers Mound	11	12.0%
Home Plate	28	30.4%
First Base	10	10.9%
Second Base	13	14.1%
Third Base	6	6.5%
Infield	2	2.2%
Outfield	9	9.8%
Foul Territory	4	4.3%
Other	3	3.3%
Unknown	6	6.5%
Total	***92***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 11.8 Practice-Related Variables for Girls' Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	10	11.4%
Second 1/2 Hour	12	13.6%
1-2 Hours into Practice	29	33.0%
>2 Hours into Practice	4	4.5%
Unknown	33	37.5%
Total	***88***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 11.4 Player Position of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

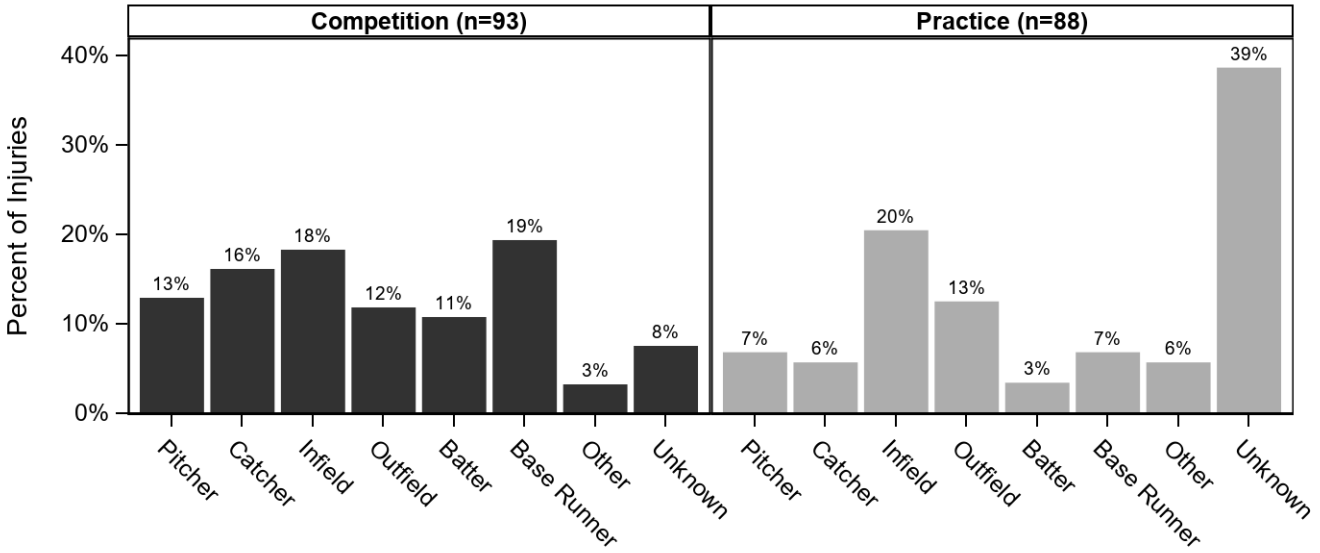


Table 11.9 Activities Leading to Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running Bases	17	18.3%	7	8.0%	24	13.3%
Catching	17	18.3%	5	5.7%	22	12.2%
Fielding a Batted Ball	8	8.6%	13	14.8%	21	11.6%
Sliding	13	14.0%	5	5.7%	18	9.9%
Throwing	5	5.4%	11	12.5%	16	8.8%
Pitching	10	10.8%	6	6.8%	16	8.8%
Fielding a Thrown Ball	6	6.5%	9	10.2%	15	8.3%
Unknown	3	3.2%	11	12.5%	14	7.7%
Batting	9	9.7%	3	3.4%	12	6.6%
Other	3	3.2%	7	8.0%	10	5.5%
General Play	2	2.2%	7	8.0%	9	5.0%
Conditioning	0	0.0%	4	4.5%	4	2.2%
Total	***93***	***100.0%***	***88***	***100.0%***	***181***	***100.0%***

* Totals and n’s are not always equal due to slight rounding or missing responses.

Table 11.10 Activity Resulting in Girls' Softball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Batting	1	1.5%	7	22.6%	1	7.1%	1	4.0%	2	4.7%
Catching	11	16.2%	3	9.7%	1	7.1%	7	28.0%	0	0.0%
Conditioning	4	5.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Fielding a Batted Ball	5	7.4%	7	22.6%	3	21.4%	2	8.0%	4	9.3%
Fielding a Thrown Ball	3	4.4%	6	19.4%	1	7.1%	2	8.0%	3	7.0%
General Play	2	2.9%	1	3.2%	0	0.0%	2	8.0%	4	9.3%
Other	6	8.8%	0	0.0%	1	7.1%	2	8.0%	1	2.3%
Pitching	4	5.9%	3	9.7%	2	14.3%	0	0.0%	7	16.3%
Running Bases	9	13.2%	2	6.5%	3	21.4%	7	28.0%	3	7.0%
Sliding	10	14.7%	1	3.2%	1	7.1%	1	4.0%	5	11.6%
Throwing	6	8.8%	1	3.2%	1	7.1%	1	4.0%	7	16.3%
Unknown	7	10.3%	0	0.0%	0	0.0%	0	0.0%	7	16.3%
Total	***68***	***100.0%***	***31***	***100.0%***	***14***	***100.0%***	***25***	***100.0%***	***43***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XII. Girls' Field Hockey Injury Epidemiology

Table 12.1 Girls' Field Hockey Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***78***	***42,595***	***1.83***
Competition	42	14,420	2.91
Practice	36	28,175	1.28

* All analyses in this report present un-weighted data.

Table 12.2 Demographic Characteristics of Injured Girls' Field Hockey Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	7	9.7%
Sophomore	18	25.0%
Junior	19	26.4%
Senior	28	38.9%
Total	***72***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	16.0 (1.3)
n	69

BMI	
Minimum	16.4
Maximum	32.7
Mean (SD)	22.3 (3.4)
n	56

* Throughout this chapter, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 12.1 Diagnosis of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

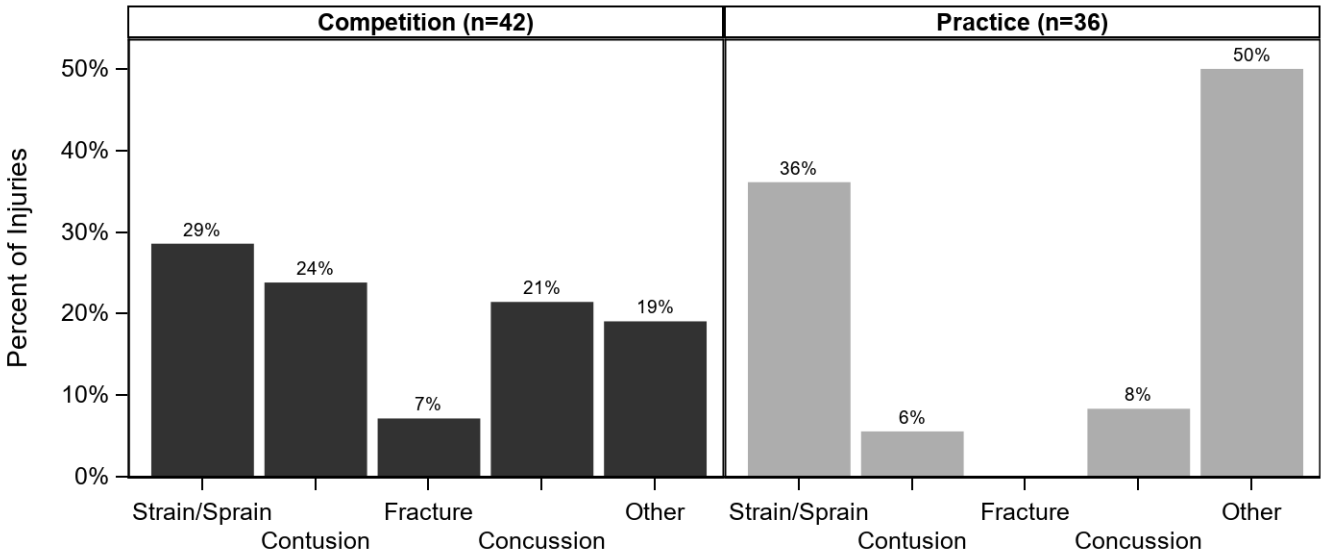


Table 12.3 Body Site of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

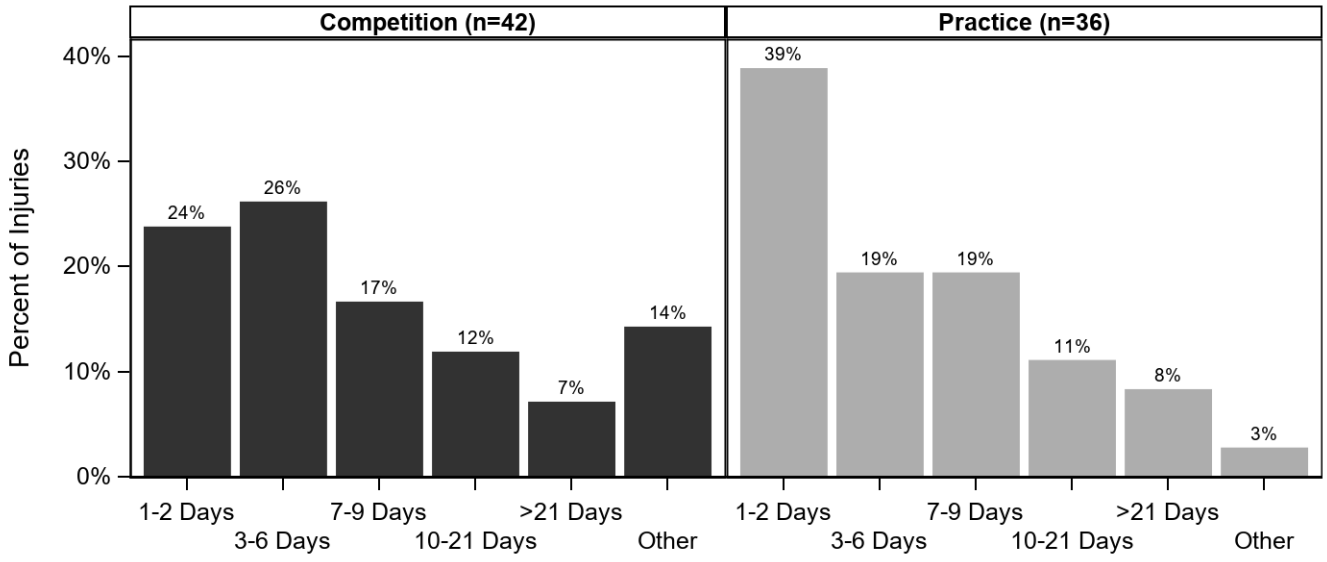
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	17	40.5%	7	19.4%	24	30.8%
Knee	3	7.1%	11	30.6%	14	17.9%
Hip/Thigh/Upper Leg	8	19.0%	4	11.1%	12	15.4%
Ankle	5	11.9%	5	13.9%	10	12.8%
Foot	2	4.8%	2	5.6%	4	5.1%
Hand/Wrist	4	9.5%	0	0.0%	4	5.1%
Systemic	2	4.8%	2	5.6%	4	5.1%
Trunk	1	2.4%	2	5.6%	3	3.8%
Lower Leg	0	0.0%	2	5.6%	2	2.6%
Other	0	0.0%	1	2.8%	1	1.3%
Total	***42***	***100.0%***	***36***	***100.0%***	***78***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 12.4 Ten Most Common Girls' Field Hockey Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=42)		Practice (n=36)		Overall (n=78)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	9	21.4%	3	8.3%	12	15.4%
Ankle Strain/Sprain	5	11.9%	5	13.9%	10	12.8%
Hip/Thigh/Upper Leg Strain/Sprain	7	16.7%	3	8.3%	10	12.8%
Knee Other	1	2.4%	9	25.0%	10	12.8%
Head/Face Contusion	4	9.5%	2	5.6%	6	7.7%
Head/Face Other	3	7.1%	2	5.6%	5	6.4%
Systemic Other	2	4.8%	2	5.6%	4	5.1%
Hand/Wrist Contusion	2	4.8%	0	0.0%	2	2.6%
Hip/Thigh/Upper Leg Other	1	2.4%	1	2.8%	2	2.6%
Knee Contusion	2	4.8%	0	0.0%	2	2.6%

Figure 12.2 Time Loss of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 12.5 Girls' Field Hockey Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	2	4.8%	1	2.8%	3	3.8%
Did Not Require Surgery	40	95.2%	35	97.2%	75	96.2%
Total	***42***	***100.0%***	***36***	***100.0%***	***78***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 12.3 History of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

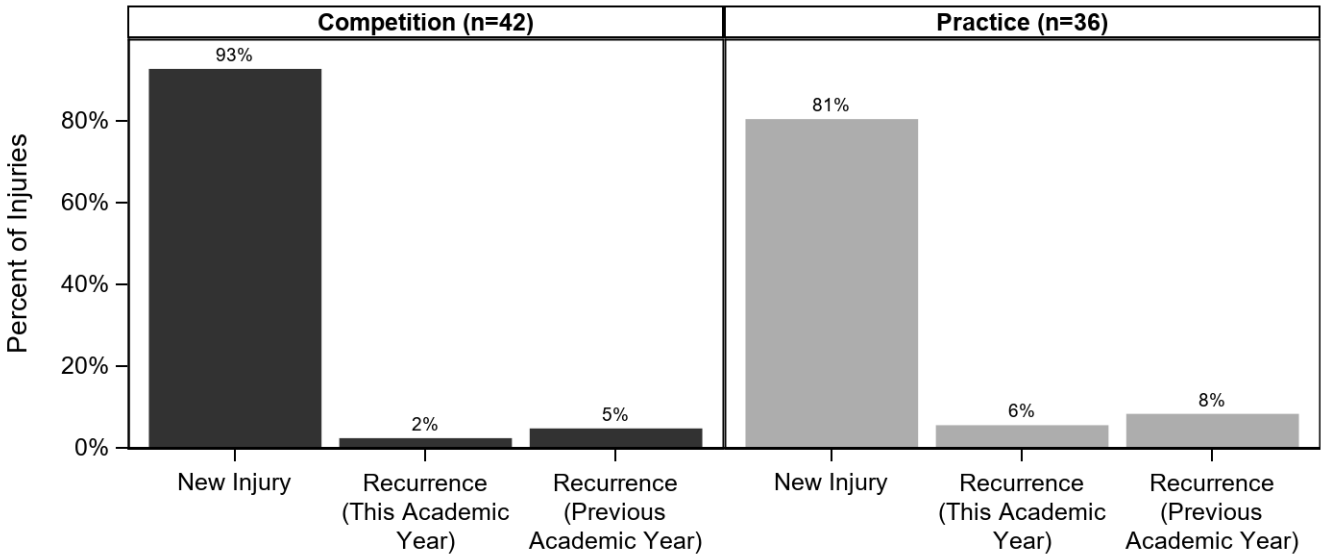


Table 12.6 Time during Season of Girls' Field Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	19	24.4%
Regular Season	56	71.8%
Post Season	3	3.8%
Total	***78***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 12.7 Competition-Related Variables for Girls' Field Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	3	25.0%
Overtime	1	8.3%
Unknown	8	66.7%
Total	***12***	***100.0%***

Field Location		
Goal Area/Circle	9	22.0%
Within 16-yard Arc	3	7.3%
Within 25-yard Line	3	7.3%
Between 25-yard Line and Center Line	3	7.3%
Sideline	1	2.4%
Other	1	2.4%
Unknown	21	51.2%
Total	***41***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 12.8 Practice-Related Variables for Girls' Field Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	3	8.8%
Second 1/2 Hour	2	5.9%
1-2 Hours into Practice	17	50.0%
>2 Hours into Practice	1	2.9%
Unknown	11	32.4%
Total	***34***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 12.4 Player Position of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

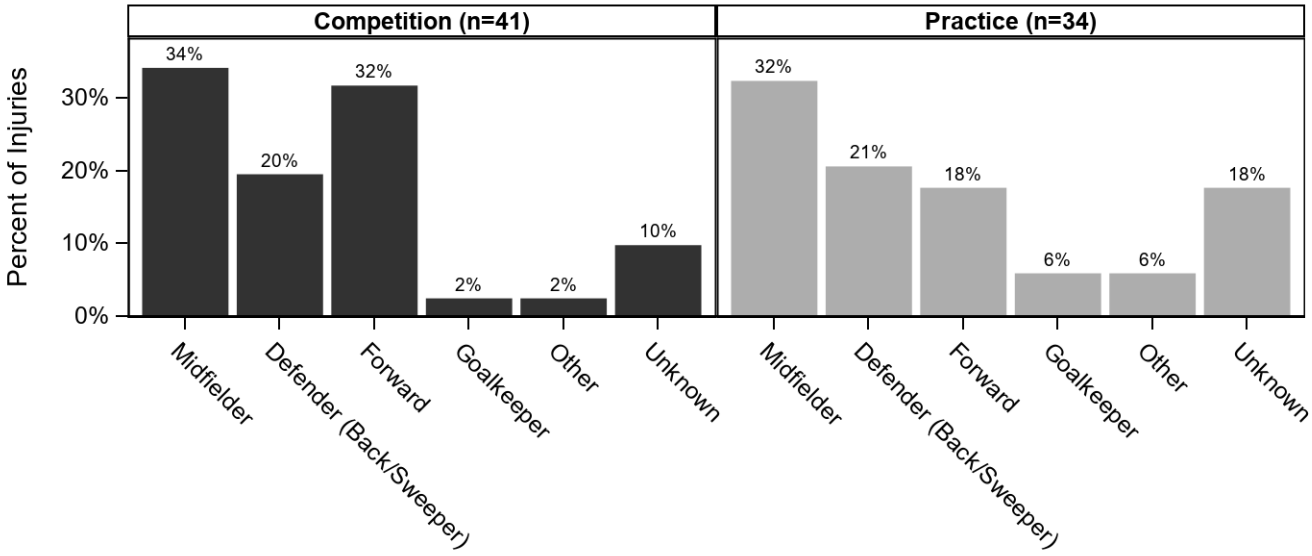


Table 12.9 Activities Leading to Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	12	30.0%	10	29.4%	22	29.7%
Defending	5	12.5%	6	17.6%	11	14.9%
Unknown	6	15.0%	3	8.8%	9	12.2%
Ball Handling/Dribbling	4	10.0%	2	5.9%	6	8.1%
Other	3	7.5%	2	5.9%	5	6.8%
Shooting	3	7.5%	2	5.9%	5	6.8%
Chasing a Loose Ball	4	10.0%	0	0.0%	4	5.4%
Receiving Pass	1	2.5%	2	5.9%	3	4.1%
Conditioning	0	0.0%	3	8.8%	3	4.1%
Goaltending	1	2.5%	2	5.9%	3	4.1%
Blocking Shot	1	2.5%	1	2.9%	2	2.7%
Penalty Corner	0	0.0%	1	2.9%	1	1.4%
Total	***40***	***100.0%***	***34***	***100.0%***	***74***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

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Table 12.10 Activity Resulting in Girls' Field Hockey Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	4	16.7%	0	0.0%	0	0.0%	1	9.1%	1	4.0%
Blocking Shot	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	8.0%
Chasing a Loose Ball	3	12.5%	1	9.1%	0	0.0%	0	0.0%	0	0.0%
Conditioning	1	4.2%	0	0.0%	0	0.0%	0	0.0%	2	8.0%
Defending	1	4.2%	6	54.5%	0	0.0%	3	27.3%	1	4.0%
General Play	6	25.0%	2	18.2%	2	66.7%	1	9.1%	11	44.0%
Goaltending	1	4.2%	0	0.0%	0	0.0%	1	9.1%	1	4.0%
Other	1	4.2%	0	0.0%	0	0.0%	2	18.2%	2	8.0%
Penalty Corner	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	4.0%
Receiving Pass	2	8.3%	0	0.0%	0	0.0%	1	9.1%	0	0.0%
Shooting	1	4.2%	1	9.1%	0	0.0%	1	9.1%	2	8.0%
Unknown	4	16.7%	1	9.1%	1	33.3%	1	9.1%	2	8.0%
Total	***24***	***100.0%***	***11***	***100.0%***	***3***	***100.0%***	***11***	***100.0%***	***25***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XIII. Boys' Ice Hockey Injury Epidemiology

Table 13.1 Boys' Ice Hockey Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***46***	***33,595***	***1.37***
Competition	42	11,662	3.60
Practice	4	21,933	0.18

* All analyses in this chapter present un-weighted data.

Table 13.2 Demographic Characteristics of Injured Boys' Ice Hockey Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	12	26.1%
Sophomore	10	21.7%
Junior	11	23.9%
Senior	13	28.3%
Total	***46***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	16.1 (1.2)
n	44

BMI	
Minimum	18.9
Maximum	28.9
Mean (SD)	23.6 (2.8)
n	34

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 13.1 Diagnosis of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

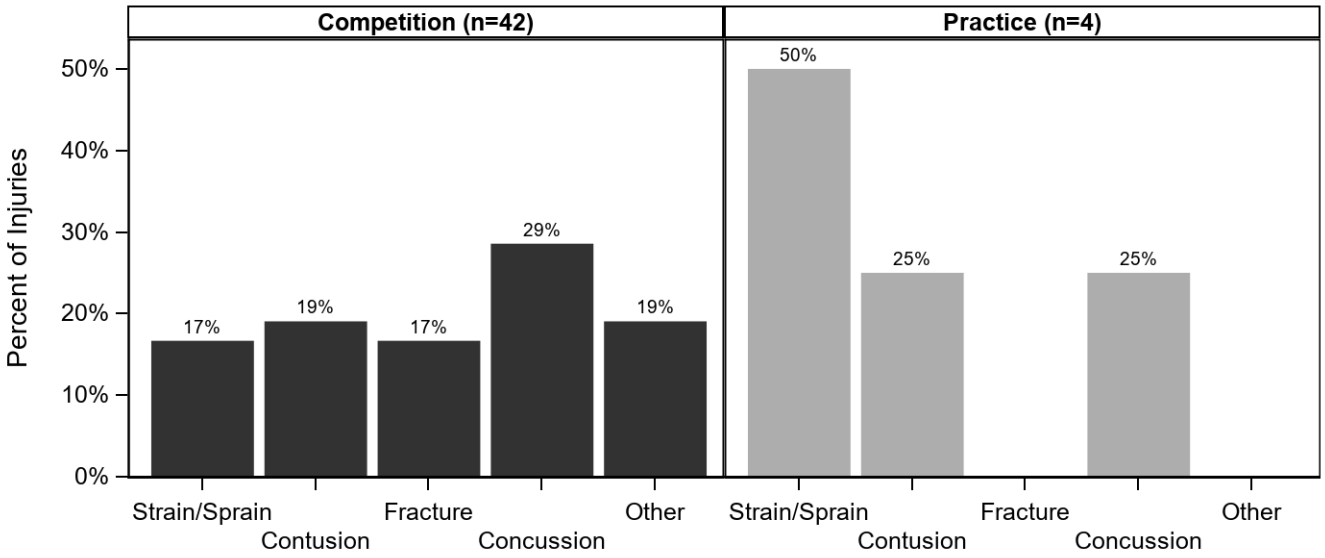


Table 13.3 Body Site of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

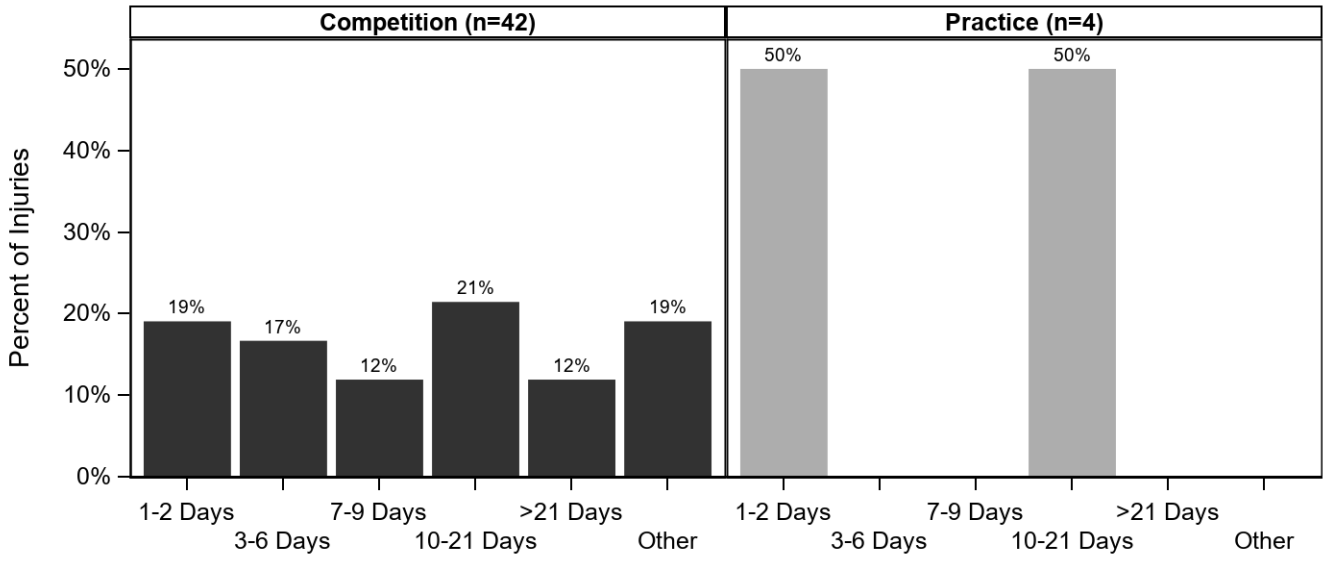
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	12	28.6%	1	25.0%	13	28.3%
Hand/Wrist	8	19.0%	1	25.0%	9	19.6%
Hip/Thigh/Upper Leg	6	14.3%	0	0.0%	6	13.0%
Ankle	3	7.1%	2	50.0%	5	10.9%
Shoulder	4	9.5%	0	0.0%	4	8.7%
Knee	3	7.1%	0	0.0%	3	6.5%
Lower Leg	2	4.8%	0	0.0%	2	4.3%
Other	2	4.8%	0	0.0%	2	4.3%
Arm/Elbow	1	2.4%	0	0.0%	1	2.2%
Trunk	1	2.4%	0	0.0%	1	2.2%
Total	***42***	***100.0%***	***4***	***100.0%***	***46***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 13.4 Ten Most Common Boys' Ice Hockey Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=42)		Practice (n=4)		Overall (n=46)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	12	28.6%	1	25.0%	13	28.3%
Hand/Wrist Fracture	5	11.9%	0	0.0%	5	10.9%
Hip/Thigh/Upper Leg Contusion	3	7.1%	0	0.0%	3	6.5%
Ankle Contusion	2	4.8%	0	0.0%	2	4.3%
Ankle Strain/Sprain	0	0.0%	2	50.0%	2	4.3%
Hand/Wrist Contusion	1	2.4%	1	25.0%	2	4.3%
Hand/Wrist Other	2	4.8%	0	0.0%	2	4.3%
Hip/Thigh/Upper Leg Strain/Sprain	2	4.8%	0	0.0%	2	4.3%
Knee Other	2	4.8%	0	0.0%	2	4.3%
Shoulder Other	2	4.8%	0	0.0%	2	4.3%

Figure 13.2 Time Loss of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 13.5 Boys' Ice Hockey Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	3	7.1%	0	0.0%	3	6.5%
Did Not Require Surgery	39	92.9%	4	100.0%	43	93.5%
Total	***42***	***100.0%***	***4***	***100.0%***	***46***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 13.3 History of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

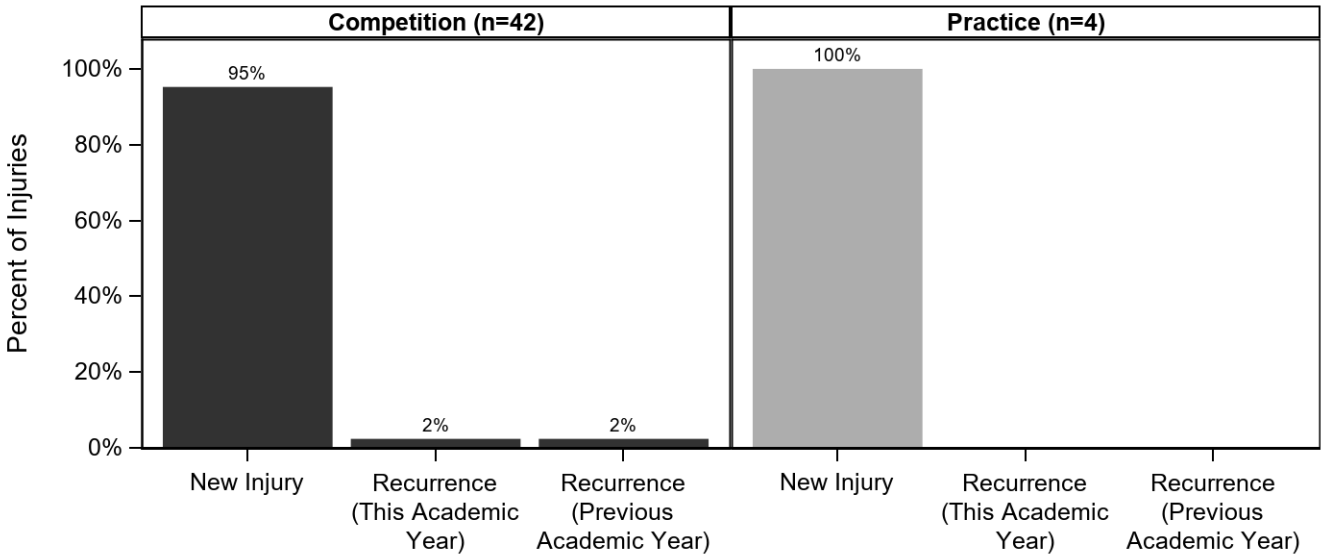


Table 13.6 Time during Season of Boys' Ice Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	3	6.5%
Regular Season	41	89.1%
Post Season	2	4.3%
Total	***46***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 13.7 Competition-Related Variables for Boys' Ice Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
First Period	4	9.5%
Second Period	13	31.0%
Third Period	16	38.1%
Unknown	9	21.4%
Total	***42***	***100.0%***

Rink Location		
Corner	6	14.3%
Behind Goal	1	2.4%
Goal Area	7	16.7%
Face-Off Circle	2	4.8%
Between Goal Line and Blue Line	15	35.7%
Neutral Zone	5	11.9%
Unknown	6	14.3%
Total	***42***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 13.8 Practice-Related Variables for Boys' Ice Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	1	25.0%
1-2 Hours into Practice	3	75.0%
Total	***4***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 13.4 Player Position of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

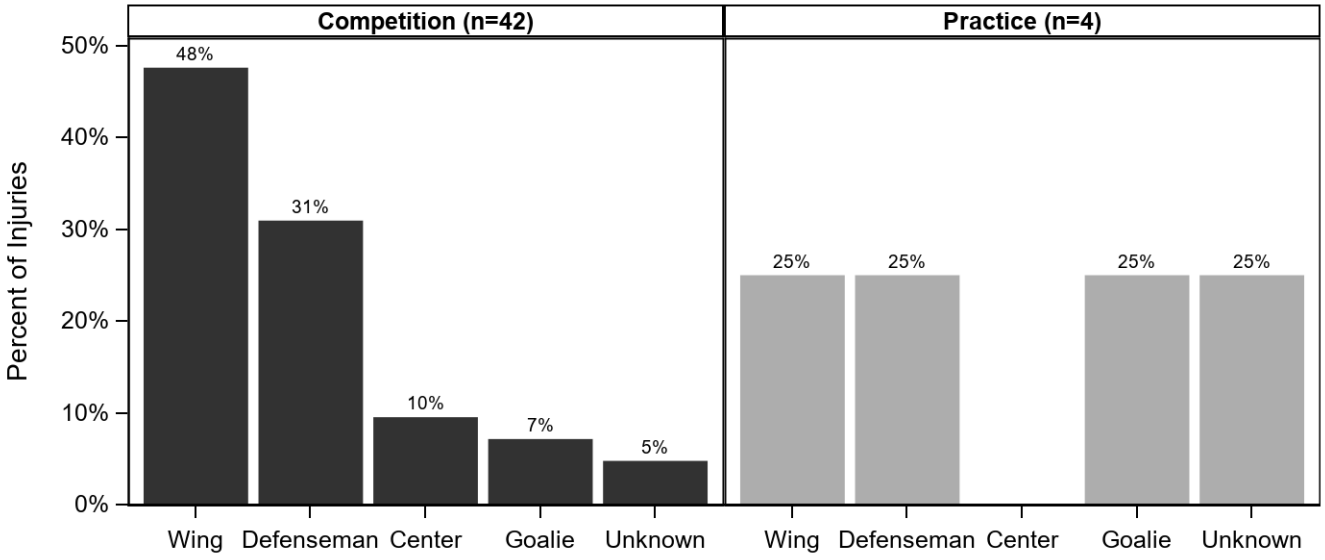


Table 13.9 Activities Leading to Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Being Checked	19	45.2%	1	25.0%	20	43.5%
Skating	9	21.4%	2	50.0%	11	23.9%
Goaltending	3	7.1%	1	25.0%	4	8.7%
Checking	4	9.5%	0	0.0%	4	8.7%
Other	2	4.8%	0	0.0%	2	4.3%
Chasing Loose Puck	2	4.8%	0	0.0%	2	4.3%
Shooting	1	2.4%	0	0.0%	1	2.2%
Unknown	1	2.4%	0	0.0%	1	2.2%
Receiving Pass	1	2.4%	0	0.0%	1	2.2%
Total	***42***	***100.0%***	***4***	***100.0%***	***46***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

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Table 13.10 Activity Resulting in Boys' Ice Hockey Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Being Checked	1	11.1%	3	33.3%	4	57.1%	9	69.2%	3	37.5%
Chasing Loose Puck	0	0.0%	1	11.1%	0	0.0%	0	0.0%	1	12.5%
Checking	1	11.1%	1	11.1%	2	28.6%	0	0.0%	0	0.0%
Goaltending	1	11.1%	1	11.1%	0	0.0%	1	7.7%	1	12.5%
Other	0	0.0%	1	11.1%	0	0.0%	0	0.0%	1	12.5%
Receiving Pass	1	11.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shooting	1	11.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Skating	4	44.4%	2	22.2%	1	14.3%	2	15.4%	2	25.0%
Unknown	0	0.0%	0	0.0%	0	0.0%	1	7.7%	0	0.0%
Total	***9***	***100.0%***	***9***	***100.0%***	***7***	***100.0%***	***13***	***100.0%***	***8***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

REPORTING INFORMATION ONLINE

XIV. Boys' Lacrosse Injury Epidemiology

Table 14.1 Boys' Lacrosse Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***186***	***76,720***	***2.42***
Competition	114	23,053	4.95
Practice	72	53,667	1.34

* All analyses in this chapter present un-weighted data.

Table 14.2 Demographic Characteristics of Injured Boys' Lacrosse Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	27	14.9%
Sophomore	49	27.1%
Junior	45	24.9%
Senior	60	33.1%
Total	***181***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	16.5 (1.2)
n	168

BMI	
Minimum	17.4
Maximum	40.6
Mean (SD)	23.3 (3.2)
n	142

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 14.1 Diagnosis of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

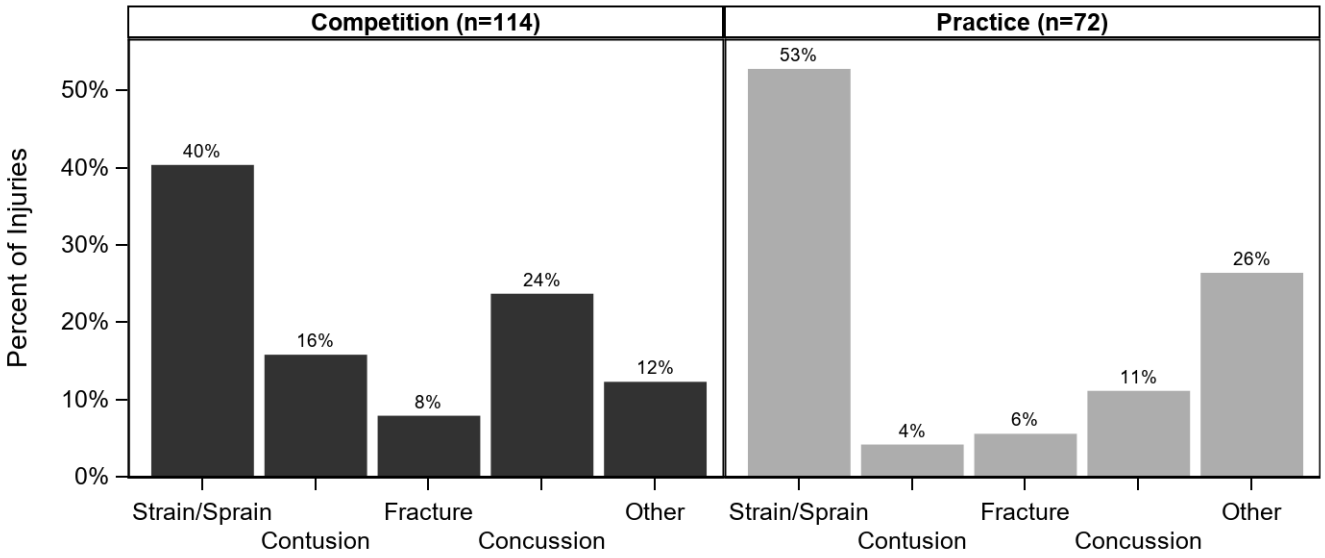


Table 14.3 Body Site of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

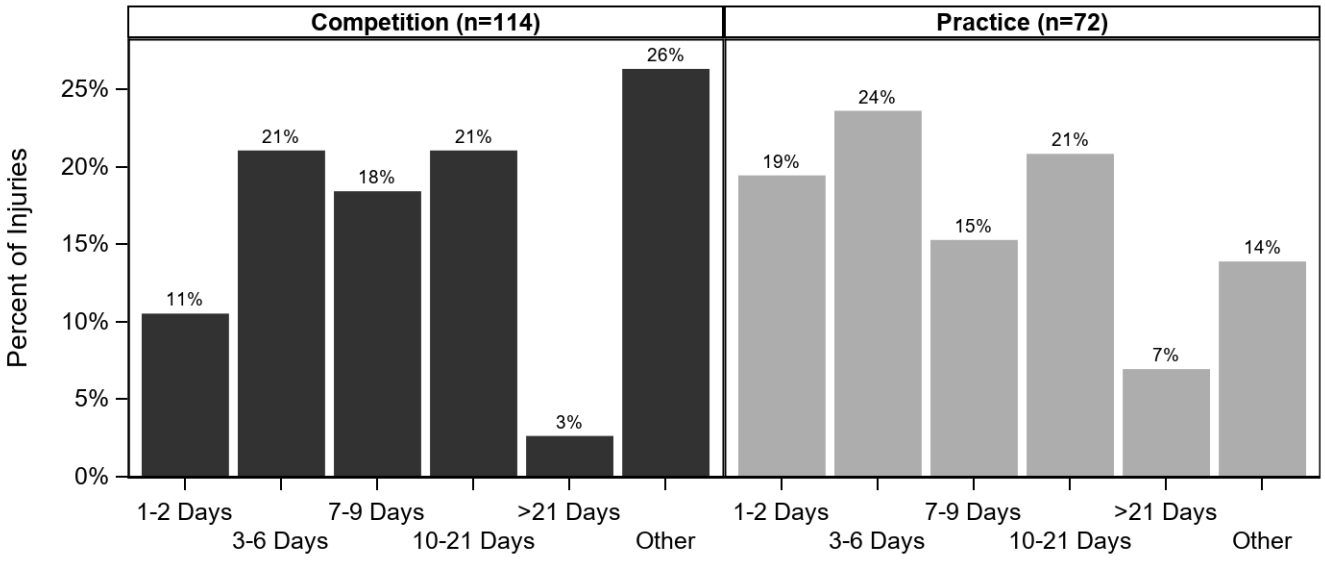
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	28	24.6%	8	11.1%	36	19.4%
Knee	15	13.2%	15	20.8%	30	16.1%
Hip/Thigh/Upper Leg	15	13.2%	13	18.1%	28	15.1%
Lower Leg	7	6.1%	7	9.7%	14	7.5%
Shoulder	11	9.6%	3	4.2%	14	7.5%
Trunk	8	7.0%	4	5.6%	12	6.5%
Ankle	6	5.3%	5	6.9%	11	5.9%
Arm/Elbow	8	7.0%	3	4.2%	11	5.9%
Hand/Wrist	7	6.1%	4	5.6%	11	5.9%
Foot	2	1.8%	8	11.1%	10	5.4%
Other	5	4.4%	1	1.4%	6	3.2%
Neck	2	1.8%	1	1.4%	3	1.6%
Total	***114***	***100.0%***	***72***	***100.0%***	***186***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 14.4 Ten Most Common Boys' Lacrosse Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=114)		Practice (n=72)		Overall (n=186)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	27	23.7%	8	11.1%	35	18.8%
Hip/Thigh/Upper Leg Strain/Sprain	8	7.0%	11	15.3%	19	10.2%
Knee Strain/Sprain	8	7.0%	7	9.7%	15	8.1%
Knee Other	6	5.3%	8	11.1%	14	7.5%
Ankle Strain/Sprain	6	5.3%	5	6.9%	11	5.9%
Lower Leg Strain/Sprain	5	4.4%	4	5.6%	9	4.8%
Trunk Strain/Sprain	5	4.4%	4	5.6%	9	4.8%
Shoulder Strain/Sprain	6	5.3%	1	1.4%	7	3.8%
Foot Strain/Sprain	1	0.9%	5	6.9%	6	3.2%
Hip/Thigh/Upper Leg Contusion	6	5.3%	0	0.0%	6	3.2%

Figure 14.2 Time Loss of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 14.5 Boys' Lacrosse Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	12	10.7%	5	6.9%	17	9.2%
Did Not Require Surgery	100	89.3%	67	93.1%	167	90.8%
Total	***112***	***100.0%***	***72***	***100.0%***	***184***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 14.3 History of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

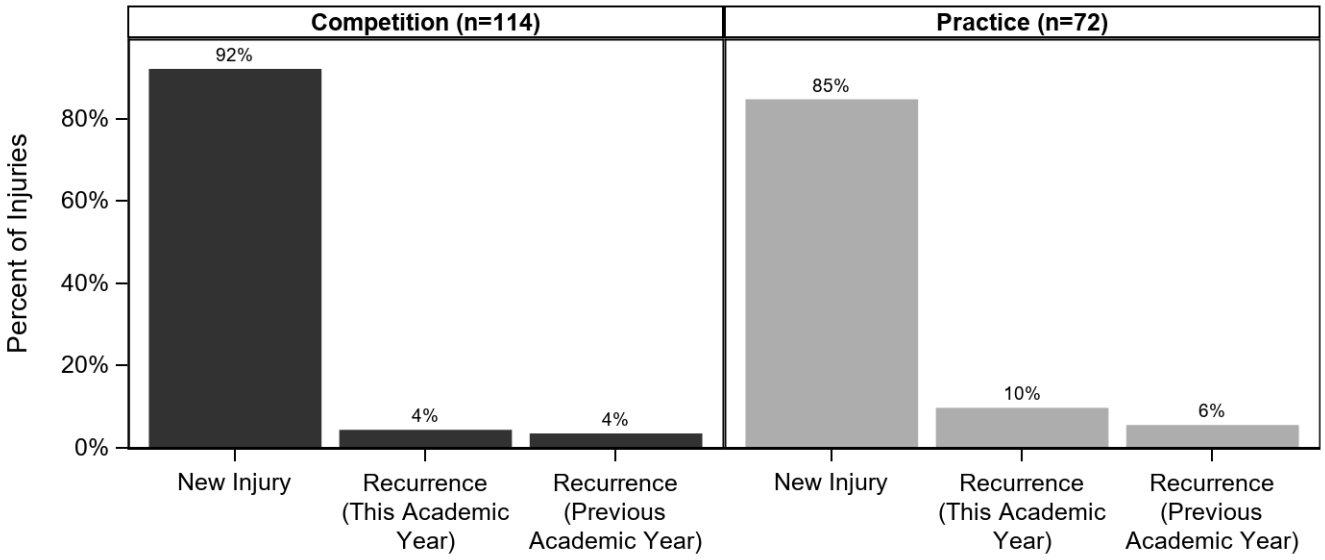


Table 14.6 Time during Season of Boys' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	43	23.1%
Regular Season	132	71.0%
Post Season	11	5.9%
Total	***186***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 14.7 Competition-Related Variables for Boys' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
First Quarter	3	2.8%
Second Quarter	21	19.4%
Third Quarter	41	38.0%
Fourth Quarter	20	18.5%
Unknown	23	21.3%
Total	***108***	***100.0%***

Field Location		
Midfield	27	25.2%
Wing Area	8	7.5%
Defensive Area	23	21.5%
Goal Area	15	14.0%
Sideline	1	0.9%
Crease Area	2	1.9%
Unknown	31	29.0%
Total	***107***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 14.8 Practice-Related Variables for Boys' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	4	5.8%
Second 1/2 Hour	7	10.1%
1-2 Hours into Practice	35	50.7%
>2 Hours into Practice	2	2.9%
Unknown	21	30.4%
Total	***69***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 14.4 Player Position of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

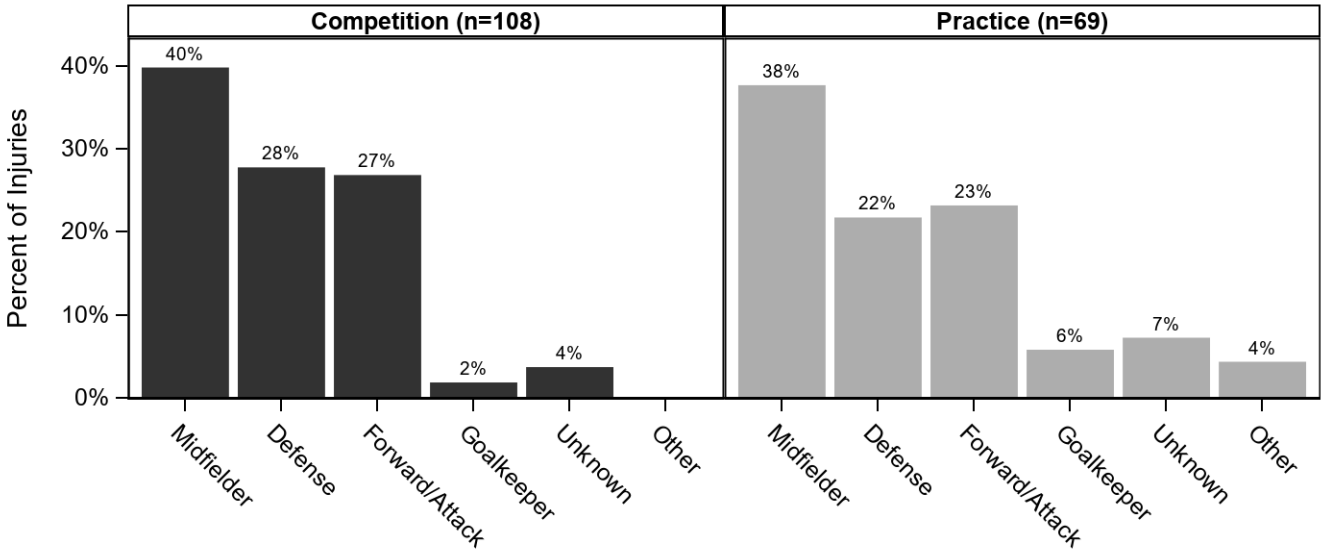


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Table 14.9 Activities Leading to Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	15	13.9%	39	55.7%	54	30.3%
Defending	15	13.9%	8	11.4%	23	12.9%
Being Body Checked	18	16.7%	0	0.0%	18	10.1%
Shooting	10	9.3%	4	5.7%	14	7.9%
Being Cross/Stick Checked	12	11.1%	2	2.9%	14	7.9%
Chasing Loose Ball	6	5.6%	7	10.0%	13	7.3%
Unknown	7	6.5%	3	4.3%	10	5.6%
Ball Handling/Cradling	9	8.3%	0	0.0%	9	5.1%
Body Checking	7	6.5%	0	0.0%	7	3.9%
Cross/Stick Checking	3	2.8%	1	1.4%	4	2.2%
Face-Off	2	1.9%	1	1.4%	3	1.7%
Receiving Pass	2	1.9%	1	1.4%	3	1.7%
Goaltending	0	0.0%	2	2.9%	2	1.1%
Conditioning	0	0.0%	1	1.4%	1	0.6%
Draw	1	0.9%	0	0.0%	1	0.6%
Blocking Shot	0	0.0%	1	1.4%	1	0.6%
Passing	1	0.9%	0	0.0%	1	0.6%
Total	***108***	***100.0%***	***70***	***100.0%***	***178***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

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Table 14.10 Activity Resulting in Boys' Lacrosse Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Cradling	5	6.4%	1	4.8%	0	0.0%	3	9.1%	0	0.0%
Being Body Checked	6	7.7%	4	19.0%	1	7.7%	6	18.2%	1	3.0%
Being Cross/Stick Checked	2	2.6%	4	19.0%	3	23.1%	4	12.1%	1	3.0%
Blocking Shot	0	0.0%	0	0.0%	0	0.0%	1	3.0%	0	0.0%
Body Checking	2	2.6%	0	0.0%	0	0.0%	3	9.1%	2	6.1%
Chasing Loose Ball	8	10.3%	2	9.5%	1	7.7%	2	6.1%	0	0.0%
Conditioning	1	1.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Cross/Stick Checking	1	1.3%	1	4.8%	0	0.0%	0	0.0%	2	6.1%
Defending	7	9.0%	4	19.0%	5	38.5%	3	9.1%	4	12.1%
Draw	0	0.0%	1	4.8%	0	0.0%	0	0.0%	0	0.0%
Face-Off	3	3.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
General Play	28	35.9%	0	0.0%	2	15.4%	4	12.1%	20	60.6%
Goaltending	0	0.0%	0	0.0%	1	7.7%	1	3.0%	0	0.0%
Passing	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	3.0%
Receiving Pass	0	0.0%	2	9.5%	0	0.0%	1	3.0%	0	0.0%
Shooting	11	14.1%	1	4.8%	0	0.0%	1	3.0%	1	3.0%
Unknown	4	5.1%	1	4.8%	0	0.0%	4	12.1%	1	3.0%
Total	***78***	***100.0%***	***21***	***100.0%***	***13***	***100.0%***	***33***	***100.0%***	***33***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XV. Girls' Lacrosse Injury Epidemiology

Table 15.1 Girls' Lacrosse Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***110***	***49,492***	***2.22***
Competition	65	15,133	4.30
Practice	45	34,359	1.31

* All analyses in this chapter present un-weighted data.

Table 15.2 Demographic Characteristics of Injured Girls' Lacrosse Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	21	21.2%
Sophomore	28	28.3%
Junior	18	18.2%
Senior	32	32.3%
Total	***99***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	16.2 (1.4)
n	85

BMI	
Minimum	15.9
Maximum	31.0
Mean (SD)	22.1 (2.9)
n	74

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 15.1 Diagnosis of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

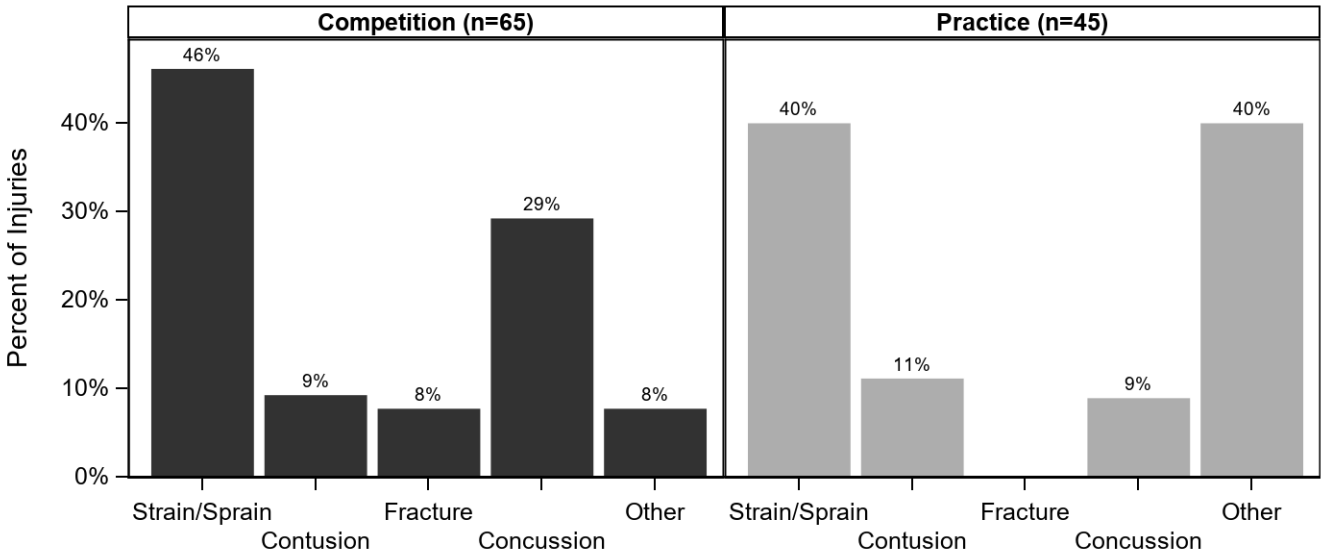


Table 15.3 Body Site of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

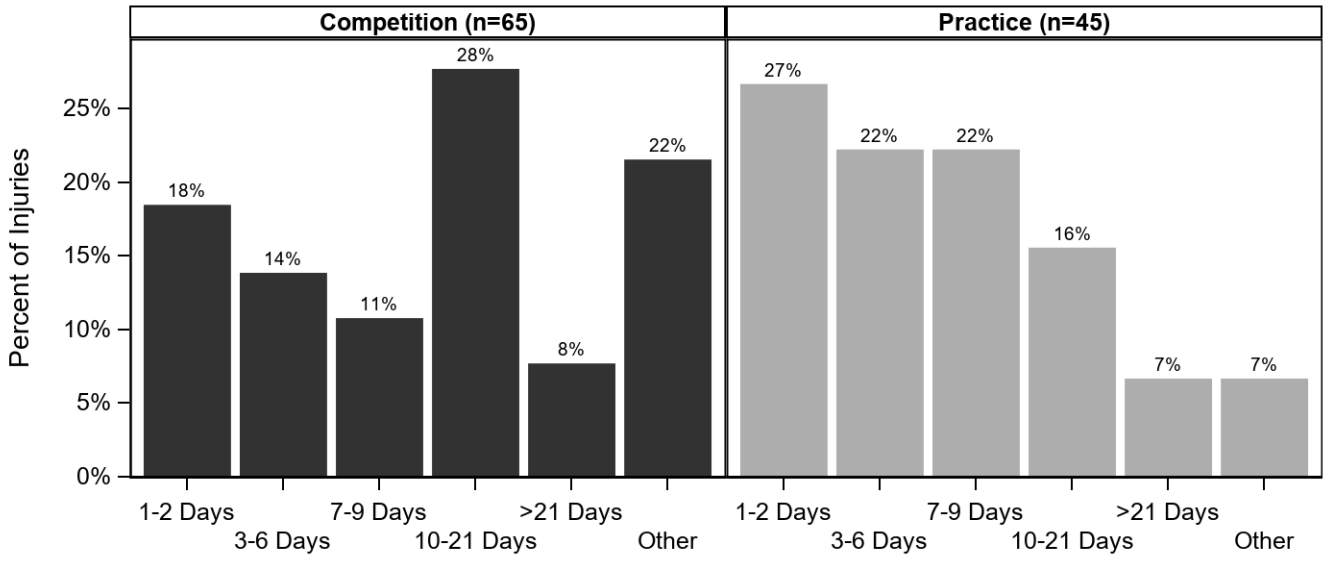
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	23	35.4%	4	8.9%	27	24.5%
Knee	13	20.0%	9	20.0%	22	20.0%
Ankle	9	13.8%	10	22.2%	19	17.3%
Hip/Thigh/Upper Leg	6	9.2%	9	20.0%	15	13.6%
Foot	2	3.1%	5	11.1%	7	6.4%
Lower Leg	3	4.6%	4	8.9%	7	6.4%
Hand/Wrist	3	4.6%	2	4.4%	5	4.5%
Shoulder	3	4.6%	0	0.0%	3	2.7%
Other	2	3.1%	0	0.0%	2	1.8%
Trunk	1	1.5%	1	2.2%	2	1.8%
Arm/Elbow	0	0.0%	1	2.2%	1	0.9%
Total	***65***	***100.0%***	***45***	***100.0%***	***110***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 15.4 Ten Most Common Girls' Lacrosse Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=65)		Practice (n=45)		Overall (n=110)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	19	29.2%	4	8.9%	23	20.9%
Ankle Strain/Sprain	9	13.8%	8	17.8%	17	15.5%
Hip/Thigh/Upper Leg Strain/Sprain	6	9.2%	6	13.3%	12	10.9%
Knee Strain/Sprain	10	15.4%	1	2.2%	11	10.0%
Knee Other	2	3.1%	7	15.6%	9	8.2%
Lower Leg Other	2	3.1%	4	8.9%	6	5.5%
Foot Other	0	0.0%	3	6.7%	3	2.7%
Foot Strain/Sprain	1	1.5%	2	4.4%	3	2.7%
Hip/Thigh/Upper Leg Other	0	0.0%	3	6.7%	3	2.7%
Hand/Wrist Contusion	0	0.0%	2	4.4%	2	1.8%

Figure 15.2 Time Loss of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 15.5 Girls' Lacrosse Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	7	11.1%	1	2.3%	8	7.5%
Did Not Require Surgery	56	88.9%	42	97.7%	98	92.5%
Total	***63***	***100.0%***	***43***	***100.0%***	***106***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 15.3 History of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

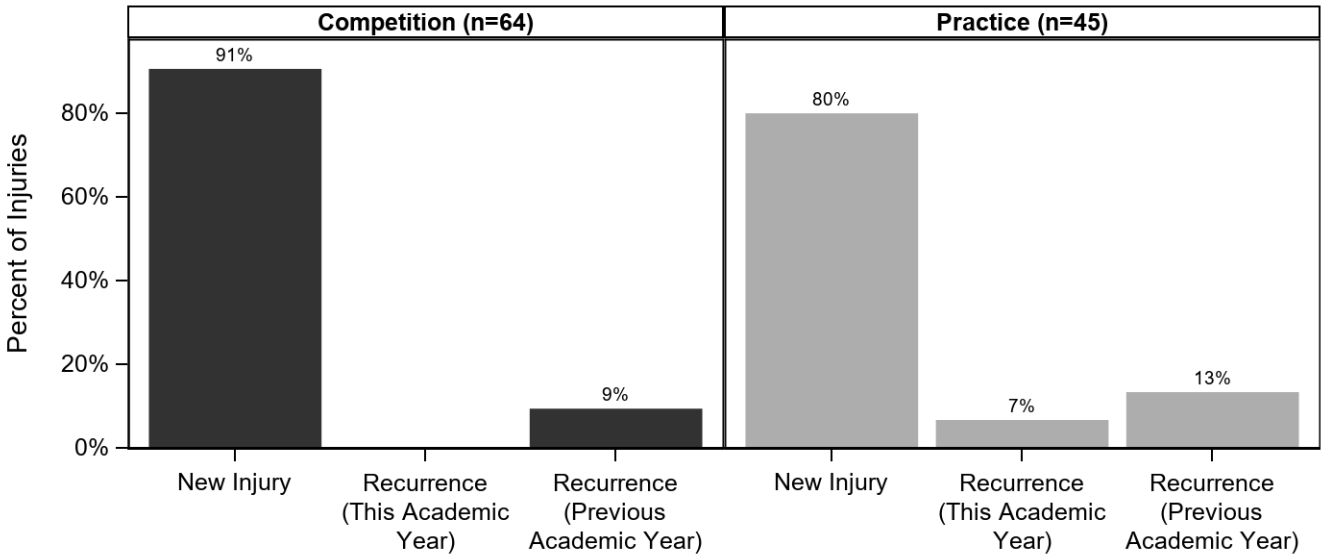


Table 15.6 Time during Season of Girls' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	12	11.0%
Regular Season	94	86.2%
Post Season	3	2.8%
Total	***109***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 15.7 Competition-Related Variables for Girls' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	4	7.4%
First Half	7	13.0%
Second Half	30	55.6%
Unknown	13	24.1%
Total	***54***	***100.0%***

Field Location		
Midfield (Between Restraining Lines)	10	18.2%
Critical Scoring Area (including the Fan and Arc)	7	12.7%
Goal Circle	8	14.5%
End Line	2	3.6%
Sideline	4	7.3%
Unknown	24	43.6%
Total	***55***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 15.8 Practice-Related Variables for Girls' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	3	7.3%
Second 1/2 Hour	2	4.9%
1-2 Hours into Practice	18	43.9%
>2 Hours into Practice	2	4.9%
Unknown	16	39.0%
Total	***41***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 15.4 Player Position of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

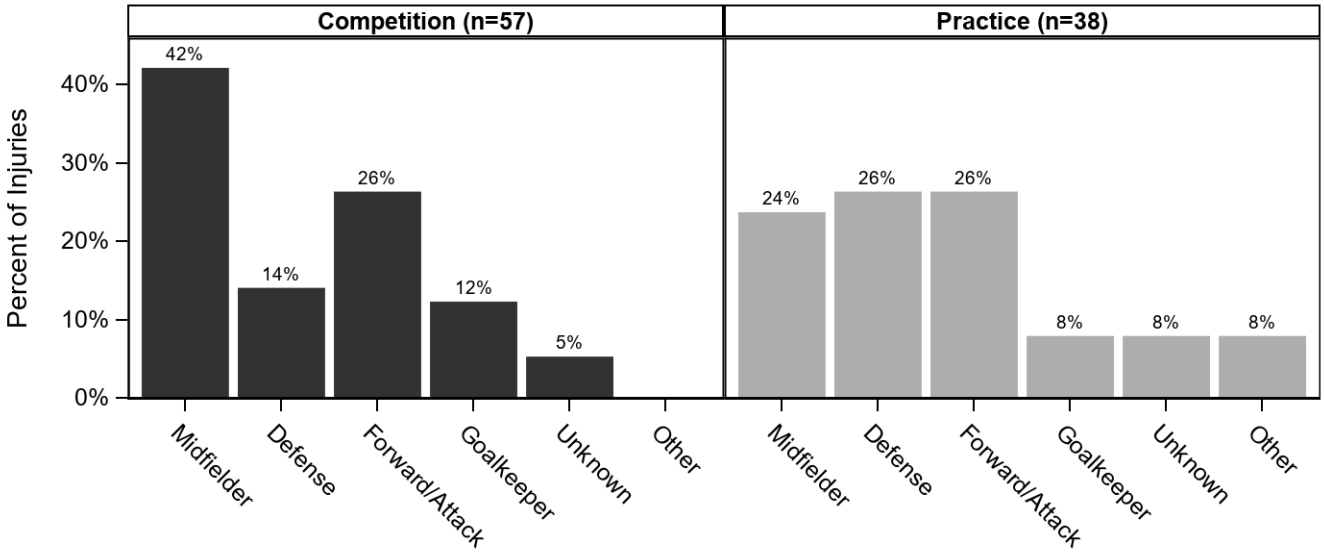


Table 15.9 Activities Leading to Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	15	26.3%	21	58.3%	36	38.7%
Defending	10	17.5%	2	5.6%	12	12.9%
Receiving Pass	7	12.3%	2	5.6%	9	9.7%
Goaltending	6	10.5%	2	5.6%	8	8.6%
Chasing Loose Ball	5	8.8%	3	8.3%	8	8.6%
Unknown	6	10.5%	1	2.8%	7	7.5%
Ball Handling/Cradling	5	8.8%	1	2.8%	6	6.5%
Conditioning	0	0.0%	4	11.1%	4	4.3%
Being Body Checked	1	1.8%	0	0.0%	1	1.1%
Being Cross/Stick Checked	1	1.8%	0	0.0%	1	1.1%
Body Checking	1	1.8%	0	0.0%	1	1.1%
Total	***57***	***100.0%***	***36***	***100.0%***	***93***	***100.0%***

* Totals and n’s are not always equal due to slight rounding or missing responses.

Table 15.10 Activity Resulting in Girls' Lacrosse Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Cradling	4	9.5%	0	0.0%	0	0.0%	2	9.1%	0	0.0%
Being Body Checked	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	5.6%
Being Cross/Stick Checked	0	0.0%	0	0.0%	0	0.0%	1	4.5%	0	0.0%
Body Checking	0	0.0%	0	0.0%	0	0.0%	1	4.5%	0	0.0%
Chasing Loose Ball	2	4.8%	1	12.5%	1	33.3%	4	18.2%	0	0.0%
Conditioning	3	7.1%	0	0.0%	0	0.0%	0	0.0%	1	5.6%
Defending	6	14.3%	1	12.5%	0	0.0%	4	18.2%	1	5.6%
General Play	19	45.2%	3	37.5%	0	0.0%	0	0.0%	14	77.8%
Goaltending	3	7.1%	2	25.0%	1	33.3%	2	9.1%	0	0.0%
Receiving Pass	4	9.5%	0	0.0%	1	33.3%	4	18.2%	0	0.0%
Unknown	1	2.4%	1	12.5%	0	0.0%	4	18.2%	1	5.6%
Total	***42***	***100.0%***	***8***	***100.0%***	***3***	***100.0%***	***22***	***100.0%***	***18***	***100.0%***

* Totals and n’s are not always equal due to slight rounding or missing responses.

XVI. Boys' Swimming and Diving Injury Epidemiology

Table 16.1 Boys' Swimming and Diving Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***7***	***35,460***	***0.20***
Competition	0	6,341	0.00
Practice	7	29,119	0.24

* All analyses in this chapter present un-weighted data.

Table 16.2 Demographic Characteristics of Injured Boys' Swimming and Diving Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	1	14.3%
Sophomore	1	14.3%
Junior	3	42.9%
Senior	2	28.6%
Total	***7***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	16.6 (1.5)
n	5

BMI	
Minimum	20.5
Maximum	27.4
Mean (SD)	23.6 (2.7)
n	5

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 16.1 Diagnosis of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

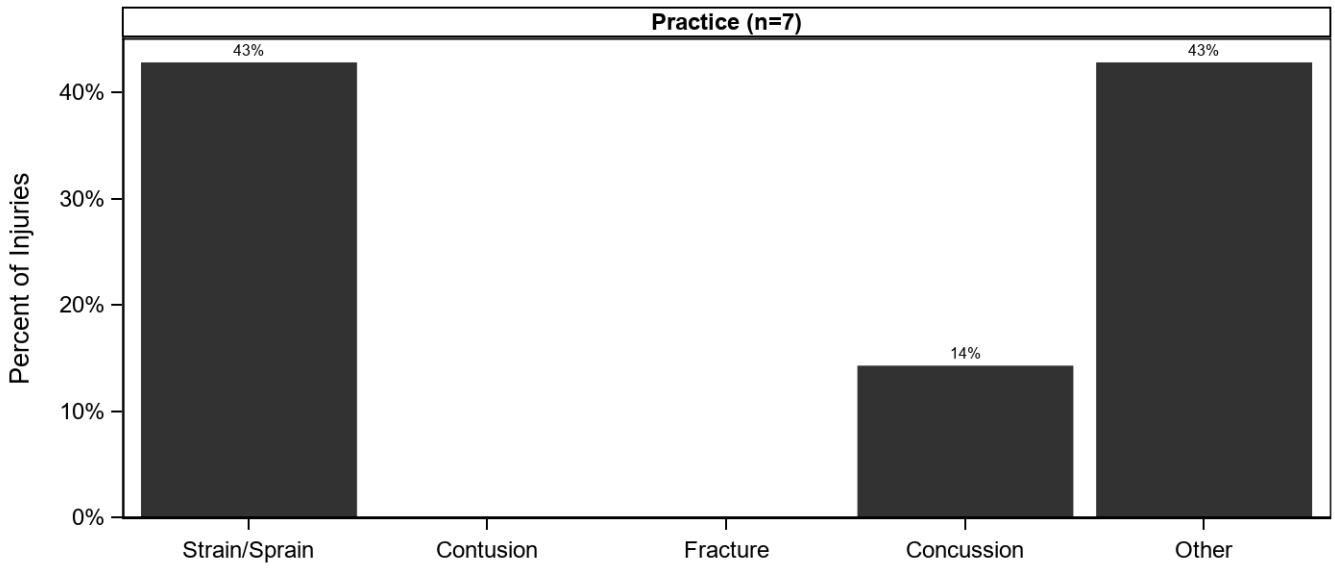


Table 16.3 Body Site of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

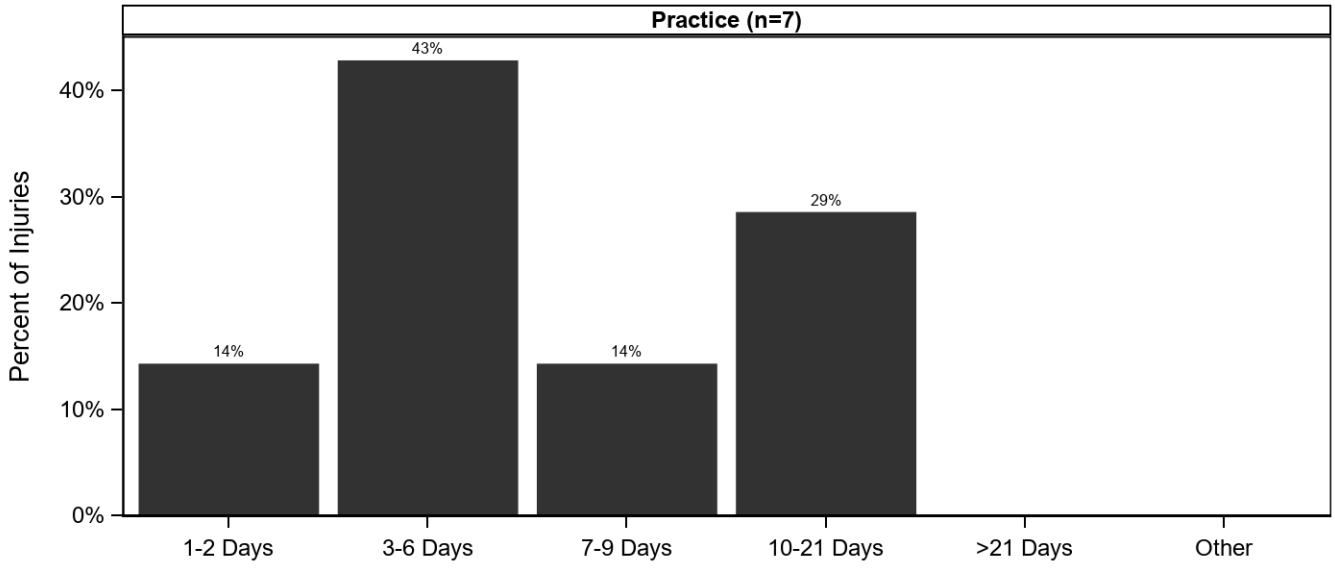
	Practice		Overall	
Body Site	**n**	**%**	**n**	**%**
Shoulder	3	42.9%	3	42.9%
Ankle	1	14.3%	1	14.3%
Hand/Wrist	1	14.3%	1	14.3%
Head/Face	1	14.3%	1	14.3%
Trunk	1	14.3%	1	14.3%
Total	***7***	***100.0%***	***7***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 16.4 Ten Most Common Boys' Swimming and Diving Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=0)		Practice (n=7)		Overall (n=7)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Shoulder Other	0	0.0%	2	28.6%	2	28.6%
Ankle Other	0	0.0%	1	14.3%	1	14.3%
Hand/Wrist Strain/Sprain	0	0.0%	1	14.3%	1	14.3%
Head/Face Concussion	0	0.0%	1	14.3%	1	14.3%
Shoulder Strain/Sprain	0	0.0%	1	14.3%	1	14.3%
Trunk Strain/Sprain	0	0.0%	1	14.3%	1	14.3%

Figure 16.2 Time Loss of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 16.5 Boys' Swimming and Diving Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**
Did Not Require Surgery	7	100.0%	7	100.0%
Total	***7***	***100.0%***	***7***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 16.3 History of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

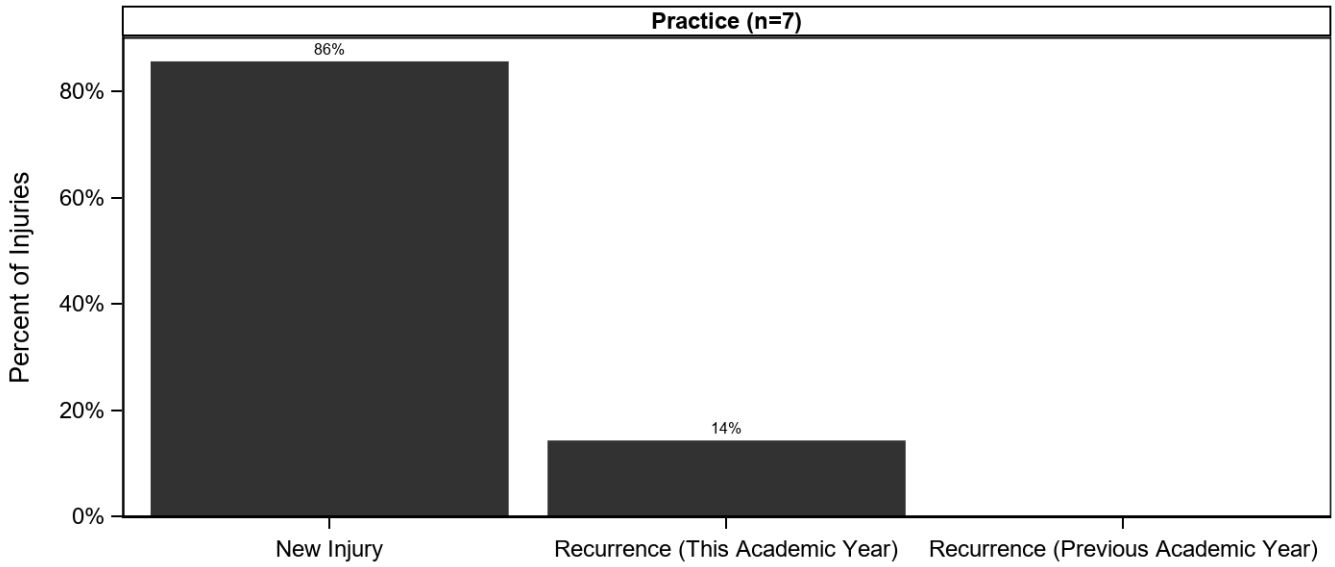


Table 16.6 Time during Season of Boys' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	2	28.6%
Regular Season	5	71.4%
Total	***7***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 16.8 Practice-Related Variables for Boys' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	1	14.3%
1-2 Hours into Practice	1	14.3%
>2 Hours into Practice	2	28.6%
Unknown	3	42.9%
Total	***7***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 16.9 Activities Leading to Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Practice		Overall	
Activity	**n**	**%**	**n**	**%**
Swimming	4	57.1%	4	57.1%
Flip Off Wall	1	14.3%	1	14.3%
Unknown	1	14.3%	1	14.3%
Touch Turn Off Wall	1	14.3%	1	14.3%
Total	***7***	***100.0%***	***7***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 16.10 Activity Resulting in Boys' Swimming and Diving Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis					
	Strain/Sprain		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Flip Off Wall	0	0.0%	1	100.0%	0	0.0%
Swimming	1	33.3%	0	0.0%	3	100.0%
Touch Turn Off Wall	1	33.3%	0	0.0%	0	0.0%
Unknown	1	33.3%	0	0.0%	0	0.0%
Total	***3***	***100.0%***	***1***	***100.0%***	***3***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XVII. Girls' Swimming and Diving Injury Epidemiology

Table 17.1 Girls' Swimming and Diving Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***3***	***36,434***	***0.08***
Competition	2	6,573	0.30
Practice	1	29,861	0.03

* All analyses in this chapter present un-weighted data.

Table 17.2 Demographic Characteristics of Injured Girls' Swimming and Diving Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	2	66.7%
Junior	1	33.3%
Total	***3***	***100.0%***

Age (years)	
Minimum	14
Maximum	17
Mean (SD)	15.5 (2.1)
n	2

BMI	
Minimum	21.8
Maximum	28.6
Mean (SD)	25.2 (4.8)
n	2

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 17.1 Diagnosis of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

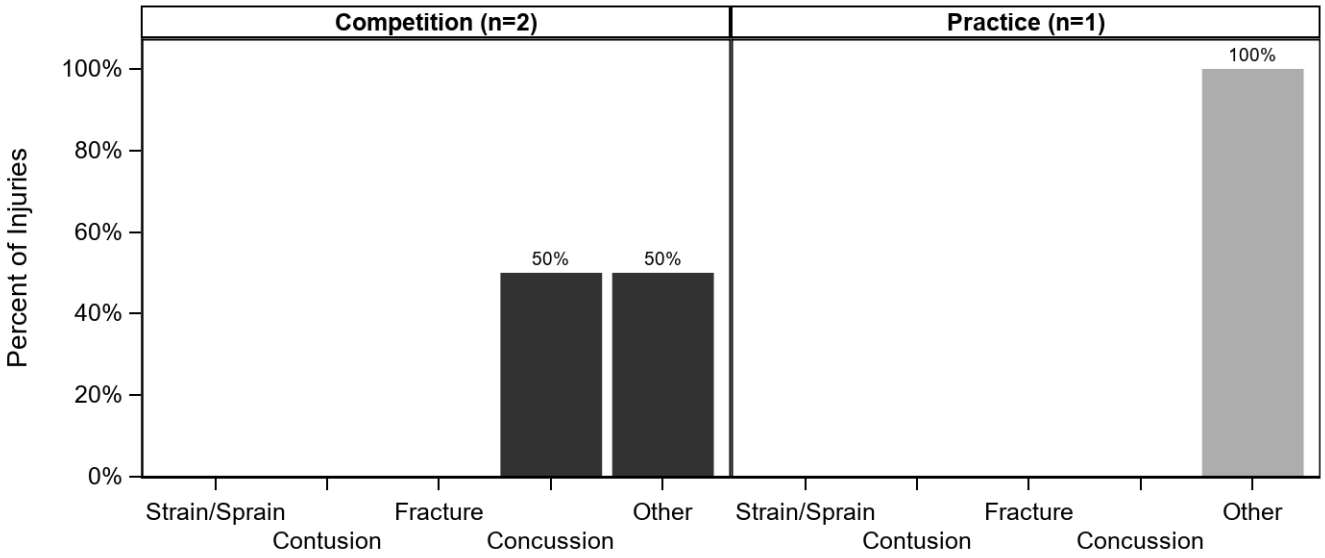


Table 17.3 Body Site of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

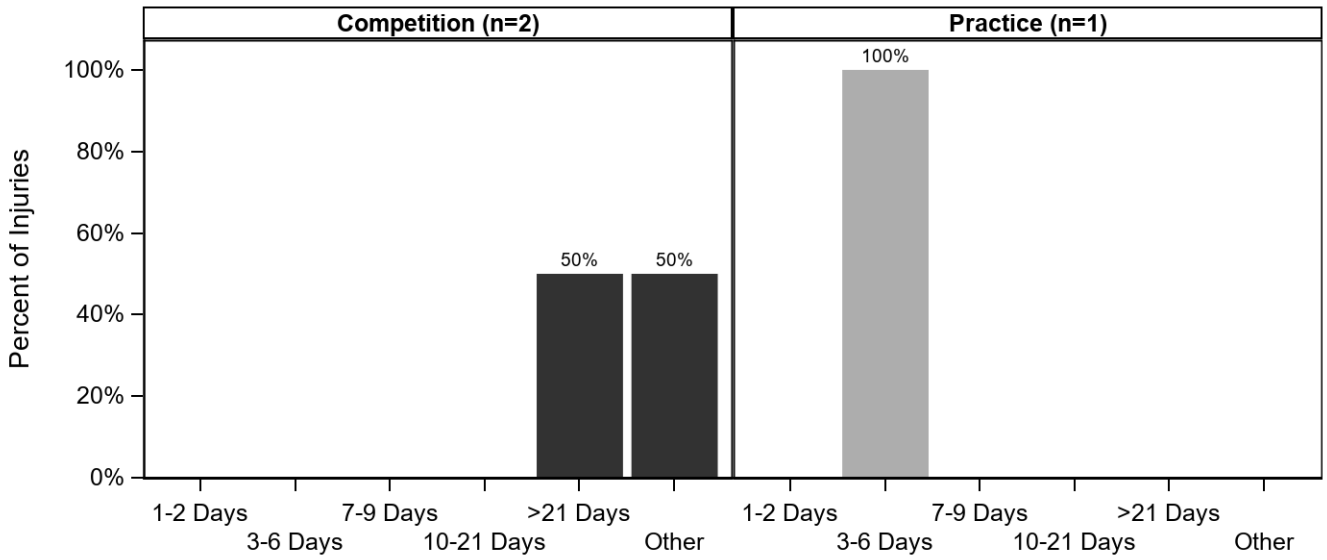
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	1	50.0%	0	0.0%	1	33.3%
Knee	0	0.0%	1	100.0%	1	33.3%
Systemic	1	50.0%	0	0.0%	1	33.3%
Total	***2***	***100.0%***	***1***	***100.0%***	***3***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 17.4 Ten Most Common Girls' Swimming and Diving Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=2)		Practice (n=1)		Overall (n=3)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	1	50.0%	0	0.0%	1	33.3%
Knee Other	0	0.0%	1	100.0%	1	33.3%
Systemic Other	1	50.0%	0	0.0%	1	33.3%

Figure 17.2 Time Loss of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 17.5 Girls' Swimming and Diving Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	2	100.0%	1	100.0%	3	100.0%
Total	***2***	***100.0%***	***1***	***100.0%***	***3***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 17.3 History of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

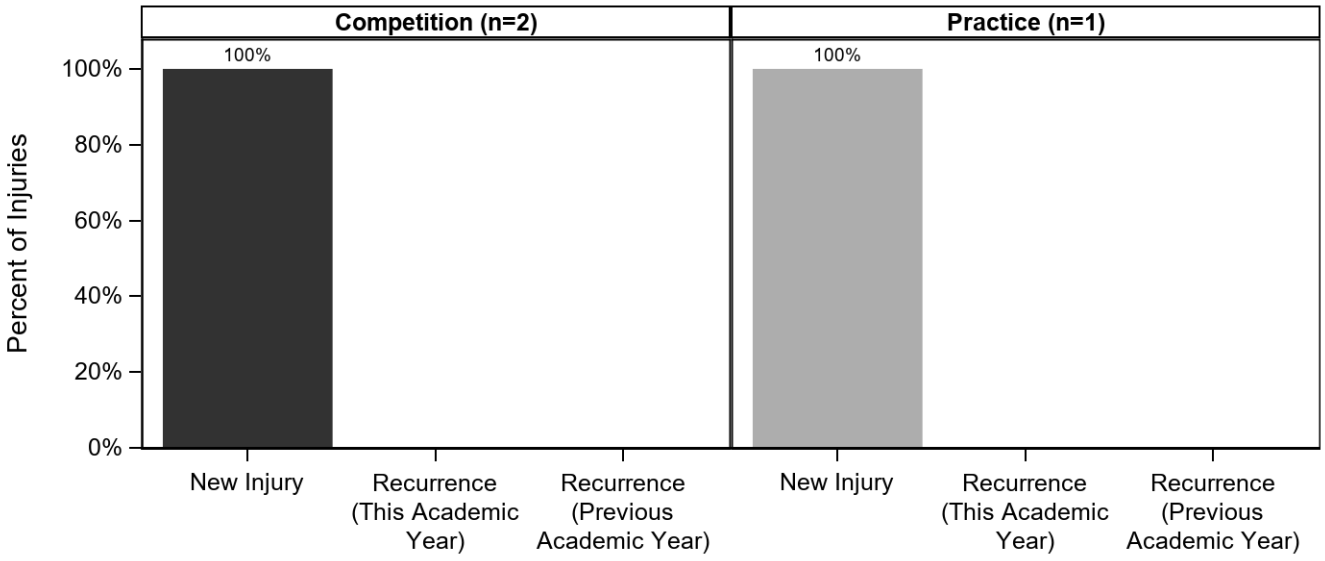


Table 17.6 Time during Season of Girls' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	1	33.3%
Regular Season	2	66.7%
Total	***3***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 17.7 Competition-Related Variables for Girls' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Pool Location		
In Pool	2	100.0%
Total	***2***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 17.8 Practice-Related Variables for Girls' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
Unknown	1	100.0%
Total	***1***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 17.9 Activities Leading to Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Swimming	0	0.0%	1	100.0%	1	33.3%
Conditioning	1	50.0%	0	0.0%	1	33.3%
Flip Off Wall	1	50.0%	0	0.0%	1	33.3%
Total	***2***	***100.0%***	***1***	***100.0%***	***3***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 17.10 Activity Resulting in Girls' Swimming and Diving Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis			
	Concussion		Other	
Activity	**n**	**%**	**n**	**%**
Conditioning	0	0.0%	1	50.0%
Flip Off Wall	1	100.0%	0	0.0%
Swimming	0	0.0%	1	50.0%
Total	***1***	***100.0%***	***2***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XVIII. Boys' Track and Field Injury Epidemiology

Table 18.1 Boys' Track and Field Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***181***	***155,981***	***1.16***
Competition	68	28,887	2.35
Practice	113	127,094	0.89

* All analyses in this chapter present un-weighted data.

Table 18.2 Demographic Characteristics of Injured Boys' Track and Field Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	44	25.0%
Sophomore	47	26.7%
Junior	57	32.4%
Senior	28	15.9%
Total	***176***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	16.1 (1.2)
n	135

BMI	
Minimum	15.2
Maximum	44.9
Mean (SD)	22.7 (3.7)
n	79

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 18.1 Diagnosis of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

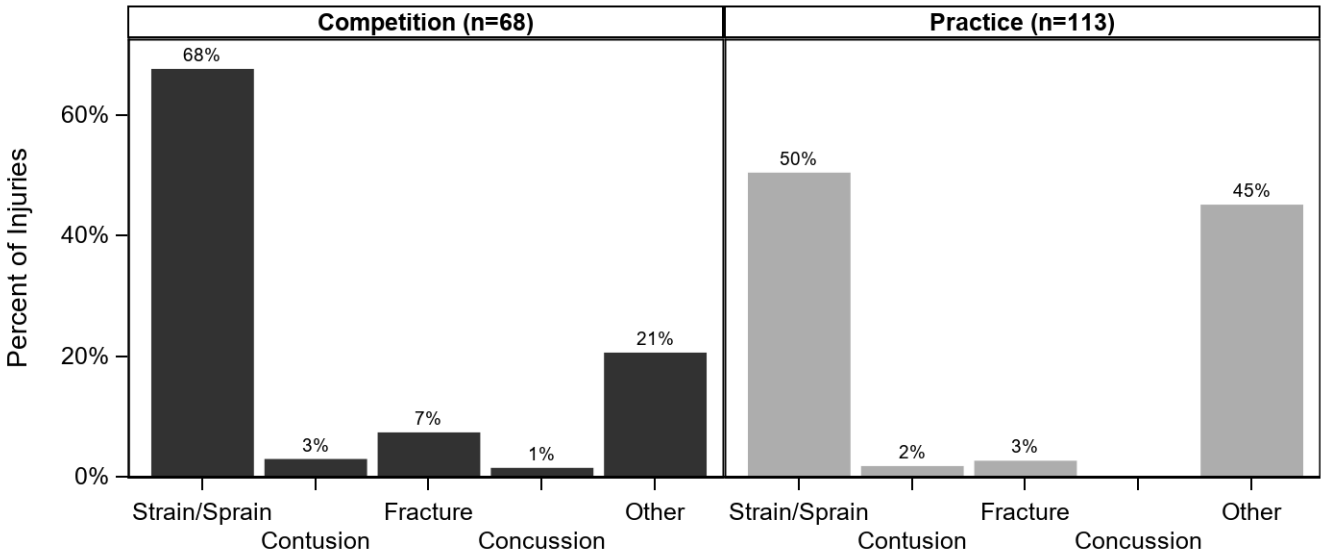


Table 18.3 Body Site of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

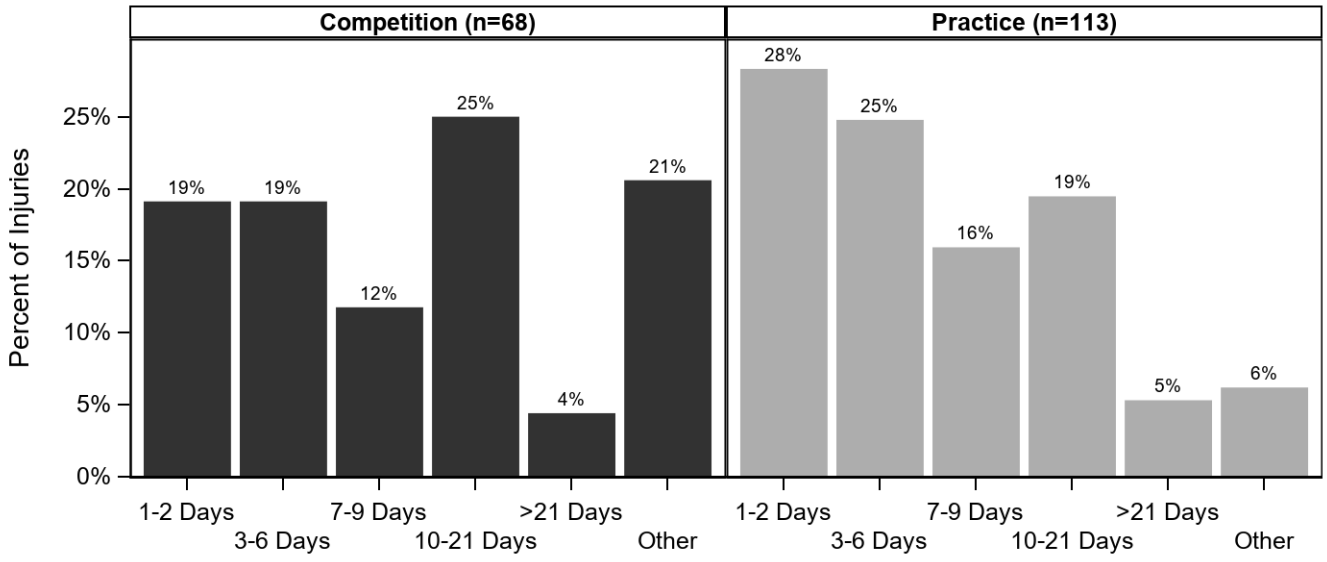
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	36	52.9%	39	34.5%	75	41.4%
Lower Leg	3	4.4%	37	32.7%	40	22.1%
Knee	9	13.2%	10	8.8%	19	10.5%
Ankle	8	11.8%	6	5.3%	14	7.7%
Trunk	4	5.9%	10	8.8%	14	7.7%
Shoulder	4	5.9%	3	2.7%	7	3.9%
Foot	1	1.5%	5	4.4%	6	3.3%
Head/Face	1	1.5%	2	1.8%	3	1.7%
Systemic	2	2.9%	0	0.0%	2	1.1%
Arm/Elbow	0	0.0%	1	0.9%	1	0.6%
Total	***68***	***100.0%***	***113***	***100.0%***	***181***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 18.4 Ten Most Common Boys' Track and Field Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=68)		Practice (n=113)		Overall (n=181)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	28	41.2%	37	32.7%	65	35.9%
Lower Leg Other	0	0.0%	33	29.2%	33	18.2%
Knee Other	6	8.8%	7	6.2%	13	7.2%
Ankle Strain/Sprain	7	10.3%	5	4.4%	12	6.6%
Trunk Strain/Sprain	4	5.9%	8	7.1%	12	6.6%
Hip/Thigh/Upper Leg Other	6	8.8%	2	1.8%	8	4.4%
Shoulder Strain/Sprain	4	5.9%	1	0.9%	5	2.8%
Lower Leg Strain/Sprain	1	1.5%	3	2.7%	4	2.2%
Knee Strain/Sprain	2	2.9%	1	0.9%	3	1.7%
Foot Fracture	1	1.5%	1	0.9%	2	1.1%

Figure 18.2 Time Loss of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 18.5 Boys' Track and Field Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	5	7.4%	3	2.7%	8	4.5%
Did Not Require Surgery	63	92.6%	108	97.3%	171	95.5%
Total	***68***	***100.0%***	***111***	***100.0%***	***179***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 18.3 History of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

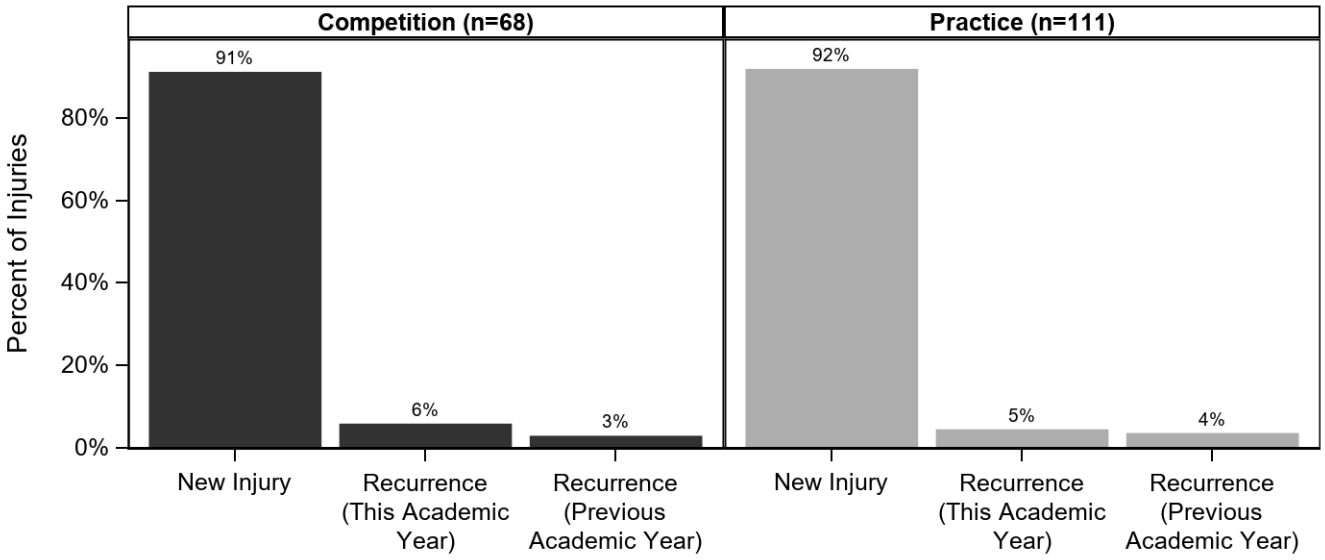


Table 18.6 Time during Season of Boys' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	50	27.6%
Regular Season	120	66.3%
Post Season	11	6.1%
Total	***181***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 18.7 Practice-Related Variables for Boys' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	9	8.2%
Second 1/2 Hour	9	8.2%
1-2 Hours into Practice	23	20.9%
>2 Hours into Practice	1	0.9%
Unknown	68	61.8%
Total	***110***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 18.8 Activities Leading to Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	40	59.7%	65	63.7%	105	62.1%
Jumping/Landing	11	16.4%	10	9.8%	21	12.4%
Unknown	4	6.0%	10	9.8%	14	8.3%
Running Hurdles	3	4.5%	6	5.9%	9	5.3%
Throwing	3	4.5%	4	3.9%	7	4.1%
Conditioning	0	0.0%	3	2.9%	3	1.8%
Leaving Block	1	1.5%	2	2.0%	3	1.8%
Baton Hand Off	3	4.5%	0	0.0%	3	1.8%
Warming Up	1	1.5%	1	1.0%	2	1.2%
Other	1	1.5%	1	1.0%	2	1.2%
Total	***67***	***100.0%***	***102***	***100.0%***	***169***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

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Table 18.9 Activity Resulting in Boys' Track and Field Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Baton Hand Off	2	2.1%	1	25.0%	0	0.0%	0	0.0%	0	0.0%
Conditioning	1	1.0%	0	0.0%	0	0.0%	0	0.0%	2	3.3%
Jumping/Landing	16	16.5%	0	0.0%	2	28.6%	0	0.0%	3	5.0%
Leaving Block	1	1.0%	0	0.0%	0	0.0%	0	0.0%	2	3.3%
Other	0	0.0%	0	0.0%	2	28.6%	0	0.0%	0	0.0%
Running	62	63.9%	3	75.0%	3	42.9%	1	100.0%	36	60.0%
Running Hurdles	5	5.2%	0	0.0%	0	0.0%	0	0.0%	4	6.7%
Throwing	3	3.1%	0	0.0%	0	0.0%	0	0.0%	4	6.7%
Unknown	5	5.2%	0	0.0%	0	0.0%	0	0.0%	9	15.0%
Warming Up	2	2.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	***97***	***100.0%***	***4***	***100.0%***	***7***	***100.0%***	***1***	***100.0%***	***60***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XIX. Girls' Track and Field Injury Epidemiology

Table 19.1 Girls' Track and Field Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***110***	***107,657***	***1.02***
Competition	23	20,075	1.15
Practice	87	87,582	0.99

* All analyses in this chapter present un-weighted data.

Table 19.2 Demographic Characteristics of Injured Girls' Track and Field Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	39	37.9%
Sophomore	27	26.2%
Junior	22	21.4%
Senior	15	14.6%
Total	***103***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.9 (1.2)
n	66

BMI	
Minimum	15.3
Maximum	24.0
Mean (SD)	20.5 (1.9)
n	47

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 19.1 Diagnosis of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

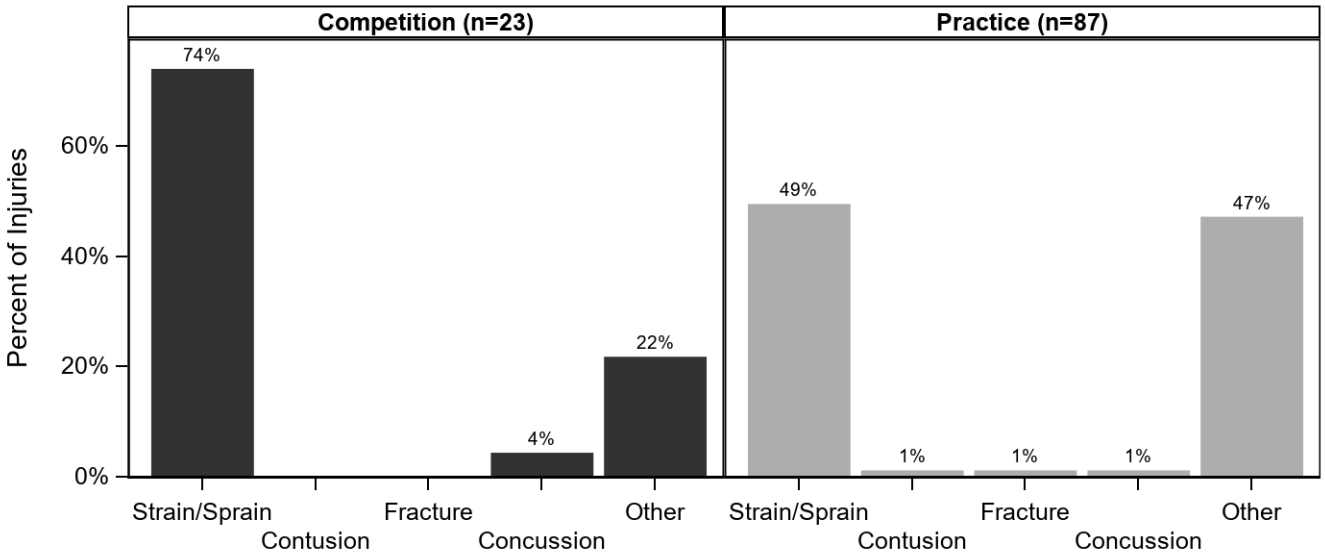


Table 19.3 Body Site of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

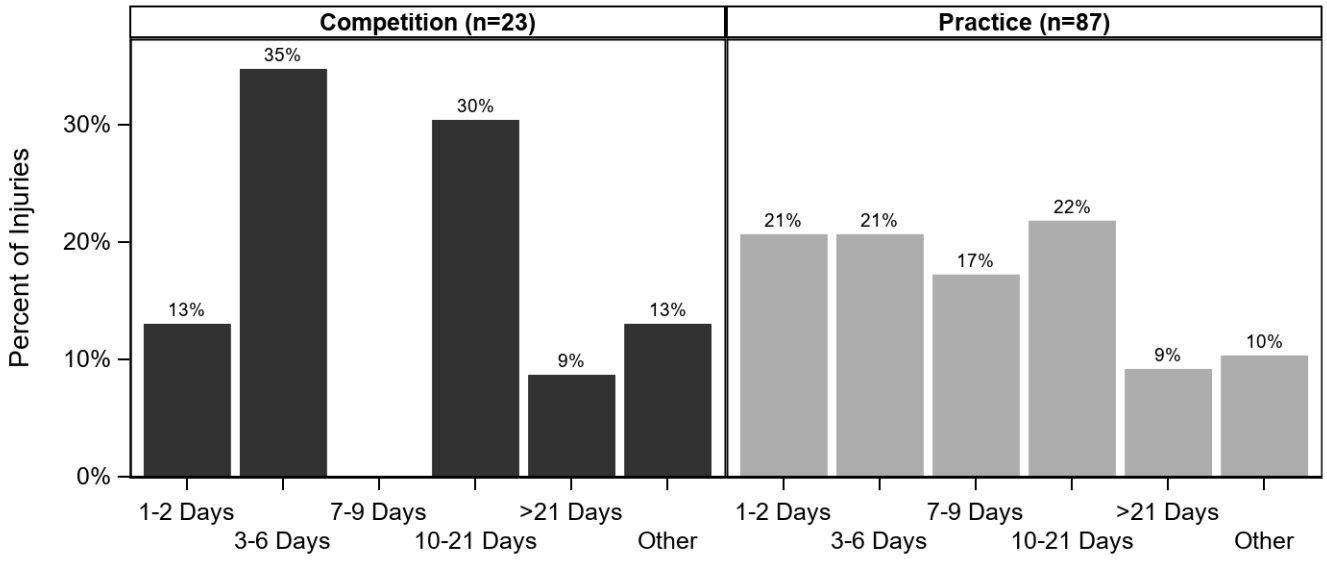
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	8	34.8%	26	29.9%	34	30.9%
Lower Leg	3	13.0%	23	26.4%	26	23.6%
Knee	4	17.4%	19	21.8%	23	20.9%
Ankle	4	17.4%	7	8.0%	11	10.0%
Trunk	1	4.3%	4	4.6%	5	4.5%
Foot	1	4.3%	2	2.3%	3	2.7%
Systemic	0	0.0%	3	3.4%	3	2.7%
Head/Face	1	4.3%	1	1.1%	2	1.8%
Arm/Elbow	1	4.3%	0	0.0%	1	0.9%
Hand/Wrist	0	0.0%	1	1.1%	1	0.9%
Shoulder	0	0.0%	1	1.1%	1	0.9%
Total	***23***	***100.0%***	***87***	***100.0%***	***110***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 19.4 Ten Most Common Girls' Track and Field Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=23)		Practice (n=87)		Overall (n=110)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	7	30.4%	22	25.3%	29	26.4%
Lower Leg Other	1	4.3%	19	21.8%	20	18.2%
Knee Other	2	8.7%	13	14.9%	15	13.6%
Ankle Strain/Sprain	4	17.4%	7	8.0%	11	10.0%
Knee Strain/Sprain	2	8.7%	5	5.7%	7	6.4%
Lower Leg Strain/Sprain	2	8.7%	4	4.6%	6	5.5%
Hip/Thigh/Upper Leg Other	1	4.3%	4	4.6%	5	4.5%
Trunk Strain/Sprain	1	4.3%	3	3.4%	4	3.6%
Systemic Other	0	0.0%	3	3.4%	3	2.7%
Foot Other	1	4.3%	1	1.1%	2	1.8%

Figure 19.2 Time Loss of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 19.5 Girls' Track and Field Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	1	4.3%	2	2.4%	3	2.8%
Did Not Require Surgery	22	95.7%	83	97.6%	105	97.2%
Total	***23***	***100.0%***	***85***	***100.0%***	***108***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 19.3 History of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

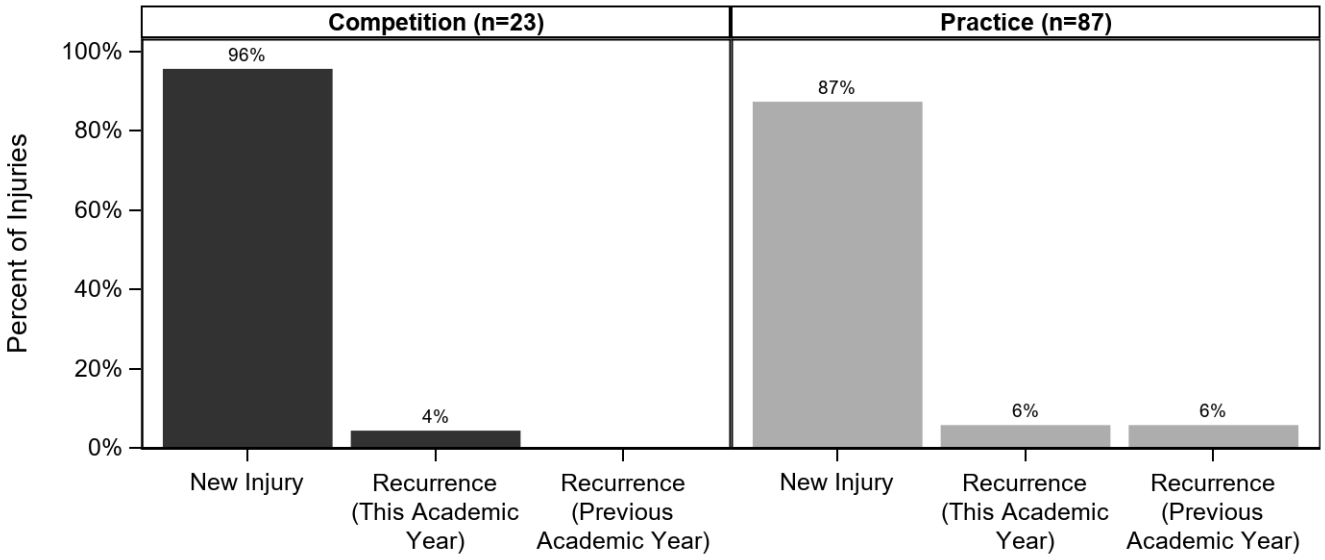


Table 19.6 Time during Season of Girls' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	45	40.9%
Regular Season	61	55.5%
Post Season	4	3.6%
Total	***110***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 19.7 Practice-Related Variables for Girls' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	10	11.8%
Second 1/2 Hour	8	9.4%
1-2 Hours into Practice	25	29.4%
>2 Hours into Practice	1	1.2%
Unknown	41	48.2%
Total	***85***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 19.8 Activities Leading to Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	9	39.1%	50	68.5%	59	61.5%
Jumping/Landing	6	26.1%	7	9.6%	13	13.5%
Unknown	3	13.0%	4	5.5%	7	7.3%
Running Hurdles	2	8.7%	3	4.1%	5	5.2%
Throwing	1	4.3%	2	2.7%	3	3.1%
Conditioning	0	0.0%	3	4.1%	3	3.1%
Warming Up	0	0.0%	2	2.7%	2	2.1%
Leaving Block	0	0.0%	2	2.7%	2	2.1%
Baton Hand Off	1	4.3%	0	0.0%	1	1.0%
Hit by Shot Put/Javelin/Discus	1	4.3%	0	0.0%	1	1.0%
Total	***23***	***100.0%***	***73***	***100.0%***	***96***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 19.9 Activity Resulting in Girls' Track and Field Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis							
	Strain/Sprain		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Baton Hand Off	1	1.9%	0	0.0%	0	0.0%	0	0.0%
Conditioning	1	1.9%	0	0.0%	0	0.0%	2	5.1%
Hit by Shot Put/Javelin/Discus	0	0.0%	0	0.0%	1	50.0%	0	0.0%
Jumping/Landing	8	14.8%	0	0.0%	0	0.0%	5	12.8%
Leaving Block	2	3.7%	0	0.0%	0	0.0%	0	0.0%
Running	33	61.1%	0	0.0%	0	0.0%	26	66.7%
Running Hurdles	4	7.4%	0	0.0%	0	0.0%	1	2.6%
Throwing	1	1.9%	1	100.0%	0	0.0%	1	2.6%
Unknown	3	5.6%	0	0.0%	1	50.0%	3	7.7%
Warming Up	1	1.9%	0	0.0%	0	0.0%	1	2.6%
Total	***54***	***100.0%***	***1***	***100.0%***	***2***	***100.0%***	***39***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XX. Boys' Cross Country Injury Epidemiology

Table 20.1 Boys' Cross Country Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***40***	***55,896***	***0.72***
Competition	6	9,871	0.61
Practice	34	46,025	0.74

* All analyses in this chapter present un-weighted data.

Table 20.2 Demographic Characteristics of Injured Boys' Cross Country Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	9	25.0%
Sophomore	12	33.3%
Junior	7	19.4%
Senior	8	22.2%
Total	***36***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.4 (1.3)
n	28

BMI	
Minimum	17.2
Maximum	27.5
Mean (SD)	20.8 (2.4)
n	20

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 20.1 Diagnosis of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

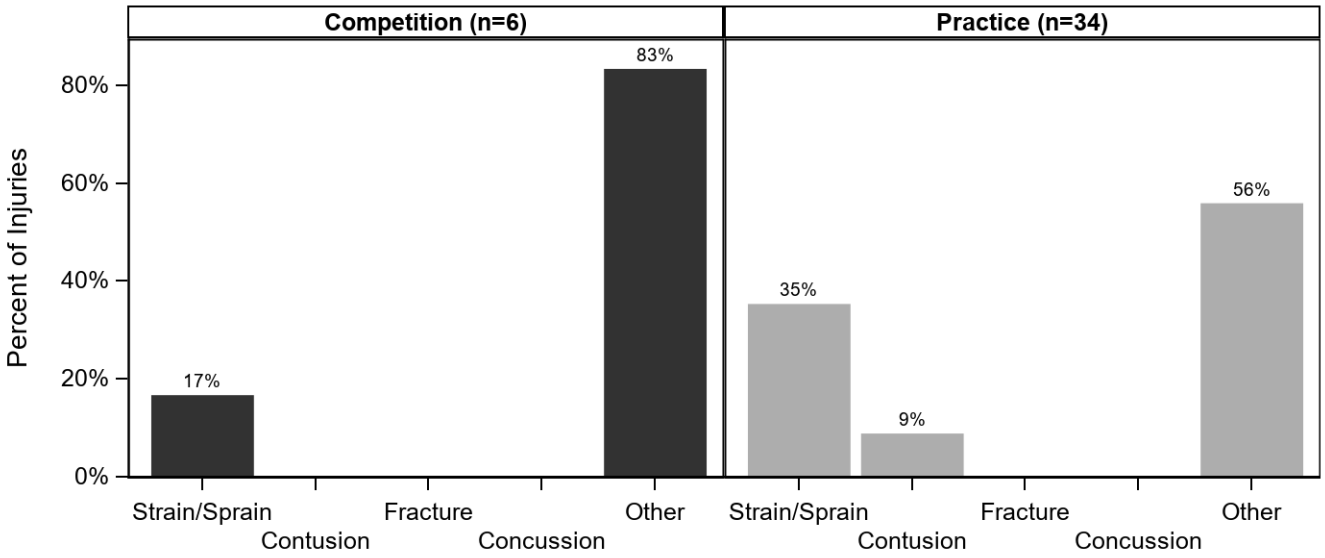


Table 20.3 Body Site of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

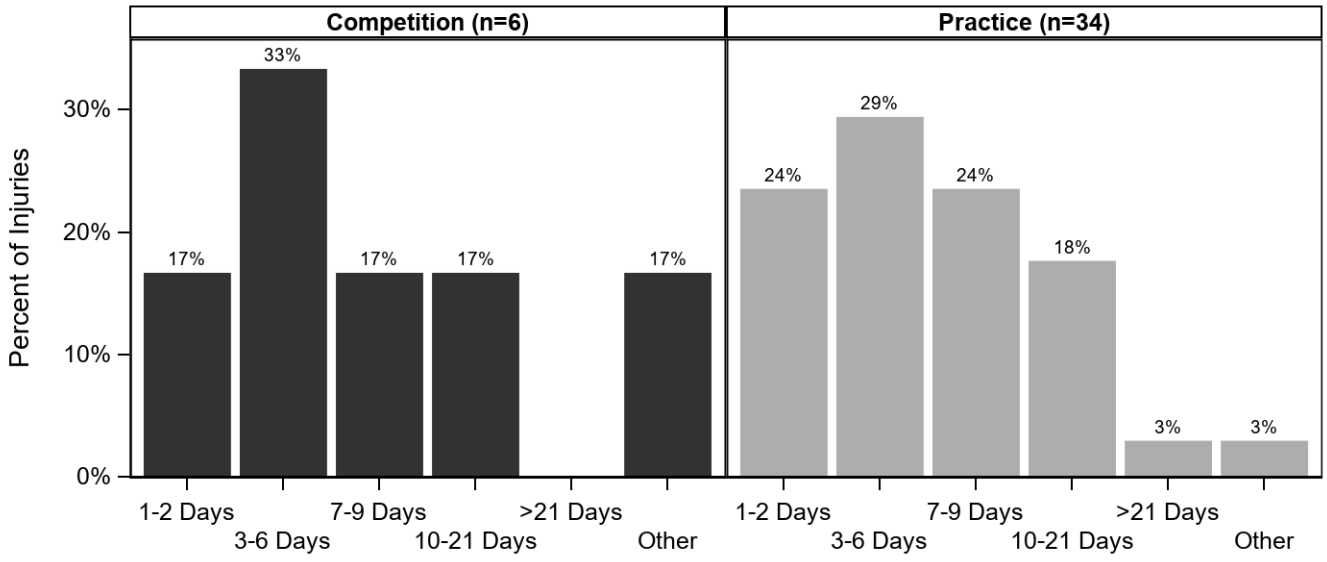
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg	1	16.7%	13	38.2%	14	35.0%
Knee	4	66.7%	5	14.7%	9	22.5%
Ankle	1	16.7%	6	17.6%	7	17.5%
Foot	0	0.0%	6	17.6%	6	15.0%
Hip/Thigh/Upper Leg	0	0.0%	2	5.9%	2	5.0%
Systemic	0	0.0%	2	5.9%	2	5.0%
Total	***6***	***100.0%***	***34***	***100.0%***	***40***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 20.4 Ten Most Common Boys' Cross Country Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=6)		Practice (n=34)		Overall (n=40)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg Other	1	16.7%	12	35.3%	13	32.5%
Knee Other	4	66.7%	4	11.8%	8	20.0%
Ankle Strain/Sprain	1	16.7%	6	17.6%	7	17.5%
Foot Contusion	0	0.0%	3	8.8%	3	7.5%
Foot Strain/Sprain	0	0.0%	2	5.9%	2	5.0%
Hip/Thigh/Upper Leg Strain/Sprain	0	0.0%	2	5.9%	2	5.0%
Systemic Other	0	0.0%	2	5.9%	2	5.0%
Foot Other	0	0.0%	1	2.9%	1	2.5%
Knee Strain/Sprain	0	0.0%	1	2.9%	1	2.5%
Lower Leg Strain/Sprain	0	0.0%	1	2.9%	1	2.5%

Figure 20.2 Time Loss of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 20.5 Boys' Cross Country Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	6	100.0%	34	100.0%	40	100.0%
Total	***6***	***100.0%***	***34***	***100.0%***	***40***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 20.3 History of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

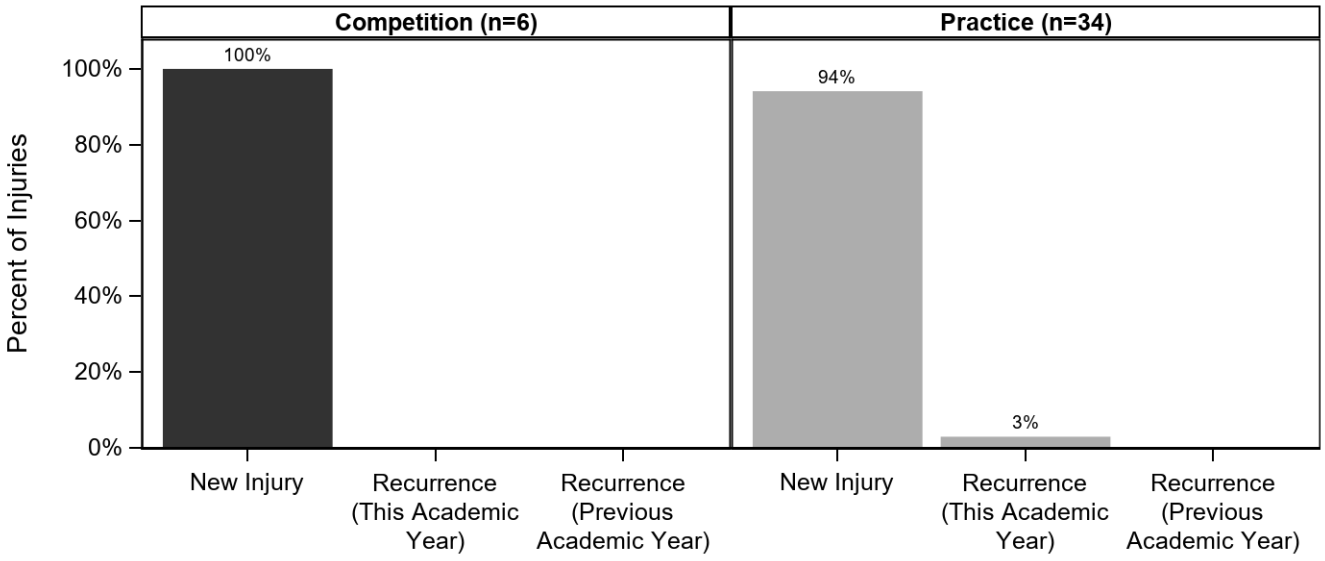


Table 20.6 Time during Season of Boys' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	8	20.0%
Regular Season	32	80.0%
Total	***40***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 20.7 Practice-Related Variables for Boys' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	3	9.1%
Second 1/2 Hour	7	21.2%
1-2 Hours into Practice	11	33.3%
>2 Hours into Practice	1	3.0%
Unknown	11	33.3%
Total	***33***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 20.8 Activities Leading to Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	4	66.7%	19	79.2%	23	76.7%
Other	0	0.0%	2	8.3%	2	6.7%
Unknown	1	16.7%	1	4.2%	2	6.7%
Conditioning	0	0.0%	2	8.3%	2	6.7%
Warming Up	1	16.7%	0	0.0%	1	3.3%
Total	***6***	***100.0%***	***24***	***100.0%***	***30***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 20.9 Activity Resulting in Boys' Cross Country Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis					
	Strain/Sprain		Contusion		Other	
Activity	n	%	n	%	n	%
Conditioning	2	20.0%	0	0.0%	0	0.0%
Other	0	0.0%	0	0.0%	2	11.1%
Running	7	70.0%	2	100.0%	14	77.8%
Unknown	0	0.0%	0	0.0%	2	11.1%
Warming Up	1	10.0%	0	0.0%	0	0.0%
Total	***10***	***100.0%***	***2***	***100.0%***	***18***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XXI. Girls' Cross Country Injury Epidemiology

Table 21.1 Girls' Cross Country Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***36***	***41,712***	***0.86***
Competition	5	7,195	0.69
Practice	31	34,517	0.90

* All analyses in this chapter present un-weighted data.

Table 21.2 Demographic Characteristics of Injured Girls' Cross Country Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	15	53.6%
Sophomore	7	25.0%
Junior	3	10.7%
Senior	3	10.7%
Total	***28***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	14.8 (1.3)
n	16

BMI	
Minimum	17.2
Maximum	26.6
Mean (SD)	20.4 (3.2)
n	10

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 21.1 Diagnosis of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

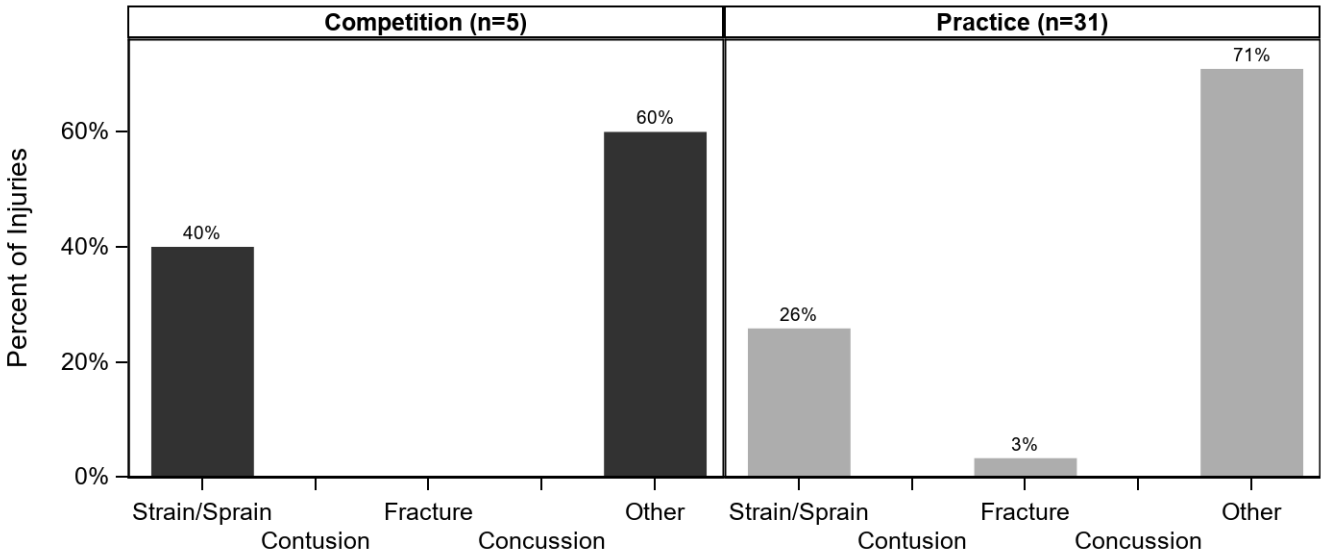


Table 21.3 Body Site of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

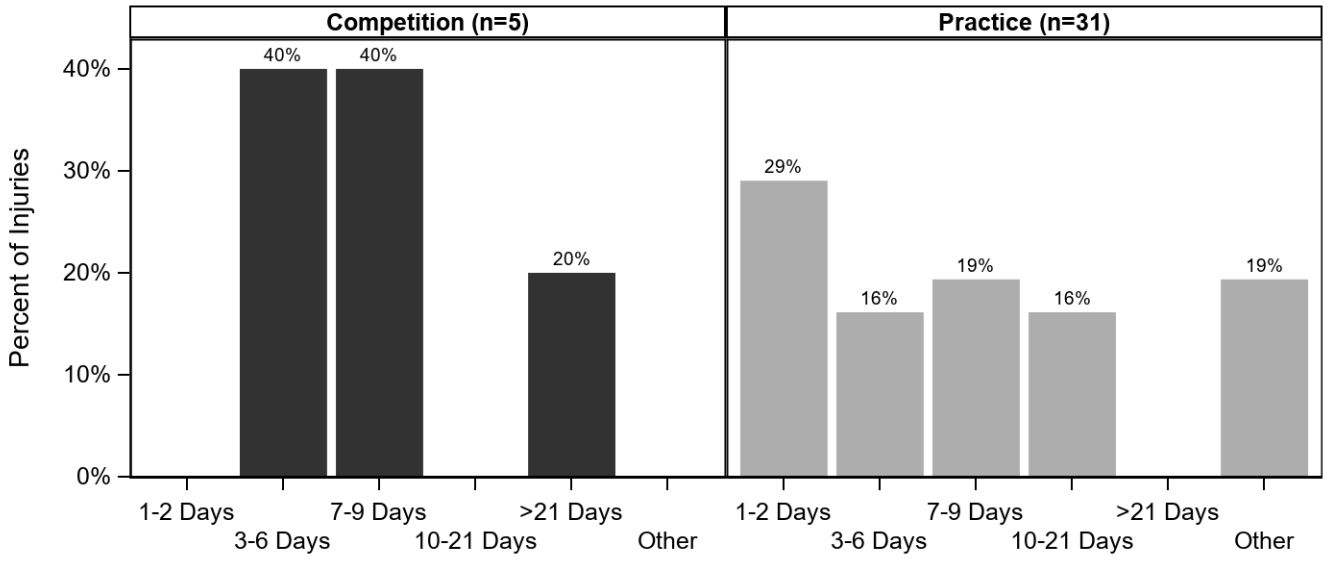
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	0	0.0%	10	32.3%	10	27.8%
Lower Leg	1	20.0%	9	29.0%	10	27.8%
Knee	1	20.0%	5	16.1%	6	16.7%
Foot	0	0.0%	4	12.9%	4	11.1%
Ankle	1	20.0%	2	6.5%	3	8.3%
Systemic	1	20.0%	1	3.2%	2	5.6%
Other	1	20.0%	0	0.0%	1	2.8%
Total	***5***	***100.0%***	***31***	***100.0%***	***36***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 21.4 Ten Most Common Girls' Cross Country Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=5)		Practice (n=31)		Overall (n=36)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg Other	0	0.0%	8	25.8%	8	22.2%
Hip/Thigh/Upper Leg Other	0	0.0%	6	19.4%	6	16.7%
Knee Other	1	20.0%	5	16.1%	6	16.7%
Hip/Thigh/Upper Leg Strain/Sprain	0	0.0%	4	12.9%	4	11.1%
Ankle Strain/Sprain	1	20.0%	2	6.5%	3	8.3%
Foot Other	0	0.0%	2	6.5%	2	5.6%
Lower Leg Strain/Sprain	1	20.0%	1	3.2%	2	5.6%
Systemic Other	1	20.0%	1	3.2%	2	5.6%
Foot Fracture	0	0.0%	1	3.2%	1	2.8%
Foot Strain/Sprain	0	0.0%	1	3.2%	1	2.8%

Figure 21.2 Time Loss of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 21.5 Girls' Cross Country Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	5	100.0%	31	100.0%	36	100.0%
Total	***5***	***100.0%***	***31***	***100.0%***	***36***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 21.3 History of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

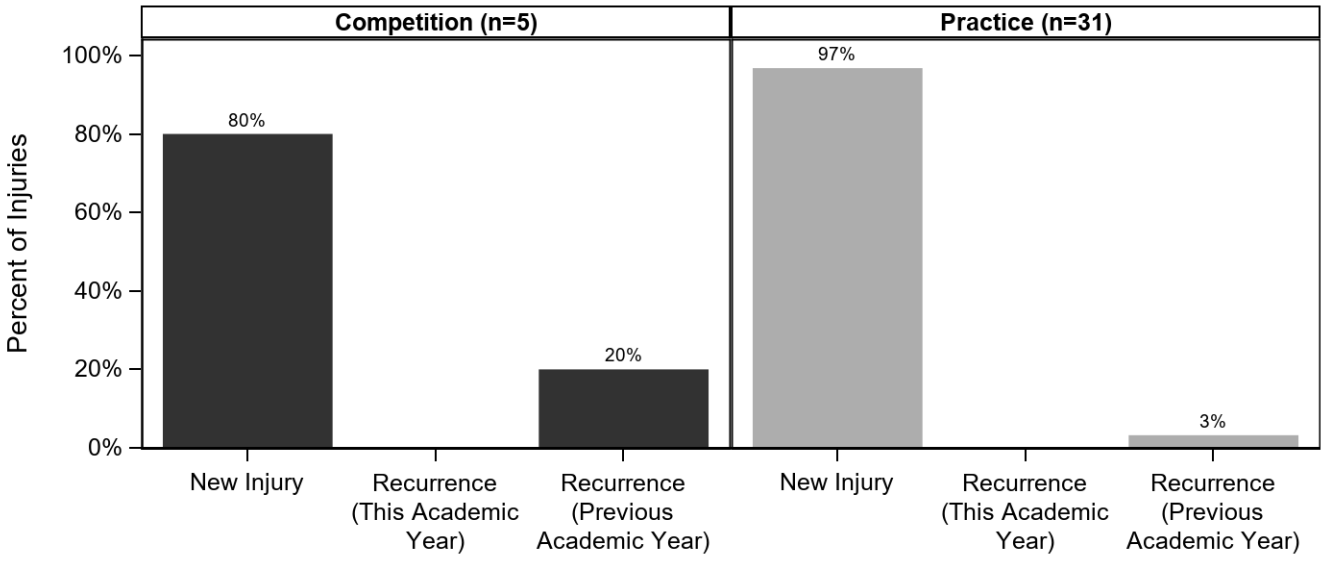


Table 21.6 Time during Season of Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	12	33.3%
Regular Season	24	66.7%
Total	***36***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 21.7 Practice-Related Variables for Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	1	3.3%
Second 1/2 Hour	3	10.0%
1-2 Hours into Practice	10	33.3%
>2 Hours into Practice	2	6.7%
Unknown	14	46.7%
Total	***30***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 21.8 Activities Leading to Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	5	100.0%	9	56.3%	14	66.7%
Unknown	0	0.0%	4	25.0%	4	19.0%
Conditioning	0	0.0%	2	12.5%	2	9.5%
Warming Up	0	0.0%	1	6.3%	1	4.8%
Total	***5***	***100.0%***	***16***	***100.0%***	***21***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 21.9 Activity Resulting in Girls' Cross Country Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis					
	Strain/Sprain		Fracture		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	1	20.0%	0	0.0%	1	6.7%
Running	4	80.0%	0	0.0%	10	66.7%
Unknown	0	0.0%	1	100.0%	3	20.0%
Warming Up	0	0.0%	0	0.0%	1	6.7%
Total	***5***	***100.0%***	***1***	***100.0%***	***15***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

XXII. Cheerleading Injury Epidemiology

Table 22.1 Cheerleading Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***77***	***98,601***	***0.78***
Competition	8	4,975	1.61
Performance	15	21,143	0.71
Practice	54	72,483	0.75

* All analyses in this chapter present un-weighted data.

Table 22.2 Demographic Characteristics of Injured Cheerleading Athletes, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Year in School	n	%
Freshman	21	30.4%
Sophomore	19	27.5%
Junior	13	18.8%
Senior	16	23.2%
Total	***69***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.4 (1.5)
n	68

BMI	
Minimum	16.5
Maximum	36.6
Mean (SD)	21.6 (3.7)
n	53

* Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 22.1 Diagnosis of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

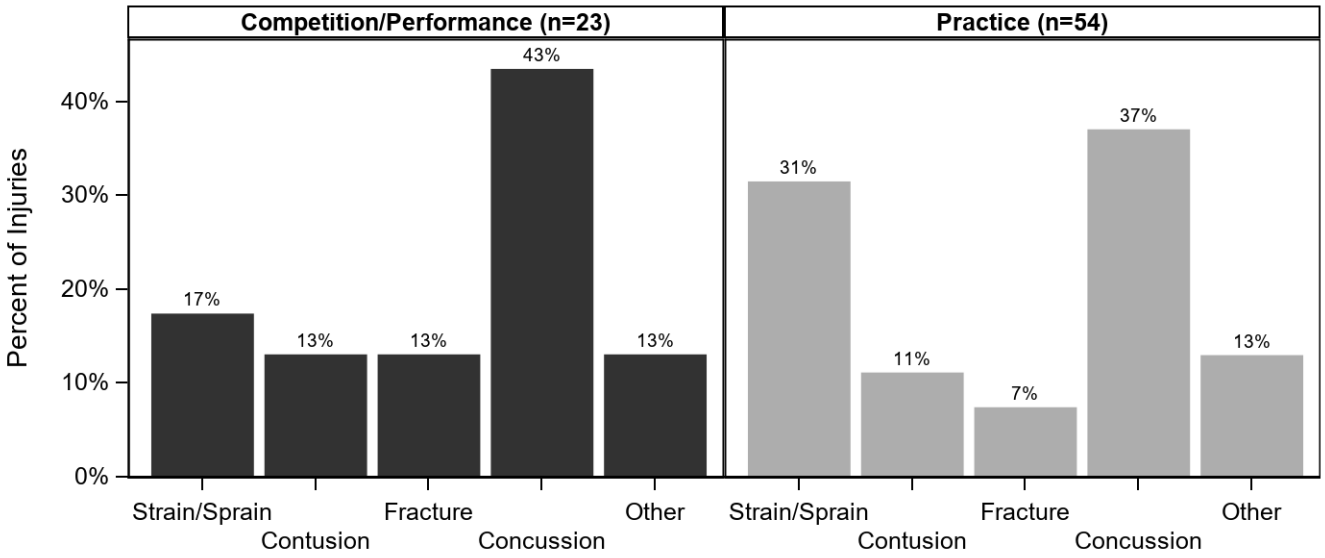


Table 22.3 Body Site of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

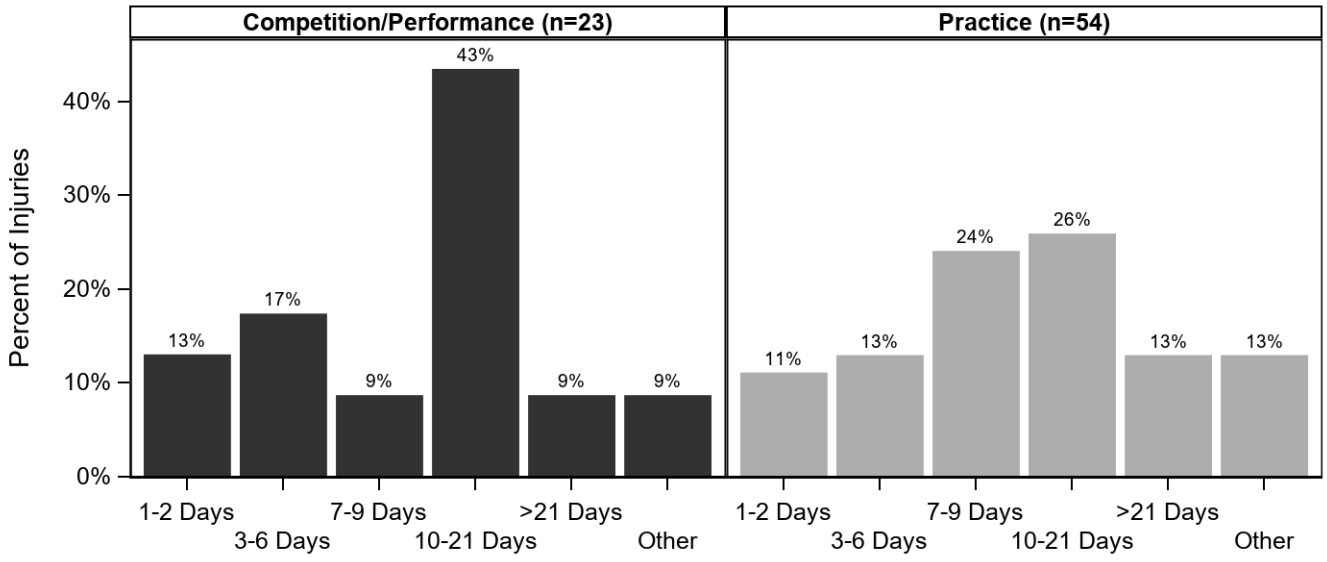
	Competition		Performance		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	3	37.5%	8	53.3%	22	40.7%	33	42.9%
Hand/Wrist	2	25.0%	0	0.0%	8	14.8%	10	13.0%
Trunk	0	0.0%	2	13.3%	5	9.3%	7	9.1%
Knee	0	0.0%	2	13.3%	4	7.4%	6	7.8%
Ankle	1	12.5%	1	6.7%	3	5.6%	5	6.5%
Arm/Elbow	0	0.0%	0	0.0%	4	7.4%	4	5.2%
Hip/Thigh/Upper Leg	0	0.0%	0	0.0%	3	5.6%	3	3.9%
Shoulder	0	0.0%	0	0.0%	3	5.6%	3	3.9%
Foot	0	0.0%	2	13.3%	0	0.0%	2	2.6%
Lower Leg	0	0.0%	0	0.0%	2	3.7%	2	2.6%
Neck	1	12.5%	0	0.0%	0	0.0%	1	1.3%
Systemic	1	12.5%	0	0.0%	0	0.0%	1	1.3%
Total	***8***	***100.0%***	***15***	***100.0%***	***54***	***100.0%***	***77***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 22.4 Ten Most Common Cheerleading Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Competition (n=8)		Performance (n=15)		Practice (n=54)		Overall (n=77)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	3	37.5%	7	13.0%	20	37.0%	30	39.0%
Ankle Strain/Sprain	1	12.5%	1	1.9%	3	5.6%	5	6.5%
Hand/Wrist Strain/Sprain	1	12.5%	0	0.0%	4	7.4%	5	6.5%
Knee Strain/Sprain	0	0.0%	1	1.9%	3	5.6%	4	5.2%
Trunk Contusion	0	0.0%	2	3.7%	2	3.7%	4	5.2%
Hand/Wrist Fracture	0	0.0%	0	0.0%	3	5.6%	3	3.9%
Arm/Elbow Strain/Sprain	0	0.0%	0	0.0%	2	3.7%	2	2.6%
Foot Fracture	0	0.0%	2	3.7%	0	0.0%	2	2.6%
Hand/Wrist Other	1	12.5%	0	0.0%	1	1.9%	2	2.6%
Head/Face Contusion	0	0.0%	0	0.0%	2	3.7%	2	2.6%

Figure 22.2 Time Loss of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *



* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 22.5 Cheerleading Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Performance		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	0	0.0%	0	0.0%	5	9.4%	5	6.7%
Did Not Require Surgery	8	100.0%	14	100.0%	48	90.6%	70	93.3%
Total	***8***	***100.0%***	***14***	***100.0%***	***53***	***100.0%***	***75***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Figure 22.3 History of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

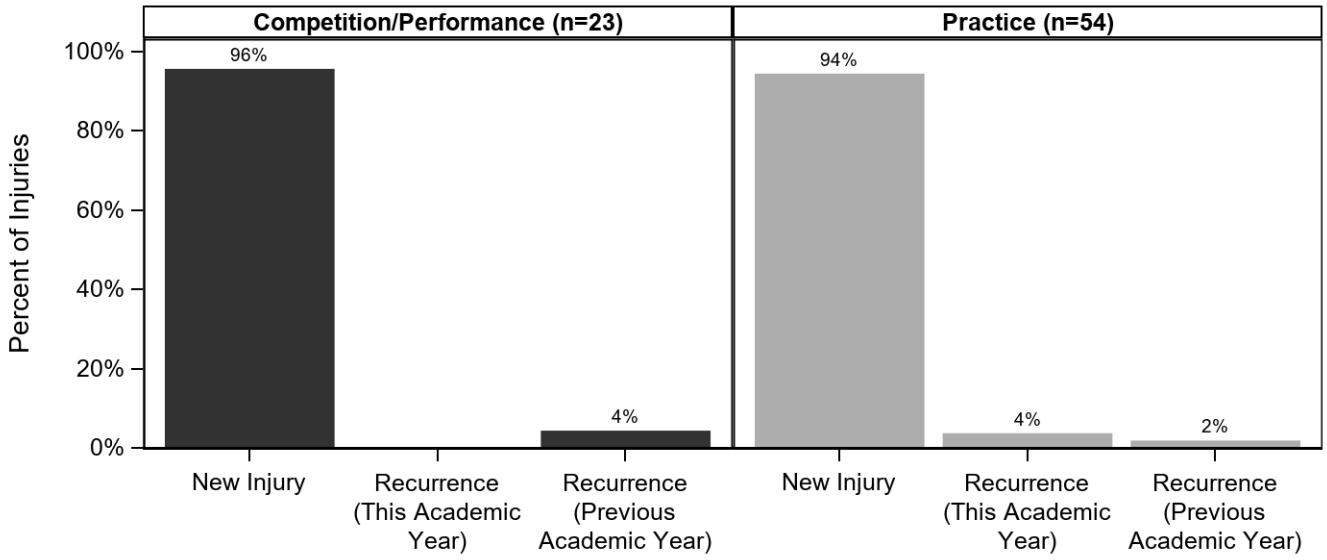


Table 22.6 Time during Season of Cheerleading Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Season	n	%
Preseason	4	5.2%
Regular Season	67	87.0%
Post Season	5	6.5%
Unknown/Other	1	1.3%
Total	***77***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 22.7 Practice-Related Variables for Cheerleading Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time in Practice	n	%
First 1/2 Hour	4	7.7%
Second 1/2 Hour	9	17.3%
1-2 Hours into Practice	28	53.8%
>2 Hours into Practice	1	1.9%
Unknown	10	19.2%
Total	***52***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

Table 22.8 Activities Leading to Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Competition		Performance		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Partner Stunt	2	28.6%	4	26.7%	15	28.8%	21	28.4%
Pyramid	0	0.0%	5	33.3%	14	26.9%	19	25.7%
Toss	3	42.9%	3	20.0%	7	13.5%	13	17.6%
Moving Tumbling	0	0.0%	0	0.0%	6	11.5%	6	8.1%
Other	0	0.0%	2	13.3%	3	5.8%	5	6.8%
Standing Tumbling	0	0.0%	0	0.0%	3	5.8%	3	4.1%
Unknown	1	14.3%	0	0.0%	2	3.8%	3	4.1%
Jump	0	0.0%	1	6.7%	1	1.9%	2	2.7%
Warm-Up	1	14.3%	0	0.0%	1	1.9%	2	2.7%
Total	***7***	***100.0%***	***15***	***100.0%***	***52***	***100.0%***	***74***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

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Table 22.9 Activity Resulting in Cheerleading Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Jump	1	4.8%	0	0.0%	1	14.3%	0	0.0%	0	0.0%
Moving Tumbling	3	14.3%	0	0.0%	1	14.3%	1	3.6%	1	10.0%
Other	2	9.5%	0	0.0%	1	14.3%	0	0.0%	2	20.0%
Partner Stunt	2	9.5%	1	12.5%	3	42.9%	10	35.7%	5	50.0%
Pyramid	5	23.8%	5	62.5%	1	14.3%	7	25.0%	1	10.0%
Standing Tumbling	2	9.5%	0	0.0%	0	0.0%	1	3.6%	0	0.0%
Toss	3	14.3%	2	25.0%	0	0.0%	8	28.6%	0	0.0%
Unknown	3	14.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Warm-Up	0	0.0%	0	0.0%	0	0.0%	1	3.6%	1	10.0%
Total	***21***	***100.0%***	***8***	***100.0%***	***7***	***100.0%***	***28***	***100.0%***	***10***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.

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XXIII. Gender Differences within Sports

23.1 Boys' and Girls' Soccer

Table 23.1 Comparison of Boys' and Girls' Soccer Injury Rates, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Boys' Soccer	Girls' Soccer *	RR (95% CI) **
Total	1.86	**2.45**	**1.32 (1.14-1.52)**
Competition	3.91	**5.59**	**1.43 (1.20-1.70)**
Practice	0.94	**1.07**	1.14 (0.89-1.47)

* Throughout this chapter, rate ratios (RR) and injury proportion ratios (IPR) compare the gender with a higher injury rate/proportion (bolded) to the gender with a lower injury rate/proportion.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.2 Comparison of Body Sites of Boys' and Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Body Site	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Head/Face	15.5%	**23.2%**	**1.50 (1.11-2.03)**
Neck	**0.8%**	0.5%	1.53 (0.26-9.13)
Shoulder	**0.8%**	0.5%	1.53 (0.26-9.13)
Trunk	**4.9%**	2.7%	1.83 (0.86-3.93)
Arm/Elbow	1.1%	**1.6%**	1.47 (0.42-5.19)
Hand/Wrist	**4.3%**	2.4%	1.81 (0.81-4.06)
Hip/Thigh/Upper Leg	**18.5%**	13.9%	1.33 (0.96-1.86)
Knee	16.8%	**18.1%**	1.08 (0.79-1.47)
Lower Leg	**9.0%**	7.7%	1.16 (0.72-1.87)
Ankle	19.6%	**22.4%**	1.16 (0.88-1.55)
Foot	**6.8%**	4.3%	1.59 (0.86-2.94)
Other	1.4%	**1.6%**	1.02 (0.30-3.50)
Systemic	0.5%	**1.1%**	1.96 (0.36-10.69)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.3 Comparison of Diagnoses of Boys' and Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Strain/Sprain	**47.8%**	45.8%	1.04 (0.89-1.22)
Contusion	**18.3%**	12.9%	**1.42 (1.01-2.00)**
Fracture	**7.1%**	5.9%	1.20 (0.69-2.09)
Concussion	12.0%	**21.4%**	**1.78 (1.27-2.50)**
Other	**14.8%**	13.9%	1.06 (0.74-1.51)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.4 Most Common Boys' and Girls' Soccer Injury Diagnoses, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Ankle Strain/Sprain	16.1%	**20.4%**	1.26 (0.93-1.72)
Head/Face Concussion	11.7%	**21.4%**	**1.83 (1.30-2.57)**
Hip/Thigh/Upper Leg Strain/Sprain	**13.4%**	10.2%	1.31 (0.88-1.96)
Knee Other	4.4%	**5.9%**	1.35 (0.72-2.53)
Knee Strain/Sprain	9.0%	**9.7%**	1.07 (0.68-1.68)

* Only includes diagnoses accounting for >5% of boys' or girls' soccer injuries.

Table 23.5 Comparison of Time Loss of Boys' and Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time Loss	Boys' Soccer	Girls' Soccer	IPR (95% CI)
1-2 Days	**16.3%**	14.1%	1.15 (0.82-1.62)
3-6 Days	**27.4%**	20.8%	**1.34 (1.03-1.73)**
7-9 Days	**14.7%**	14.1%	1.04 (0.73-1.48)
10-21 Days	20.4%	**24.3%**	1.21 (0.92-1.58)
>21 Days	4.1%	**4.3%**	1.05 (0.52-2.09)
Other	17.1%	**22.4%**	1.31 (0.98-1.76)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.6 Comparison of Mechanisms of Boys' and Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Soccer Mechanism	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Contact with Another Player	**31.6%**	21.3%	**1.48 (1.15-1.91)**
Contact with Ball	12.0%	**15.8%**	1.32 (0.91-1.91)
Contact with Goal	**0.3%**	0.3%	1.03 (0.06-16.49)
N/A **	**13.4%**	12.2%	1.10 (0.75-1.61)
Other	10.3%	**12.2%**	1.19 (0.78-1.80)
Rotation Around a Planted Foot/Inversion	9.4%	**14.7%**	**1.56 (1.04-2.35)**
Slide Tackle	**5.4%**	4.2%	1.30 (0.67-2.53)
Stepped On/Fell On/Kicked	9.4%	**12.2%**	1.30 (0.85-1.99)
Uneven Playing Surface	1.1%	**1.9%**	1.70 (0.50-5.78)
Unknown	**7.1%**	5.3%	1.35 (0.76-2.42)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.
** Includes overuse, heat illness, conditioning, etc.

Table 23.7 Comparison of Activities of Boys' and Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Soccer Activity	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Attempting a Slide Tackle	**0.6%**	0.6%	1.03 (0.15-7.34)
Ball Handling/Dribbling	**10.1%**	7.5%	1.34 (0.83-2.17)
Blocking Shot	**1.2%**	0.6%	2.07 (0.38-11.27)
Chasing Loose Ball	9.2%	**9.8%**	1.06 (0.67-1.67)
Conditioning	**2.0%**	2.0%	1.03 (0.37-2.93)
Defending	13.3%	**17.3%**	1.30 (0.92-1.85)
General Play	25.7%	**29.1%**	1.13 (0.89-1.44)
Goaltending	**6.6%**	5.3%	1.25 (0.69-2.26)
Heading Ball	**6.1%**	3.9%	1.55 (0.80-3.01)
Other	1.2%	**1.7%**	1.45 (0.41-5.11)
Passing	2.6%	**3.1%**	1.18 (0.49-2.82)
Receiving Pass	**3.2%**	2.2%	1.42 (0.58-3.50)
Receiving a Slide Tackle	**1.7%**	0.6%	3.10 (0.63-15.33)
Shooting	**5.2%**	3.1%	1.69 (0.81-3.54)
Unknown	11.3%	**13.4%**	1.19 (0.80-1.77)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

23.2 Boys' and Girls' Basketball

Table 23.8 Comparison of Boys' and Girls' Basketball Injury Rates, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Boys' Basketball	Girls' Basketball *	RR (95% CI) **
Total	1.91	**2.28**	**1.19 (1.04-1.36)**
Competition	3.41	**4.91**	**1.44 (1.21-1.72)**
Practice	**1.30**	1.16	1.12 (0.91-1.38)

* Throughout this chapter, rate ratios (RR) and injury proportion ratios (IPR) compare the gender with a higher injury rate/proportion (bolded) to the gender with a lower injury rate/proportion.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.9 Comparison of Body Sites of Boys' and Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Body Site	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Head/Face	13.6%	**18.6%**	**1.37 (1.01-1.87)**
Neck	0.4%	**0.8%**	1.91 (0.32-11.43)
Shoulder	**2.9%**	0.8%	**3.66 (1.06-12.67)**
Trunk	**4.7%**	2.1%	**2.25 (1.02-4.99)**
Arm/Elbow	1.2%	**3.1%**	2.55 (0.96-6.75)
Hand/Wrist	7.2%	**10.0%**	1.38 (0.89-2.15)
Hip/Thigh/Upper Leg	**9.3%**	5.8%	1.60 (0.98-2.63)
Knee	13.8%	**18.1%**	1.31 (0.96-1.79)
Lower Leg	4.1%	**4.5%**	1.08 (0.58-2.04)
Ankle	**38.3%**	32.3%	1.19 (0.99-1.43)
Foot	**3.7%**	3.1%	1.18 (0.57-2.41)
Other	**0.4%**	0.0%	--
Systemic	0.4%	**0.8%**	1.91 (0.32-11.43)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.10 Comparison of Diagnoses of Boys' and Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Strain/Sprain	56.4%	**56.5%**	1.01 (0.89-1.13)
Contusion	**12.6%**	8.1%	**1.54 (1.02-2.33)**
Fracture	5.8%	**6.3%**	1.09 (0.64-1.86)
Concussion	8.0%	**16.2%**	**2.00 (1.37-2.92)**
Other	**17.3%**	12.8%	1.34 (0.97-1.86)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.11 Most Common Boys' and Girls' Basketball Injury Diagnoses, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Ankle Strain/Sprain	**37.2%**	31.5%	1.18 (0.98-1.43)
Head/Face Concussion	8.0%	**16.0%**	**2.00 (1.37-2.92)**
Knee Other	**6.0%**	4.5%	1.34 (0.75-2.40)
Knee Strain/Sprain	4.1%	**11.3%**	**2.74 (1.64-4.59)**

* Only includes diagnoses accounting for >5% of boys' or girls' basketball injuries.

Table 23.12 Comparison of Time Loss of Boys' and Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time Loss	Boys' Basketball	Girls' Basketball	IPR (95% CI)
1-2 Days	**29.0%**	26.2%	1.11 (0.89-1.38)
3-6 Days	**22.8%**	22.8%	1.00 (0.78-1.28)
7-9 Days	**15.2%**	11.0%	1.38 (0.97-1.97)
10-21 Days	17.5%	**18.3%**	1.05 (0.79-1.40)
>21 Days	4.9%	**6.0%**	1.17 (0.67-2.05)
Other	10.5%	**15.7%**	**1.50 (1.06-2.13)**
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.13 Comparison of Mechanisms of Boys' and Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Basketball Mechanism	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Collision with Another Player	**25.5%**	20.5%	1.24 (0.96-1.60)
Contact with Ball	2.6%	**6.2%**	**2.39 (1.20-4.75)**
Jumping/Landing	**26.3%**	21.8%	1.21 (0.94-1.54)
N/A **	7.6%	**10.0%**	1.32 (0.85-2.05)
Other	9.5%	**10.0%**	1.05 (0.69-1.59)
Rotation Around a Planted Foot/Inversion	14.3%	**18.1%**	1.27 (0.93-1.73)
Stepped On/Fell On/Kicked	**9.3%**	8.6%	1.08 (0.70-1.67)
Unknown	**5.0%**	4.9%	1.02 (0.56-1.87)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.
** Includes overuse, heat illness, conditioning, etc.

Table 23.14 Comparison of Activities of Boys' and Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Basketball Activity	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Ball Handling/Dribbling	4.8%	**6.0%**	1.25 (0.70-2.23)
Chasing Loose Ball	**10.8%**	10.3%	1.05 (0.70-1.57)
Conditioning	2.2%	**3.0%**	1.38 (0.59-3.21)
Defending	15.0%	**16.8%**	1.13 (0.82-1.54)
General Play	14.5%	**19.3%**	1.33 (0.98-1.80)
Other	1.1%	**1.1%**	1.00 (0.27-3.72)
Passing	0.0%	**1.1%**	--
Rebounding	**23.2%**	15.5%	**1.50 (1.12-2.01)**
Receiving Pass	1.3%	**2.7%**	2.09 (0.76-5.70)
Shooting	**10.8%**	6.5%	**1.66 (1.04-2.66)**
Unknown	16.3%	**17.7%**	1.09 (0.80-1.47)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

23.3 Boys' Baseball and Girls' Softball

Table 23.15 Comparison of Baseball and Softball Injury Rates, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Boys' Baseball	Girls' Softball *	RR (95% CI) **
Total	1.29	**1.52**	1.18 (0.98-1.42)
Competition	1.95	**2.20**	1.13 (0.87-1.47)
Practice	0.95	**1.17**	1.24 (0.95-1.61)

* Throughout this chapter, rate ratios (RR) and injury proportion ratios (IPR) compare the gender with a higher injury rate/proportion (bolded) to the gender with a lower injury rate/proportion.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.16 Comparison of Body Sites of Baseball and Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Body Site	Boys' Baseball	Girls' Softball	IPR (95% CI)
Head/Face	15.4%	**24.6%**	**1.58 (1.08-2.32)**
Neck	**0.4%**	0.0%	--
Shoulder	**17.8%**	12.3%	1.46 (0.92-2.31)
Trunk	4.3%	**5.1%**	1.17 (0.51-2.71)
Arm/Elbow	**13.0%**	5.1%	**2.56 (1.29-5.09)**
Hand/Wrist	**15.4%**	12.3%	1.26 (0.79-2.03)
Hip/Thigh/Upper Leg	**12.6%**	10.3%	1.24 (0.73-2.11)
Knee	7.5%	**11.3%**	1.57 (0.87-2.86)
Lower Leg	2.4%	**4.6%**	2.32 (0.79-6.83)
Ankle	7.9%	**9.7%**	1.22 (0.67-2.23)
Foot	1.6%	**3.1%**	1.93 (0.55-6.78)
Other	**1.2%**	0.0%	--
Systemic	0.4%	**1.5%**	3.86 (0.40-37.16)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.17 Comparison of Diagnoses of Baseball and Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Baseball	Girls' Softball	IPR (95% CI)
Strain/Sprain	**39.4%**	37.9%	1.04 (0.82-1.32)
Contusion	10.4%	**15.9%**	1.53 (0.94-2.50)
Fracture	**15.9%**	7.7%	**2.07 (1.18-3.65)**
Concussion	7.2%	**13.8%**	**1.93 (1.09-3.41)**
Other	**27.1%**	24.6%	1.10 (0.80-1.52)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.18 Most Common Baseball and Softball Injury Diagnoses, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Baseball	Girls' Softball	IPR (95% CI)
Ankle Strain/Sprain	7.2%	**8.2%**	1.14 (0.60-2.19)
Arm/Elbow Strain/Sprain	**6.0%**	1.0%	**5.83 (1.34-25.32)**
Hand/Wrist Fracture	**8.0%**	3.6%	2.22 (0.96-5.16)
Head/Face Concussion	6.8%	**13.8%**	**2.04 (1.15-3.65)**
Head/Face Contusion	0.8%	**6.2%**	**7.72 (1.74-34.30)**
Hip/Thigh/Upper Leg Strain/Sprain	**9.6%**	8.2%	1.17 (0.64-2.14)
Knee Strain/Sprain	2.8%	**5.1%**	1.84 (0.71-4.76)
Shoulder Other	**8.8%**	7.2%	1.22 (0.64-2.33)
Shoulder Strain/Sprain	**8.0%**	5.1%	1.55 (0.74-3.25)

* Only includes diagnoses accounting for >5% of boys' baseball or girls' softball injuries.

Table 23.19 Comparison of Time Loss of Baseball and Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time Loss	Boys' Baseball	Girls' Softball	IPR (95% CI)
1-2 Days	20.2%	**26.2%**	1.29 (0.91-1.81)
3-6 Days	**21.7%**	17.4%	1.26 (0.85-1.85)
7-9 Days	11.1%	**12.8%**	1.24 (0.74-2.08)
10-21 Days	**23.7%**	17.4%	1.37 (0.94-2.00)
>21 Days	7.1%	**7.2%**	1.00 (0.51-1.97)
Other	16.2%	**19.0%**	1.16 (0.78-1.74)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.20 Comparison of Mechanisms of Baseball and Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Baseball Mechanism	Boys' Baseball	Girls' Softball	IPR (95% CI)
Contact with Another Player	**8.9%**	7.1%	1.25 (0.65-2.42)
Contact with Bases	11.4%	**12.1%**	1.06 (0.63-1.80)
Contact with Thrown Ball (Non-Pitch)	6.1%	**14.3%**	**2.34 (1.28-4.30)**
Hit by Batted Ball	10.2%	**10.4%**	1.03 (0.58-1.81)
Hit by Pitch	**6.1%**	4.4%	1.39 (0.60-3.21)
N/A **	15.9%	**15.9%**	1.01 (0.65-1.56)
Other	**17.9%**	17.0%	1.05 (0.69-1.60)
Rotation Around a Planted Foot/Inversion	**7.3%**	4.9%	1.48 (0.68-3.23)
Throwing (Not Pitching)	4.5%	**6.0%**	1.35 (0.60-3.06)
Throwing (Pitching)	**9.3%**	3.3%	**2.84 (1.17-6.85)**
Unknown	2.4%	**4.4%**	1.80 (0.63-5.13)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.
** Includes overuse, heat illness, conditioning, etc.

Table 23.21 Comparison of Activities of Baseball and Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Baseball Activity	Boys' Baseball	Girls' Softball	IPR (95% CI)
Batting	**10.2%**	6.6%	1.54 (0.79-2.99)
Catching	6.5%	**12.2%**	**1.86 (1.00-3.45)**
Conditioning	2.0%	**2.2%**	1.08 (0.29-4.00)
Fielding a Batted Ball	11.4%	**11.6%**	1.02 (0.59-1.73)
Fielding a Thrown Ball	3.7%	**8.3%**	**2.26 (1.01-5.06)**
General Play	3.7%	**5.0%**	1.35 (0.55-3.35)
Other	5.3%	**5.5%**	1.04 (0.47-2.33)
Pitching	**16.3%**	8.8%	**1.85 (1.07-3.20)**
Running Bases	**19.6%**	13.3%	1.48 (0.94-2.32)
Sliding	7.8%	**9.9%**	1.28 (0.69-2.38)
Throwing	6.9%	**8.8%**	1.27 (0.66-2.46)
Unknown	6.5%	**7.7%**	1.18 (0.59-2.37)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

23.4 Boys' and Girls' Swimming

Table 23.22 Comparison of Boys' and Girls' Swimming Injury Rates, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Boys' Swimming	Girls' Swimming *	RR (95% CI) **
Total	**0.20**	0.08	2.40 (0.62-9.27)
Competition	--	**0.30**	--
Practice	**0.24**	0.03	7.18 (0.88-58.35)

* Throughout this chapter, rate ratios (RR) and injury proportion ratios (IPR) compare the gender with a higher injury rate/proportion (bolded) to the gender with a lower injury rate/proportion.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.23 Comparison of Body Sites of Boys' and Girls' Swimming Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Body Site	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Head/Face	14.3%	**33.3%**	2.33 (0.12-44.29)
Shoulder	**42.9%**	0.0%	--
Trunk	**14.3%**	0.0%	--
Hand/Wrist	**14.3%**	0.0%	--
Knee	0.0%	**33.3%**	--
Ankle	**14.3%**	0.0%	--
Systemic	0.0%	**33.3%**	--
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.24 Comparison of Diagnoses of Boys' and Girls' Swimming Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Strain/Sprain	**42.9%**	0.0%	--
Concussion	14.3%	**33.3%**	2.33 (0.12-44.29)
Other	42.9%	**66.7%**	1.56 (0.37-6.47)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.25 Most Common Boys' and Girls' Swimming Injury Diagnoses, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Ankle Other	**14.3%**	0.0%	--
Hand/Wrist Strain/Sprain	**14.3%**	0.0%	--
Head/Face Concussion	14.3%	**33.3%**	2.33 (0.12-44.29)
Knee Other	0.0%	**33.3%**	--
Shoulder Other	**28.6%**	0.0%	--
Shoulder Strain/Sprain	**14.3%**	0.0%	--
Systemic Other	0.0%	**33.3%**	--
Trunk Strain/Sprain	**14.3%**	0.0%	--

* Only includes diagnoses accounting for >5% of boys' or girls' swimming injuries.

Table 23.26 Comparison of Time Loss of Boys' and Girls' Swimming Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time Loss	Boys' Swimming	Girls' Swimming	IPR (95% CI)
1-2 Days	**14.3%**	0.0%	--
3-6 Days	**42.9%**	33.3%	1.29 (0.14-11.69)
7-9 Days	**14.3%**	0.0%	--
10-21 Days	**28.6%**	0.0%	--
>21 Days	0.0%	**33.3%**	--
Other	0.0%	**33.3%**	--
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.27 Comparison of Mechanisms of Boys' and Girls' Swimming Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Swimming Mechanism	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Contact with Another Person	**14.3%**	0.0%	--
Contact with Wall	14.3%	**33.3%**	2.33 (0.12-44.29)
N/A **	**71.4%**	66.7%	1.07 (0.35-3.31)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.
** Includes overuse, heat illness, conditioning, etc.

Table 23.28 Comparison of Activities of Boys' and Girls' Swimming Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Swimming Activity	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Conditioning	0.0%	**33.3%**	--
Flip Off Wall	14.3%	**33.3%**	2.33 (0.12-44.29)
Swimming	**57.1%**	33.3%	1.71 (0.21-13.97)
Touch Turn Off Wall	**14.3%**	0.0%	--
Unknown	**14.3%**	0.0%	--
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

23.5 Boys' and Girls' Track

Table 23.29 Comparison of Boys' and Girls' Track Injury Rates, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Boys' Track	Girls' Track *	RR (95% CI) **
Total	**1.16**	1.02	1.14 (0.90-1.44)
Competition	**2.35**	1.15	**2.05 (1.28-3.30)**
Practice	0.89	**0.99**	1.12 (0.84-1.48)

* Throughout this chapter, rate ratios (RR) and injury proportion ratios (IPR) compare the gender with a higher injury rate/proportion (bolded) to the gender with a lower injury rate/proportion.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.30 Comparison of Body Sites of Boys' and Girls' Track Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Body Site	Boys' Track	Girls' Track	IPR (95% CI)
Head/Face	1.7%	**1.8%**	1.10 (0.18-6.53)
Shoulder	**3.9%**	0.9%	4.25 (0.52-34.54)
Trunk	**7.7%**	4.5%	1.70 (0.63-4.62)
Arm/Elbow	0.6%	**0.9%**	1.65 (0.10-26.47)
Hand/Wrist	0.0%	**0.9%**	--
Hip/Thigh/Upper Leg	**41.4%**	30.9%	1.34 (0.96-1.87)
Knee	10.5%	**20.9%**	**1.99 (1.13-3.50)**
Lower Leg	22.1%	**23.6%**	1.07 (0.69-1.65)
Ankle	7.7%	**10.0%**	1.29 (0.61-2.76)
Foot	**3.3%**	2.7%	1.22 (0.31-4.80)
Systemic	1.1%	**2.7%**	2.47 (0.41-14.69)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.31 Comparison of Diagnoses of Boys' and Girls' Track Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Track	Girls' Track	IPR (95% CI)
Strain/Sprain	**56.9%**	54.5%	1.04 (0.84-1.29)
Contusion	**2.2%**	0.9%	2.43 (0.27-21.75)
Fracture	**4.4%**	0.9%	4.86 (0.61-38.82)
Concussion	0.6%	**1.8%**	3.29 (0.30-36.38)
Other	35.9%	**41.8%**	1.16 (0.87-1.57)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.32 Most Common Boys' and Girls' Track Injury Diagnoses, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Track	Girls' Track	IPR (95% CI)
Ankle Strain/Sprain	6.6%	**10.0%**	1.51 (0.69-3.32)
Hip/Thigh/Upper Leg Strain/Sprain	**35.9%**	26.4%	1.36 (0.94-1.97)
Knee Other	7.2%	**13.6%**	1.90 (0.94-3.85)
Knee Strain/Sprain	1.7%	**6.4%**	**3.84 (1.01-14.66)**
Lower Leg Other	**18.2%**	18.2%	1.00 (0.60-1.66)
Lower Leg Strain/Sprain	2.2%	**5.5%**	2.47 (0.71-8.62)
Trunk Strain/Sprain	**6.6%**	3.6%	1.82 (0.60-5.55)

* Only includes diagnoses accounting for >5% of boys' or girls' track injuries.

Table 23.33 Comparison of Time Loss of Boys' and Girls' Track Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time Loss	Boys' Track	Girls' Track	IPR (95% CI)
1-2 Days	**24.9%**	19.1%	1.30 (0.82-2.07)
3-6 Days	22.7%	**23.6%**	1.04 (0.68-1.61)
7-9 Days	**14.4%**	13.6%	1.05 (0.58-1.91)
10-21 Days	21.5%	**23.6%**	1.10 (0.71-1.70)
>21 Days	5.0%	**9.1%**	1.83 (0.76-4.38)
Other	**11.6%**	10.9%	1.06 (0.54-2.08)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.34 Comparison of Mechanisms of Boys' and Girls' Track Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Track Mechanism	Boys' Track	Girls' Track	IPR (95% CI)
Contact with Another Person	**0.6%**	0.0%	--
Contact with Field Equipment	2.4%	**4.2%**	1.77 (0.45-6.97)
Contact with Ground	**19.0%**	7.4%	**2.59 (1.18-5.66)**
Fall/Trip	**6.5%**	4.2%	1.56 (0.51-4.78)
N/A **	46.4%	**54.7%**	1.18 (0.92-1.51)
Other	10.1%	**10.5%**	1.04 (0.49-2.19)
Rotation Around Planted Foot/Inversion	5.4%	**8.4%**	1.57 (0.62-3.96)
Uneven Playing Surface	**2.4%**	1.1%	2.26 (0.25-20.23)
Unknown	7.1%	**9.5%**	1.33 (0.58-3.05)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.
** Includes overuse, heat illness, conditioning, etc.

Table 23.35 Comparison of Activities of Boys' and Girls' Track Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Track Activity	Boys' Track	Girls' Track	IPR (95% CI)
Baton Hand Off	**1.8%**	1.0%	1.70 (0.18-16.39)
Conditioning	1.8%	**3.1%**	1.76 (0.36-8.64)
Hit by Shot Put/Javelin/Discus	0.0%	**1.0%**	--
Jumping/Landing	12.4%	**13.5%**	1.09 (0.57-2.09)
Leaving Block	1.8%	**2.1%**	1.17 (0.20-6.98)
Other	**1.2%**	0.0%	--
Running	**62.1%**	61.5%	1.01 (0.83-1.23)
Running Hurdles	**5.3%**	5.2%	1.02 (0.35-2.98)
Throwing	**4.1%**	3.1%	1.33 (0.35-5.05)
Unknown	**8.3%**	7.3%	1.14 (0.47-2.73)
Warming Up	1.2%	**2.1%**	1.76 (0.25-12.45)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

23.6 Boys' and Girls' Cross Country

Table 23.36 Comparison of Boys' and Girls' Cross Country Injury Rates, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year

	Boys' Cross Country	Girls' Cross Country *	RR (95% CI) **
Total	0.72	**0.86**	1.21 (0.77-1.89)
Competition	0.61	**0.69**	1.14 (0.35-3.75)
Practice	0.74	**0.90**	1.22 (0.75-1.98)

* Throughout this chapter, rate ratios (RR) and injury proportion ratios (IPR) compare the gender with a higher injury rate/proportion (bolded) to the gender with a lower injury rate/proportion.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.37 Comparison of Body Sites of Boys' and Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Body Site	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Hip/Thigh/Upper Leg	5.0%	**27.8%**	**5.56 (1.26-24.49)**
Knee	**22.5%**	16.7%	1.35 (0.52-3.49)
Lower Leg	**35.0%**	27.8%	1.26 (0.63-2.51)
Ankle	**17.5%**	8.3%	2.10 (0.57-7.74)
Foot	**15.0%**	11.1%	1.35 (0.40-4.53)
Other	0.0%	**2.8%**	--
Systemic	5.0%	**5.6%**	1.11 (0.16-7.82)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.38 Comparison of Diagnoses of Boys' and Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Strain/Sprain	**32.5%**	27.8%	1.17 (0.58-2.37)
Contusion	**7.5%**	0.0%	--
Fracture	0.0%	**2.8%**	--
Other	60.0%	**69.4%**	1.16 (0.82-1.63)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.39 Most Common Boys' and Girls' Cross Country Injury Diagnoses, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Diagnosis	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Ankle Strain/Sprain	**17.5%**	8.3%	2.10 (0.57-7.74)
Foot Contusion	**7.5%**	0.0%	--
Foot Other	2.5%	**5.6%**	2.22 (0.20-24.80)
Hip/Thigh/Upper Leg Other	0.0%	**16.7%**	--
Hip/Thigh/Upper Leg Strain/Sprain	5.0%	**11.1%**	2.22 (0.42-11.86)
Knee Other	**20.0%**	16.7%	1.20 (0.45-3.20)
Lower Leg Other	**32.5%**	22.2%	1.46 (0.67-3.17)
Lower Leg Strain/Sprain	2.5%	**5.6%**	2.22 (0.20-24.80)
Systemic Other	5.0%	**5.6%**	1.11 (0.16-7.82)

* Only includes diagnoses accounting for >5% of boys' or girls' track injuries.

Table 23.40 Comparison of Time Loss of Boys' and Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Time Loss	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
1-2 Days	22.5%	**25.0%**	1.11 (0.49-2.54)
3-6 Days	**30.0%**	19.4%	1.54 (0.67-3.56)
7-9 Days	**22.5%**	22.2%	1.01 (0.43-2.39)
10-21 Days	**17.5%**	13.9%	1.26 (0.43-3.71)
>21 Days	2.5%	**2.8%**	1.11 (0.07-18.24)
Other	5.0%	**16.7%**	3.33 (0.69-16.04)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

Table 23.41 Comparison of Mechanisms of Boys' and Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Cross Country Mechanism	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Contact with Ground	**9.4%**	4.8%	1.97 (0.20-19.04)
N/A **	6.3%	**14.3%**	2.29 (0.39-13.28)
Other	**3.1%**	0.0%	--
Overuse	53.1%	**61.9%**	1.17 (0.72-1.89)
Rotation Around Planted Foot/Inversion	9.4%	**9.5%**	1.02 (0.17-5.90)
Uneven Surface	**18.8%**	9.5%	1.97 (0.42-9.31)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.
** Includes overuse, heat illness, conditioning, etc.

Table 23.42 Comparison of Activities of Boys' and Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2022-23 School Year *

Cross Country Activity	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Conditioning	6.7%	**9.5%**	1.43 (0.20-9.99)
Other	**6.7%**	0.0%	--
Running	**76.7%**	66.7%	1.15 (0.79-1.67)
Unknown	6.7%	**19.0%**	2.86 (0.54-15.02)
Warming Up	3.3%	**4.8%**	1.43 (0.09-23.73)
Total	***100.0%***	***100.0%***	**--**

* Totals are not always equal to 100% due to slight rounding or missing responses.

REPORTING INFORMATION ONLINE

XXIV. Reporter Demographics & Compliance

During the 2022-23 school year, 144 ATs enrolled to participate in the study. ATs were expected to report for every week in which they were enrolled. For example, an AT who joined the study as a replacement school in week 10 was not expected to report for weeks 1-9. Overall, 130 enrolled ATs reported an average of 39 study weeks. The majority of ATs (88%) reported for more than 20 weeks of the study. Internal validity checks of a 5% randomly selected sample of the 144 schools participating in the convenience sample during the 2022-23 academic year yielded 92.6% sensitivity, 95.8% specificity, a positive predictive value of 73.5%, and a negative predictive value of 99.0%. Internal validity checks are completed every other year. The next internal validity check will occur using data from the 2024-25 academic year.

Prior to the start of the study, participating ATs were asked to complete a short demographics survey. Over three-quarters (84%) of participating high schools were public schools, with the remainder being private. All ATs except for three provided services to their athletes five or more days each week. 72% of ATs participating during the 2022-23 school year had previously participated in the National High School Sports-Related Injury Surveillance Study.

An online “End of Season” survey gave all participating ATs (both in the original study as well as in the expanded study including those ATs who did not report any data) the opportunity to provide feedback on their experiences with the study. This survey was completed by 66 ATs (46%). Average reporting time burdens were 16 minutes for the weekly exposure report and 8 minutes for the injury report form. Using a 5-point Likert scale, RIO was overwhelmingly reported to be either very easy (68%) or somewhat easy (27%) to use (5 and 4 on the Likert scale, respectively), with ATs being either very satisfied (64%) or somewhat satisfied (20%) with the system (5 and 4 on the Likert scale, respectively). Suggestions provided by ATs, such as the addition or clarification of questions or answer choices, will be used to improve the National High School Sports-Related Injury Surveillance Study for the 2023-24 school year.

XXV. SUMMARY

High school sports play an important role in the adoption and maintenance of a physically active lifestyle among millions of US adolescents. Too often, injury prevention in this population is overlooked as sports-related injuries are thought to be unavoidable. In reality, sports-related injuries are largely preventable through the application of evidence-based preventive interventions. Such preventive interventions can include educational campaigns, introduction of new or improved protective equipment, rule changes, other policy changes, etc. The morbidity, mortality, and disability caused by high school sports-related injuries can be reduced through the development and implementation of improved injury diagnosis and treatment modalities as well as through effective prevention strategies. However, surveillance of exposure-based injury rates in a nationally representative sample of high school athletes and subsequent epidemiologic analysis of patterns of injury are needed to drive evidence-based prevention practices.

Prior to the implementation of the National High School Sports-Related Injury Surveillance Study, the study of high school sports-related injuries had largely been limited by an inability to calculate injury rates due to a lack of exposure data (i.e., frequency of participation in athletic activities including practice and competition), an inability to compare findings across groups (i.e., sports/activities, genders, schools, and levels of competition), or an inability to generalize findings from small non-representative samples. The value of national injury surveillance studies that collect injury, exposure, and risk factor data from representative samples has been well demonstrated by the National Collegiate Athletic Association's Injury Surveillance System (NCAA ISS), now known as the Injury Surveillance Program (ISP). Data collected by the NCAA has been used to develop preventive interventions including increased use of protective equipment and rule changes that have had proven success in reducing injuries among collegiate athletes.

For example, NCAA ISP data have been used to develop several interventions intended to reduce the number of preseason heat-related football injuries including the elimination of consecutive days of multiple practices, daily time limitations, and a gradual increase in equipment for conditioning and heat acclimation. Additionally, several committees have considered NCAA ISP data when making recommendations including the NCAA Committee on Competitive Safeguards and Medical Aspects of Sports' recommendation for mandatory eye protection in women's lacrosse, the NCAA Men's Ice Hockey Rules Committee's recommendation for stricter penalties for hitting from behind, checking into the boards, and not wearing a mouthpiece, and the NCAA Men's Basketball Rules Committee's discussions of widening the free-throw lane to prevent injuries related to player contact. Unfortunately, because an equivalent injury surveillance system to collect injury and exposure data from a nationally representative sample of high school athletes had not previously existed, injury prevention efforts targeted to reduce injury rates in this population were based largely upon data collected from collegiate athletes. This is unacceptable because distinct biophysiological differences (e.g., lower muscle mass, immature growth plates, etc.) means high school athletes are not merely miniature versions of their collegiate counterparts.

The successful implementation and maintenance of the National High School Sports-Related Injury Surveillance Study demonstrates the value of a national injury surveillance system at the high school level. Dr. Collins and her research staff are committed to maintaining a permanent national high school sports injury surveillance system.

While the health benefits of a physically active lifestyle including sports participation are undeniable, participants are at risk of injury because a certain endemic level of injury can be expected during any physical activity, especially those with a competitive component. However, injury rates among high school athletes should be reduced to the lowest possible level without discouraging adolescents from engaging in this important form of physical activity. This goal can be best accomplished by monitoring injury rates and patterns of injury among high school athletes over time; investigating the etiology of preventable injuries; and developing, implementing, and evaluating evidence-based preventive interventions. Surveillance systems such as the model used for this study are critical in achieving these goals.