Convenience Sample Summary Report

NATIONAL HIGH SCHOOL SPORTS-RELATED INJURY SURVEILLANCE STUDY

2019-20 School Year

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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.

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I. Introduction & Methodology

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 an over 7.9 million in 2018-19. 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 national 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 System 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. This surveillance has been conducted 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), the National High School Sports-Related Injury Surveillance System was able to be continued during the 2019-20 school year. Previous study years 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 System 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 System during the 2005-06 through 2013-14 school years and looks forward carrying on the important work of this surveillance system.

In March 2020, nearly all high school sports were suspended due to COVID-19. As a result, data reporting for winter and spring sports in the 2019-20 school year was incomplete. Furthermore, many ATs were unable to gain access to their records to complete retrospective data reporting; therefore,COVID-19 may have affected results for the entire 19-20 school year.

1.3 Specific Aims

The continuing objectives of this study are to maintain the National High School Sports- Related Injury Surveillance System among a nationally representative 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 System 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 and
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 two 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

The National Athletic Trainers' Association (NATA) membership list was used to identify eligible reporters - certified athletic trainers (AT) who provide care for high school athletes and who have a valid e-mail address. Each eligible reporter received an e-mail 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 (girls' field hockey, and lacrosse and boys' ice 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-$400 honorarium depending on the number of sports reported along with individualized injury reports following the study's conclusion.

As a result of the convenience sample methodology, different schools reported for the different sports of interest. See table below:

School Participation by Sport, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year

	# Schools in Random Sample	# Schools in Convenience Sample	# Schools Total*
Original Sports			
Football	88	34	122
Boys' Soccer	92	34	126
Girls' Soccer	90	32	122
Girls' Volleyball	88	34	122
Boys' Basketball	94	41	135
Girls' Basketball	95	42	137
Wrestling	83	35	118
Baseball	77	31	108
Softball	80	33	113
New Sports			
Field Hockey	23	21	44
Ice hockey	12	10	22
Boys' Lacrosse	37	14	51
Girls' Lacrosse	35	17	52
Boys' Swimming and Diving	38	16	54
Girls' Swimming and Diving	40	17	57
Boys' Track and Field	51	31	82
Girls' Track and Field	51	32	83
Boys' Cross Country	54	36	90
Girls' Cross Country	53	35	88
Cheerleading	48	30	78
Total	**99**	**59**	**158**

*Numbers only include schools who actually reported data for the 2019-20 school year.

1.6 Data Collection

Each AT that enrolled their school in National High School Sports-Related Injury Surveillance System received an email every Monday throughout the study period reminding them to enter their school's data into the surveillance system. Each participating AT was asked to complete 44 weekly exposure reports: one for each week from July 29, 2019 through May 31, 2020. Exposure reports collected exposure information (number of athlete-competitions and athlete-practices) and the number of reportable injuries sustained by student athletes of each sport that was 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.). This 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 events 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 (CI). 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 confidence intervals calculated. Following is an example of the IPR calculation comparing the proportion of male soccer concussions to the proportion of female 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. CI not including 1.00 were considered statistically significant. Injury rates over time were compared by running a linear regression and testing for trend.

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, 2019-20 School Year *†

	Event Type	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Overall	***Total***	***5,065***	***2,497,216***	***2.03***
	Competition	2,797	587,652	4.76
	Performance	11	31,828	0.35
	Practice	2,257	1,877,736	1.20
Boys' Football	***Total***	***1,900***	***489,178***	***3.88***
	Competition	1,201	91,413	13.14
	Practice	699	397,765	1.76
Boys' Soccer	***Total***	***413***	***212,594***	***1.94***
	Competition	274	65,636	4.17
	Practice	139	146,958	0.95
Girls' Soccer	***Total***	***395***	***159,527***	***2.48***
	Competition	266	47,157	5.64
	Practice	129	112,370	1.15
Girls' Volleyball	***Total***	***300***	***207,280***	***1.45***
	Competition	143	70,748	2.02
	Practice	157	136,532	1.15
Boys' Basketball	***Total***	***439***	***276,048***	***1.59***
	Competition	238	83,449	2.85
	Practice	201	192,599	1.04
Girls' Basketball	***Total***	***397***	***191,628***	***2.07***
	Competition	245	59,060	4.15
	Practice	152	132,568	1.15
Boys' Wrestling	***Total***	***499***	***185,060***	***2.70***
	Competition	225	47,063	4.78
	Practice	274	137,997	1.99

Boys' Baseball	***Total***	***48***	***48,808***	***0.98***
	Competition	9	6,957	1.29
	Practice	39	41,851	0.93
Girls' Softball	***Total***	***39***	***37,699***	***1.03***
	Competition	12	7,629	1.57
	Practice	27	30,070	0.90
Girls' Field Hockey	***Total***	***96***	***65,285***	***1.47***
	Competition	54	22,482	2.40
	Practice	42	42,803	0.98
Boys' Ice Hockey	***Total***	***72***	***45,400***	***1.59***
	Competition	59	16,043	3.68
	Practice	13	29,357	0.44
Boys' Lacrosse	***Total***	***65***	***25,021***	***2.60***
	Competition	16	2,859	5.60
	Practice	49	22,162	2.21
Girls' Lacrosse	***Total***	***33***	***18,984***	***1.74***
	Competition	6	2,022	2.97
	Practice	27	16,962	1.59
Boys' Swimming	***Total***	***10***	***57,767***	***0.17***
	Competition	5	10,366	0.48
	Practice	5	47,401	0.11
Girls' Swimming	***Total***	***32***	***68,455***	***0.47***
	Competition	3	12,005	0.25
	Practice	29	56,450	0.51
Boys' Track	***Total***	***42***	***48,464***	***0.87***
	Competition	4	3,574	1.12
	Practice	38	44,890	0.85

Girls' Track	***Total***	***47***	***43,302***	***1.09***
	Competition	5	3,629	1.38
	Practice	42	39,673	1.06
Boys' Cross Country	***Total***	***74***	***100,016***	***0.74***
	Competition	14	16,374	0.86
	Practice	60	83,642	0.72
Girls' Cross Country	***Total***	***67***	***80,595***	***0.83***
	Competition	12	13,062	0.92
	Practice	55	67,533	0.81
Cheerleading	***Total***	***97***	***136,105***	***0.71***
	Competition	6	6,124	0.98
	Performance	11	31,828	0.35
	Practice	80	98,153	0.82

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* Only includes injuries resulting in ≥1 day time loss.
†**The suspension of sports due to COVID-19 may have affected these results.**

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Table 2.2 Proportion of Injuries Resulting in Time Loss, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

	< 1 Day Time Loss	≥ 1 Day Time Loss	Time Loss Data Missing	Total
	%	%	%	%
Overall	***2.5%***	***93.4%***	***4.1%***	***100.0%***
Boys' Football	2.1%	94.7%	3.2%	100.0%
Boys' Soccer	2.9%	91.6%	5.5%	100.0%
Girls' Soccer	3.5%	92.1%	4.4%	100.0%
Girls' Volleyball	1.3%	96.2%	2.6%	100.0%
Boys' Basketball	2.9%	92.0%	5.0%	100.0%
Girls' Basketball	2.8%	92.5%	4.7%	100.0%
Boys' Wrestling	1.9%	94.7%	3.4%	100.0%
Boys' Baseball	5.5%	87.3%	7.3%	100.0%
Girls' Softball	2.1%	83.0%	14.9%	100.0%
Girls' Field Hockey	5.7%	90.6%	3.8%	100.0%
Boys' Ice Hockey	2.6%	93.5%	3.9%	100.0%
Boys' Lacrosse	1.4%	91.5%	7.0%	100.0%
Girls' Lacrosse	2.8%	91.7%	5.6%	100.0%
Boys' Swimming	15.4%	76.9%	7.7%	100.0%
Girls' Swimming	0.0%	0.0%	0.0%	0.0%
Boys' Track	2.1%	89.4%	8.5%	100.0%
Girls' Track	0.0%	0.0%	0.0%	0.0%
Boys' Cross Country	0.0%	97.4%	2.6%	100.0%
Girls' Cross Country	2.7%	91.8%	5.5%	100.0%
Cheerleading	5.5%	89.0%	5.5%	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.

†**The suspension of sports due to COVID-19 may have affected these results.**

Table 2.3 Demographic Characteristics of Injured Athletes by Sex, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

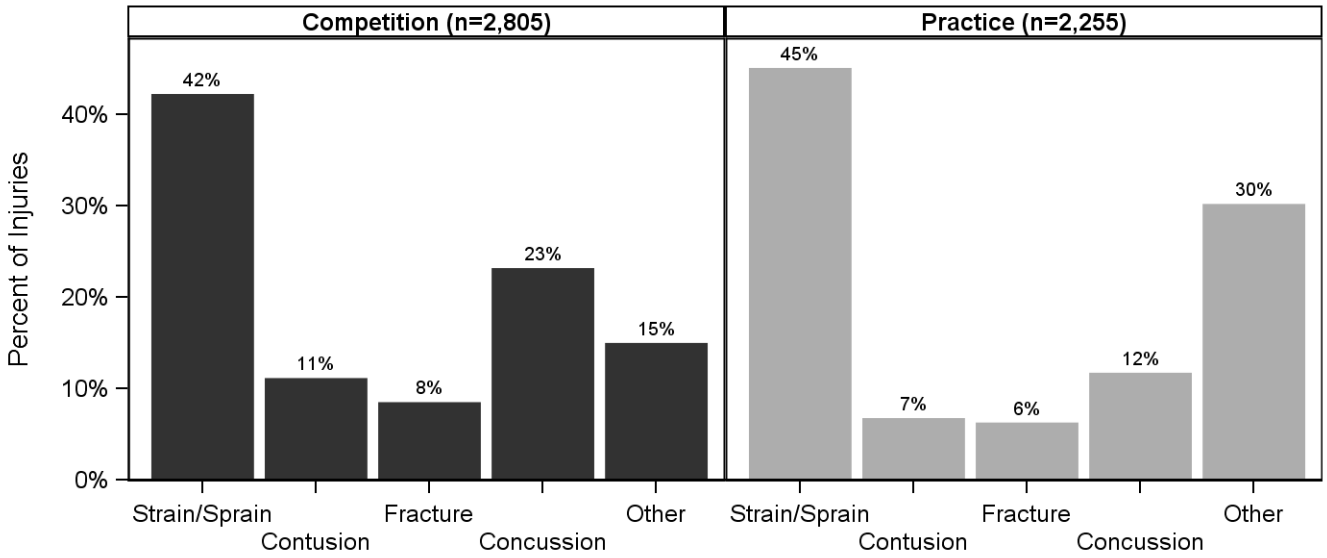
	Male		Female	
Year in School	**n**	**%**	**n**	**%**
Freshman	773	22.8%	372	25.9%
Sophomore	801	23.6%	409	28.5%
Junior	837	24.7%	339	23.6%
Senior	984	29.0%	314	21.9%
Total ***	***3,395***	***100.0%***	***1,434***	***100.0%***

Age (years)		
Minimum	12	13
Maximum	19	18
Mean (SD)	15.9 (1.2)	15.6 (1.2)
n	2,561	1,085

BMI		
Minimum	15.4	14.4
Maximum	45.7	42.0
Mean (SD)	24.5 (4.4)	22.2 (3.4)
n	1,895	785

* All analyses in this report present unweighted data.
** Throughout this report, totals and n's represent the total unweighted 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.
†**The suspension of sports due to COVID-19 may have affected these results.**

Figure 2.1 Injury Diagnosis by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year†



* Competition includes cheerleading performance related injuries.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 2.4 Body Site of Injury by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	726	25.9%	328	14.5%	1,054	20.8%
Ankle	531	18.9%	372	16.5%	903	17.8%
Knee	404	14.4%	306	13.6%	710	14.0%
Hip/Thigh/Upper Leg	190	6.8%	318	14.1%	508	10.0%
Hand/Wrist	253	9.0%	170	7.5%	423	8.4%
Shoulder	223	7.9%	160	7.1%	383	7.6%
Trunk	129	4.6%	158	7.0%	287	5.7%
Lower Leg	90	3.2%	162	7.2%	252	5.0%
Arm/Elbow	85	3.0%	106	4.7%	191	3.8%
Foot	70	2.5%	103	4.6%	173	3.4%
Other	67	2.4%	48	2.1%	115	2.3%
Neck	39	1.4%	24	1.1%	63	1.2%
Total	***2,807***	***100.0%***	***2,255***	***100.0%***	***5,062***	***100.0%***

* Competition includes cheerleading performance related injuries. Totals and n's are not always equal due to slight rounding or missing responses.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 2.5 Most Commonly Injured Ankle Structures, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

	Male (n=552)		Female (n=320)		Overall (n=872)	
Ankle Ligament Injuries	**n**	**%**	**n**	**%**	**n**	**%**
Anterior Talofibular Ligament	401	72.6%	233	72.8%	634	72.7%
Calcaneofibular Ligament	145	26.3%	105	32.8%	250	28.7%
Anterior Tibiofibular Ligament	106	19.2%	46	14.4%	152	17.4%
Posterior Talofibular Ligament	49	8.9%	36	11.3%	85	9.7%
Deltoid Ligament	39	7.1%	15	4.7%	54	6.2%
Posterior Tibiofibular Ligament	17	3.1%	9	2.8%	26	3.0%

* Multiple ligament responses allowed per injury report. Totals and n's are not always equal due to slight rounding or missing responses.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 2.6 Most Commonly Injured Knee Structures, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

	Male (n=463)		Female (n=222)		Overall (n=685)	
Knee Ligament Injuries	**n**	**%**	**n**	**%**	**n**	**%**
Patella and/or Patellar Tendon	127	27.4%	56	25.2%	183	26.7%
Medial Collateral Ligament	123	26.6%	47	21.2%	170	24.8%
Anterior Cruciate Ligament	89	19.2%	58	26.1%	147	21.5%
Torn Cartilage (Meniscus)	72	15.6%	37	16.7%	109	15.9%
Lateral Collateral Ligament	26	5.6%	11	5.0%	37	5.4%
Posterior Cruciate Ligament	10	2.2%	3	1.4%	13	1.9%

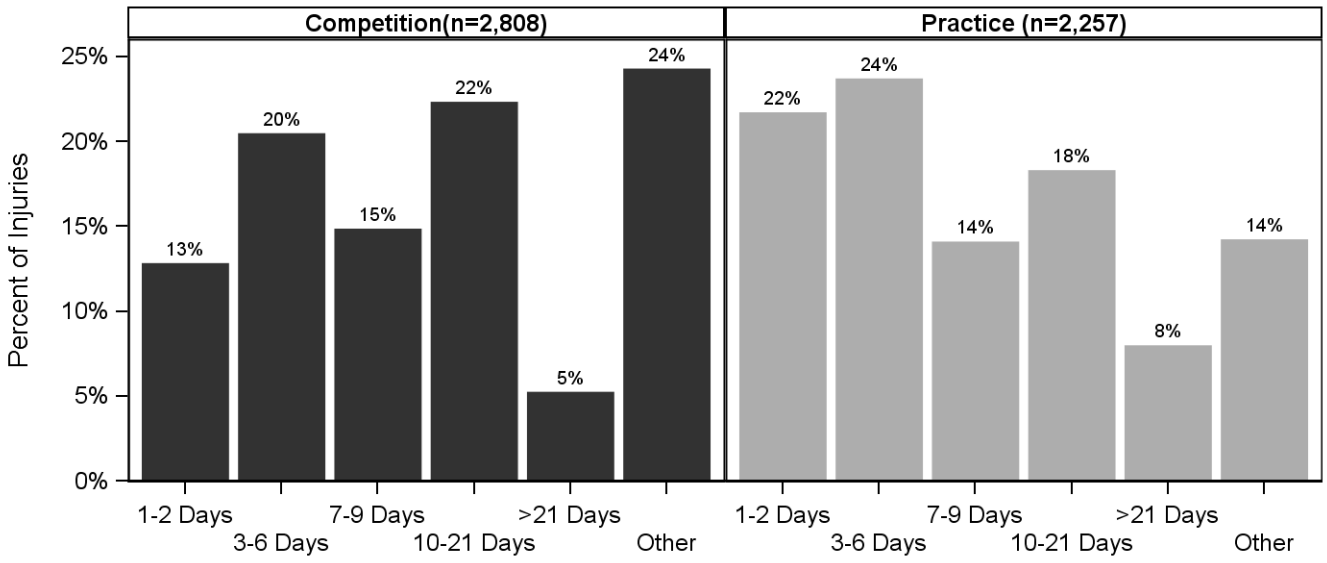
* Multiple ligament responses allowed per injury report. Totals and n's are not always equal due to slight rounding or missing responses.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 2.7 Ten Most Common Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

	Competition (n=2,804)		Practice (n=2,253)		Overall (n=5,057)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	649	23.1%	263	11.7%	912	18.0%
Ankle Strain/Sprain	484	17.3%	336	14.9%	820	16.2%
Hip/Thigh/Upper Leg Strain/Sprain	111	4.0%	251	11.1%	362	7.2%
Knee Strain/Sprain	226	8.1%	98	4.3%	324	6.4%
Knee Other	108	3.9%	168	7.5%	276	5.5%
Shoulder Other	114	4.1%	77	3.4%	191	3.8%
Hand/Wrist Fracture	111	4.0%	73	3.2%	184	3.6%
Shoulder Strain/Sprain	95	3.4%	74	3.3%	169	3.3%
Hand/Wrist Strain/Sprain	89	3.2%	64	2.8%	153	3.0%
Trunk Strain/Sprain	52	1.9%	79	3.5%	131	2.6%

* Competition includes cheerleading performance related injuries.
†**The suspension of sports due to COVID-19 may have affected these results.**

Figure 2.2 Time Loss by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year†



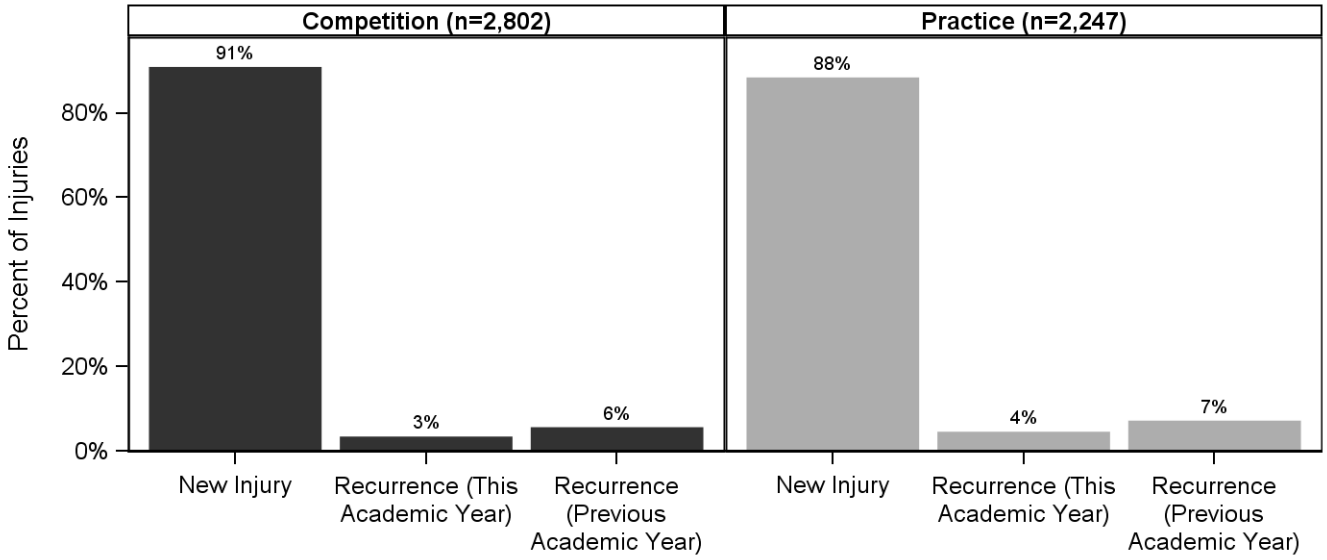
* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play. Competition includes cheerleading performance related injuries
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 2.8 Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	226	8.1%	100	4.5%	326	6.5%
Did Not Require Surgery	2,552	91.9%	2,139	95.5%	4,691	93.5%
Total	***2,778***	***100.0%***	***2,239***	***100.0%***	***5,017***	***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, 2019-20 School Year†



* Competition includes cheerleading performance related injuries.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 2.9 Time during Season of Injury, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

Time in Season	n	%
Preseason	1,095	21.6%
Regular Season	3,747	74.1%
Post Season	207	4.1%
Unknown/Other	11	0.2%
Total	***5,060***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 2.10 Practice-Related Variables, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

Time in Practice	n	%
First 1/2 Hour	191	8.7%
Second 1/2 Hour	361	16.5%
1-2 Hours into Practice	943	43.1%
>2 Hours into Practice	69	3.2%
Unknown	624	28.5%
Total	***2,188***	***100.0%***

* Totals and n's are not always equal due to slight rounding or missing responses.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 2.11 Methods for Injury Evaluation and Assessment, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

Injuries Evaluated By:	n=5,065	%
Certified Athletic Trainer	4,734	93.5%
Orthopedic Physician	1,013	20.0%
Physician/Pediatrician	931	18.4%
Other	83	1.6%
Physician's Assistant	58	1.1%
Chiropractor	35	0.7%
Nurse Practitioner	26	0.5%
Neurologist/Neuropsychologist	25	0.5%
Dentist/Oral Surgeon	3	0.1%

Assessment Method:	n=5,065	%
Evaluation	4,922	97.2%
X-Ray	1,749	34.5%
MRI	543	10.7%
CT-Scan	75	1.5%
Other	46	0.9%
Blood Work/Lab Test	36	0.7%

* Multiple responses allowed per injury report. Totals and n's are not always equal due to slight rounding or missing responses.
†**The suspension of sports due to COVID-19 may have affected these results.**

III. Boys' Football Injury Epidemiology

Table 3.1 Football Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***1,900***	***621,653***	***3.06***
Competition	1,201	111,867	10.74
Practice	699	509,786	1.37

* All analyses in this report present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 3.2 Demographic Characteristics of Injured Football Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	404	21.7%
Sophomore	444	23.9%
Junior	455	24.5%
Senior	557	29.9%
Total	***1,860***	***100.0%***

Age (years)	
Minimum	13
Maximum	19
Mean (SD)	15.9 (1.2)
n	1,416

BMI	
Minimum	15.4
Maximum	45.7
Mean (SD)	25.7 (4.7)
n	982

* 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, 2019-20 School Year

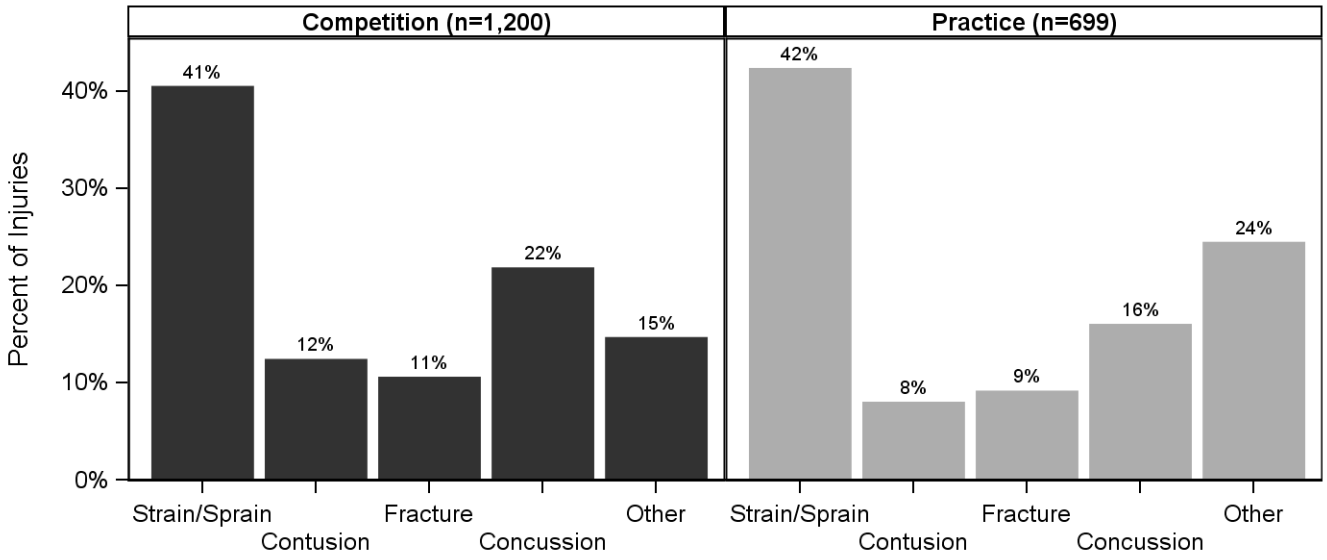


Table 3.3 Body Site of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

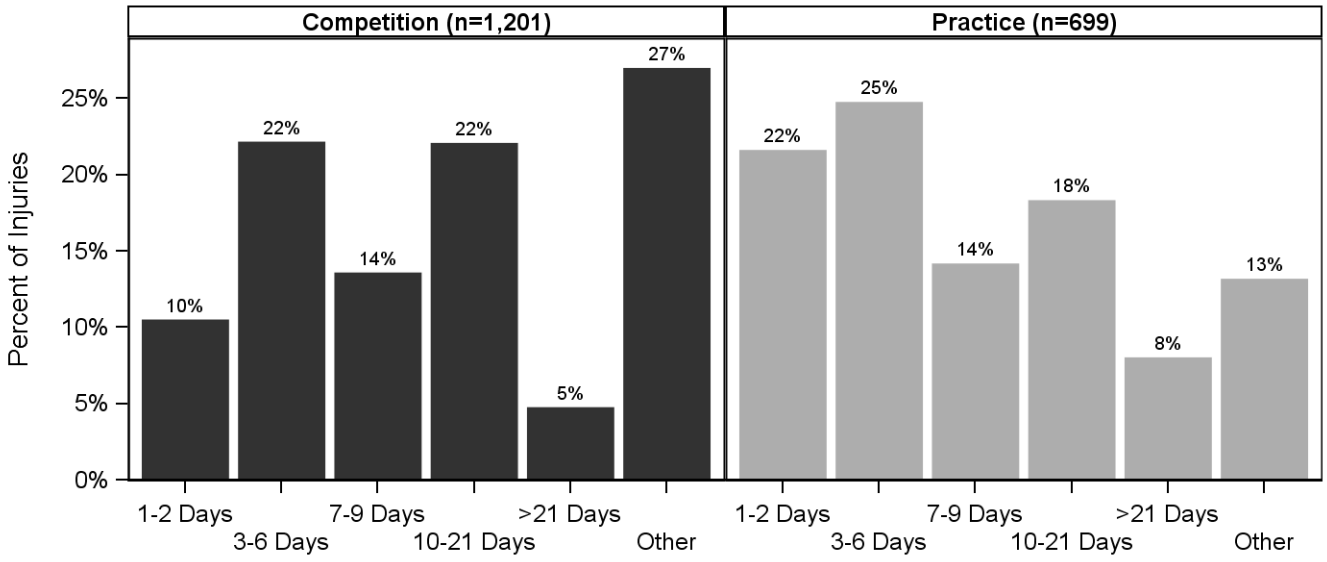
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	269	22.4%	117	16.8%	386	20.3%
Knee	191	15.9%	98	14.0%	289	15.2%
Ankle	191	15.9%	87	12.5%	278	14.6%
Hand/Wrist	125	10.4%	85	12.2%	210	11.1%
Shoulder	134	11.2%	64	9.2%	198	10.4%
Hip/Thigh/Upper Leg	72	6.0%	79	11.3%	151	8.0%
Trunk	61	5.1%	45	6.4%	106	5.6%
Arm/Elbow	39	3.2%	37	5.3%	76	4.0%
Lower Leg	36	3.0%	26	3.7%	62	3.3%
Other	38	3.2%	20	2.9%	58	3.1%
Foot	22	1.8%	29	4.2%	51	2.7%
Neck	23	1.9%	11	1.6%	34	1.8%
Total	***1,201***	***100.0%***	***698***	***100.0%***	***1,899***	***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, 2019-20 School Year

	Competition (n=1,200)		Practice (n=698)		Overall (n=1,898)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	261	21.8%	111	15.9%	372	19.6%
Ankle Strain/Sprain	170	14.2%	81	11.6%	251	13.2%
Knee Strain/Sprain	113	9.4%	42	6.0%	155	8.2%
Hip/Thigh/Upper Leg Strain/Sprain	35	2.9%	67	9.6%	102	5.4%
Shoulder Other	69	5.8%	32	4.6%	101	5.3%
Hand/Wrist Fracture	59	4.9%	39	5.6%	98	5.2%
Shoulder Strain/Sprain	59	4.9%	27	3.9%	86	4.5%
Knee Other	43	3.6%	42	6.0%	85	4.5%
Hand/Wrist Strain/Sprain	38	3.2%	31	4.4%	69	3.6%
Hip/Thigh/Upper Leg Contusion	33	2.8%	8	1.1%	41	2.2%

Figure 3.2 Time Loss of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	125	10.5%	41	5.9%	166	8.8%
Did Not Require Surgery	1,065	89.5%	653	94.1%	1,718	91.2%
Total	***1,190***	***100.0%***	***694***	***100.0%***	***1,884***	***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, 2019-20 School Year

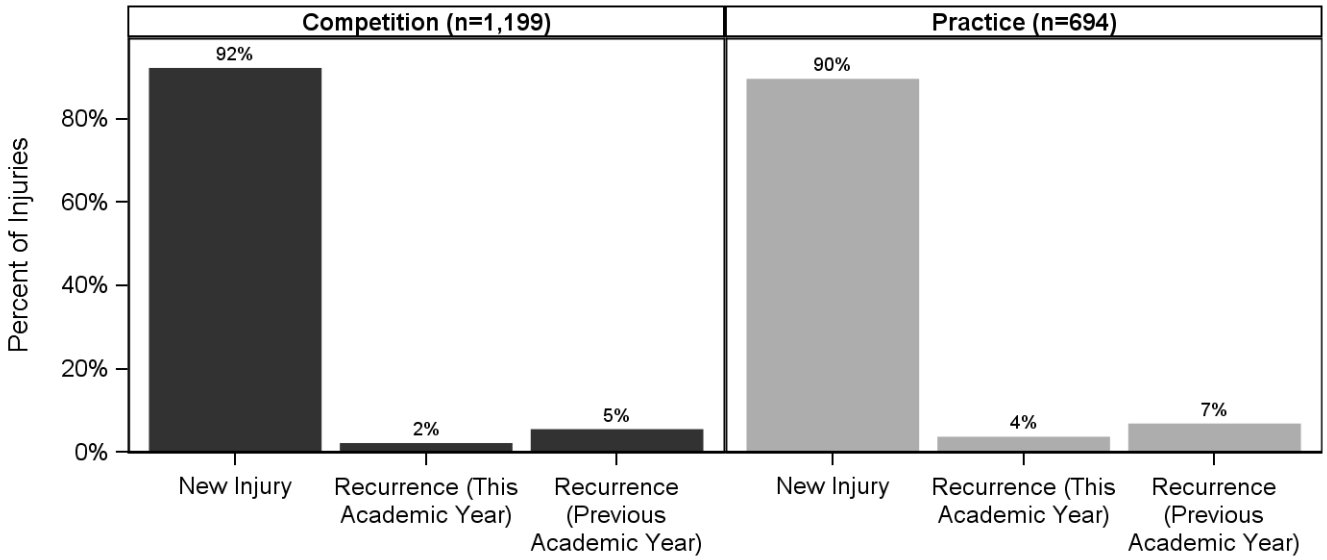


Table 3.6 Time during Season of Football Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	381	20.1%
Regular Season	1,425	75.1%
Post Season	86	4.5%
Unknown/Other	6	0.3%
Total	***1,898***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	7	0.6%
First Quarter	138	12.5%
Second Quarter	322	29.2%
Third Quarter	349	31.6%
Fourth Quarter	286	25.9%
Overtime	2	0.2%
Total	***1,104***	***100.0%***

Field Location		
End Zone	25	2.2%
Red Zone (20 Yard Line to Goal Line)	185	16.3%
Between the 20 Yard Lines	627	55.3%
Off the Field	9	0.8%
Unknown	288	25.4%
Total	***1,134***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	49	7.3%
Second 1/2 Hour	108	16.1%
1-2 Hours into Practice	339	50.4%
>2 Hours into Practice	33	4.9%
Unknown	143	21.3%
Total	***672***	***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, 2019-20 School Year

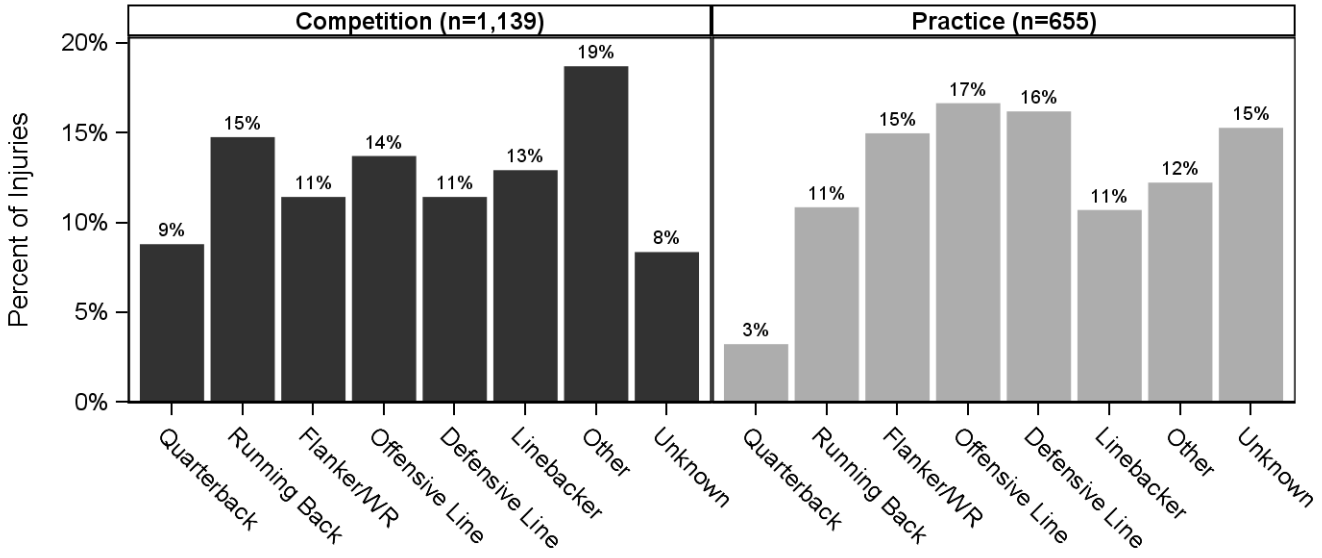


Table 3.9 Activities Leading to Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Being Tackled	357	31.0%	92	14.0%	449	24.8%
Tackling	265	23.0%	84	12.8%	349	19.3%
Blocking	169	14.7%	112	17.0%	281	15.5%
Unknown	101	8.8%	75	11.4%	176	9.7%
Being Blocked	91	7.9%	48	7.3%	139	7.7%
N/A **	17	1.5%	94	14.3%	111	6.1%
Rotation Around a Planted Foot/Inversion	43	3.7%	48	7.3%	91	5.0%
Stepped On, Fell On or Kicked	54	4.7%	30	4.6%	84	4.6%
Other	38	3.3%	44	6.7%	82	4.5%
Contact with Ball	8	0.7%	15	2.3%	23	1.3%
Uneven Playing Surface	8	0.7%	8	1.2%	16	0.9%
Contact with Blocking Sled/Dummy	0	0.0%	8	1.2%	8	0.4%
Total	***1,151***	***100.0%***	***658***	***100.0%***	***1,809***	***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, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Being Blocked	46	6.1%	24	12.0%	10	5.5%	40	11.4%	19	5.9%
Being Tackled	159	21.2%	70	35.0%	66	36.1%	96	27.3%	58	17.9%
Blocking	127	17.0%	23	11.5%	29	15.8%	60	17.0%	41	12.7%
Contact with Ball	8	1.1%	3	1.5%	4	2.2%	0	0.0%	8	2.5%
Contact with Blocking Sled/Dummy	3	0.4%	1	0.5%	1	0.5%	2	0.6%	1	0.3%
N/A **	51	6.8%	2	1.0%	0	0.0%	1	0.3%	57	17.6%
Other	42	5.6%	5	2.5%	14	7.7%	4	1.1%	17	5.2%
Rotation Around a Planted Foot/Inversion	71	9.5%	1	0.5%	3	1.6%	1	0.3%	15	4.6%
Stepped On, Fell On or Kicked	53	7.1%	17	8.5%	8	4.4%	1	0.3%	5	1.5%
Tackling	123	16.4%	39	19.5%	38	20.8%	81	23.0%	68	21.0%
Uneven Playing Surface	13	1.7%	1	0.5%	0	0.0%	0	0.0%	2	0.6%
Unknown	53	7.1%	14	7.0%	10	5.5%	66	18.8%	33	10.2%
Total	***749***	***100.0%***	***200***	***100.0%***	***183***	***100.0%***	***352***	***100.0%***	***324***	***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

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Table 4.1 Boys' Soccer Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***413***	***212,594***	***1.94***
Competition	274	65,636	4.17
Practice	139	146,958	0.95

* All analyses in this report present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 4.2 Demographic Characteristics of Injured Boys' Soccer Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	82	20.7%
Sophomore	85	21.4%
Junior	109	27.5%
Senior	121	30.5%
Total	***397***	***100.0%***

Age (years)	
Minimum	13
Maximum	19
Mean (SD)	15.9 (1.2)
n	299

BMI	
Minimum	16.5
Maximum	33.9
Mean (SD)	22.5 (2.8)
n	216

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

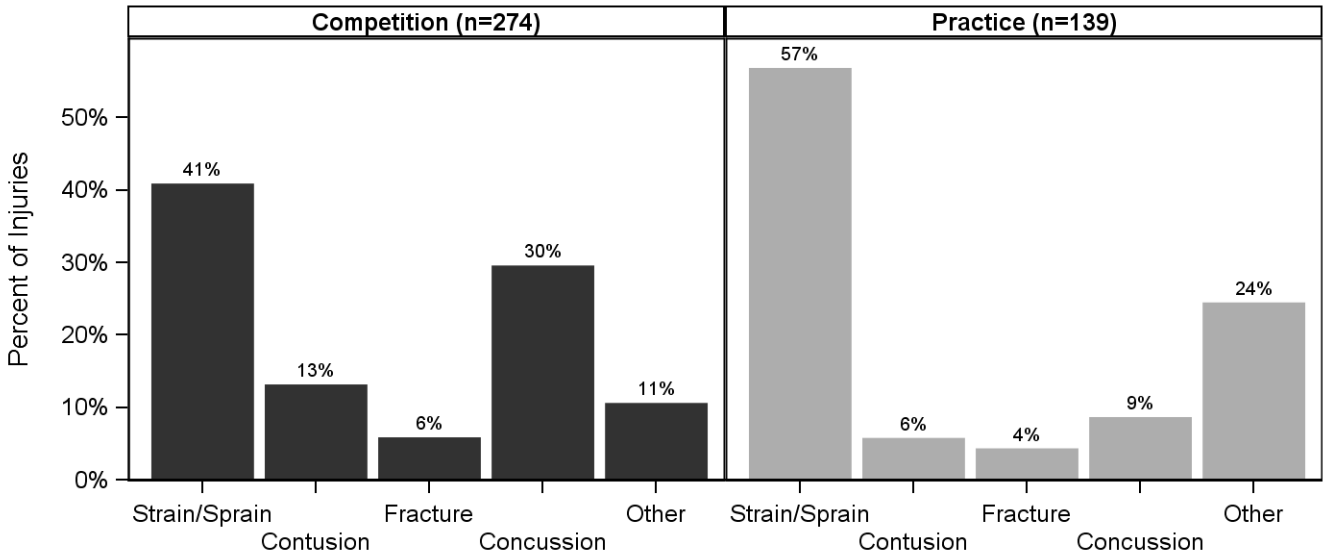


Table 4.3 Body Site of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

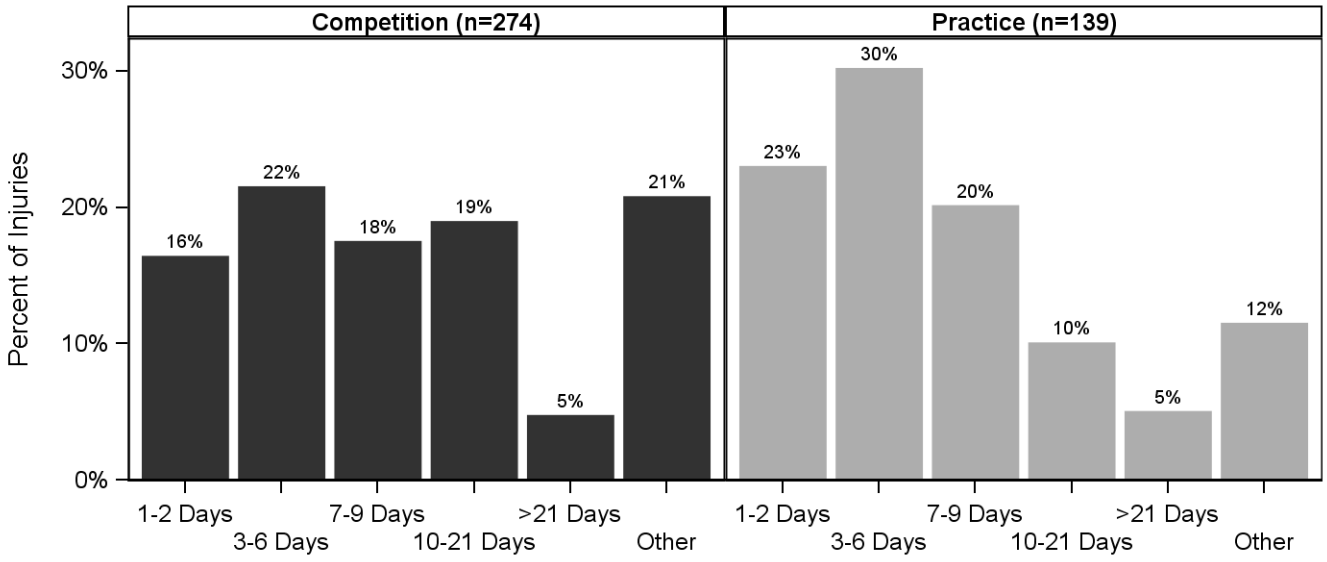
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	96	35.2%	13	9.4%	109	26.5%
Hip/Thigh/Upper Leg	38	13.9%	47	33.8%	85	20.6%
Ankle	57	20.9%	26	18.7%	83	20.1%
Knee	24	8.8%	10	7.2%	34	8.3%
Lower Leg	17	6.2%	15	10.8%	32	7.8%
Foot	10	3.7%	9	6.5%	19	4.6%
Shoulder	6	2.2%	7	5.0%	13	3.2%
Hand/Wrist	8	2.9%	3	2.2%	11	2.7%
Trunk	7	2.6%	4	2.9%	11	2.7%
Other	6	2.2%	2	1.4%	8	1.9%
Arm/Elbow	3	1.1%	3	2.2%	6	1.5%
Neck	1	0.4%	0	0.0%	1	0.2%
Total	***273***	***100.0%***	***139***	***100.0%***	***412***	***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, 2019-20 School Year

	Competition (n=273)		Practice (n=139)		Overall (n=412)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	81	29.7%	12	8.6%	93	22.6%
Ankle Strain/Sprain	51	18.7%	20	14.4%	71	17.2%
Hip/Thigh/Upper Leg Strain/Sprain	26	9.5%	42	30.2%	68	16.5%
Knee Strain/Sprain	14	5.1%	3	2.2%	17	4.1%
Lower Leg Other	3	1.1%	9	6.5%	12	2.9%
Lower Leg Strain/Sprain	6	2.2%	6	4.3%	12	2.9%
Head/Face Other	9	3.3%	1	0.7%	10	2.4%
Hip/Thigh/Upper Leg Other	5	1.8%	4	2.9%	9	2.2%
Knee Other	5	1.8%	4	2.9%	9	2.2%
Hip/Thigh/Upper Leg Contusion	7	2.6%	1	0.7%	8	1.9%

Figure 4.2 Time Loss of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	11	4.1%	1	0.7%	12	2.9%
Did Not Require Surgery	259	95.9%	137	99.3%	396	97.1%
Total	***270***	***100.0%***	***138***	***100.0%***	***408***	***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, 2019-20 School Year

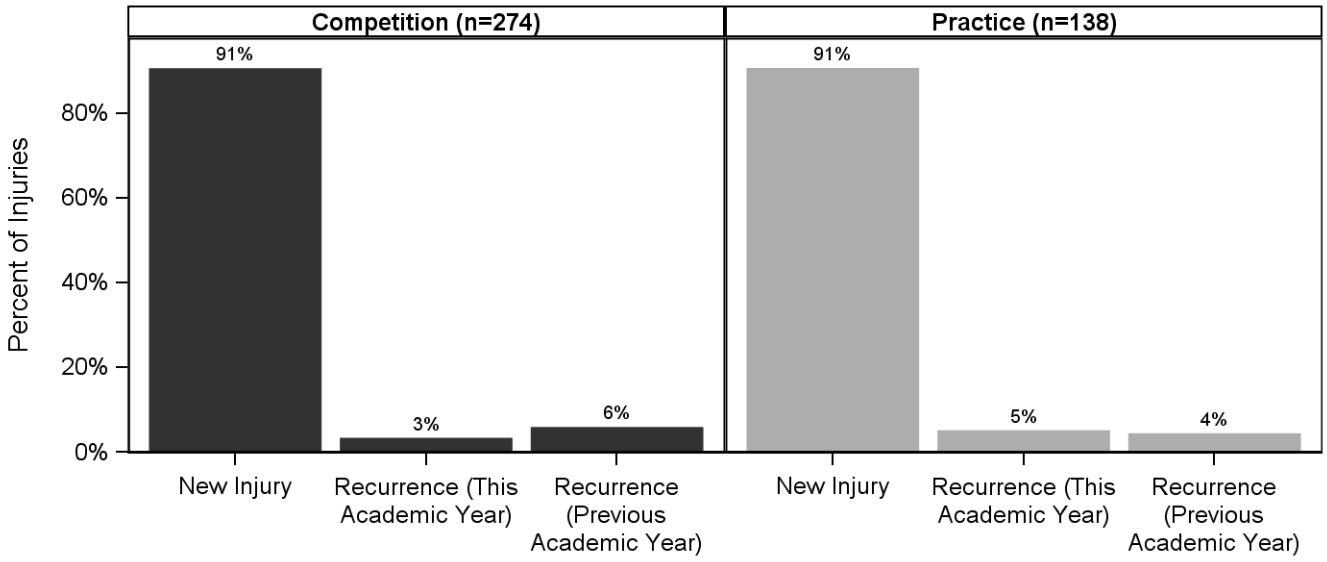


Table 4.6 Time during Season of Boys' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	89	21.5%
Regular Season	301	72.9%
Post Season	23	5.6%
Total	***413***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	5	2.0%
First Half	73	29.0%
Second Half	134	53.2%
Unknown	40	15.9%
Total	***252***	***100.0%***

Field Location		
Goal Box (Defense)	41	16.3%
Goal Box (Offense)	18	7.2%
Side of Goal Box (Defense)	9	3.6%
Side of Goal Box (Offense)	10	4.0%
Top of Goal Box Extended to Center Line (Offense)	37	14.7%
Top of Goal Box Extended to Center Line (Defense)	34	13.5%
Off the Field	6	2.4%
Unknown	96	38.2%
Total	***251***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	14	10.3%
Second 1/2 Hour	20	14.7%
1-2 Hours into Practice	62	45.6%
>2 Hours into Practice	3	2.2%
Unknown	37	27.2%
Total	***136***	***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, 2019-20 School Year

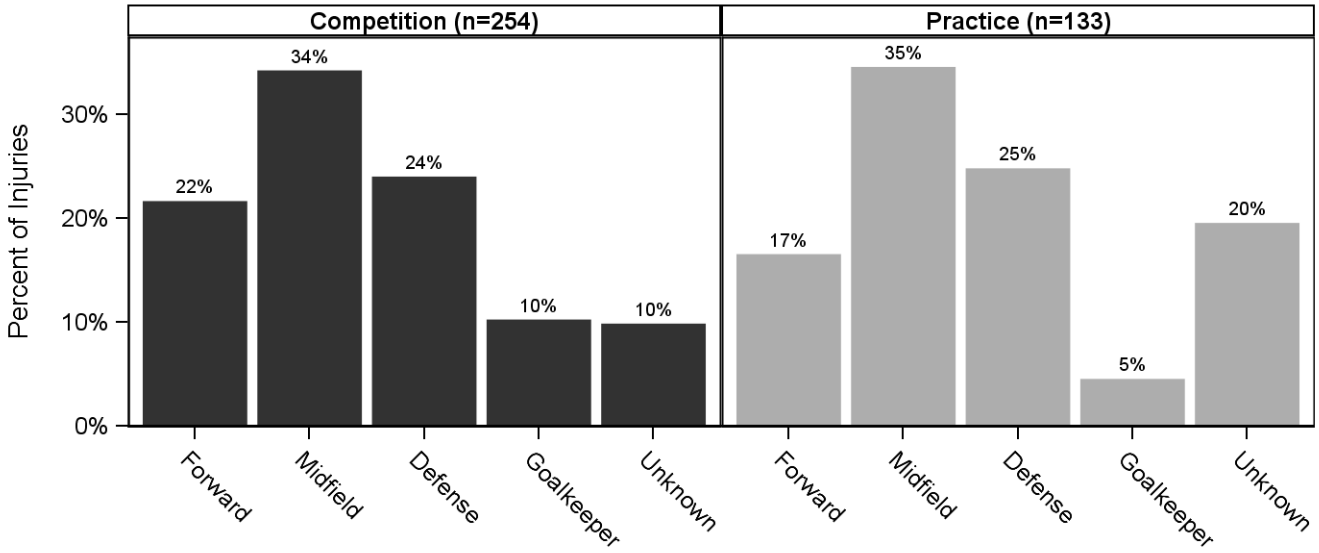


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Table 4.9 Activities Leading to Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	49	19.3%	60	44.8%	109	28.1%
Unknown	37	14.6%	17	12.7%	54	13.9%
Defending	39	15.4%	5	3.7%	44	11.3%
Heading Ball	27	10.6%	6	4.5%	33	8.5%
Goaltending	25	9.8%	2	1.5%	27	7.0%
Chasing Loose Ball	18	7.1%	6	4.5%	24	6.2%
Ball Handling/Dribbling	18	7.1%	4	3.0%	22	5.7%
Receiving Pass	16	6.3%	2	1.5%	18	4.6%
Shooting	8	3.1%	7	5.2%	15	3.9%
Conditioning	0	0.0%	12	9.0%	12	3.1%
Other	4	1.6%	7	5.2%	11	2.8%
Passing	8	3.1%	3	2.2%	11	2.8%
Blocking Shot	4	1.6%	3	2.2%	7	1.8%
Attempting a Slide Tackle	1	0.4%	0	0.0%	1	0.3%
Total	***254***	***100.0%***	***134***	***100.0%***	***388***	***100.0%***

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

Table 4.10 Activity Resulting in Boys' Soccer Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Attempting a Slide Tackle	1	0.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ball Handling/Dribbling	15	8.7%	4	9.3%	0	0.0%	1	1.1%	2	3.3%
Blocking Shot	4	2.3%	0	0.0%	0	0.0%	1	1.1%	2	3.3%
Chasing Loose Ball	12	6.9%	5	11.6%	2	9.1%	2	2.2%	3	4.9%
Conditioning	6	3.5%	1	2.3%	0	0.0%	0	0.0%	5	8.2%
Defending	14	8.1%	5	11.6%	2	9.1%	17	19.1%	6	9.8%
General Play	57	32.9%	9	20.9%	6	27.3%	11	12.4%	26	42.6%
Goaltending	3	1.7%	6	14.0%	2	9.1%	15	16.9%	1	1.6%
Heading Ball	3	1.7%	0	0.0%	5	22.7%	23	25.8%	2	3.3%
Other	5	2.9%	0	0.0%	1	4.5%	2	2.2%	3	4.9%
Passing	8	4.6%	1	2.3%	0	0.0%	1	1.1%	1	1.6%
Receiving Pass	11	6.4%	4	9.3%	1	4.5%	2	2.2%	0	0.0%
Shooting	13	7.5%	2	4.7%	0	0.0%	0	0.0%	0	0.0%
Unknown	21	12.1%	6	14.0%	3	13.6%	14	15.7%	10	16.4%
Total	***173***	***100.0%***	***43***	***100.0%***	***22***	***100.0%***	***89***	***100.0%***	***61***	***100.0%***

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

V. Girls' Soccer Injury Epidemiology

Table 5.1 Girls' Soccer Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***395***	***159,527***	***2.48***
Competition	266	47,157	5.64
Practice	129	112,370	1.15

* All analyses in this report present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 5.2 Demographic Characteristics of Injured Girls' Soccer Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	92	23.8%
Sophomore	116	30.0%
Junior	79	20.4%
Senior	100	25.8%
Total	***387***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.6 (1.2)
n	281

BMI	
Minimum	16.2
Maximum	32.5
Mean (SD)	22.1 (3.0)
n	179

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

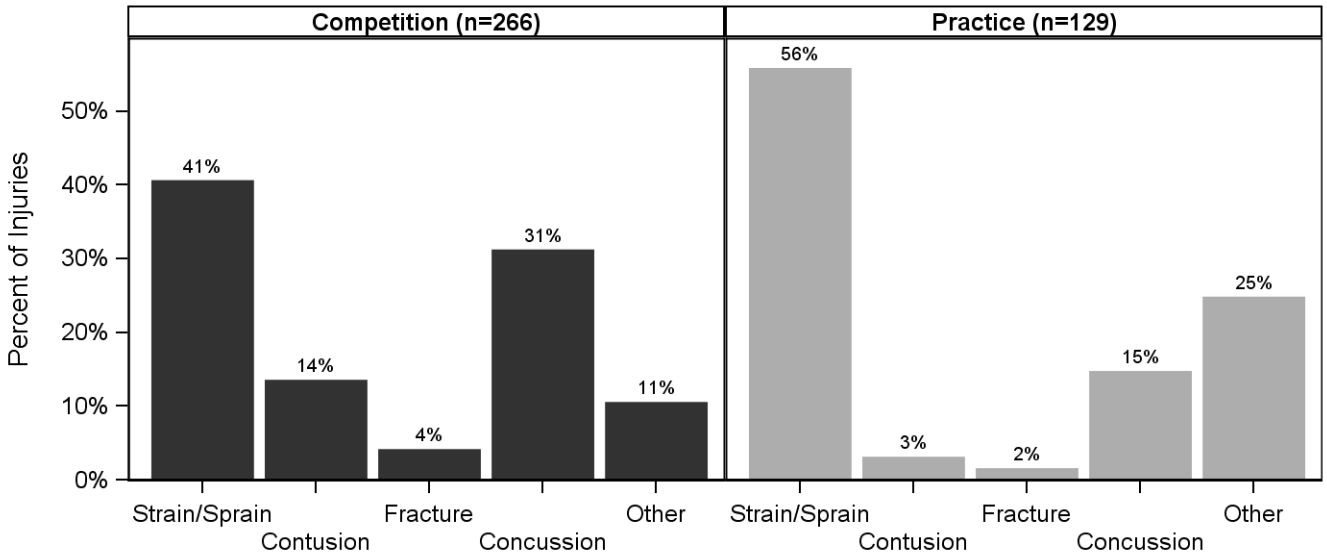


Table 5.3 Body Site of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

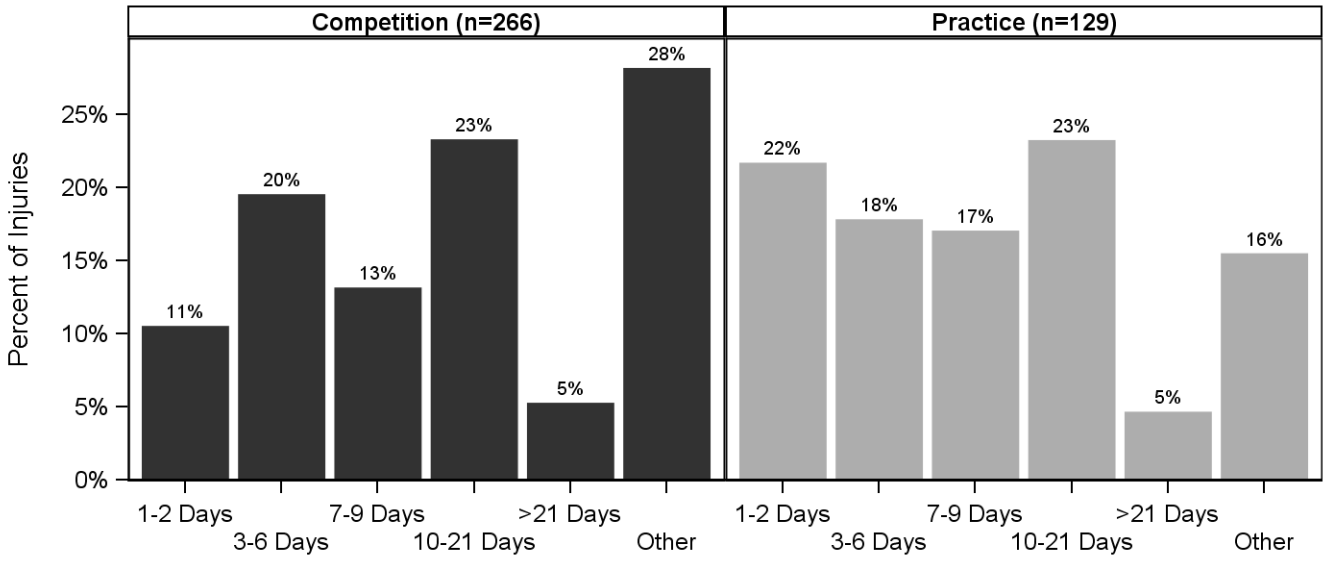
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	87	32.7%	19	14.8%	106	26.9%
Knee	63	23.7%	18	14.1%	81	20.6%
Ankle	40	15.0%	26	20.3%	66	16.8%
Hip/Thigh/Upper Leg	21	7.9%	36	28.1%	57	14.5%
Foot	15	5.6%	8	6.3%	23	5.8%
Trunk	15	5.6%	6	4.7%	21	5.3%
Lower Leg	7	2.6%	12	9.4%	19	4.8%
Hand/Wrist	7	2.6%	0	0.0%	7	1.8%
Other	4	1.5%	2	1.6%	6	1.5%
Shoulder	5	1.9%	1	0.8%	6	1.5%
Neck	2	0.8%	0	0.0%	2	0.5%
Total	***266***	***100.0%***	***128***	***100.0%***	***394***	***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, 2019-20 School Year

	Competition (n=266)		Practice (n=128)		Overall (n=394)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	83	31.2%	19	14.8%	102	25.9%
Ankle Strain/Sprain	35	13.2%	21	16.4%	56	14.2%
Knee Strain/Sprain	38	14.3%	8	6.3%	46	11.7%
Hip/Thigh/Upper Leg Strain/Sprain	12	4.5%	33	25.8%	45	11.4%
Knee Other	16	6.0%	9	7.0%	25	6.3%
Knee Contusion	9	3.4%	1	0.8%	10	2.5%
Trunk Strain/Sprain	6	2.3%	4	3.1%	10	2.5%
Foot Other	2	0.8%	6	4.7%	8	2.0%
Trunk Contusion	8	3.0%	0	0.0%	8	2.0%
Foot Strain/Sprain	6	2.3%	1	0.8%	7	1.8%

Figure 5.2 Time Loss of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	19	7.2%	7	5.4%	26	6.6%
Did Not Require Surgery	245	92.8%	122	94.6%	367	93.4%
Total	***264***	***100.0%***	***129***	***100.0%***	***393***	***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, 2019-20 School Year

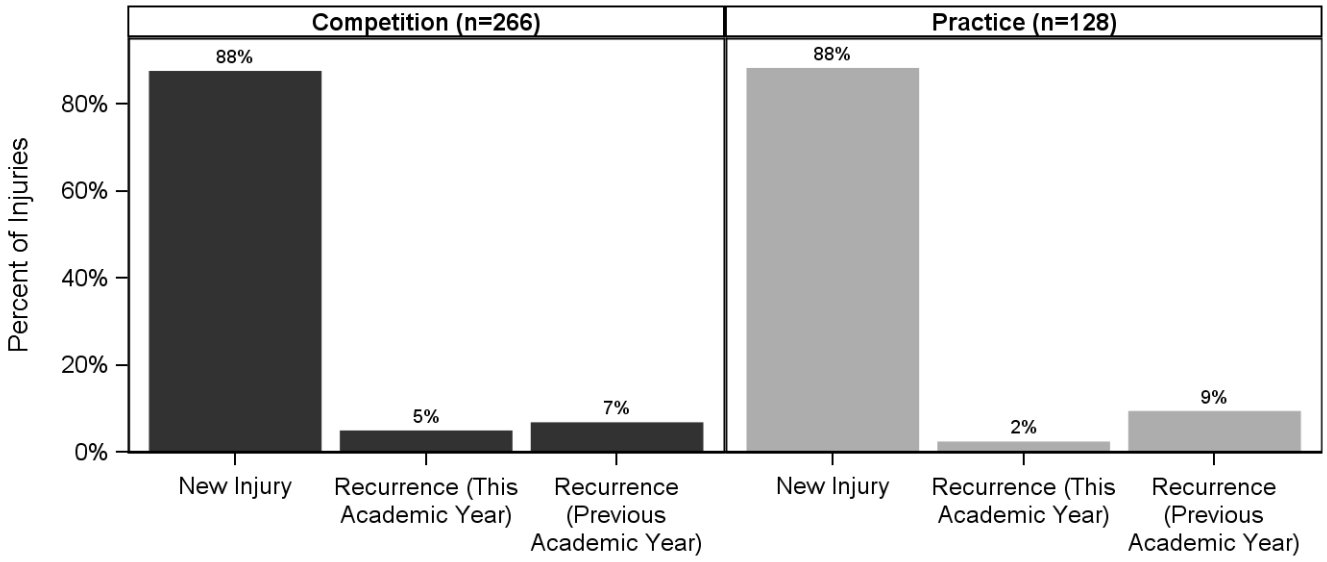


Table 5.6 Time during Season of Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	89	22.5%
Regular Season	278	70.4%
Post Season	27	6.8%
Unknown/Other	1	0.3%
Total	***395***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	6	2.3%
First Half	68	26.6%
Second Half	133	52.0%
Overtime	1	0.4%
Unknown	48	18.8%
Total	***256***	***100.0%***

Field Location		
Goal Box (Defense)	32	12.5%
Goal Box (Offense)	21	8.2%
Side of Goal Box (Defense)	20	7.8%
Side of Goal Box (Offense)	13	5.1%
Top of Goal Box Extended to Center Line (Offense)	37	14.5%
Top of Goal Box Extended to Center Line (Defense)	34	13.3%
Off the Field	4	1.6%
Unknown	94	36.9%
Total	***255***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	9	7.3%
Second 1/2 Hour	20	16.3%
1-2 Hours into Practice	62	50.4%
>2 Hours into Practice	3	2.4%
Unknown	29	23.6%
Total	***123***	***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, 2019-20 School Year

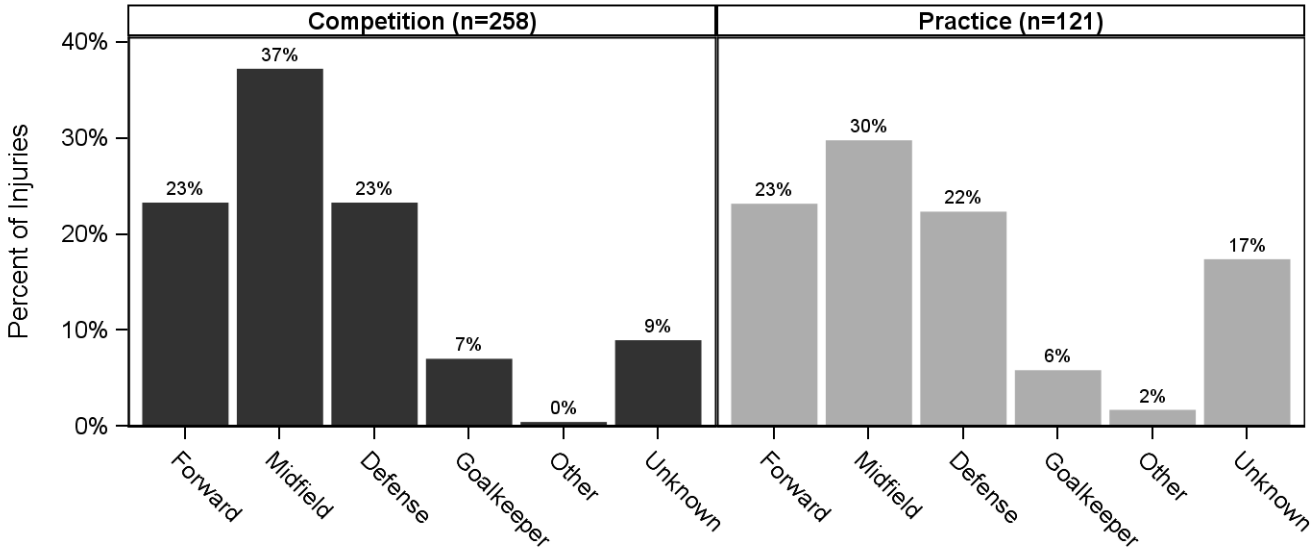


Table 5.9 Activities Leading to Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	45	17.3%	44	36.7%	89	23.4%
Defending	47	18.1%	8	6.7%	55	14.5%
Unknown	39	15.0%	13	10.8%	52	13.7%
Chasing Loose Ball	24	9.2%	11	9.2%	35	9.2%
Ball Handling/Dribbling	25	9.6%	5	4.2%	30	7.9%
Heading Ball	23	8.8%	3	2.5%	26	6.8%
Goaltending	15	5.8%	4	3.3%	19	5.0%
Receiving Pass	13	5.0%	5	4.2%	18	4.7%
Conditioning	0	0.0%	17	14.2%	17	4.5%
Passing	10	3.8%	3	2.5%	13	3.4%
Shooting	9	3.5%	3	2.5%	12	3.2%
Blocking Shot	6	2.3%	2	1.7%	8	2.1%
Other	4	1.5%	2	1.7%	6	1.6%
Total	***260***	***100.0%***	***120***	***100.0%***	***380***	***100.0%***

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

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Table 5.10 Activity Resulting in Girls' Soccer Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	14	8.1%	4	10.3%	1	7.7%	6	6.1%	5	8.8%
Blocking Shot	4	2.3%	2	5.1%	0	0.0%	2	2.0%	0	0.0%
Chasing Loose Ball	19	11.0%	3	7.7%	1	7.7%	8	8.2%	4	7.0%
Conditioning	11	6.4%	0	0.0%	0	0.0%	0	0.0%	6	10.5%
Defending	23	13.3%	11	28.2%	1	7.7%	17	17.3%	3	5.3%
General Play	43	24.9%	5	12.8%	4	30.8%	18	18.4%	19	33.3%
Goaltending	9	5.2%	5	12.8%	0	0.0%	4	4.1%	1	1.8%
Heading Ball	2	1.2%	1	2.6%	0	0.0%	23	23.5%	0	0.0%
Other	1	0.6%	1	2.6%	0	0.0%	3	3.1%	1	1.8%
Passing	10	5.8%	0	0.0%	0	0.0%	1	1.0%	2	3.5%
Receiving Pass	11	6.4%	0	0.0%	1	7.7%	4	4.1%	2	3.5%
Shooting	7	4.0%	2	5.1%	0	0.0%	1	1.0%	2	3.5%
Unknown	19	11.0%	5	12.8%	5	38.5%	11	11.2%	12	21.1%
Total	***173***	***100.0%***	***39***	***100.0%***	***13***	***100.0%***	***98***	***100.0%***	***57***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***300***	***252,227***	***1.19***
Competition	143	84,717	1.69
Practice	157	167,510	0.94

* All analyses in this report present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 6.2 Demographic Characteristics of Injured Girls' Volleyball Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	68	22.9%
Sophomore	73	24.6%
Junior	91	30.6%
Senior	65	21.9%
Total	***297***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.5 (1.2)
n	229

BMI	
Minimum	16.0
Maximum	42.0
Mean (SD)	22.4 (3.5)
n	181

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

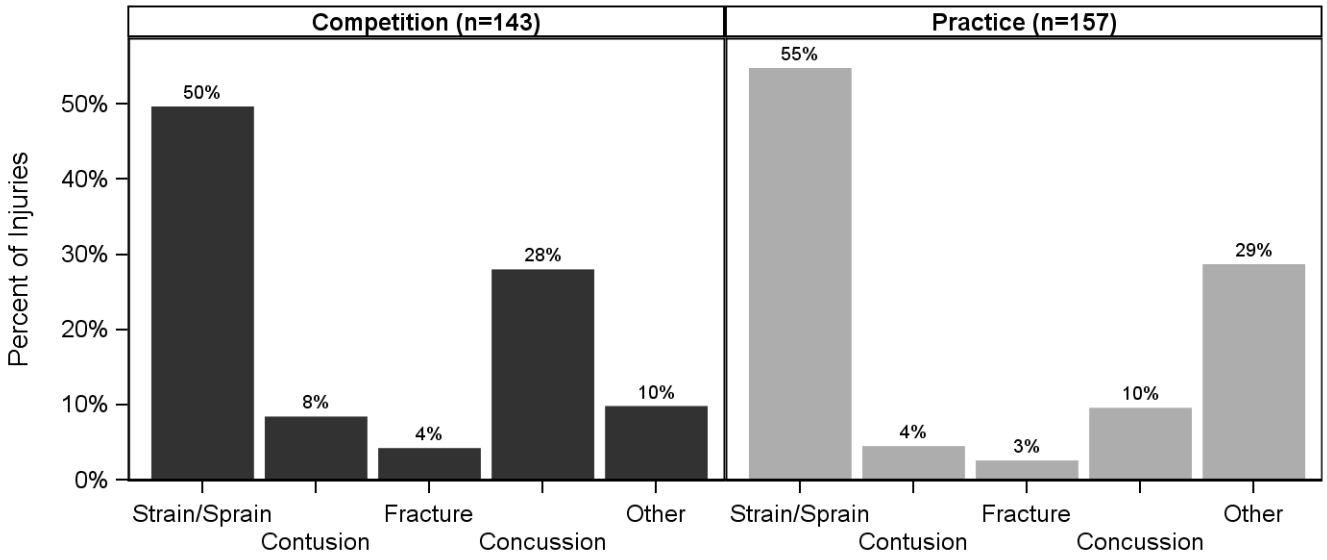


Table 6.3 Body Site of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

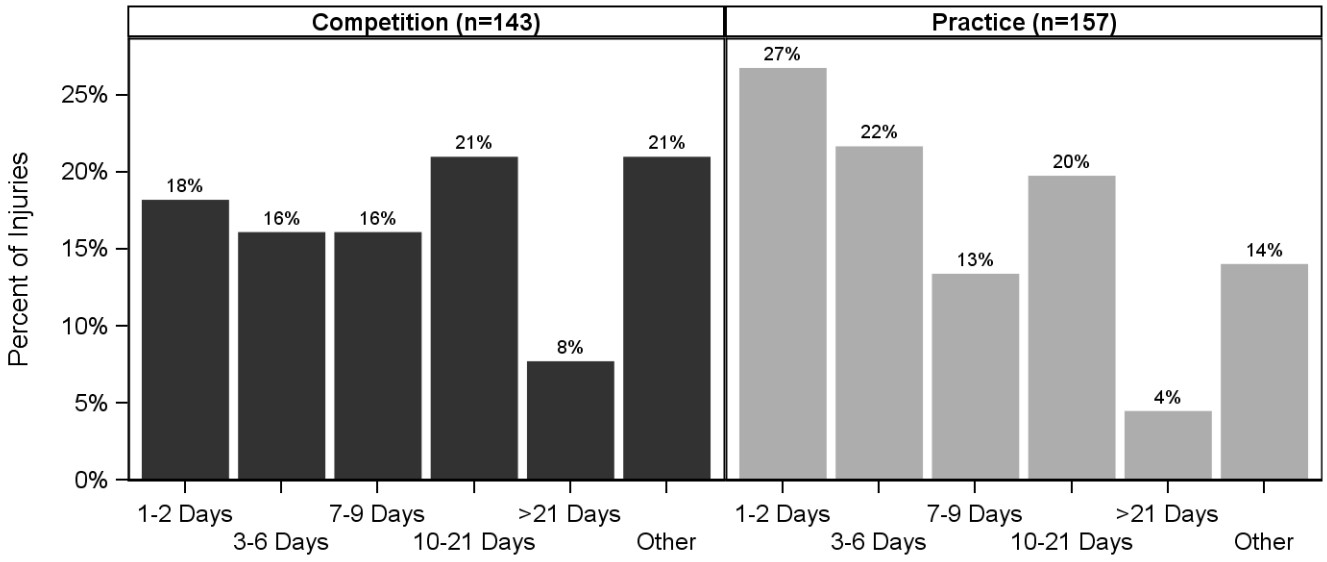
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	38	26.6%	45	28.7%	83	27.7%
Head/Face	42	29.4%	21	13.4%	63	21.0%
Knee	15	10.5%	27	17.2%	42	14.0%
Hand/Wrist	22	15.4%	14	8.9%	36	12.0%
Shoulder	7	4.9%	13	8.3%	20	6.7%
Trunk	10	7.0%	10	6.4%	20	6.7%
Hip/Thigh/Upper Leg	3	2.1%	10	6.4%	13	4.3%
Lower Leg	3	2.1%	6	3.8%	9	3.0%
Foot	2	1.4%	6	3.8%	8	2.7%
Arm/Elbow	1	0.7%	1	0.6%	2	0.7%
Neck	0	0.0%	2	1.3%	2	0.7%
Other	0	0.0%	2	1.3%	2	0.7%
Total	***143***	***100.0%***	***157***	***100.0%***	***300***	***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, 2019-20 School Year

	Competition (n=143)		Practice (n=157)		Overall (n=300)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	36	25.2%	42	26.8%	78	26.0%
Head/Face Concussion	40	28.0%	15	9.6%	55	18.3%
Knee Other	5	3.5%	17	10.8%	22	7.3%
Hand/Wrist Strain/Sprain	13	9.1%	7	4.5%	20	6.7%
Knee Strain/Sprain	9	6.3%	8	5.1%	17	5.7%
Shoulder Strain/Sprain	3	2.1%	9	5.7%	12	4.0%
Trunk Strain/Sprain	6	4.2%	6	3.8%	12	4.0%
Hip/Thigh/Upper Leg Strain/Sprain	2	1.4%	7	4.5%	9	3.0%
Hand/Wrist Fracture	4	2.8%	2	1.3%	6	2.0%
Hand/Wrist Other	3	2.1%	3	1.9%	6	2.0%

Figure 6.2 Time Loss of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	8	5.7%	10	6.4%	18	6.1%
Did Not Require Surgery	133	94.3%	146	93.6%	279	93.9%
Total	***141***	***100.0%***	***156***	***100.0%***	***297***	***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, 2019-20 School Year

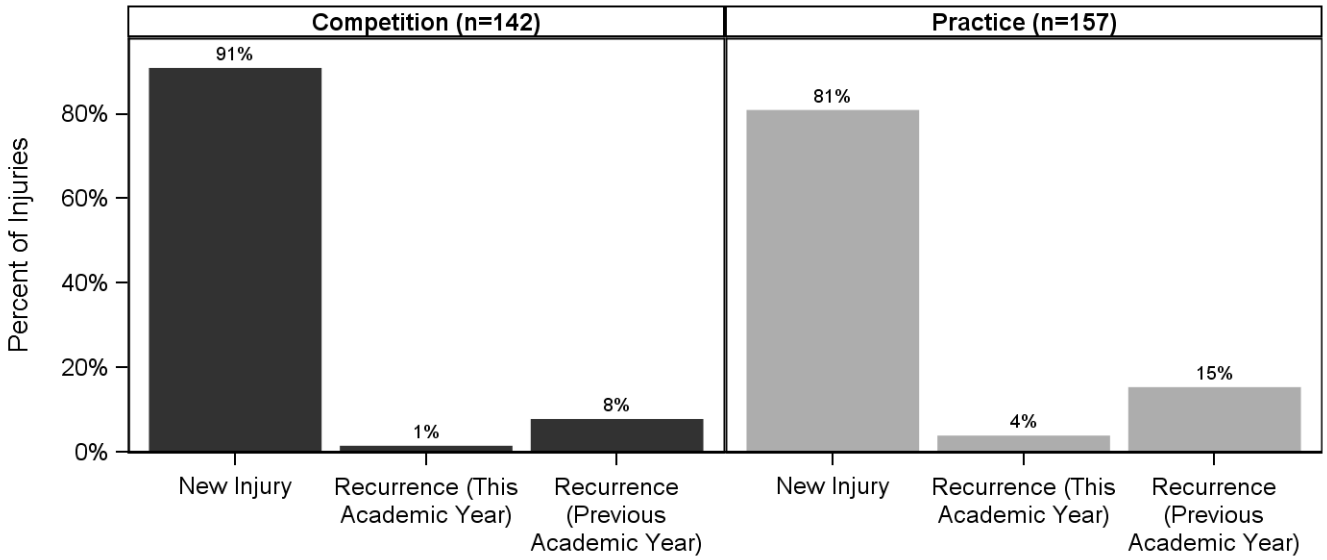


Table 6.6 Time during Season of Girls' Volleyball Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	58	19.3%
Regular Season	234	78.0%
Post Season	7	2.3%
Unknown/Other	1	0.3%
Total	***300***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	20	14.5%
First Set	7	5.1%
Second Set	31	22.5%
Third Set	20	14.5%
Fourth Set	5	3.6%
Fifth Set	1	0.7%
Unknown	54	39.1%
Total	***138***	***100.0%***

Court Location		
Right Back (Server)	4	2.9%
Right Forward	16	11.6%
Outside Court (Your Side)	5	3.6%
Outside Court (Opponents Side)	1	0.7%
Middle Forward	13	9.4%
Left Forward	14	10.1%
Left Back	14	10.1%
Outside the Playable Area	2	1.4%
At the Net	9	6.5%
Unknown	60	43.5%
Total	***138***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	11	7.2%
Second 1/2 Hour	25	16.4%
1-2 Hours into Practice	71	46.7%
>2 Hours into Practice	4	2.6%
Unknown	41	27.0%
Total	***152***	***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, 2019-20 School Year

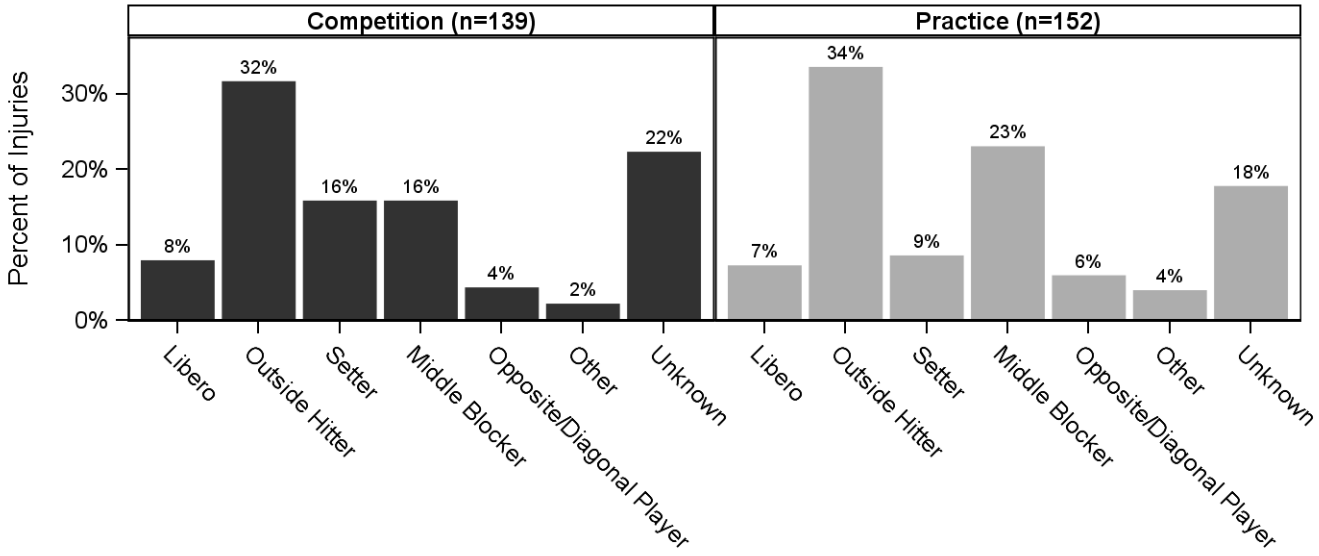


Table 6.9 Activities Leading to Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	29	20.7%	32	21.1%	61	20.9%
Digging	30	21.4%	26	17.1%	56	19.2%
Blocking	20	14.3%	32	21.1%	52	17.8%
Spiking	23	16.4%	17	11.2%	40	13.7%
Unknown	19	13.6%	16	10.5%	35	12.0%
Passing	8	5.7%	7	4.6%	15	5.1%
Conditioning	0	0.0%	12	7.9%	12	4.1%
Serving	3	2.1%	7	4.6%	10	3.4%
Setting	5	3.6%	3	2.0%	8	2.7%
Other	3	2.1%	0	0.0%	3	1.0%
Total	***140***	***100.0%***	***152***	***100.0%***	***292***	***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, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Blocking	33	21.6%	0	0.0%	3	30.0%	5	9.6%	11	19.0%
Conditioning	8	5.2%	0	0.0%	1	10.0%	0	0.0%	3	5.2%
Digging	16	10.5%	8	42.1%	4	40.0%	19	36.5%	9	15.5%
General Play	31	20.3%	3	15.8%	0	0.0%	13	25.0%	14	24.1%
Other	1	0.7%	1	5.3%	0	0.0%	1	1.9%	0	0.0%
Passing	5	3.3%	2	10.5%	1	10.0%	4	7.7%	3	5.2%
Serving	7	4.6%	0	0.0%	0	0.0%	1	1.9%	2	3.4%
Setting	7	4.6%	0	0.0%	0	0.0%	1	1.9%	0	0.0%
Spiking	31	20.3%	1	5.3%	0	0.0%	0	0.0%	8	13.8%
Unknown	14	9.2%	4	21.1%	1	10.0%	8	15.4%	8	13.8%
Total	***153***	***100.0%***	***19***	***100.0%***	***10***	***100.0%***	***52***	***100.0%***	***58***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***439***	***312,149***	***1.41***
Competition	238	93,688	2.54
Practice	201	218,461	0.92

* All analyses in this report present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 7.2 Demographic Characteristics of Injured Boys' Basketball Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	97	22.6%
Sophomore	111	25.8%
Junior	104	24.2%
Senior	118	27.4%
Total	***430***	***100.0%***

Age (years)	
Minimum	13
Maximum	19
Mean (SD)	15.9 (1.3)
n	321

BMI	
Minimum	15.4
Maximum	39.5
Mean (SD)	23.4 (3.3)
n	239

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

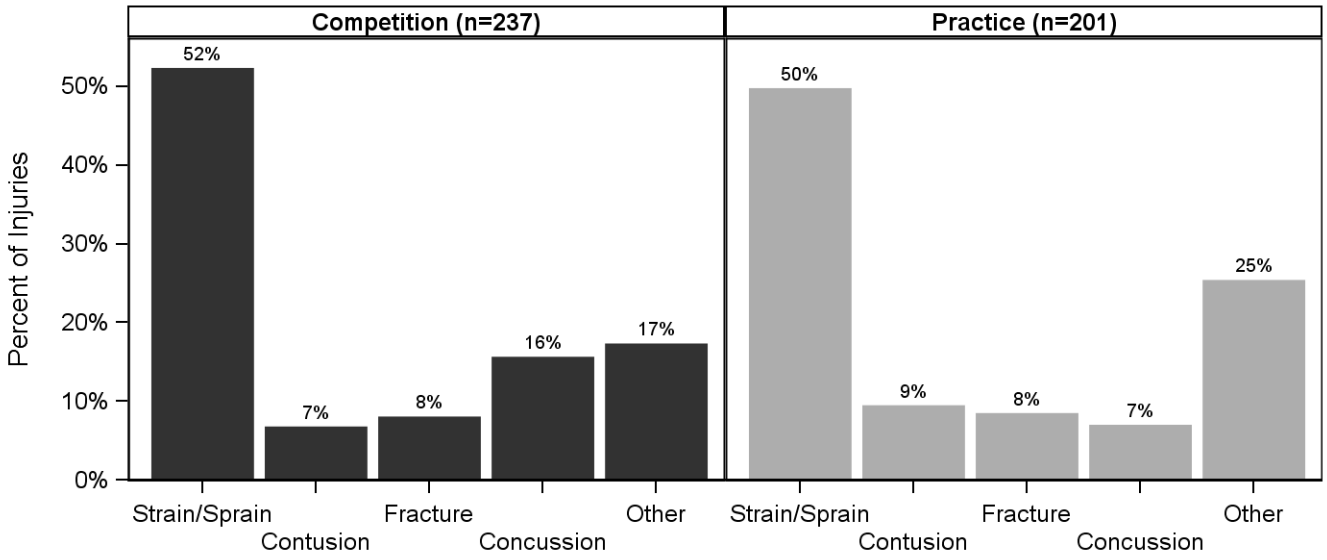


Table 7.3 Body Site of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

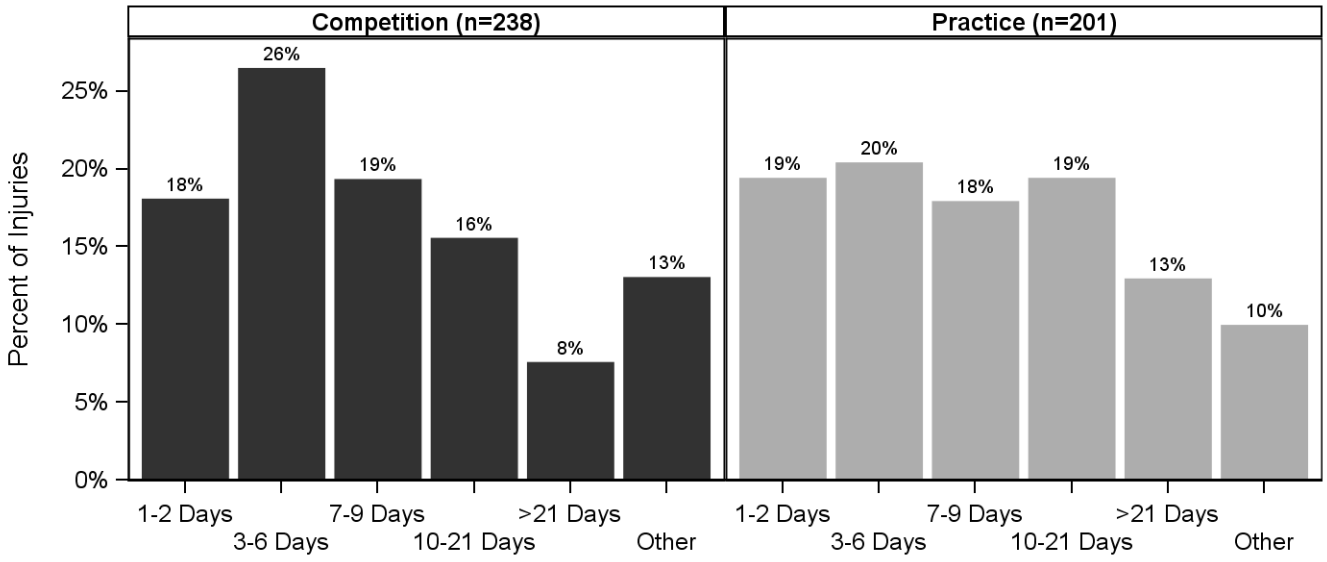
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	92	38.7%	62	30.8%	154	35.1%
Head/Face	56	23.5%	30	14.9%	86	19.6%
Knee	19	8.0%	27	13.4%	46	10.5%
Hand/Wrist	25	10.5%	19	9.5%	44	10.0%
Hip/Thigh/Upper Leg	11	4.6%	16	8.0%	27	6.2%
Trunk	8	3.4%	15	7.5%	23	5.2%
Lower Leg	7	2.9%	10	5.0%	17	3.9%
Foot	4	1.7%	9	4.5%	13	3.0%
Arm/Elbow	6	2.5%	6	3.0%	12	2.7%
Shoulder	5	2.1%	4	2.0%	9	2.1%
Other	3	1.3%	3	1.5%	6	1.4%
Neck	2	0.8%	0	0.0%	2	0.5%
Total	***238***	***100.0%***	***201***	***100.0%***	***439***	***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, 2019-20 School Year

	Competition (n=237)		Practice (n=201)		Overall (n=438)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	88	37.1%	58	28.9%	146	33.3%
Head/Face Concussion	37	15.6%	14	7.0%	51	11.6%
Knee Other	10	4.2%	17	8.5%	27	6.2%
Head/Face Other	14	5.9%	11	5.5%	25	5.7%
Hand/Wrist Strain/Sprain	14	5.9%	8	4.0%	22	5.0%
Hand/Wrist Fracture	10	4.2%	7	3.5%	17	3.9%
Trunk Strain/Sprain	4	1.7%	11	5.5%	15	3.4%
Hip/Thigh/Upper Leg Contusion	5	2.1%	8	4.0%	13	3.0%
Hip/Thigh/Upper Leg Strain/Sprain	6	2.5%	7	3.5%	13	3.0%
Knee Strain/Sprain	5	2.1%	6	3.0%	11	2.5%

Figure 7.2 Time Loss of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	12	5.1%	8	4.0%	20	4.6%
Did Not Require Surgery	223	94.9%	192	96.0%	415	95.4%
Total	***235***	***100.0%***	***200***	***100.0%***	***435***	***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, 2019-20 School Year

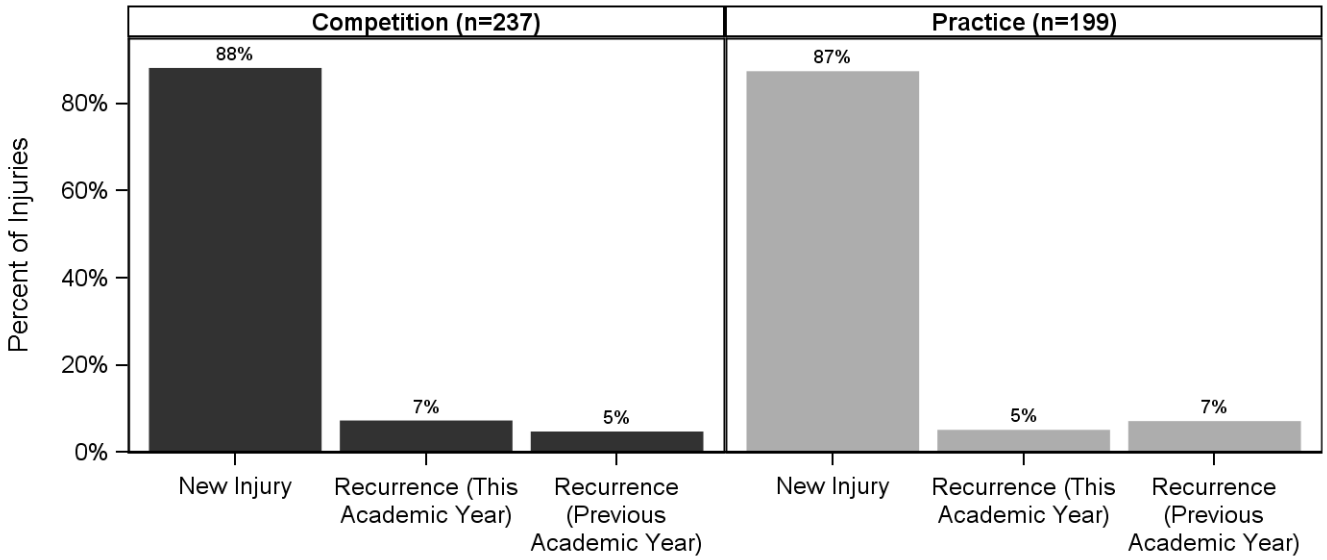


Table 7.6 Time during Season of Boys' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	88	20.0%
Regular Season	342	77.9%
Post Season	9	2.1%
Total	***439***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	3	1.3%
First Quarter	13	5.7%
Second Quarter	59	25.8%
Third Quarter	57	24.9%
Fourth Quarter	55	24.0%
Overtime	1	0.4%
Unknown	41	17.9%
Total	***229***	***100.0%***

Court Location		
Inside Lane (Offense)	50	22.0%
Inside Lane (Defense)	43	18.9%
Between 3 Point Arc and Lane (Offense)	21	9.3%
Between 3 Point Arc and Lane (Defense)	13	5.7%
Outside 3 Point Arc (Offense)	10	4.4%
Outside 3 Point Arc (Defense)	9	4.0%
Out of Bounds	1	0.4%
Off the Court	3	1.3%
Backcourt	5	2.2%
Unknown	72	31.7%
Total	***227***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	20	10.3%
Second 1/2 Hour	44	22.6%
1-2 Hours into Practice	95	48.7%
>2 Hours into Practice	4	2.1%
Unknown	32	16.4%
Total	***195***	***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, 2019-20 School Year

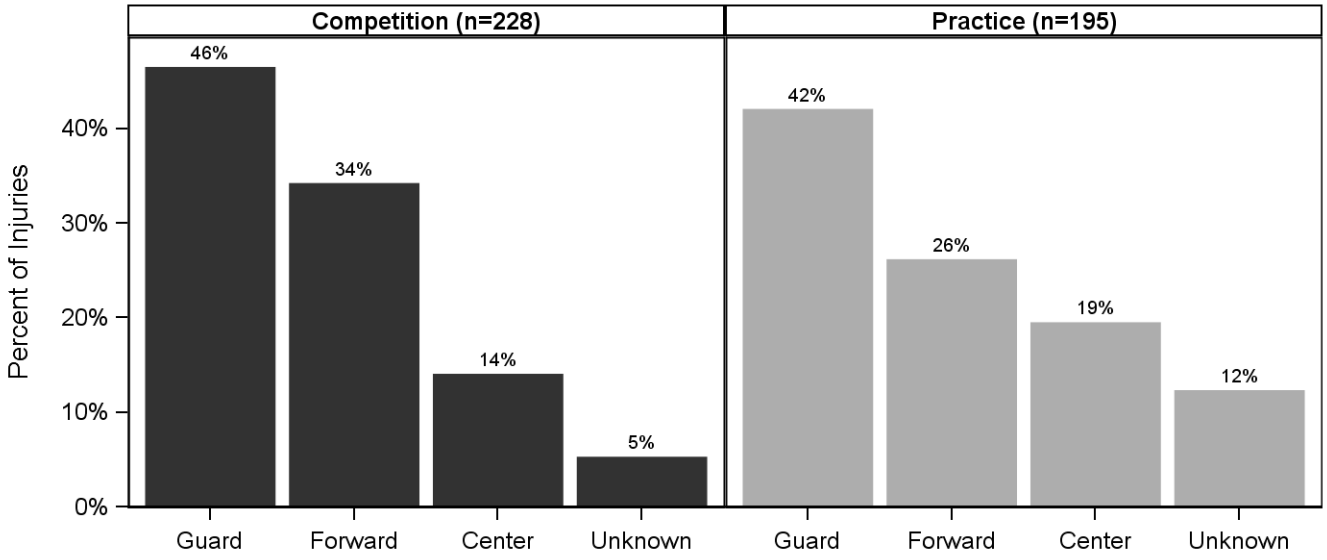


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Table 7.9 Activities Leading to Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Rebounding	57	25.0%	37	18.9%	94	22.2%
General Play	37	16.2%	55	28.1%	92	21.7%
Unknown	37	16.2%	24	12.2%	61	14.4%
Defending	34	14.9%	25	12.8%	59	13.9%
Chasing Loose Ball	25	11.0%	15	7.7%	40	9.4%
Shooting	18	7.9%	12	6.1%	30	7.1%
Receiving Pass	6	2.6%	9	4.6%	15	3.5%
Ball Handling/Dribbling	9	3.9%	5	2.6%	14	3.3%
Conditioning	1	0.4%	10	5.1%	11	2.6%
Other	3	1.3%	3	1.5%	6	1.4%
Screening	1	0.4%	0	0.0%	1	0.2%
Passing	0	0.0%	1	0.5%	1	0.2%
Total	***228***	***100.0%***	***196***	***100.0%***	***424***	***100.0%***

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

Table 7.10 Activity Resulting in Boys' Basketball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	8	3.7%	3	8.8%	0	0.0%	0	0.0%	3	3.4%
Chasing Loose Ball	10	4.6%	5	14.7%	6	16.7%	5	10.4%	14	15.9%
Conditioning	6	2.8%	1	2.9%	0	0.0%	0	0.0%	4	4.5%
Defending	29	13.4%	7	20.6%	3	8.3%	10	20.8%	10	11.4%
General Play	47	21.7%	7	20.6%	6	16.7%	7	14.6%	25	28.4%
Other	3	1.4%	0	0.0%	3	8.3%	0	0.0%	0	0.0%
Passing	0	0.0%	0	0.0%	1	2.8%	0	0.0%	0	0.0%
Rebounding	63	29.0%	1	2.9%	5	13.9%	12	25.0%	13	14.8%
Receiving Pass	8	3.7%	2	5.9%	2	5.6%	2	4.2%	1	1.1%
Screening	0	0.0%	0	0.0%	0	0.0%	1	2.1%	0	0.0%
Shooting	17	7.8%	4	11.8%	2	5.6%	2	4.2%	5	5.7%
Unknown	26	12.0%	4	11.8%	8	22.2%	9	18.8%	13	14.8%
Total	***217***	***100.0%***	***34***	***100.0%***	***36***	***100.0%***	***48***	***100.0%***	***88***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***397***	***191,628***	***2.07***
Competition	245	59,060	4.15
Practice	152	132,568	1.15

* All analyses in this report present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 8.2 Demographic Characteristics of Injured Girls' Basketball Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	117	29.7%
Sophomore	120	30.5%
Junior	82	20.8%
Senior	75	19.0%
Total	***394***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.6 (1.2)
n	278

BMI	
Minimum	16.1
Maximum	39.0
Mean (SD)	22.5 (3.6)
n	195

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

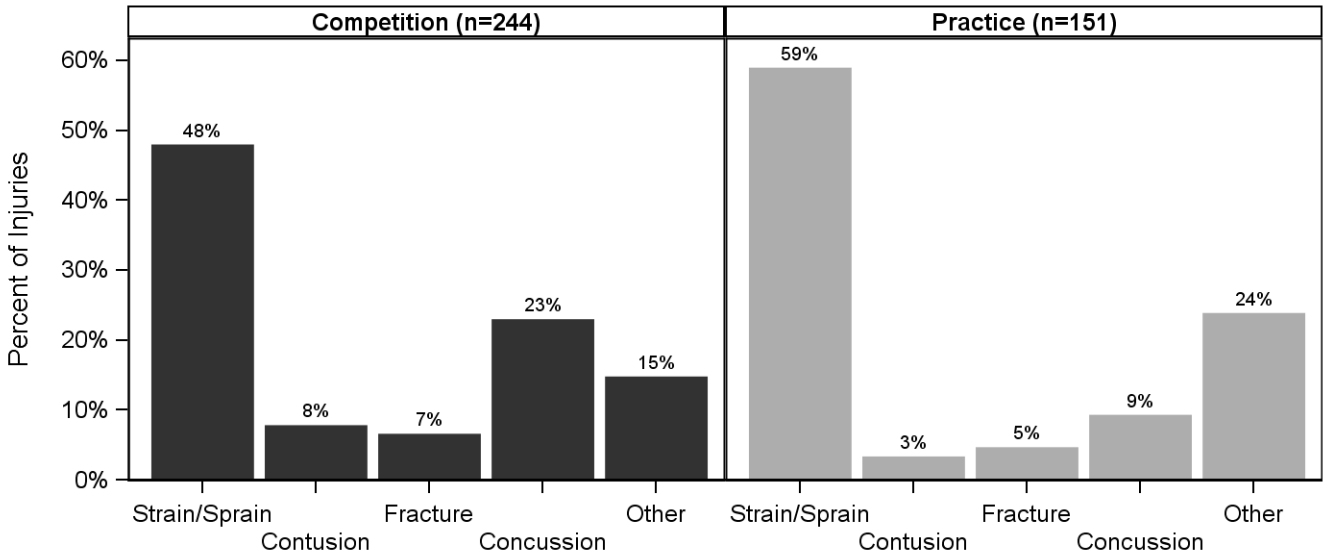


Table 8.3 Body Site of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

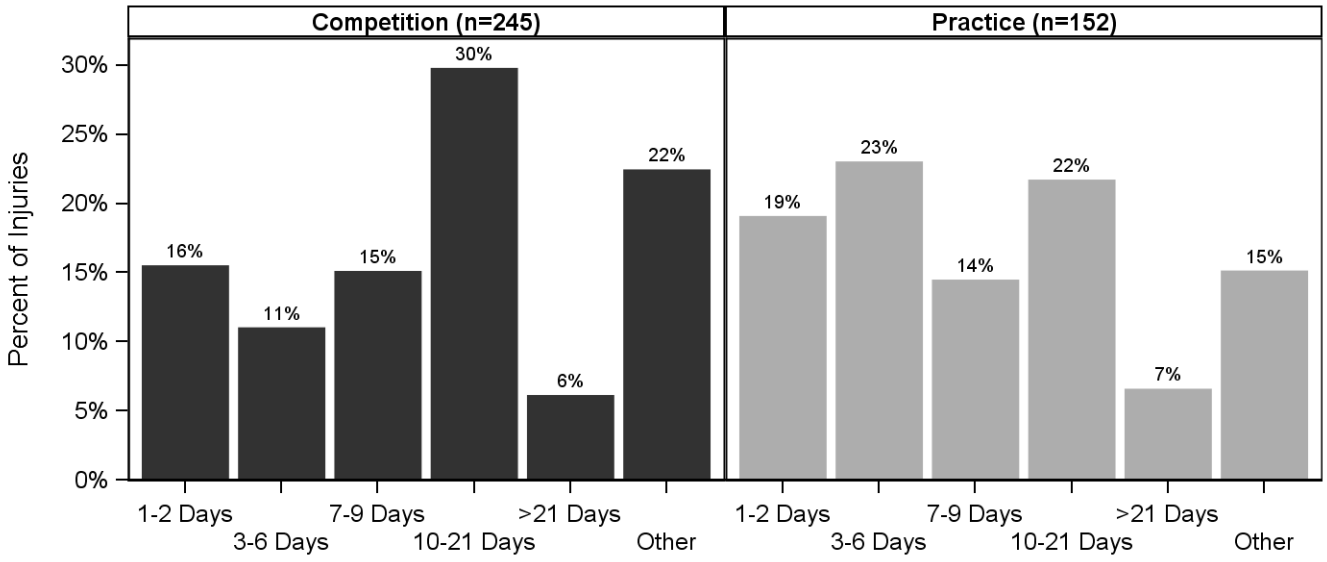
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	71	29.0%	58	38.2%	129	32.5%
Head/Face	64	26.1%	14	9.2%	78	19.6%
Knee	42	17.1%	27	17.8%	69	17.4%
Hand/Wrist	21	8.6%	12	7.9%	33	8.3%
Hip/Thigh/Upper Leg	9	3.7%	18	11.8%	27	6.8%
Shoulder	10	4.1%	4	2.6%	14	3.5%
Lower Leg	6	2.4%	7	4.6%	13	3.3%
Foot	7	2.9%	5	3.3%	12	3.0%
Trunk	6	2.4%	4	2.6%	10	2.5%
Neck	4	1.6%	1	0.7%	5	1.3%
Arm/Elbow	4	1.6%	0	0.0%	4	1.0%
Other	1	0.4%	2	1.3%	3	0.8%
Total	***245***	***100.0%***	***152***	***100.0%***	***397***	***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, 2019-20 School Year

	Competition (n=244)		Practice (n=151)		Overall (n=395)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	67	27.5%	53	35.1%	120	30.4%
Head/Face Concussion	56	23.0%	14	9.3%	70	17.7%
Knee Strain/Sprain	25	10.2%	9	6.0%	34	8.6%
Knee Other	9	3.7%	14	9.3%	23	5.8%
Hip/Thigh/Upper Leg Strain/Sprain	4	1.6%	14	9.3%	18	4.6%
Hand/Wrist Strain/Sprain	7	2.9%	7	4.6%	14	3.5%
Shoulder Other	10	4.1%	3	2.0%	13	3.3%
Hand/Wrist Fracture	8	3.3%	4	2.6%	12	3.0%
Knee Contusion	8	3.3%	3	2.0%	11	2.8%
Lower Leg Other	3	1.2%	5	3.3%	8	2.0%

Figure 8.2 Time Loss of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	22	9.0%	8	5.3%	30	7.6%
Did Not Require Surgery	223	91.0%	143	94.7%	366	92.4%
Total	***245***	***100.0%***	***151***	***100.0%***	***396***	***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, 2019-20 School Year

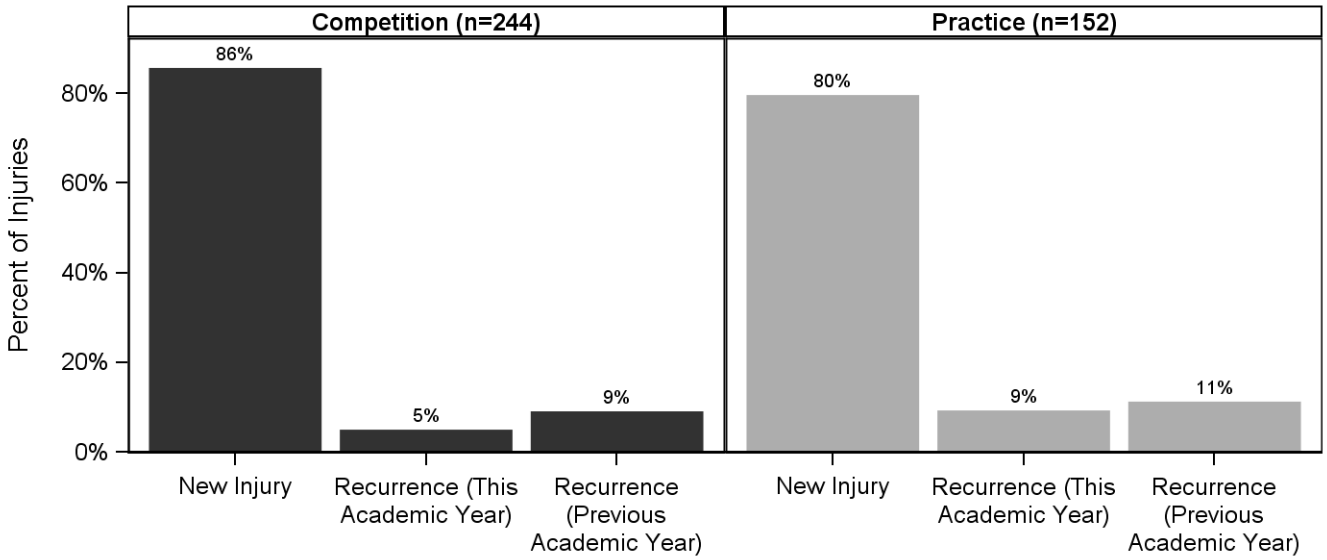


Table 8.6 Time during Season of Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	73	18.4%
Regular Season	315	79.5%
Post Season	8	2.0%
Total	***396***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	8	3.3%
First Quarter	17	7.1%
Second Quarter	45	18.8%
Third Quarter	62	25.9%
Fourth Quarter	50	20.9%
Unknown	57	23.8%
Total	***239***	***100.0%***

Court Location		
Inside Lane (Offense)	36	15.2%
Inside Lane (Defense)	51	21.5%
Between 3 Point Arc and Lane (Offense)	8	3.4%
Between 3 Point Arc and Lane (Defense)	26	11.0%
Outside 3 Point Arc (Offense)	11	4.6%
Outside 3 Point Arc (Defense)	19	8.0%
Out of Bounds	5	2.1%
Backcourt	3	1.3%
Unknown	78	32.9%
Total	***237***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	17	11.3%
Second 1/2 Hour	22	14.7%
1-2 Hours into Practice	62	41.3%
>2 Hours into Practice	2	1.3%
Unknown	47	31.3%
Total	***150***	***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, 2019-20 School Year

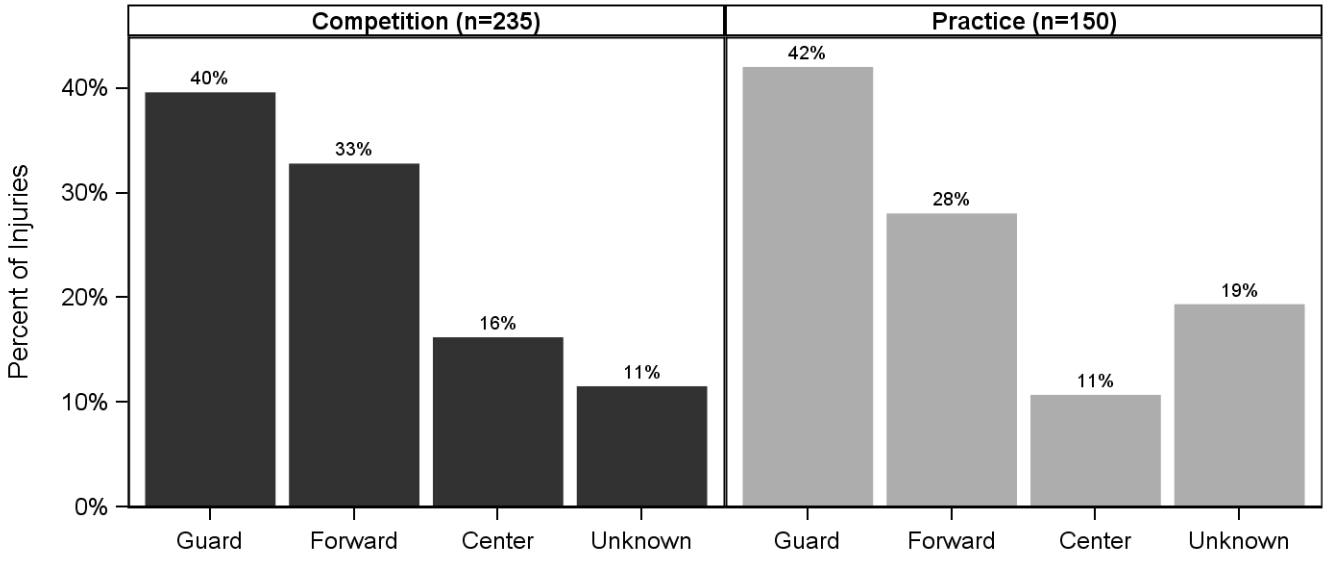


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Table 8.9 Activities Leading to Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	40	16.6%	40	26.7%	80	20.5%
Defending	54	22.4%	16	10.7%	70	17.9%
Rebounding	39	16.2%	18	12.0%	57	14.6%
Unknown	28	11.6%	29	19.3%	57	14.6%
Chasing Loose Ball	33	13.7%	6	4.0%	39	10.0%
Shooting	21	8.7%	6	4.0%	27	6.9%
Receiving Pass	12	5.0%	7	4.7%	19	4.9%
Conditioning	0	0.0%	16	10.7%	16	4.1%
Ball Handling/Dribbling	5	2.1%	9	6.0%	14	3.6%
Other	5	2.1%	1	0.7%	6	1.5%
Passing	2	0.8%	2	1.3%	4	1.0%
Screening	2	0.8%	0	0.0%	2	0.5%
Total	***241***	***100.0%***	***150***	***100.0%***	***391***	***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, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	8	4.0%	1	4.3%	0	0.0%	2	2.9%	3	4.2%
Chasing Loose Ball	13	6.5%	7	30.4%	1	4.3%	15	21.4%	3	4.2%
Conditioning	10	5.0%	0	0.0%	0	0.0%	0	0.0%	6	8.3%
Defending	31	15.4%	6	26.1%	8	34.8%	15	21.4%	10	13.9%
General Play	38	18.9%	2	8.7%	4	17.4%	8	11.4%	27	37.5%
Other	3	1.5%	0	0.0%	1	4.3%	1	1.4%	1	1.4%
Passing	3	1.5%	0	0.0%	1	4.3%	0	0.0%	0	0.0%
Rebounding	38	18.9%	2	8.7%	2	8.7%	7	10.0%	8	11.1%
Receiving Pass	9	4.5%	0	0.0%	3	13.0%	2	2.9%	5	6.9%
Screening	1	0.5%	0	0.0%	0	0.0%	1	1.4%	0	0.0%
Shooting	21	10.4%	1	4.3%	1	4.3%	3	4.3%	1	1.4%
Unknown	26	12.9%	4	17.4%	2	8.7%	16	22.9%	8	11.1%
Total	***201***	***100.0%***	***23***	***100.0%***	***23***	***100.0%***	***70***	***100.0%***	***72***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***499***	***213,076***	***2.34***
Competition	225	55,326	4.07
Practice	274	157,750	1.74

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 9.2 Demographic Characteristics of Injured Boys' Wrestling Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	140	28.5%
Sophomore	112	22.8%
Junior	126	25.7%
Senior	113	23.0%
Total	***491***	***100.0%***

Age (years)	
Minimum	12
Maximum	18
Mean (SD)	15.8 (1.3)
n	349

BMI	
Minimum	17.1
Maximum	42.6
Mean (SD)	24.3 (4.8)
n	292

* Throughout this chapter, totals and n's represent the total unweighted 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, 2019-20 School Year

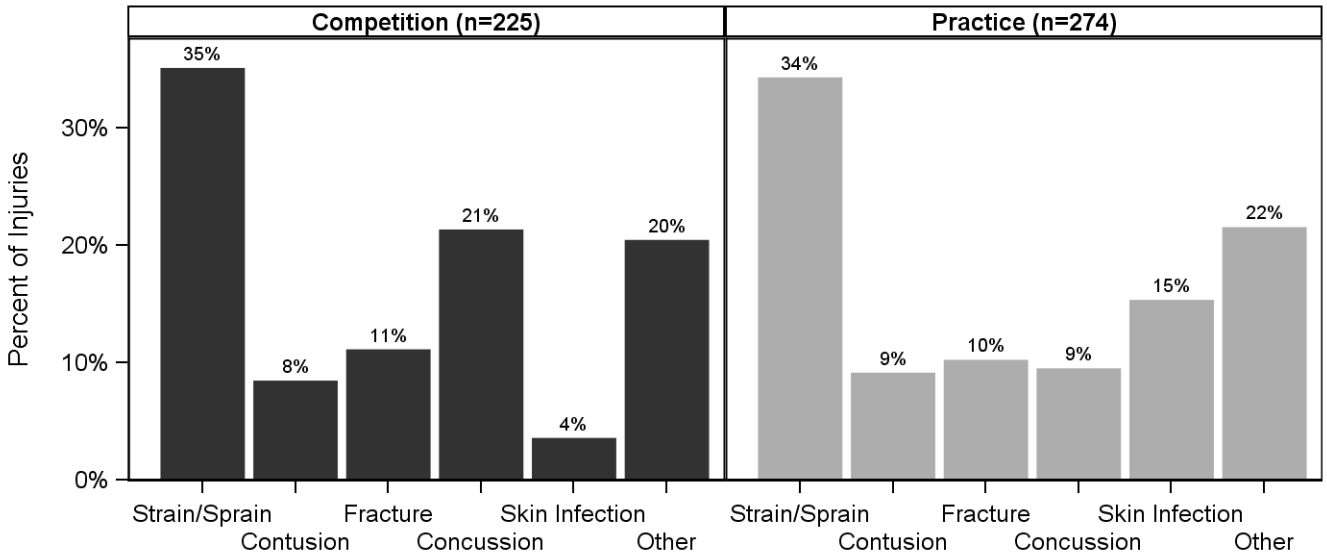


Table 9.3 Body Site of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

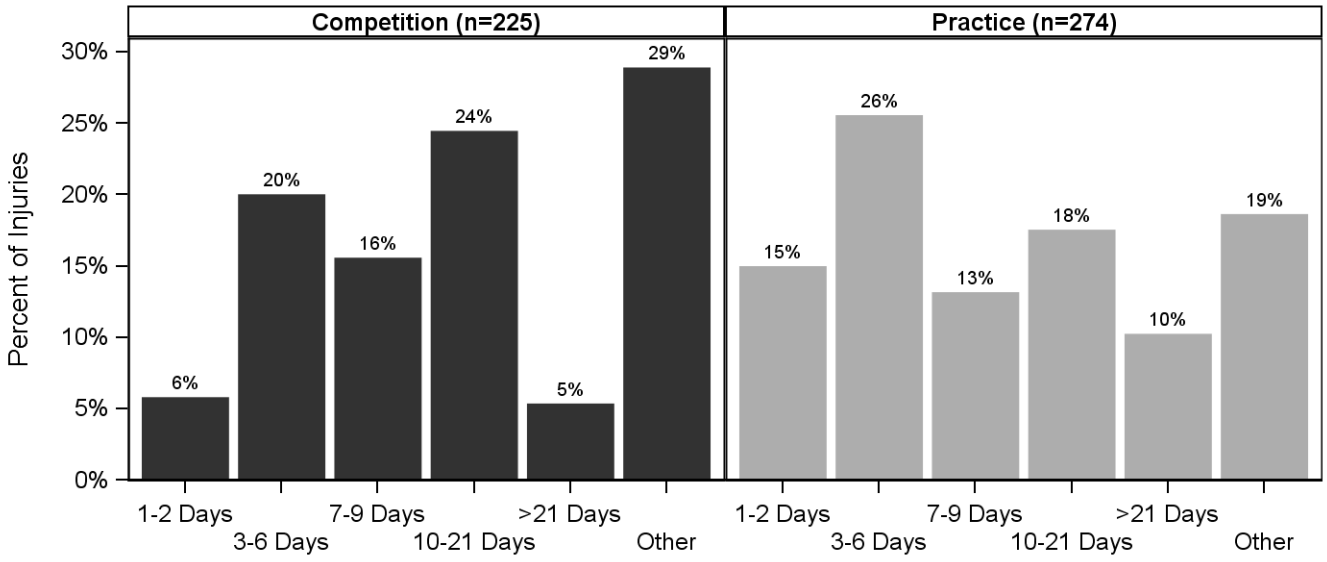
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	61	27.1%	52	19.0%	113	22.6%
Knee	31	13.8%	39	14.2%	70	14.0%
Shoulder	36	16.0%	32	11.7%	68	13.6%
Arm/Elbow	26	11.6%	36	13.1%	62	12.4%
Trunk	17	7.6%	34	12.4%	51	10.2%
Ankle	14	6.2%	21	7.7%	35	7.0%
Hand/Wrist	16	7.1%	19	6.9%	35	7.0%
Hip/Thigh/Upper Leg	8	3.6%	15	5.5%	23	4.6%
Other	5	2.2%	8	2.9%	13	2.6%
Neck	4	1.8%	8	2.9%	12	2.4%
Lower Leg	2	0.9%	7	2.6%	9	1.8%
Foot	5	2.2%	3	1.1%	8	1.6%
Total	***225***	***100.0%***	***274***	***100.0%***	***499***	***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, 2019-20 School Year

	Competition (n=225)		Practice (n=274)		Overall (n=499)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	48	21.3%	26	9.5%	74	14.8%
Knee Other	14	6.2%	19	6.9%	33	6.6%
Shoulder Strain/Sprain	15	6.7%	17	6.2%	32	6.4%
Ankle Strain/Sprain	12	5.3%	19	6.9%	31	6.2%
Arm/Elbow Other	9	4.0%	22	8.0%	31	6.2%
Shoulder Other	17	7.6%	14	5.1%	31	6.2%
Head/Face Other	7	3.1%	21	7.7%	28	5.6%
Knee Strain/Sprain	13	5.8%	14	5.1%	27	5.4%
Trunk Strain/Sprain	9	4.0%	15	5.5%	24	4.8%
Hand/Wrist Fracture	10	4.4%	13	4.7%	23	4.6%

Figure 9.2 Time Loss of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	18	8.1%	17	6.3%	35	7.1%
Did Not Require Surgery	205	91.9%	254	93.7%	459	92.9%
Total	***223***	***100.0%***	***271***	***100.0%***	***494***	***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, 2019-20 School Year

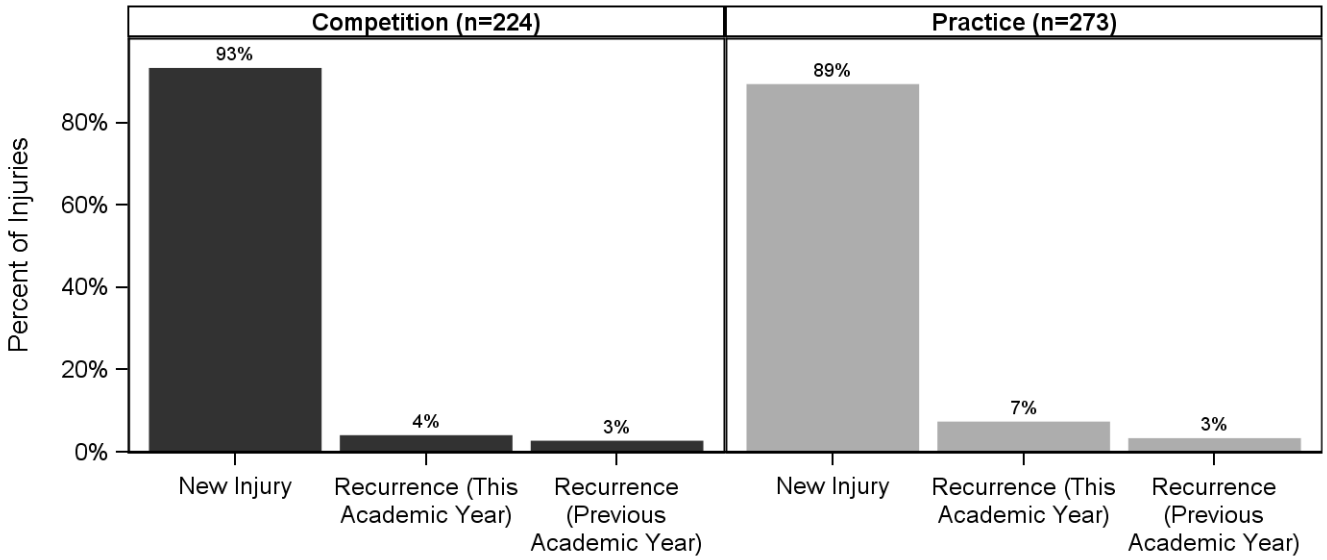


Table 9.6 Time during Season of Boys' Wrestling Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	64	12.8%
Regular Season	402	80.6%
Post Season	33	6.6%
Total	***499***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	3	1.5%
First Period	27	13.2%
Second Period	49	23.9%
Third Period	46	22.4%
Overtime	1	0.5%
Unknown	79	38.5%
Total	***205***	***100.0%***

Mat Location		
Within 28ft Circle	271	58.7%
Out of Bounds	6	1.3%
Off Mat	9	1.9%
Unknown	176	38.1%
Total	***462***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	20	7.5%
Second 1/2 Hour	40	15.0%
1-2 Hours into Practice	106	39.8%
>2 Hours into Practice	8	3.0%
Unknown	92	34.6%
Total	***266***	***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, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Takedown	113	54.3%	73	28.3%	186	39.9%
Unknown	32	15.4%	50	19.4%	82	17.6%
Sparring	19	9.1%	45	17.4%	64	13.7%
N/A **	5	2.4%	46	17.8%	51	10.9%
Escape	9	4.3%	8	3.1%	17	3.6%
Reversal	7	3.4%	6	2.3%	13	2.8%
Conditioning	0	0.0%	13	5.0%	13	2.8%
Other	2	1.0%	9	3.5%	11	2.4%
Near Fall	9	4.3%	1	0.4%	10	2.1%
Fall	5	2.4%	5	1.9%	10	2.1%
Riding	7	3.4%	2	0.8%	9	1.9%
Total	***208***	***100.0%***	***258***	***100.0%***	***466***	***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, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	n	%	n	%	n	%	n	%	n	%
Conditioning	7	4.1%	1	2.3%	1	1.9%	0	0.0%	4	2.8%
Escape	9	5.3%	2	4.7%	0	0.0%	1	1.8%	5	3.4%
Fall	4	2.4%	2	4.7%	1	1.9%	1	1.8%	2	1.4%
N/A **	1	0.6%	1	2.3%	0	0.0%	0	0.0%	49	33.8%
Near Fall	4	2.4%	2	4.7%	0	0.0%	0	0.0%	4	2.8%
Other	1	0.6%	0	0.0%	3	5.8%	1	1.8%	6	4.1%
Reversal	8	4.7%	0	0.0%	2	3.8%	2	3.5%	1	0.7%
Riding	5	3.0%	1	2.3%	0	0.0%	0	0.0%	3	2.1%
Sparring	35	20.7%	6	14.0%	6	11.5%	8	14.0%	9	6.2%
Takedown	62	36.7%	23	53.5%	30	57.7%	35	61.4%	36	24.8%
Unknown	33	19.5%	5	11.6%	9	17.3%	9	15.8%	26	17.9%
Total	***169***	***100.0%***	***43***	***100.0%***	***52***	***100.0%***	***57***	***100.0%***	***145***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***48***	***48,808***	***0.98***
Competition	9	6,957	1.29
Practice	39	41,851	0.93

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 10.2 Demographic Characteristics of Injured Boys' Baseball Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	14	30.4%
Sophomore	12	26.1%
Junior	6	13.0%
Senior	14	30.4%
Total	***46***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.9 (1.3)
n	32

BMI	
Minimum	17.1
Maximum	44.9
Mean (SD)	24.6 (5.3)
n	27

* Throughout this chapter, totals and n's represent the total unweighted 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, 2019-20 School Year

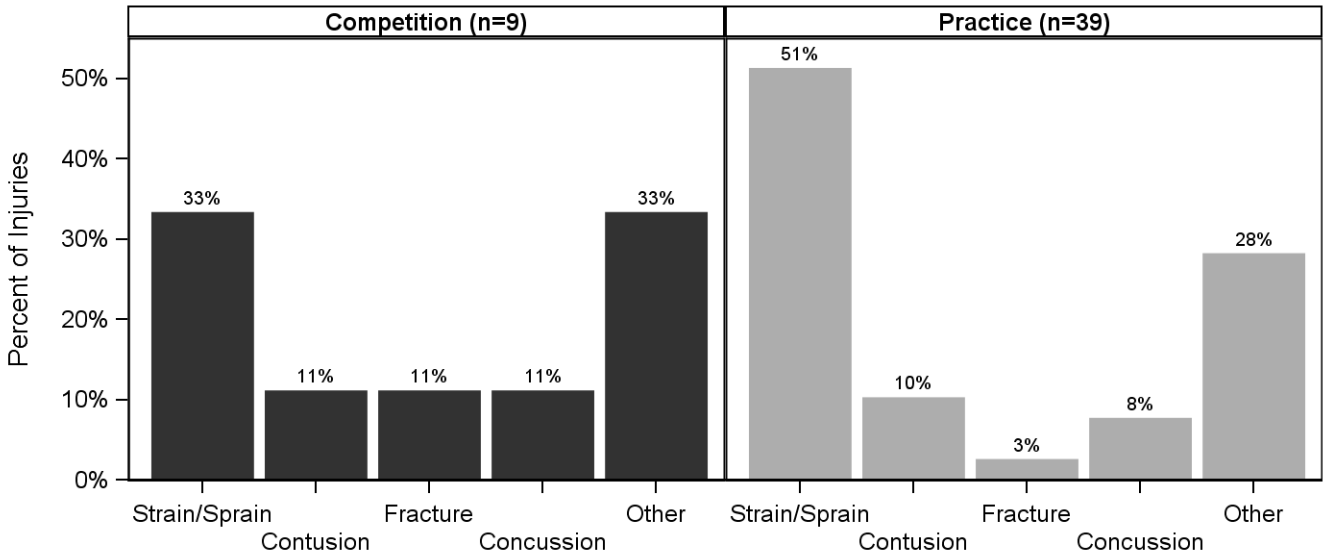


Table 10.3 Body Site of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

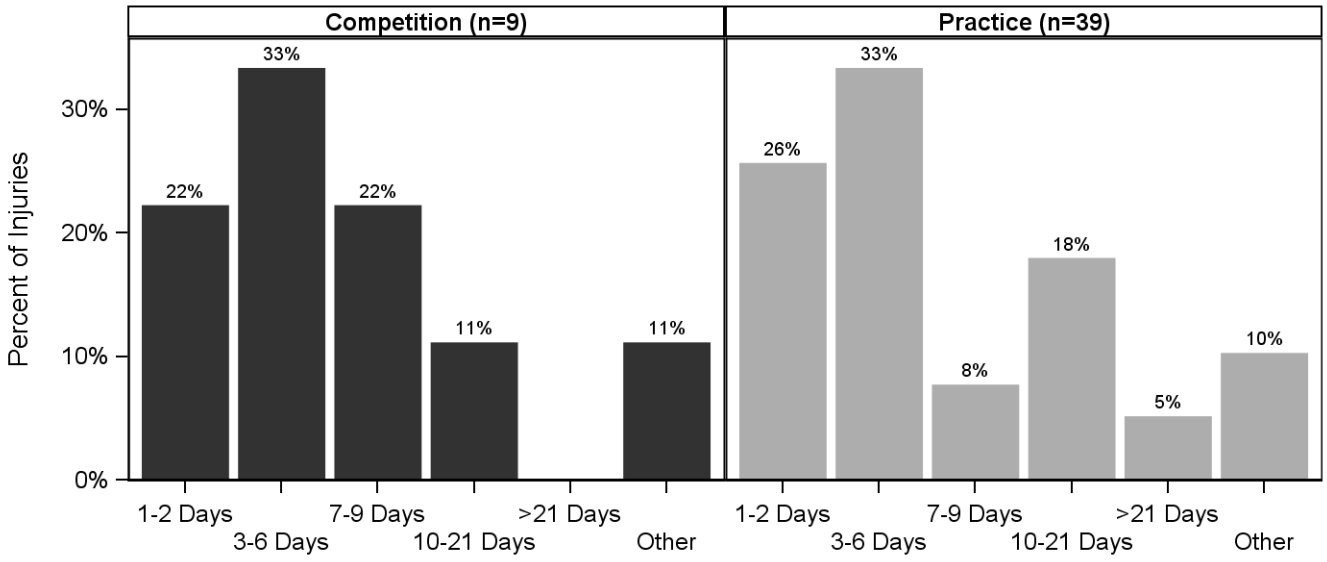
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Arm/Elbow	0	0.0%	10	25.6%	10	20.8%
Hand/Wrist	4	44.4%	4	10.3%	8	16.7%
Hip/Thigh/Upper Leg	3	33.3%	5	12.8%	8	16.7%
Shoulder	1	11.1%	6	15.4%	7	14.6%
Head/Face	1	11.1%	4	10.3%	5	10.4%
Lower Leg	0	0.0%	3	7.7%	3	6.3%
Trunk	0	0.0%	3	7.7%	3	6.3%
Ankle	0	0.0%	2	5.1%	2	4.2%
Foot	0	0.0%	1	2.6%	1	2.1%
Knee	0	0.0%	1	2.6%	1	2.1%
Total	***9***	***100.0%***	***39***	***100.0%***	***48***	***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, 2019-20 School Year

	Competition (n=9)		Practice (n=39)		Overall (n=48)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	3	33.3%	5	12.8%	8	16.7%
Arm/Elbow Strain/Sprain	0	0.0%	6	15.4%	6	12.5%
Arm/Elbow Other	0	0.0%	4	10.3%	4	8.3%
Hand/Wrist Contusion	1	11.1%	3	7.7%	4	8.3%
Head/Face Concussion	1	11.1%	3	7.7%	4	8.3%
Shoulder Other	1	11.1%	3	7.7%	4	8.3%
Shoulder Strain/Sprain	0	0.0%	3	7.7%	3	6.3%
Ankle Strain/Sprain	0	0.0%	2	5.1%	2	4.2%
Hand/Wrist Fracture	1	11.1%	1	2.6%	2	4.2%
Hand/Wrist Other	2	22.2%	0	0.0%	2	4.2%

Figure 10.2 Time Loss of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	9	100.0%	39	100.0%	48	100.0%
Total	***9***	***100.0%***	***39***	***100.0%***	***48***	***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, 2019-20 School Year

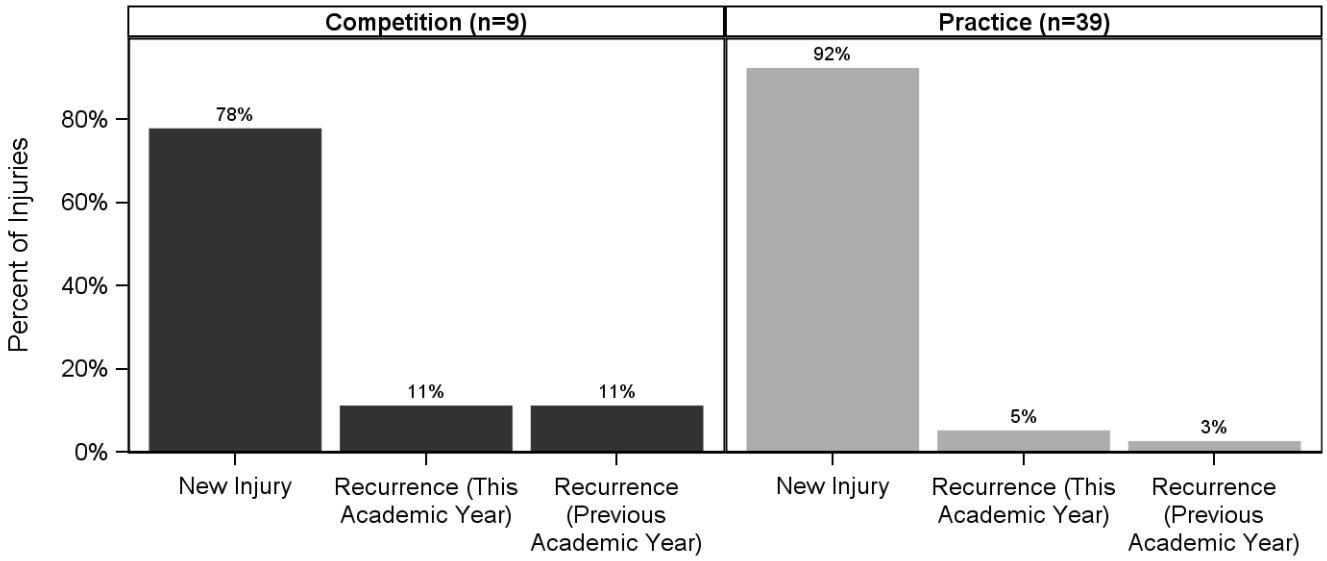


Table 10.6 Time during Season of Boys' Baseball Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	33	68.8%
Regular Season	15	31.3%
Total	***48***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	1	11.1%
Second Inning	1	11.1%
Third Inning	3	33.3%
Fifth Inning	2	22.2%
Unknown	2	22.2%
Total	***9***	***100.0%***

Field Location		
Pitchers Mound	1	11.1%
Home Plate	2	22.2%
First Base	1	11.1%
Second Base	3	33.3%
Unknown	2	22.2%
Total	***9***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	6	15.4%
Second 1/2 Hour	4	10.3%
1-2 Hours into Practice	15	38.5%
>2 Hours into Practice	1	2.6%
Unknown	13	33.3%
Total	***39***	***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, 2019-20 School Year

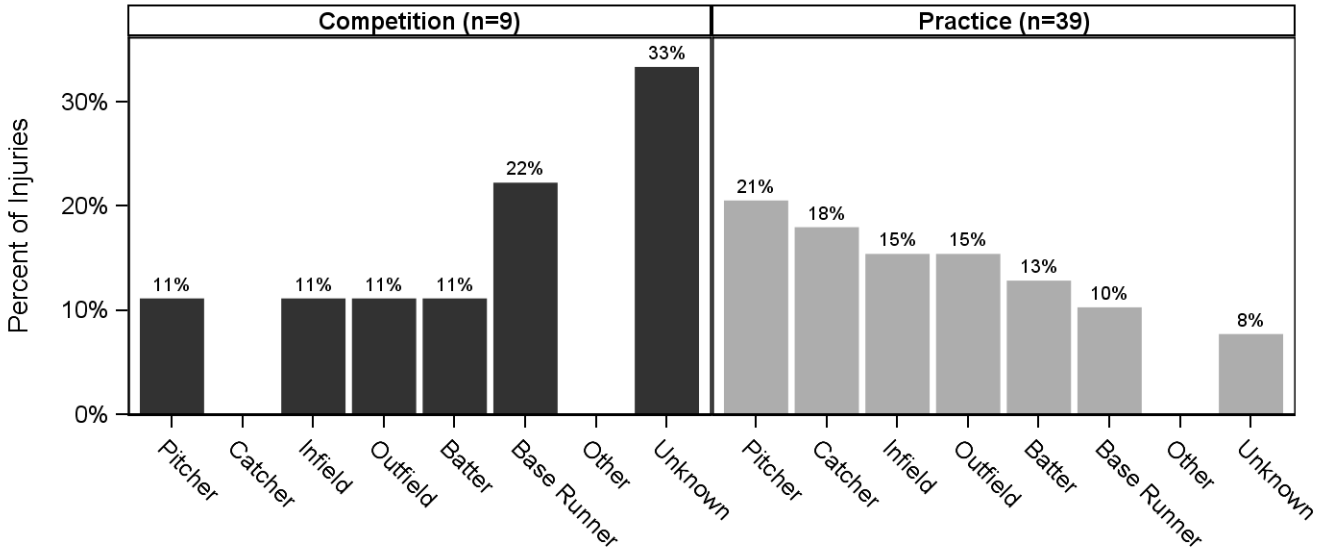


Table 10.9 Activities Leading to Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Pitching	1	11.1%	7	17.9%	8	16.7%
Running Bases	1	11.1%	6	15.4%	7	14.6%
General Play	2	22.2%	5	12.8%	7	14.6%
Batting	2	22.2%	4	10.3%	6	12.5%
Throwing	0	0.0%	5	12.8%	5	10.4%
Sliding	2	22.2%	1	2.6%	3	6.3%
Unknown	0	0.0%	3	7.7%	3	6.3%
Catching	0	0.0%	2	5.1%	2	4.2%
Conditioning	0	0.0%	2	5.1%	2	4.2%
Other	1	11.1%	1	2.6%	2	4.2%
Fielding a Batted Ball	0	0.0%	2	5.1%	2	4.2%
Fielding a Thrown Ball	0	0.0%	1	2.6%	1	2.1%
Total	***9***	***100.0%***	***39***	***100.0%***	***48***	***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, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Batting	3	13.0%	2	40.0%	0	0.0%	0	0.0%	1	7.1%
Catching	0	0.0%	1	20.0%	0	0.0%	1	25.0%	0	0.0%
Conditioning	2	8.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Fielding a Batted Ball	1	4.3%	0	0.0%	0	0.0%	0	0.0%	1	7.1%
Fielding a Thrown Ball	1	4.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
General Play	6	26.1%	0	0.0%	0	0.0%	0	0.0%	1	7.1%
Other	0	0.0%	0	0.0%	1	50.0%	1	25.0%	0	0.0%
Pitching	3	13.0%	0	0.0%	0	0.0%	1	25.0%	4	28.6%
Running Bases	4	17.4%	2	40.0%	0	0.0%	1	25.0%	0	0.0%
Sliding	0	0.0%	0	0.0%	1	50.0%	0	0.0%	2	14.3%
Throwing	2	8.7%	0	0.0%	0	0.0%	0	0.0%	3	21.4%
Unknown	1	4.3%	0	0.0%	0	0.0%	0	0.0%	2	14.3%
Total	***23***	***100.0%***	***5***	***100.0%***	***2***	***100.0%***	***4***	***100.0%***	***14***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***39***	***37,699***	***1.03***
Competition	12	7,629	1.57
Practice	27	30,070	0.90

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 11.2 Demographic Characteristics of Injured Girls' Softball Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	10	25.6%
Sophomore	10	25.6%
Junior	9	23.1%
Senior	10	25.6%
Total	***39***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.7 (1.1)
n	25

BMI	
Minimum	19.9
Maximum	29.9
Mean (SD)	23.5 (2.9)
n	19

* Throughout this chapter, totals and n's represent the total unweighted 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, 2019-20 School Year

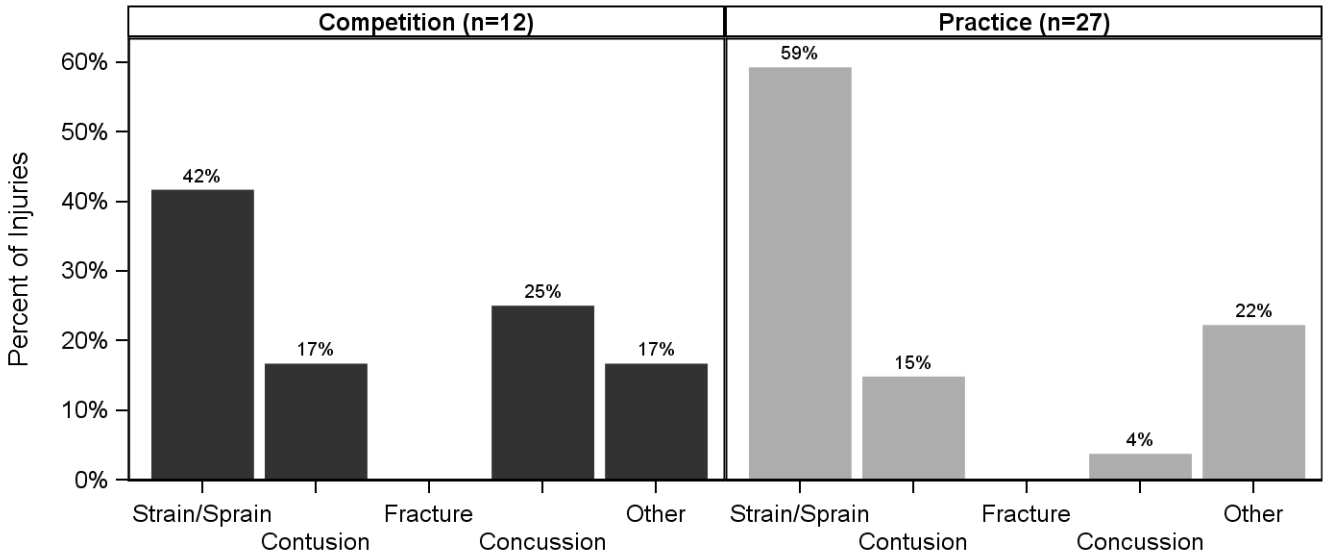


Table 11.3 Body Site of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

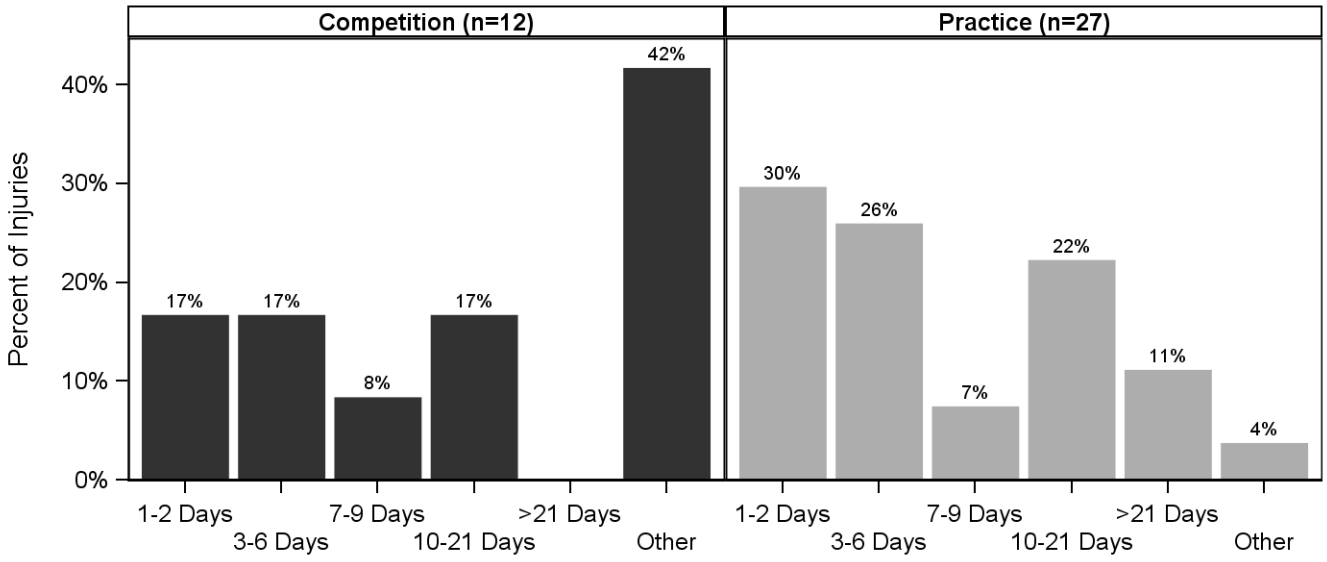
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	2	16.7%	5	18.5%	7	17.9%
Arm/Elbow	1	8.3%	5	18.5%	6	15.4%
Hip/Thigh/Upper Leg	0	0.0%	6	22.2%	6	15.4%
Hand/Wrist	3	25.0%	2	7.4%	5	12.8%
Head/Face	3	25.0%	2	7.4%	5	12.8%
Knee	2	16.7%	2	7.4%	4	10.3%
Shoulder	0	0.0%	2	7.4%	2	5.1%
Trunk	0	0.0%	2	7.4%	2	5.1%
Lower Leg	0	0.0%	1	3.7%	1	2.6%
Neck	1	8.3%	0	0.0%	1	2.6%
Total	***12***	***100.0%***	***27***	***100.0%***	***39***	***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, 2019-20 School Year

	Competition (n=12)		Practice (n=27)		Overall (n=39)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	2	16.7%	5	18.5%	7	17.9%
Head/Face Concussion	3	25.0%	1	3.7%	4	10.3%
Hip/Thigh/Upper Leg Strain/Sprain	0	0.0%	4	14.8%	4	10.3%
Arm/Elbow Other	0	0.0%	3	11.1%	3	7.7%
Hand/Wrist Strain/Sprain	1	8.3%	2	7.4%	3	7.7%
Arm/Elbow Strain/Sprain	1	8.3%	1	3.7%	2	5.1%
Hand/Wrist Other	2	16.7%	0	0.0%	2	5.1%
Knee Contusion	1	8.3%	1	3.7%	2	5.1%
Knee Strain/Sprain	1	8.3%	1	3.7%	2	5.1%
Arm/Elbow Contusion	0	0.0%	1	3.7%	1	2.6%

Figure 11.2 Time Loss of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	2	16.7%	1	3.7%	3	7.7%
Did Not Require Surgery	10	83.3%	26	96.3%	36	92.3%
Total	***12***	***100.0%***	***27***	***100.0%***	***39***	***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, 2019-20 School Year

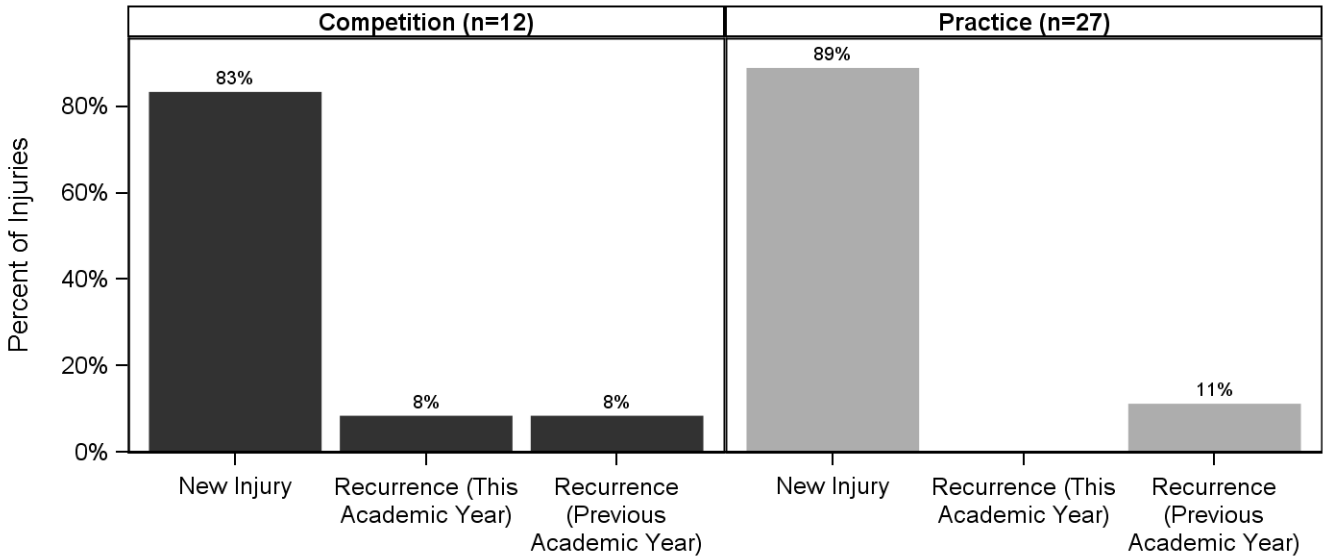


Table 11.6 Time during Season of Girls' Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	22	56.4%
Regular Season	17	43.6%
Total	***39***	***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, 2019-20 School Year *

Time in Competition	n	%
First Inning	1	9.1%
Second Inning	1	9.1%
Third Inning	2	18.2%
Fourth Inning	1	9.1%
Fifth Inning	2	18.2%
Sixth Inning	1	9.1%
Unknown	3	27.3%
Total	***11***	***100.0%***

Field Location		
Home Plate	3	27.3%
Second Base	3	27.3%
Third Base	2	18.2%
Outfield	1	9.1%
Other	1	9.1%
Unknown	1	9.1%
Total	***11***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	2	7.4%
Second 1/2 Hour	3	11.1%
1-2 Hours into Practice	10	37.0%
>2 Hours into Practice	1	3.7%
Unknown	11	40.7%
Total	***27***	***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, 2019-20 School Year

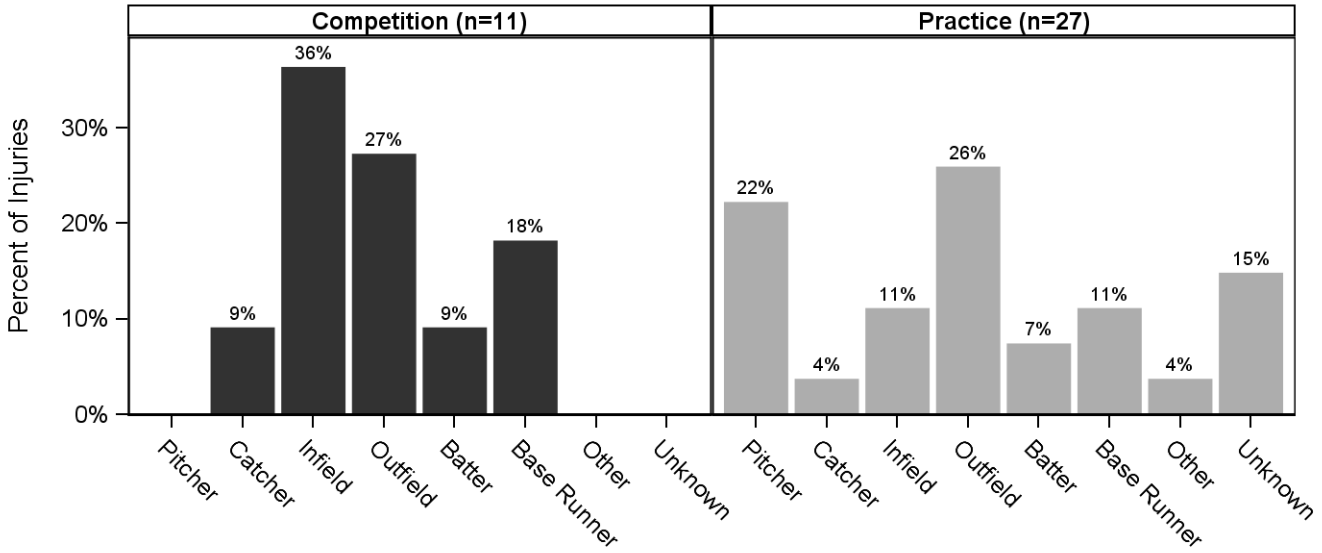


Table 11.9 Activities Leading to Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Sliding	5	45.5%	1	3.8%	6	16.2%
Pitching	0	0.0%	6	23.1%	6	16.2%
Running Bases	1	9.1%	4	15.4%	5	13.5%
Fielding a Batted Ball	3	27.3%	2	7.7%	5	13.5%
General Play	1	9.1%	2	7.7%	3	8.1%
Conditioning	0	0.0%	3	11.5%	3	8.1%
Throwing	0	0.0%	3	11.5%	3	8.1%
Catching	1	9.1%	1	3.8%	2	5.4%
Fielding a Thrown Ball	0	0.0%	2	7.7%	2	5.4%
Unknown	0	0.0%	1	3.8%	1	2.7%
Batting	0	0.0%	1	3.8%	1	2.7%
Total	***11***	***100.0%***	***26***	***100.0%***	***37***	***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, 2019-20 School Year *

	Diagnosis							
	Strain/Sprain		Contusion		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Batting	1	5.0%	0	0.0%	0	0.0%	0	0.0%
Catching	1	5.0%	0	0.0%	0	0.0%	1	14.3%
Conditioning	3	15.0%	0	0.0%	0	0.0%	0	0.0%
Fielding a Batted Ball	2	10.0%	1	16.7%	2	50.0%	0	0.0%
Fielding a Thrown Ball	1	5.0%	1	16.7%	0	0.0%	0	0.0%
General Play	2	10.0%	0	0.0%	0	0.0%	1	14.3%
Pitching	1	5.0%	1	16.7%	1	25.0%	3	42.9%
Running Bases	4	20.0%	0	0.0%	1	25.0%	0	0.0%
Sliding	3	15.0%	3	50.0%	0	0.0%	0	0.0%
Throwing	2	10.0%	0	0.0%	0	0.0%	1	14.3%
Unknown	0	0.0%	0	0.0%	0	0.0%	1	14.3%
Total	***20***	***100.0%***	***6***	***100.0%***	***4***	***100.0%***	***7***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***96***	***65,285***	***1.47***
Competition	54	22,482	2.40
Practice	42	42,803	0.98

* All analyses in this report present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 12.2 Demographic Characteristics of Injured Girls' Field Hockey Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	21	22.1%
Sophomore	30	31.6%
Junior	17	17.9%
Senior	27	28.4%
Total	***95***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.7 (1.1)
n	85

BMI	
Minimum	16.2
Maximum	31.8
Mean (SD)	22.1 (2.9)
n	63

* Throughout this chapter, totals and n's represent the total unweighted 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, 2019-20 School Year

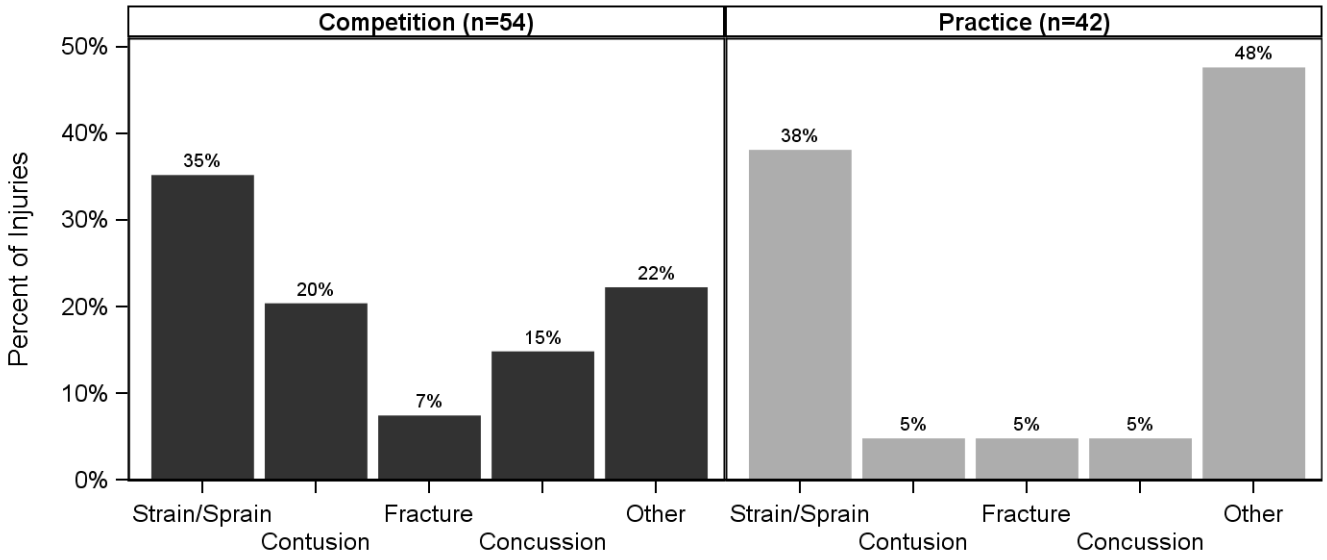


Table 12.3 Body Site of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

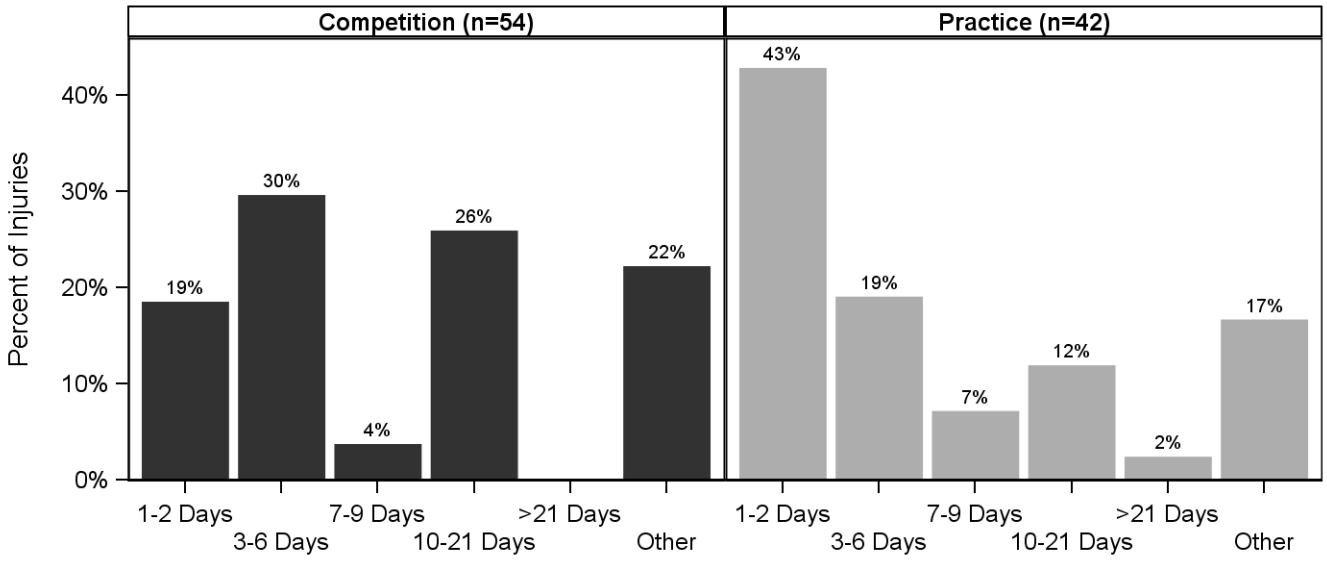
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	15	27.8%	4	9.5%	19	19.8%
Ankle	8	14.8%	6	14.3%	14	14.6%
Hip/Thigh/Upper Leg	5	9.3%	7	16.7%	12	12.5%
Hand/Wrist	10	18.5%	1	2.4%	11	11.5%
Knee	8	14.8%	3	7.1%	11	11.5%
Lower Leg	2	3.7%	8	19.0%	10	10.4%
Foot	2	3.7%	5	11.9%	7	7.3%
Other	1	1.9%	4	9.5%	5	5.2%
Trunk	0	0.0%	3	7.1%	3	3.1%
Arm/Elbow	1	1.9%	1	2.4%	2	2.1%
Shoulder	2	3.7%	0	0.0%	2	2.1%
Total	***54***	***100.0%***	***42***	***100.0%***	***96***	***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, 2019-20 School Year

	Competition (n=54)		Practice (n=42)		Overall (n=96)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	7	13.0%	5	11.9%	12	12.5%
Head/Face Concussion	8	14.8%	2	4.8%	10	10.4%
Hip/Thigh/Upper Leg Strain/Sprain	4	7.4%	5	11.9%	9	9.4%
Lower Leg Other	2	3.7%	7	16.7%	9	9.4%
Head/Face Other	5	9.3%	1	2.4%	6	6.3%
Other Other	1	1.9%	4	9.5%	5	5.2%
Foot Other	1	1.9%	3	7.1%	4	4.2%
Hand/Wrist Contusion	4	7.4%	0	0.0%	4	4.2%
Hand/Wrist Fracture	3	5.6%	1	2.4%	4	4.2%
Knee Other	2	3.7%	2	4.8%	4	4.2%

Figure 12.2 Time Loss of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	3	5.9%	0	0.0%	3	3.2%
Did Not Require Surgery	48	94.1%	42	100.0%	90	96.8%
Total	***51***	***100.0%***	***42***	***100.0%***	***93***	***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, 2019-20 School Year

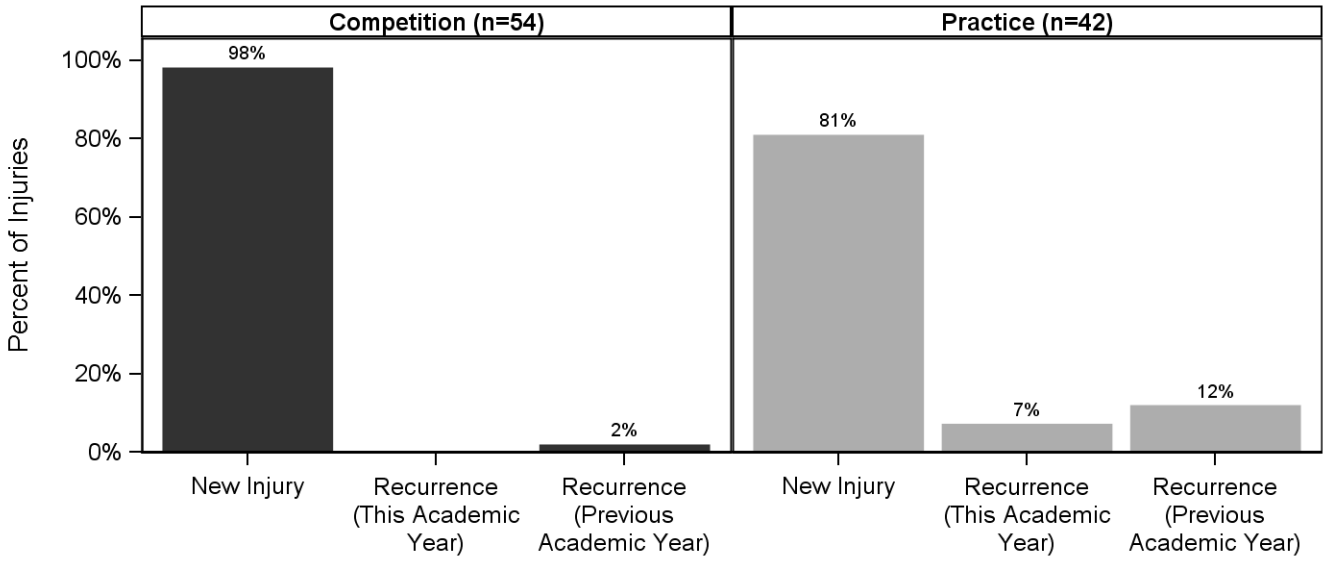


Table 12.6 Time during Season of Girls' Field Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	26	27.1%
Regular Season	63	65.6%
Post Season	7	7.3%
Total	***96***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	1	2.0%
First Half	7	13.7%
Second Half	28	54.9%
Unknown	15	29.4%
Total	***51***	***100.0%***

Field Location		
Goal Area/Circle	7	13.7%
Within 16-yard Arc	1	2.0%
Within 25-yard Line	5	9.8%
Between 25-yard Line and Center Line	12	23.5%
Unknown	26	51.0%
Total	***51***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	4	10.0%
Second 1/2 Hour	7	17.5%
1-2 Hours into Practice	17	42.5%
Unknown	12	30.0%
Total	***40***	***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, 2019-20 School Year

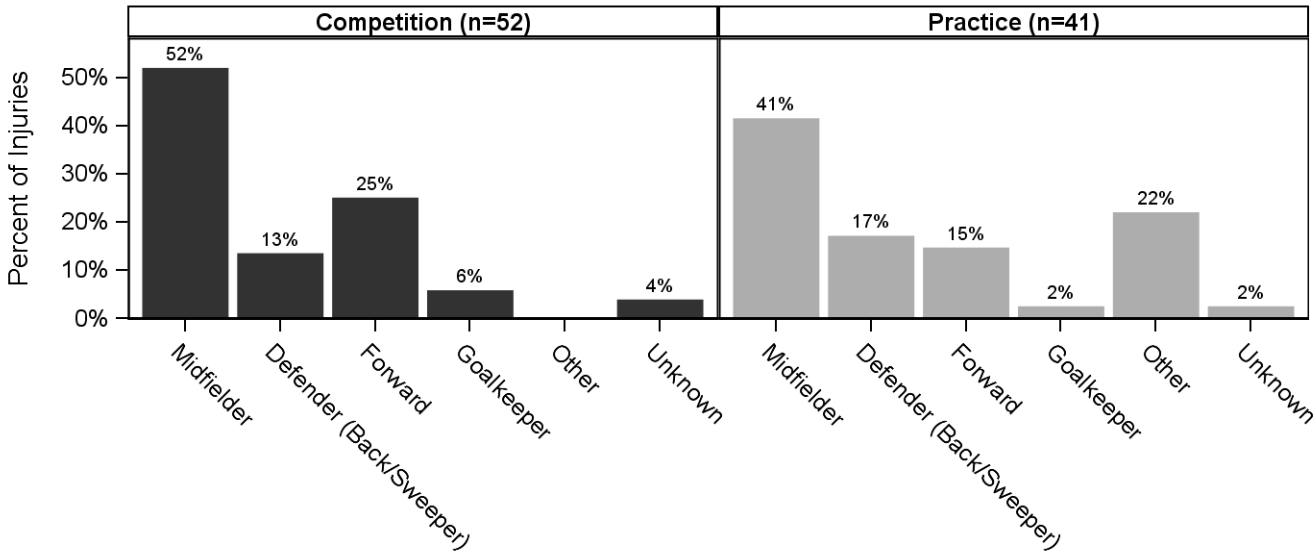


Table 12.9 Activities Leading to Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	15	29.4%	13	32.5%	28	30.8%
Defending	10	19.6%	4	10.0%	14	15.4%
Unknown	6	11.8%	4	10.0%	10	11.0%
Conditioning	0	0.0%	10	25.0%	10	11.0%
Ball Handling/Dribbling	9	17.6%	0	0.0%	9	9.9%
Chasing a Loose Ball	4	7.8%	4	10.0%	8	8.8%
Goaltending	3	5.9%	0	0.0%	3	3.3%
Blocking Shot	2	3.9%	1	2.5%	3	3.3%
Shooting	0	0.0%	2	5.0%	2	2.2%
Receiving Pass	2	3.9%	0	0.0%	2	2.2%
Penalty Corner	0	0.0%	1	2.5%	1	1.1%
Other	0	0.0%	1	2.5%	1	1.1%
Total	***51***	***100.0%***	***40***	***100.0%***	***91***	***100.0%***

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

Table 12.10 Activity Resulting in Girls' Field Hockey Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	5	15.6%	1	8.3%	0	0.0%	2	20.0%	1	3.2%
Blocking Shot	0	0.0%	2	16.7%	0	0.0%	1	10.0%	0	0.0%
Chasing a Loose Ball	3	9.4%	0	0.0%	2	33.3%	1	10.0%	2	6.5%
Conditioning	5	15.6%	0	0.0%	0	0.0%	0	0.0%	5	16.1%
Defending	3	9.4%	5	41.7%	1	16.7%	2	20.0%	3	9.7%
General Play	8	25.0%	2	16.7%	2	33.3%	1	10.0%	15	48.4%
Goaltending	2	6.3%	0	0.0%	0	0.0%	1	10.0%	0	0.0%
Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	3.2%
Penalty Corner	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	3.2%
Receiving Pass	0	0.0%	1	8.3%	1	16.7%	0	0.0%	0	0.0%
Shooting	2	6.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Unknown	4	12.5%	1	8.3%	0	0.0%	2	20.0%	3	9.7%
Total	***32***	***100.0%***	***12***	***100.0%***	***6***	***100.0%***	***10***	***100.0%***	***31***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***72***	***45,400***	***1.59***
Competition	59	16,043	3.68
Practice	13	29,357	0.44

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 13.2 Demographic Characteristics of Injured Boys' Ice Hockey Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	17	23.6%
Sophomore	13	18.1%
Junior	18	25.0%
Senior	24	33.3%
Total	***72***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.9 (1.4)
n	59

BMI	
Minimum	17.0
Maximum	34.1
Mean (SD)	23.6 (2.8)
n	52

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

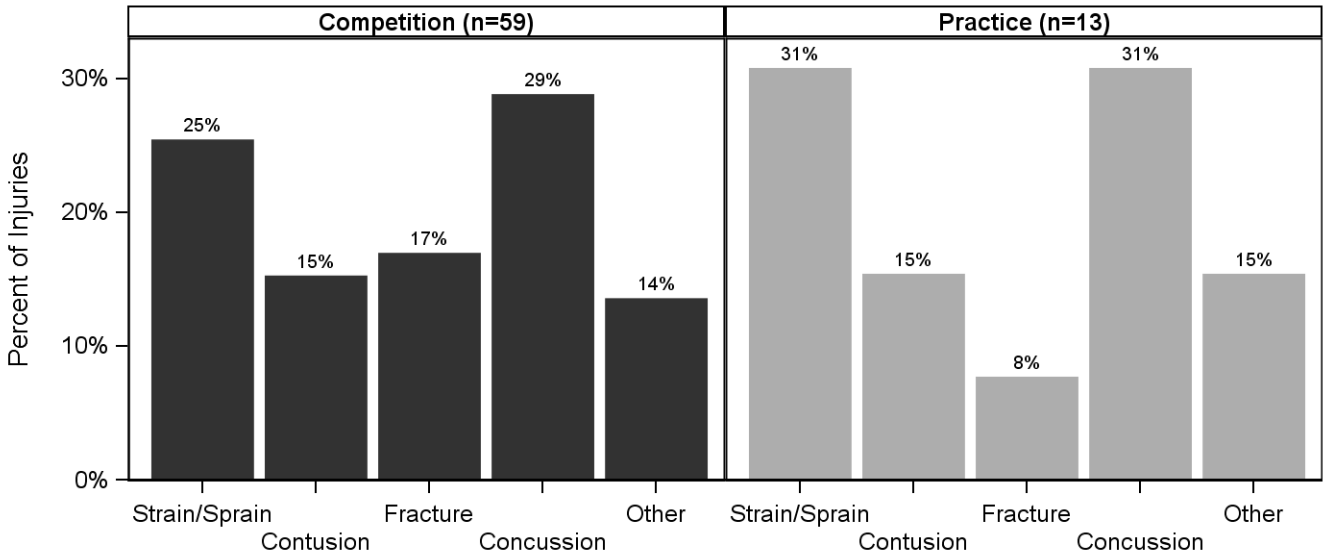


Table 13.3 Body Site of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

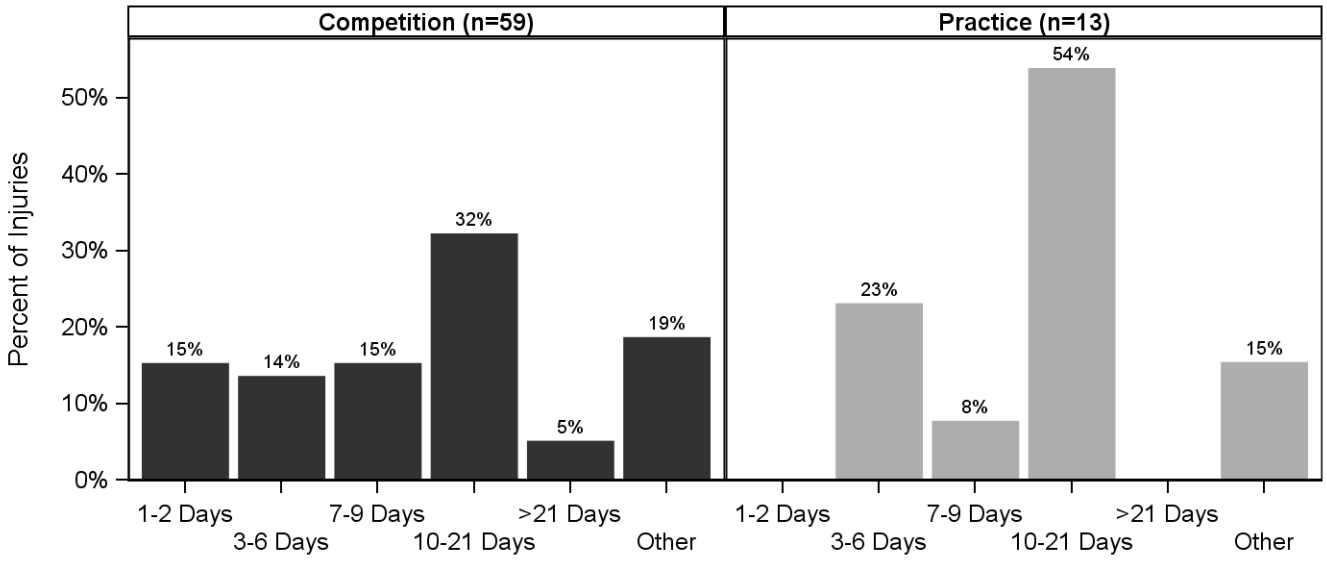
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	17	28.8%	5	38.5%	22	30.6%
Hand/Wrist	11	18.6%	2	15.4%	13	18.1%
Shoulder	9	15.3%	2	15.4%	11	15.3%
Other	7	11.9%	1	7.7%	8	11.1%
Hip/Thigh/Upper Leg	5	8.5%	0	0.0%	5	6.9%
Knee	3	5.1%	1	7.7%	4	5.6%
Ankle	2	3.4%	1	7.7%	3	4.2%
Arm/Elbow	2	3.4%	0	0.0%	2	2.8%
Foot	2	3.4%	0	0.0%	2	2.8%
Lower Leg	1	1.7%	0	0.0%	1	1.4%
Trunk	0	0.0%	1	7.7%	1	1.4%
Total	***59***	***100.0%***	***13***	***100.0%***	***72***	***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, 2019-20 School Year

	Competition (n=59)		Practice (n=13)		Overall (n=72)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	17	28.8%	4	30.8%	21	29.2%
Hand/Wrist Fracture	8	13.6%	1	7.7%	9	12.5%
Shoulder Strain/Sprain	5	8.5%	1	7.7%	6	8.3%
Other Strain/Sprain	4	6.8%	1	7.7%	5	6.9%
Hand/Wrist Strain/Sprain	2	3.4%	1	7.7%	3	4.2%
Shoulder Contusion	2	3.4%	1	7.7%	3	4.2%
Ankle Strain/Sprain	1	1.7%	1	7.7%	2	2.8%
Foot Contusion	2	3.4%	0	0.0%	2	2.8%
Hip/Thigh/Upper Leg Contusion	2	3.4%	0	0.0%	2	2.8%
Hip/Thigh/Upper Leg Strain/Sprain	2	3.4%	0	0.0%	2	2.8%

Figure 13.2 Time Loss of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	2	3.5%	2	15.4%	4	5.7%
Did Not Require Surgery	55	96.5%	11	84.6%	66	94.3%
Total	***57***	***100.0%***	***13***	***100.0%***	***70***	***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, 2019-20 School Year

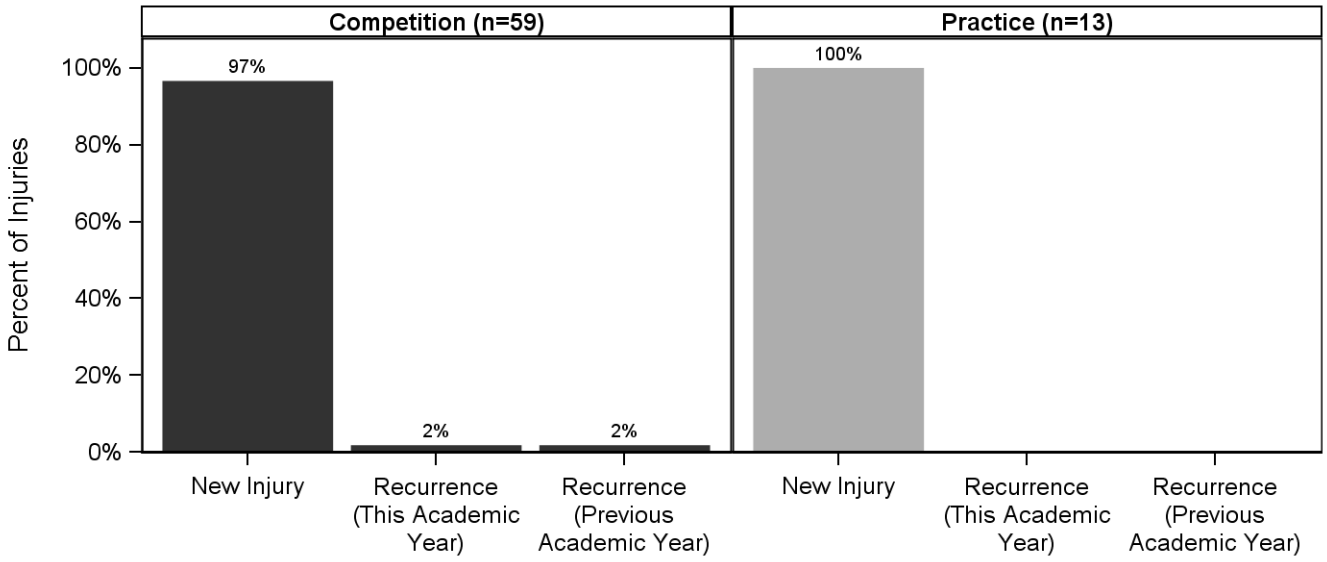


Table 13.6 Time during Season of Boys' Ice Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	2	2.8%
Regular Season	66	91.7%
Post Season	4	5.6%
Total	***72***	***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, 2019-20 School Year *

Time in Competition	n	%
First Period	14	24.1%
Second Period	27	46.6%
Third Period	10	17.2%
Overtime	1	1.7%
Unknown	6	10.3%
Total	***58***	***100.0%***

Rink Location		
Corner	8	13.8%
Behind Goal	4	6.9%
Goal Area	5	8.6%
Face-Off Circle	1	1.7%
Between Goal Line and Blue Line	20	34.5%
Neutral Zone	11	19.0%
Unknown	9	15.5%
Total	***58***	***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, 2019-20 School Year *

Time in Practice	n	%
Second 1/2 Hour	2	15.4%
1-2 Hours into Practice	6	46.2%
Unknown	5	38.5%
Total	***13***	***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, 2019-20 School Year

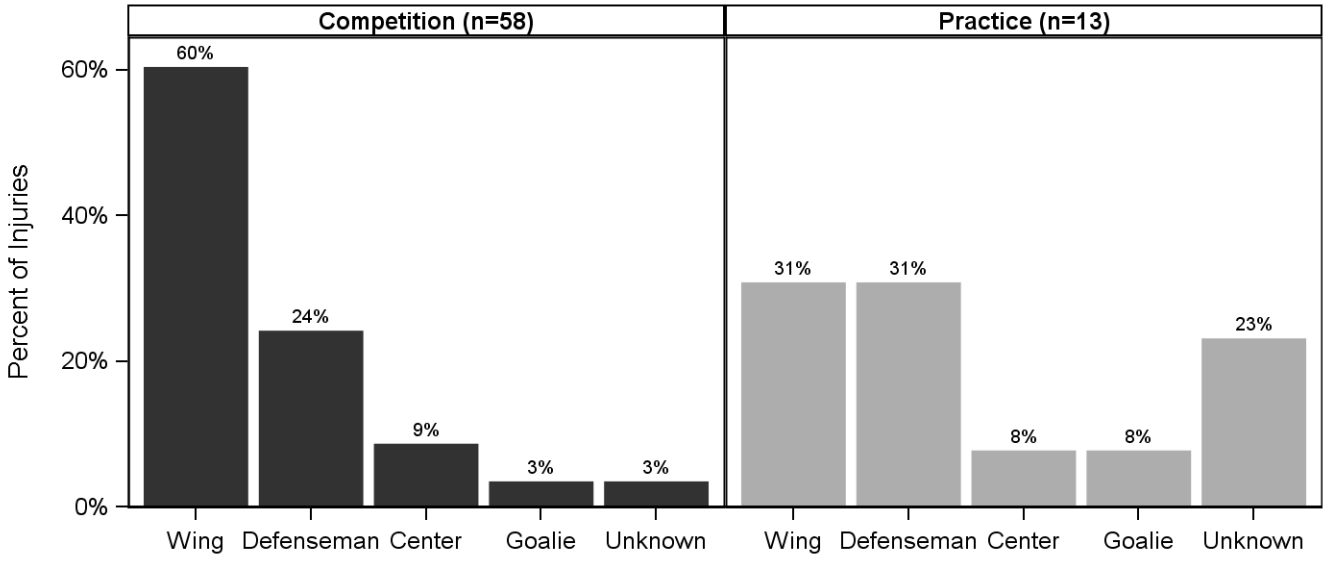


Table 13.9 Activities Leading to Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Being Checked	21	36.2%	0	0.0%	21	29.6%
Skating	14	24.1%	4	30.8%	18	25.4%
Checking	9	15.5%	1	7.7%	10	14.1%
Unknown	5	8.6%	4	30.8%	9	12.7%
Chasing Loose Puck	1	1.7%	3	23.1%	4	5.6%
Other	3	5.2%	0	0.0%	3	4.2%
Goaltending	2	3.4%	1	7.7%	3	4.2%
Receiving Pass	2	3.4%	0	0.0%	2	2.8%
Passing	1	1.7%	0	0.0%	1	1.4%
Total	***58***	***100.0%***	***13***	***100.0%***	***71***	***100.0%***

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

Table 13.10 Activity Resulting in Boys' Ice Hockey Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Being Checked	5	27.8%	3	27.3%	4	36.4%	8	38.1%	1	10.0%
Chasing Loose Puck	2	11.1%	0	0.0%	0	0.0%	2	9.5%	0	0.0%
Checking	5	27.8%	0	0.0%	0	0.0%	0	0.0%	5	50.0%
Goaltending	1	5.6%	0	0.0%	0	0.0%	1	4.8%	1	10.0%
Other	0	0.0%	3	27.3%	0	0.0%	0	0.0%	0	0.0%
Passing	0	0.0%	0	0.0%	1	9.1%	0	0.0%	0	0.0%
Receiving Pass	0	0.0%	0	0.0%	0	0.0%	2	9.5%	0	0.0%
Skating	2	11.1%	4	36.4%	5	45.5%	6	28.6%	1	10.0%
Unknown	3	16.7%	1	9.1%	1	9.1%	2	9.5%	2	20.0%
Total	***18***	***100.0%***	***11***	***100.0%***	***11***	***100.0%***	***21***	***100.0%***	***10***	***100.0%***

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

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XIV. Boys' Lacrosse Injury Epidemiology

Table 14.1 Boys' Lacrosse Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***65***	***132,645***	***0.49***
Competition	16	38,333	0.42
Practice	49	94,312	0.52

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 14.2 Demographic Characteristics of Injured Boys' Lacrosse Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	7	10.8%
Sophomore	13	20.0%
Junior	18	27.7%
Senior	27	41.5%
Total	***65***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	16.5 (1.2)
n	62

BMI	
Minimum	18.8
Maximum	28.4
Mean (SD)	23.7 (1.9)
n	49

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

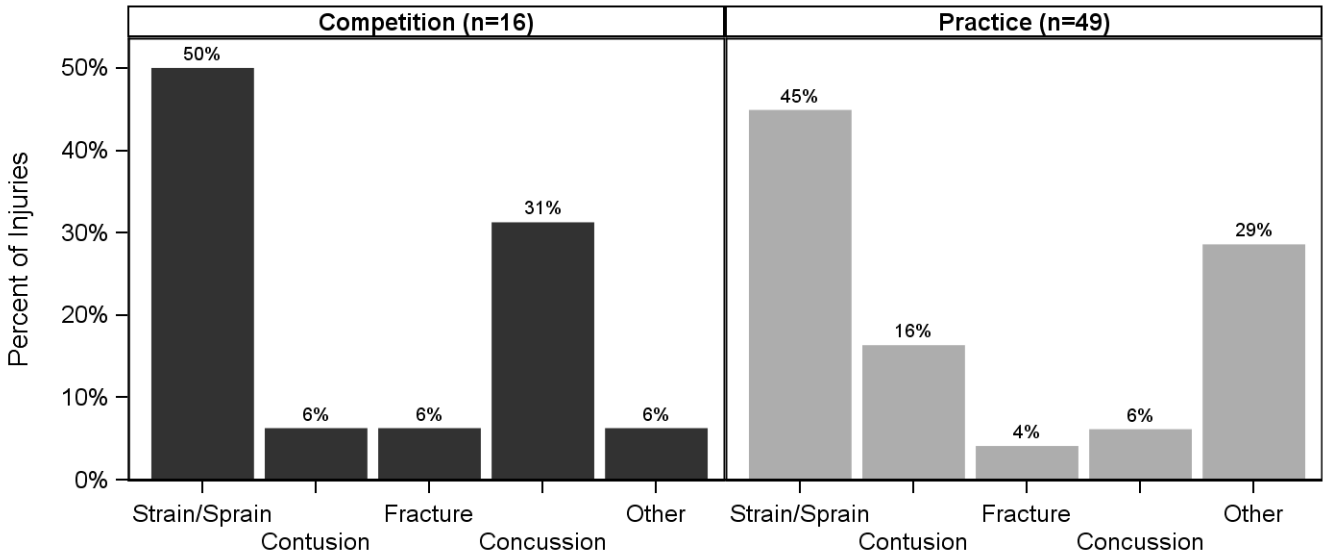


Table 14.3 Body Site of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

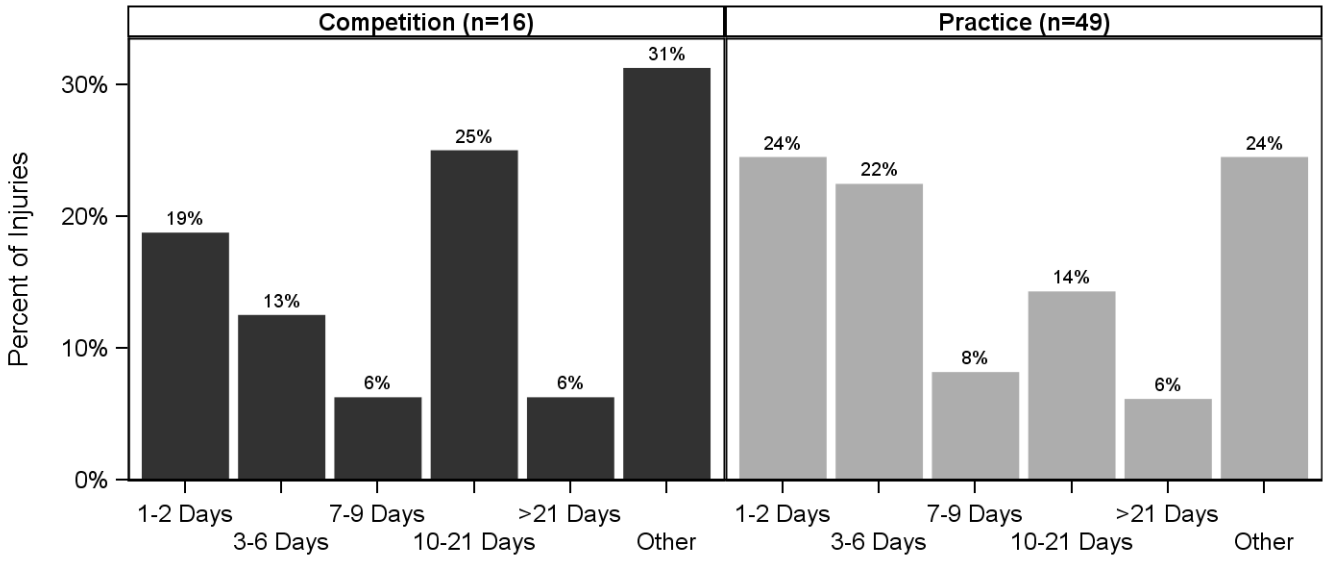
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	2	12.5%	13	26.5%	15	23.1%
Knee	2	12.5%	9	18.4%	11	16.9%
Head/Face	5	31.3%	4	8.2%	9	13.8%
Ankle	2	12.5%	5	10.2%	7	10.8%
Trunk	1	6.3%	6	12.2%	7	10.8%
Hand/Wrist	1	6.3%	4	8.2%	5	7.7%
Shoulder	2	12.5%	3	6.1%	5	7.7%
Lower Leg	1	6.3%	3	6.1%	4	6.2%
Arm/Elbow	0	0.0%	1	2.0%	1	1.5%
Neck	0	0.0%	1	2.0%	1	1.5%
Total	***16***	***100.0%***	***49***	***100.0%***	***65***	***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, 2019-20 School Year

	Competition (n=16)		Practice (n=49)		Overall (n=65)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	5	31.3%	3	6.1%	8	12.3%
Hip/Thigh/Upper Leg Strain/Sprain	1	6.3%	7	14.3%	8	12.3%
Ankle Strain/Sprain	2	12.5%	5	10.2%	7	10.8%
Hip/Thigh/Upper Leg Contusion	1	6.3%	4	8.2%	5	7.7%
Knee Other	0	0.0%	5	10.2%	5	7.7%
Knee Strain/Sprain	2	12.5%	3	6.1%	5	7.7%
Trunk Strain/Sprain	1	6.3%	4	8.2%	5	7.7%
Hand/Wrist Fracture	1	6.3%	2	4.1%	3	4.6%
Lower Leg Other	0	0.0%	3	6.1%	3	4.6%
Shoulder Other	1	6.3%	2	4.1%	3	4.6%

Figure 14.2 Time Loss of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	2	12.5%	1	2.1%	3	4.8%
Did Not Require Surgery	14	87.5%	46	97.9%	60	95.2%
Total	***16***	***100.0%***	***47***	***100.0%***	***63***	***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, 2019-20 School Year

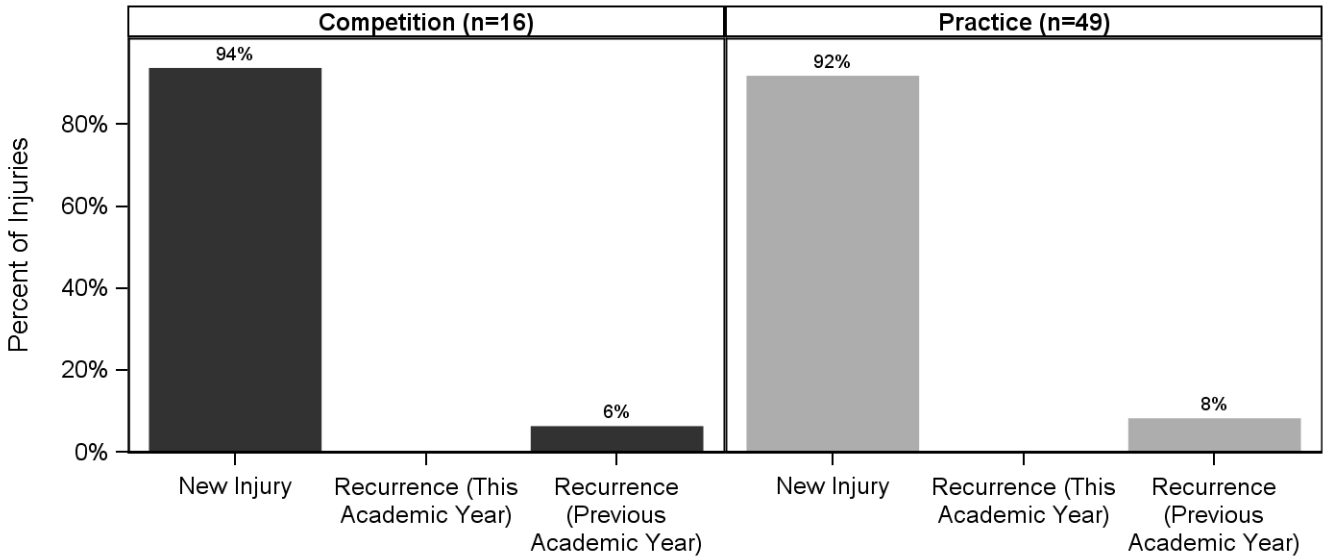


Table 14.6 Time during Season of Boys' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	48	73.8%
Regular Season	15	23.1%
Unknown/Other	2	3.1%
Total	***65***	***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, 2019-20 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	1	6.3%
Second Quarter	5	31.3%
Third Quarter	2	12.5%
Fourth Quarter	5	31.3%
Unknown	3	18.8%
Total	***16***	***100.0%***

Rink Location		
Midfield	5	31.3%
Wing Area	2	12.5%
Goal Area	4	25.0%
Crease Area	1	6.3%
Unknown	4	25.0%
Total	***16***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	3	6.3%
Second 1/2 Hour	10	20.8%
1-2 Hours into Practice	24	50.0%
>2 Hours into Practice	2	4.2%
Unknown	9	18.8%
Total	***48***	***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, 2019-20 School Year

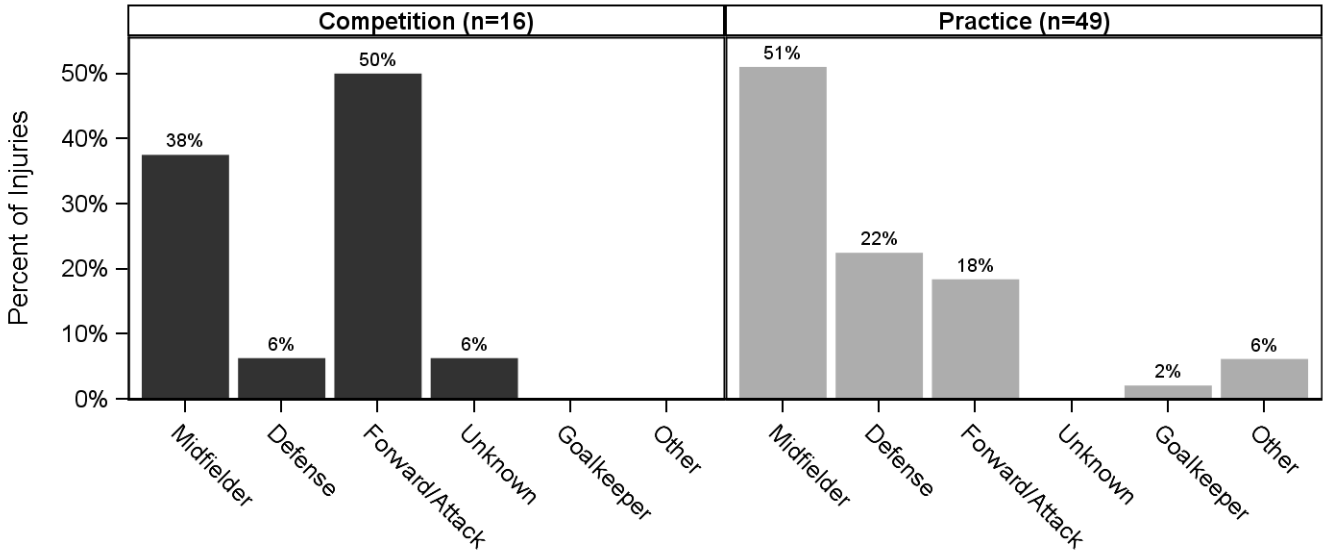


Table 14.9 Activities Leading to Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	3	18.8%	19	38.8%	22	33.8%
Chasing Loose Ball	3	18.8%	3	6.1%	6	9.2%
Shooting	2	12.5%	4	8.2%	6	9.2%
Being Body Checked	1	6.3%	3	6.1%	4	6.2%
Being Cross/Stick Checked	1	6.3%	3	6.1%	4	6.2%
Unknown	1	6.3%	3	6.1%	4	6.2%
Defending	1	6.3%	2	4.1%	3	4.6%
Body Checking	1	6.3%	2	4.1%	3	4.6%
Other	1	6.3%	2	4.1%	3	4.6%
Conditioning	0	0.0%	3	6.1%	3	4.6%
Cross/Stick Checking	1	6.3%	1	2.0%	2	3.1%
Receiving Pass	1	6.3%	1	2.0%	2	3.1%
Goaltending	0	0.0%	1	2.0%	1	1.5%
Face-Off	0	0.0%	1	2.0%	1	1.5%
Ball Handling/Cradling	0	0.0%	1	2.0%	1	1.5%
Total	***16***	***100.0%***	***49***	***100.0%***	***65***	***100.0%***

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

Table 14.10 Activity Resulting in Boys' Lacrosse Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Cradling	1	3.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Being Body Checked	2	6.7%	1	11.1%	0	0.0%	0	0.0%	1	6.7%
Being Cross/Stick Checked	0	0.0%	1	11.1%	2	66.7%	1	12.5%	0	0.0%
Body Checking	0	0.0%	1	11.1%	1	33.3%	0	0.0%	1	6.7%
Chasing Loose Ball	3	10.0%	1	11.1%	0	0.0%	2	25.0%	0	0.0%
Conditioning	2	6.7%	0	0.0%	0	0.0%	0	0.0%	1	6.7%
Cross/Stick Checking	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	13.3%
Defending	2	6.7%	1	11.1%	0	0.0%	0	0.0%	0	0.0%
Face-Off	1	3.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
General Play	12	40.0%	1	11.1%	0	0.0%	0	0.0%	9	60.0%
Goaltending	0	0.0%	1	11.1%	0	0.0%	0	0.0%	0	0.0%
Other	2	6.7%	0	0.0%	0	0.0%	1	12.5%	0	0.0%
Receiving Pass	0	0.0%	0	0.0%	0	0.0%	2	25.0%	0	0.0%
Shooting	3	10.0%	1	11.1%	0	0.0%	1	12.5%	1	6.7%
Unknown	2	6.7%	1	11.1%	0	0.0%	1	12.5%	0	0.0%
Total	***30***	***100.0%***	***9***	***100.0%***	***3***	***100.0%***	***8***	***100.0%***	***15***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***33***	***18,984***	***1.74***
Competition	6	2,022	2.97
Practice	27	16,962	1.59

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 15.2 Demographic Characteristics of Injured Girls' Lacrosse Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	5	15.6%
Sophomore	7	21.9%
Junior	10	31.3%
Senior	10	31.3%
Total	***32***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	16.3 (1.2)
n	28

BMI	
Minimum	17.7
Maximum	30.3
Mean (SD)	23.3 (4.0)
n	15

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

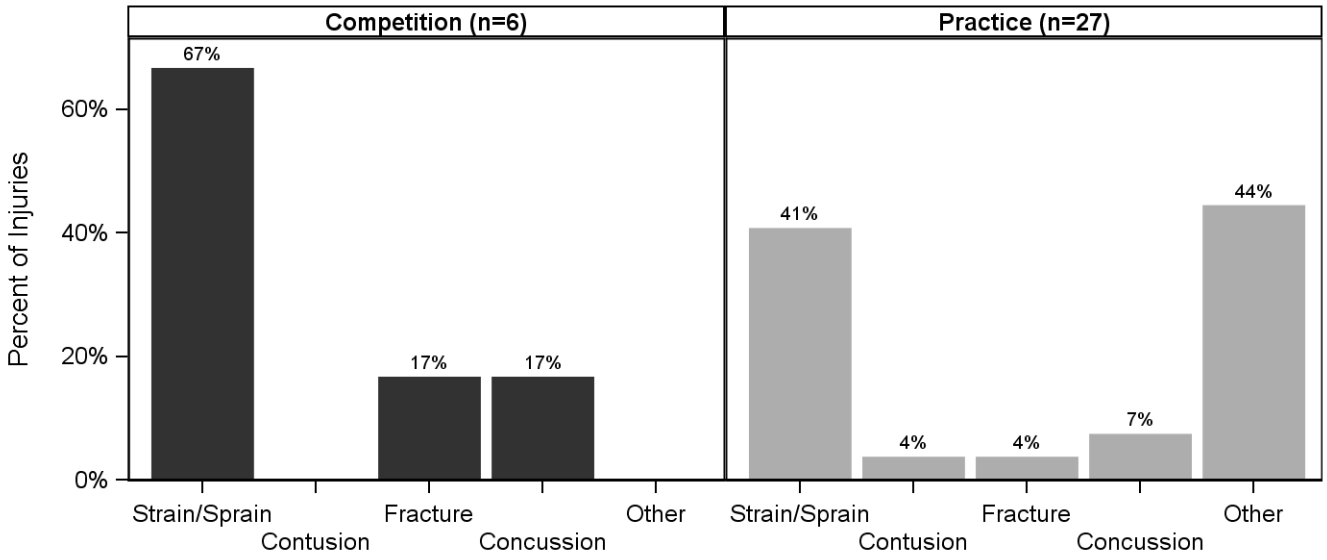


Table 15.3 Body Site of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

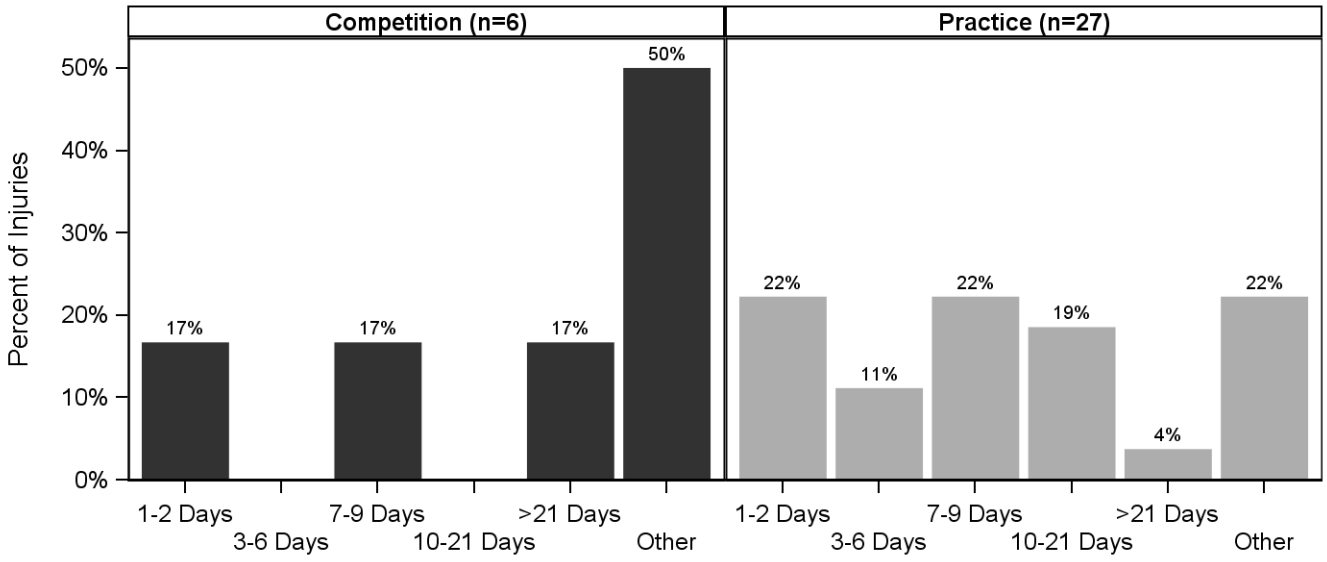
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg	1	16.7%	7	25.9%	8	24.2%
Knee	1	16.7%	4	14.8%	5	15.2%
Ankle	2	33.3%	2	7.4%	4	12.1%
Hip/Thigh/Upper Leg	0	0.0%	4	14.8%	4	12.1%
Foot	0	0.0%	3	11.1%	3	9.1%
Head/Face	1	16.7%	2	7.4%	3	9.1%
Trunk	0	0.0%	2	7.4%	2	6.1%
Arm/Elbow	1	16.7%	0	0.0%	1	3.0%
Hand/Wrist	0	0.0%	1	3.7%	1	3.0%
Other	0	0.0%	1	3.7%	1	3.0%
Shoulder	0	0.0%	1	3.7%	1	3.0%
Total	***6***	***100.0%***	***27***	***100.0%***	***33***	***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, 2019-20 School Year

	Competition (n=6)		Practice (n=27)		Overall (n=33)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg Other	0	0.0%	7	25.9%	7	21.2%
Ankle Strain/Sprain	2	33.3%	2	7.4%	4	12.1%
Hip/Thigh/Upper Leg Strain/Sprain	0	0.0%	4	14.8%	4	12.1%
Head/Face Concussion	1	16.7%	2	7.4%	3	9.1%
Knee Other	0	0.0%	3	11.1%	3	9.1%
Knee Strain/Sprain	1	16.7%	1	3.7%	2	6.1%
Arm/Elbow Fracture	1	16.7%	0	0.0%	1	3.0%
Foot Fracture	0	0.0%	1	3.7%	1	3.0%
Foot Other	0	0.0%	1	3.7%	1	3.0%
Foot Strain/Sprain	0	0.0%	1	3.7%	1	3.0%

Figure 15.2 Time Loss of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	1	16.7%	0	0.0%	1	3.0%
Did Not Require Surgery	5	83.3%	27	100.0%	32	97.0%
Total	***6***	***100.0%***	***27***	***100.0%***	***33***	***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, 2019-20 School Year

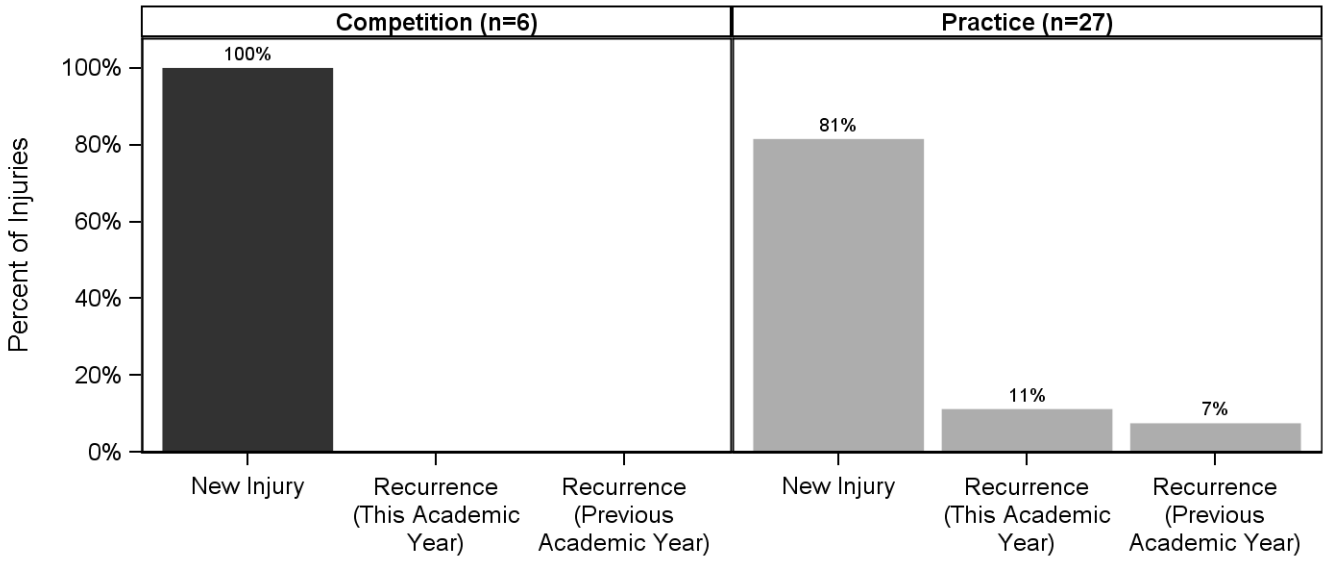


Table 15.6 Time during Season of Girls' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	23	69.7%
Regular Season	9	27.3%
Unknown/Other	1	3.0%
Total	***33***	***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, 2019-20 School Year *

Time in Competition	n	%
First Half	2	40.0%
Second Half	3	60.0%
Total	***5***	***100.0%***

Rink Location		
Midfield (Between Restraining Lines)	2	40.0%
Goal Circle	1	20.0%
Unknown	2	40.0%
Total	***5***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	7	25.9%
Second 1/2 Hour	3	11.1%
1-2 Hours into Practice	6	22.2%
Unknown	11	40.7%
Total	***27***	***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, 2019-20 School Year

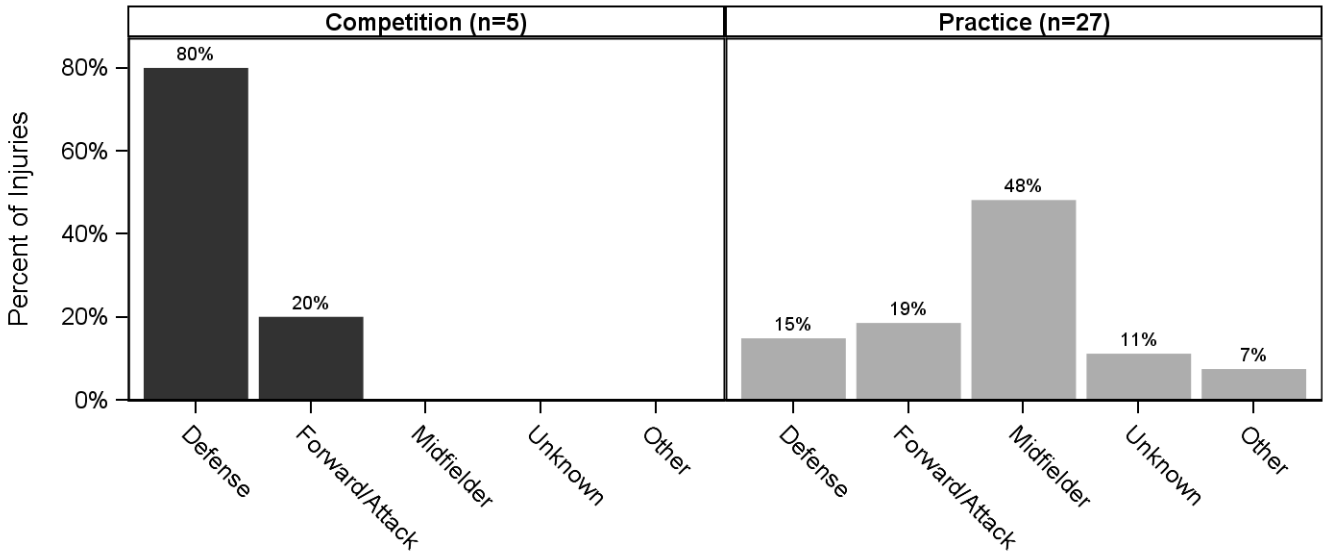


Table 15.9 Activities Leading to Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	1	20.0%	13	48.1%	14	43.8%
Conditioning	0	0.0%	6	22.2%	6	18.8%
Unknown	2	40.0%	1	3.7%	3	9.4%
Being Cross/Stick Checked	0	0.0%	2	7.4%	2	6.3%
Chasing Loose Ball	0	0.0%	1	3.7%	1	3.1%
Defending	1	20.0%	0	0.0%	1	3.1%
Being Body Checked	1	20.0%	0	0.0%	1	3.1%
Receiving Pass	0	0.0%	1	3.7%	1	3.1%
Other	0	0.0%	1	3.7%	1	3.1%
Passing	0	0.0%	1	3.7%	1	3.1%
Shooting	0	0.0%	1	3.7%	1	3.1%
Total	***5***	***100.0%***	***27***	***100.0%***	***32***	***100.0%***

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

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Table 15.10 Activity Resulting in Girls' Lacrosse Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Being Body Checked	0	0.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%
Being Cross/Stick Checked	0	0.0%	1	100.0%	0	0.0%	1	33.3%	0	0.0%
Chasing Loose Ball	1	7.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Conditioning	3	21.4%	0	0.0%	0	0.0%	0	0.0%	3	25.0%
Defending	1	7.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
General Play	5	35.7%	0	0.0%	0	0.0%	0	0.0%	9	75.0%
Other	0	0.0%	0	0.0%	1	50.0%	0	0.0%	0	0.0%
Passing	0	0.0%	0	0.0%	0	0.0%	1	33.3%	0	0.0%
Receiving Pass	1	7.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shooting	1	7.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Unknown	2	14.3%	0	0.0%	0	0.0%	1	33.3%	0	0.0%
Total	***14***	***100.0%***	***1***	***100.0%***	***2***	***100.0%***	***3***	***100.0%***	***12***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***10***	***85,434***	***0.12***
Competition	5	15,444	0.32
Practice	5	69,990	0.07

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 16.2 Demographic Characteristics of Injured Boys' Swimming and Diving Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	3	30.0%
Sophomore	3	30.0%
Junior	1	10.0%
Senior	3	30.0%
Total	***10***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.3 (1.9)
n	4

BMI	
Minimum	20.3
Maximum	29.4
Mean (SD)	24.5 (4.2)
n	4

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

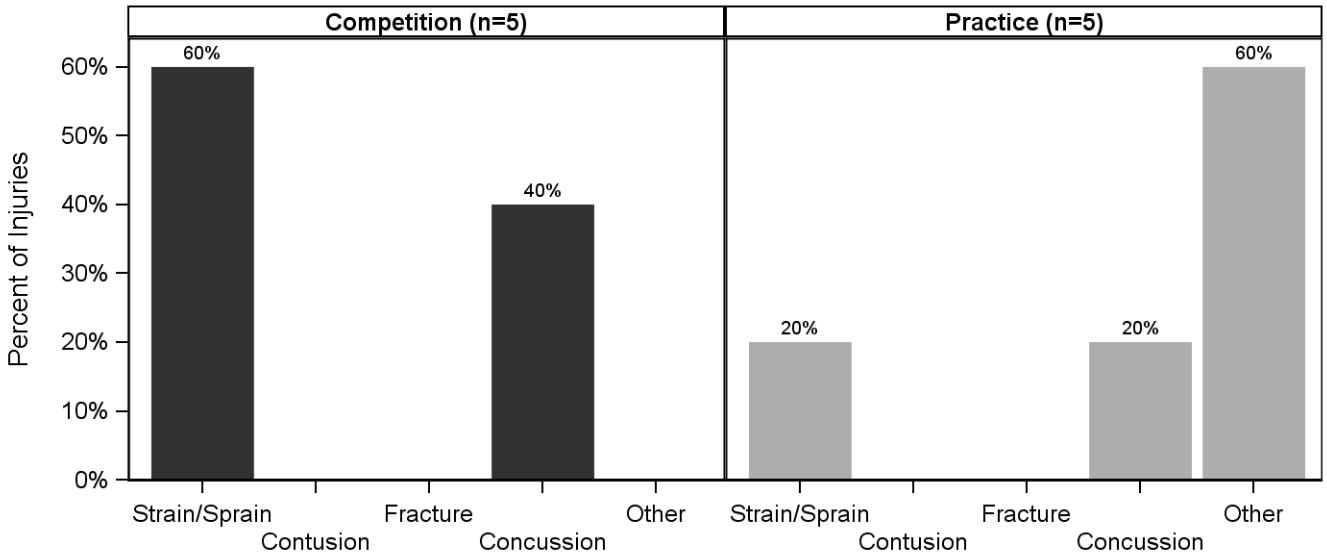


Table 16.3 Body Site of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

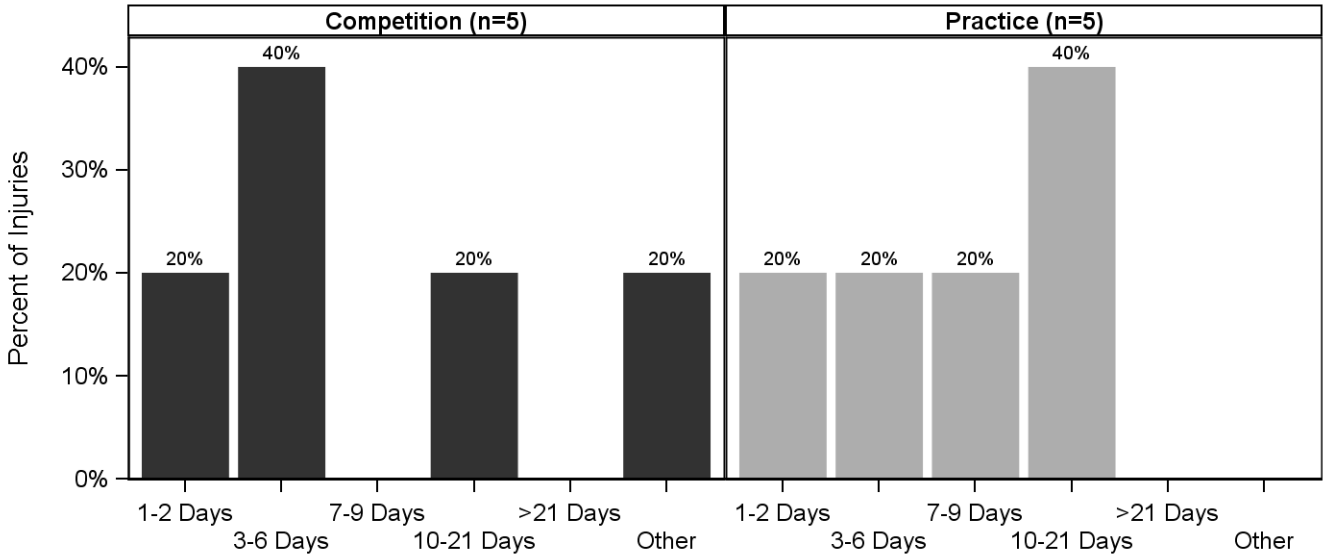
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	2	40.0%	1	20.0%	3	30.0%
Shoulder	1	20.0%	2	40.0%	3	30.0%
Trunk	1	20.0%	1	20.0%	2	20.0%
Arm/Elbow	1	20.0%	0	0.0%	1	10.0%
Lower Leg	0	0.0%	1	20.0%	1	10.0%
Total	***5***	***100.0%***	***5***	***100.0%***	***10***	***100.0%***

* 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, 2019-20 School Year

	Competition (n=5)		Practice (n=5)		Overall (n=10)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	2	40.0%	1	20.0%	3	30.0%
Shoulder Other	0	0.0%	2	40.0%	2	20.0%
Trunk Strain/Sprain	1	20.0%	1	20.0%	2	20.0%
Arm/Elbow Strain/Sprain	1	20.0%	0	0.0%	1	10.0%
Lower Leg Other	0	0.0%	1	20.0%	1	10.0%
Shoulder Strain/Sprain	1	20.0%	0	0.0%	1	10.0%

Figure 16.2 Time Loss of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	5	100.0%	5	100.0%	10	100.0%
Total	***5***	***100.0%***	***5***	***100.0%***	***10***	***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, 2019-20 School Year

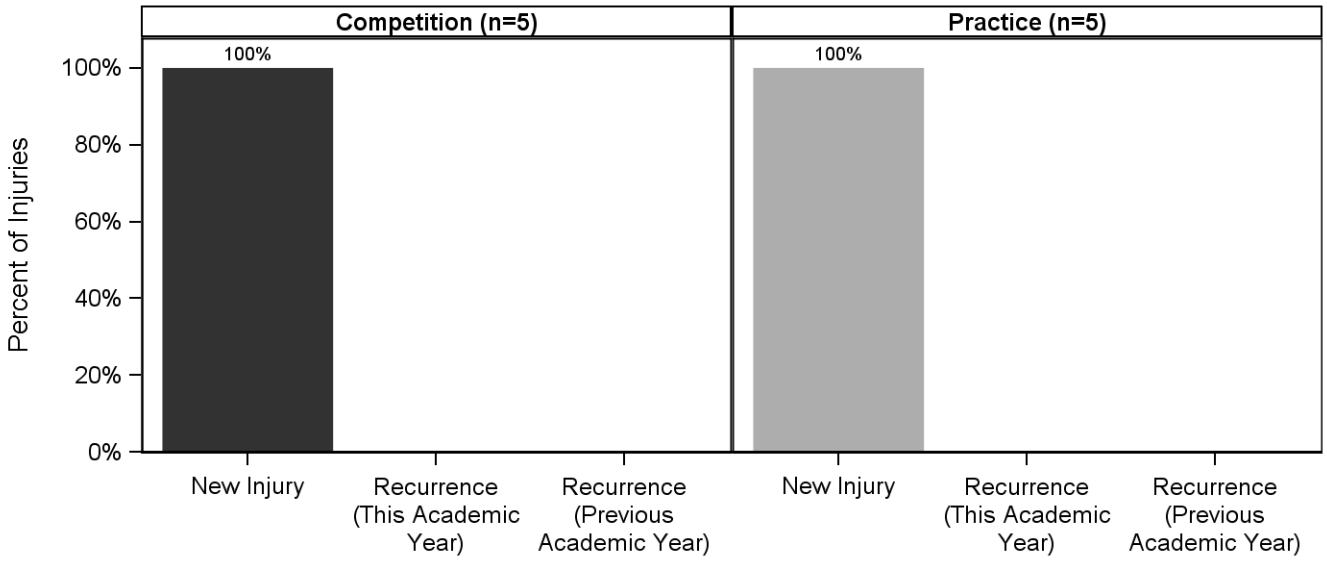


Table 16.6 Time during Season of Boys' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	2	20.0%
Regular Season	8	80.0%
Total	***10***	***100.0%***

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

Table 16.7 Competition-Related Variables for Boys' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Pool Location		
In Pool	4	80.0%
Unknown	1	20.0%
Total	***5***	***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, 2019-20 School Year *

Time in Practice	n	%
Unknown	5	100.0%
Total	***5***	***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, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Swimming	3	60.0%	4	80.0%	7	70.0%
Flip Off Wall	1	20.0%	1	20.0%	2	20.0%
Conditioning	1	20.0%	0	0.0%	1	10.0%
Total	***5***	***100.0%***	***5***	***100.0%***	***10***	***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, 2019-20 School Year *

	Diagnosis					
	Strain/Sprain		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	0	0.0%	1	33.3%	0	0.0%
Flip Off Wall	0	0.0%	2	66.7%	0	0.0%
Swimming	4	100.0%	0	0.0%	3	100.0%
Total	***4***	***100.0%***	***3***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***32***	***68,455***	***0.47***
Competition	3	12,005	0.25
Practice	29	56,450	0.51

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 17.2 Demographic Characteristics of Injured Girls' Swimming and Diving Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	10	32.3%
Sophomore	6	19.4%
Junior	8	25.8%
Senior	7	22.6%
Total	***31***	***100.0%***

Age (years)	
Minimum	13
Maximum	17
Mean (SD)	15.5 (1.1)
n	24

BMI	
Minimum	18.0
Maximum	30.7
Mean (SD)	21.9 (3.2)
n	20

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

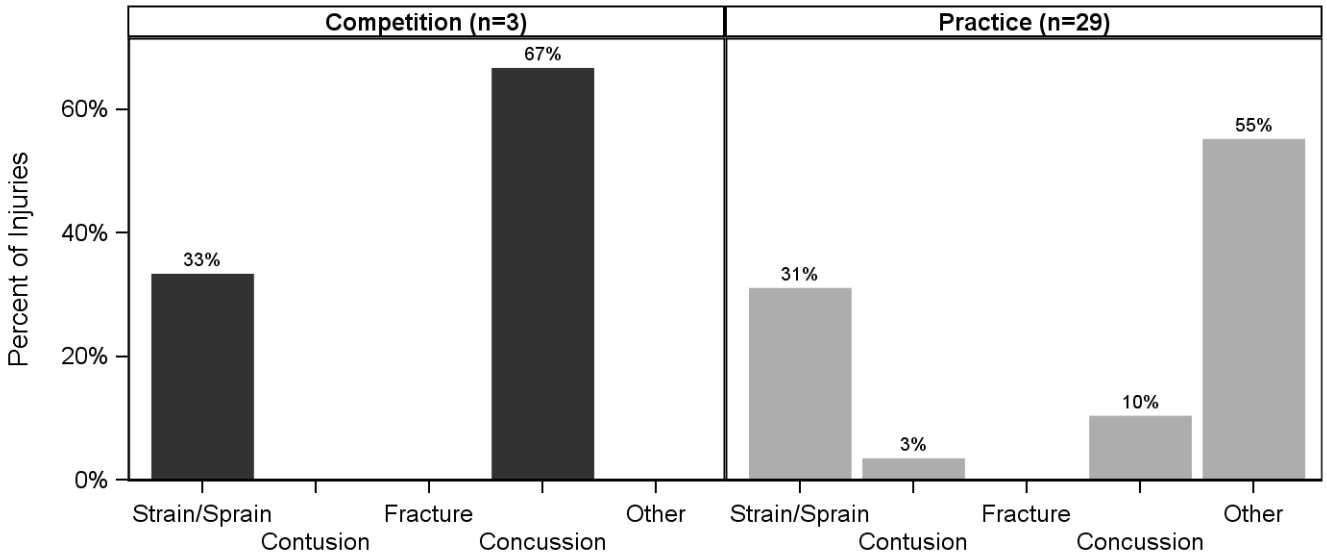


Table 17.3 Body Site of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

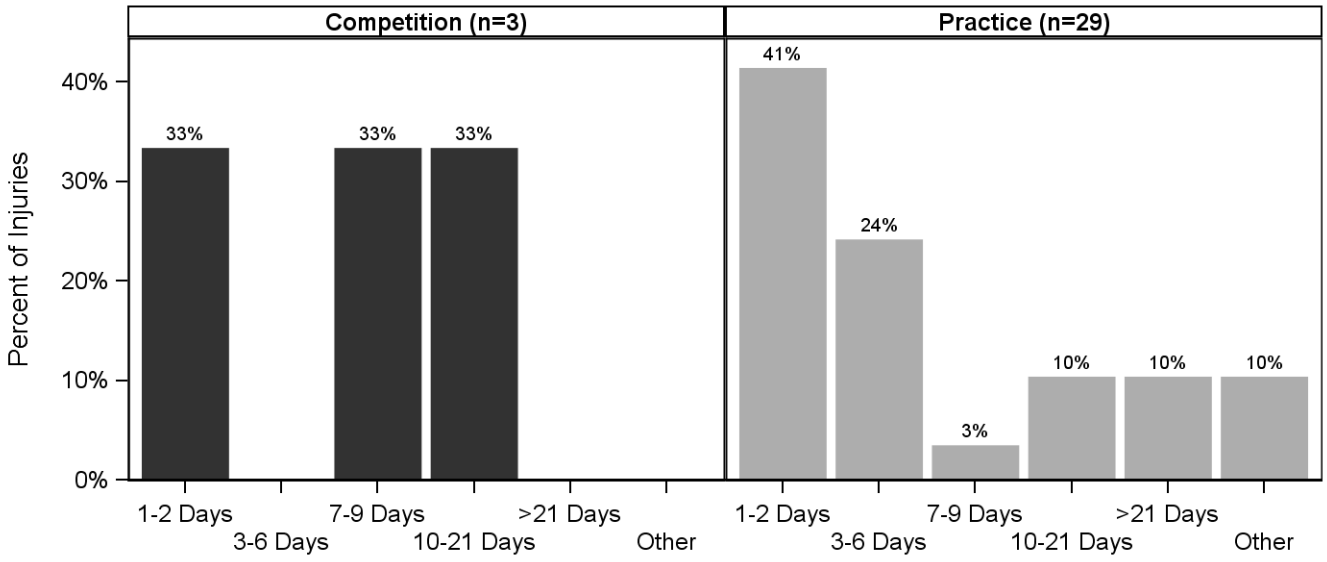
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Shoulder	0	0.0%	13	44.8%	13	40.6%
Head/Face	2	66.7%	3	10.3%	5	15.6%
Trunk	1	33.3%	4	13.8%	5	15.6%
Knee	0	0.0%	3	10.3%	3	9.4%
Hip/Thigh/Upper Leg	0	0.0%	2	6.9%	2	6.3%
Lower Leg	0	0.0%	2	6.9%	2	6.3%
Ankle	0	0.0%	1	3.4%	1	3.1%
Arm/Elbow	0	0.0%	1	3.4%	1	3.1%
Total	***3***	***100.0%***	***29***	***100.0%***	***32***	***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, 2019-20 School Year

	Competition (n=3)		Practice (n=29)		Overall (n=32)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Shoulder Other	0	0.0%	10	34.5%	10	31.3%
Head/Face Concussion	2	66.7%	3	10.3%	5	15.6%
Trunk Strain/Sprain	1	33.3%	3	10.3%	4	12.5%
Knee Other	0	0.0%	3	10.3%	3	9.4%
Shoulder Strain/Sprain	0	0.0%	3	10.3%	3	9.4%
Hip/Thigh/Upper Leg Other	0	0.0%	2	6.9%	2	6.3%
Ankle Strain/Sprain	0	0.0%	1	3.4%	1	3.1%
Arm/Elbow Strain/Sprain	0	0.0%	1	3.4%	1	3.1%
Lower Leg Contusion	0	0.0%	1	3.4%	1	3.1%
Lower Leg Strain/Sprain	0	0.0%	1	3.4%	1	3.1%

Figure 17.2 Time Loss of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	3	100.0%	29	100.0%	32	100.0%
Total	***3***	***100.0%***	***29***	***100.0%***	***32***	***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, 2019-20 School Year

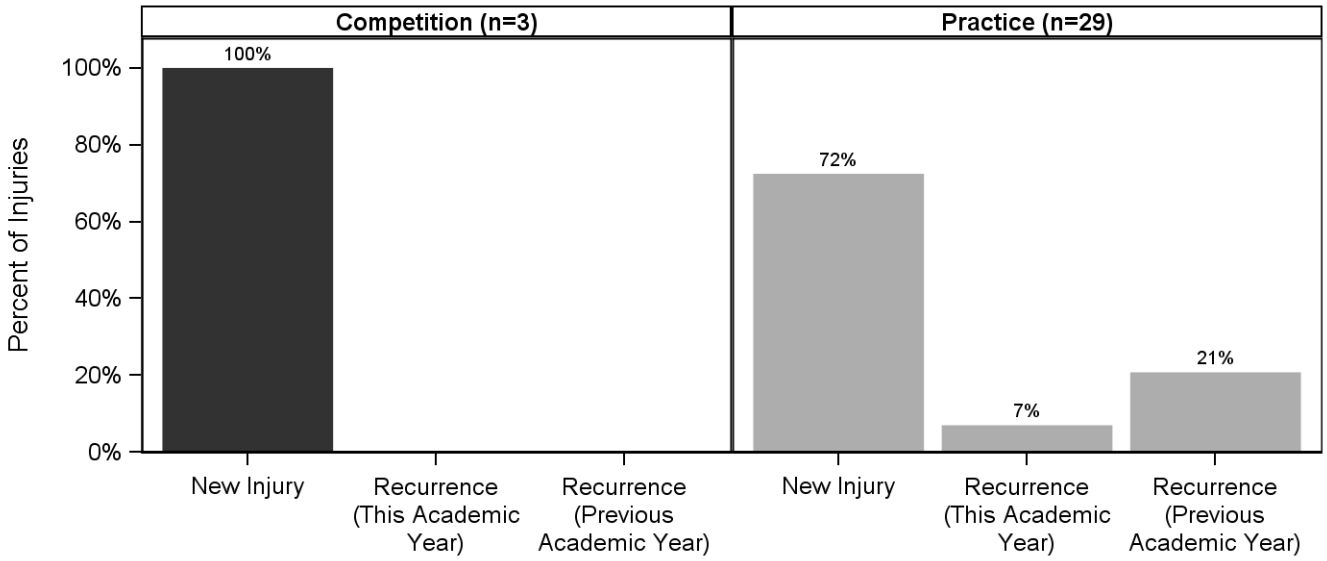


Table 17.6 Time during Season of Girls' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	8	25.8%
Regular Season	23	74.2%
Total	***31***	***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, 2019-20 School Year *

Pool Location		
In Pool	2	66.7%
Unknown	1	33.3%
Total	***3***	***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, 2019-20 School Year *

Time in Practice	n	%
Second 1/2 Hour	3	10.3%
1-2 Hours into Practice	3	10.3%
Unknown	23	79.3%
Total	***29***	***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, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Swimming	0	0.0%	17	60.7%	17	54.8%
Unknown	1	33.3%	3	10.7%	4	12.9%
Conditioning	0	0.0%	3	10.7%	3	9.7%
Flip Off Wall	1	33.3%	2	7.1%	3	9.7%
Other	1	33.3%	1	3.6%	2	6.5%
Diving Off Board, Platform or Block	0	0.0%	2	7.1%	2	6.5%
Total	***3***	***100.0%***	***28***	***100.0%***	***31***	***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, 2019-20 School Year *

	Diagnosis							
	Strain/Sprain		Contusion		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	2	20.0%	0	0.0%	0	0.0%	1	6.7%
Diving Off Board, Platform or Block	1	10.0%	0	0.0%	0	0.0%	1	6.7%
Flip Off Wall	1	10.0%	0	0.0%	1	20.0%	1	6.7%
Other	0	0.0%	1	100.0%	1	20.0%	0	0.0%
Swimming	4	40.0%	0	0.0%	3	60.0%	10	66.7%
Unknown	2	20.0%	0	0.0%	0	0.0%	2	13.3%
Total	***10***	***100.0%***	***1***	***100.0%***	***5***	***100.0%***	***15***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***42***	***260,689***	***0.16***
Competition	4	46,570	0.09
Practice	38	214,119	0.18

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 18.2 Demographic Characteristics of Injured Boys' Track and Field Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	9	22.0%
Sophomore	18	43.9%
Junior	6	14.6%
Senior	8	19.5%
Total	***41***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.7 (1.1)
n	31

BMI	
Minimum	17.8
Maximum	28.9
Mean (SD)	21.8 (2.9)
n	27

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

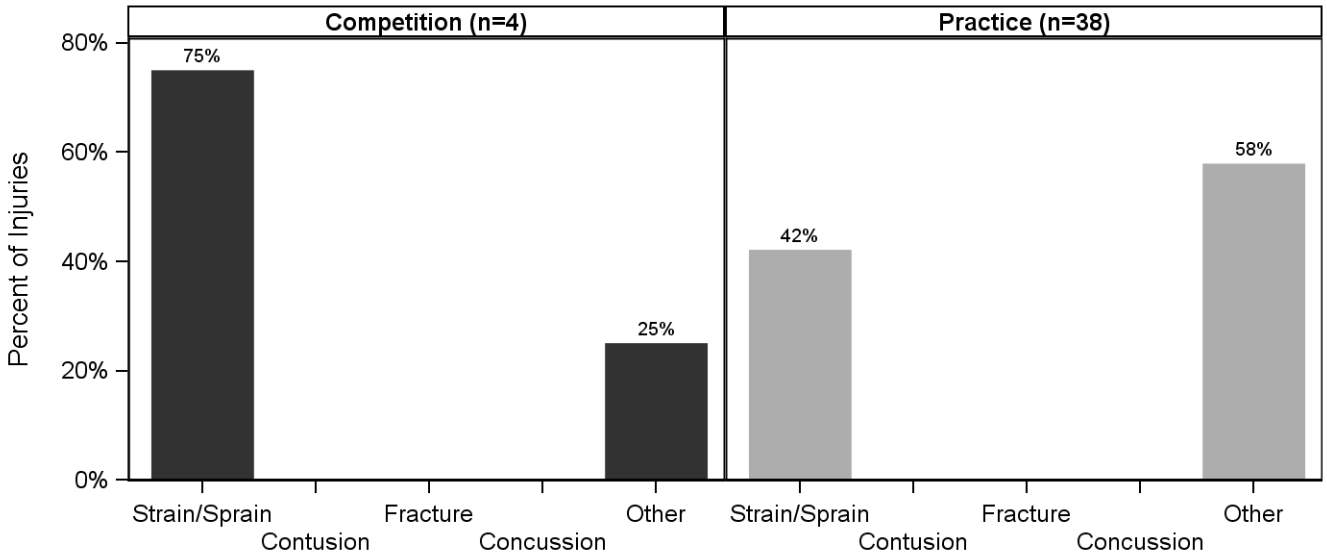


Table 18.3 Body Site of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

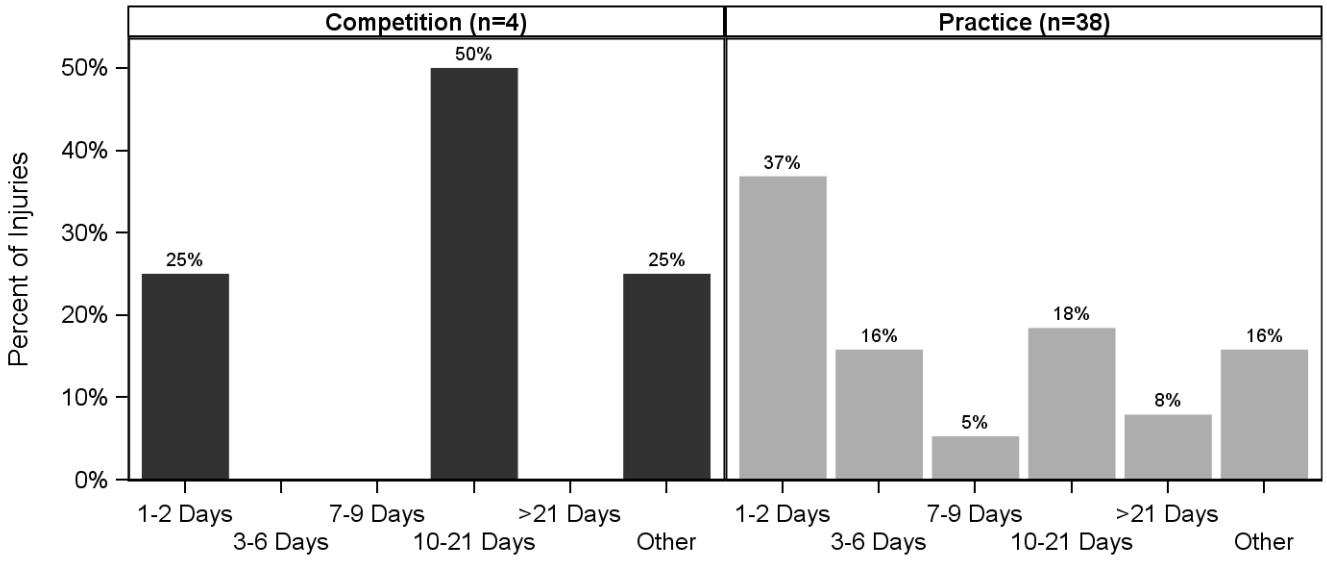
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	1	25.0%	12	31.6%	13	31.0%
Lower Leg	1	25.0%	11	28.9%	12	28.6%
Knee	1	25.0%	8	21.1%	9	21.4%
Trunk	0	0.0%	4	10.5%	4	9.5%
Foot	0	0.0%	2	5.3%	2	4.8%
Neck	1	25.0%	0	0.0%	1	2.4%
Shoulder	0	0.0%	1	2.6%	1	2.4%
Total	***4***	***100.0%***	***38***	***100.0%***	***42***	***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, 2019-20 School Year

	Competition (n=4)		Practice (n=38)		Overall (n=42)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	1	25.0%	11	28.9%	12	28.6%
Lower Leg Other	0	0.0%	11	28.9%	11	26.2%
Knee Other	1	25.0%	8	21.1%	9	21.4%
Trunk Strain/Sprain	0	0.0%	3	7.9%	3	7.1%
Foot Other	0	0.0%	1	2.6%	1	2.4%
Foot Strain/Sprain	0	0.0%	1	2.6%	1	2.4%
Hip/Thigh/Upper Leg Other	0	0.0%	1	2.6%	1	2.4%
Lower Leg Strain/Sprain	1	25.0%	0	0.0%	1	2.4%
Neck Strain/Sprain	1	25.0%	0	0.0%	1	2.4%
Shoulder Strain/Sprain	0	0.0%	1	2.6%	1	2.4%

Figure 18.2 Time Loss of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	4	100.0%	38	100.0%	42	100.0%
Total	***4***	***100.0%***	***38***	***100.0%***	***42***	***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, 2019-20 School Year

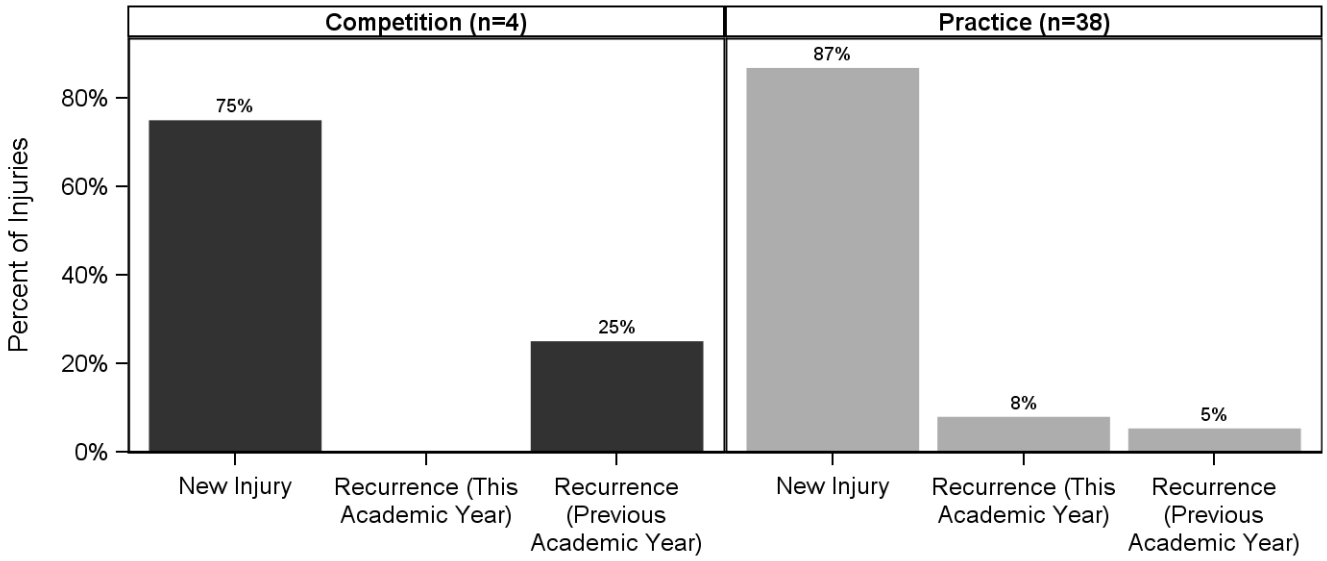


Table 18.6 Time during Season of Boys' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	26	61.9%
Regular Season	16	38.1%
Total	***42***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	6	15.8%
Second 1/2 Hour	3	7.9%
1-2 Hours into Practice	2	5.3%
>2 Hours into Practice	1	2.6%
Unknown	26	68.4%
Total	***38***	***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, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	3	75.0%	31	83.8%	34	82.9%
Jumping/Landing	1	25.0%	1	2.7%	2	4.9%
Throwing	0	0.0%	2	5.4%	2	4.9%
Leaving Block	0	0.0%	1	2.7%	1	2.4%
Conditioning	0	0.0%	1	2.7%	1	2.4%
Unknown	0	0.0%	1	2.7%	1	2.4%
Total	***4***	***100.0%***	***37***	***100.0%***	***41***	***100.0%***

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

Table 18.9 Activity Resulting in Boys' Track and Field Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Diagnosis			
	Strain/Sprain		Other	
Activity	**n**	**%**	**n**	**%**
Conditioning	1	5.3%	0	0.0%
Jumping/Landing	2	10.5%	0	0.0%
Leaving Block	1	5.3%	0	0.0%
Running	13	68.4%	21	95.5%
Throwing	2	10.5%	0	0.0%
Unknown	0	0.0%	1	4.5%
Total	***19***	***100.0%***	***22***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***47***	***43,302***	***1.09***
Competition	5	3,629	1.38
Practice	42	39,673	1.06

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 19.2 Demographic Characteristics of Injured Girls' Track and Field Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	20	44.4%
Sophomore	9	20.0%
Junior	12	26.7%
Senior	4	8.9%
Total	***45***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.3 (1.2)
n	36

BMI	
Minimum	14.4
Maximum	30.3
Mean (SD)	21.5 (3.9)
n	26

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

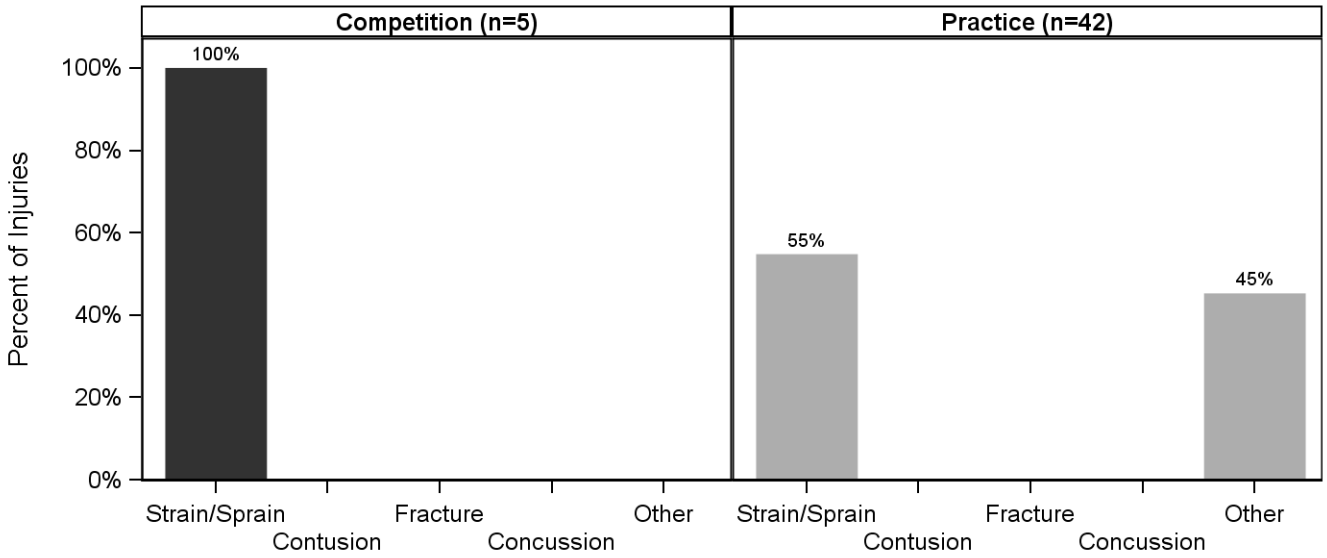


Table 19.3 Body Site of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

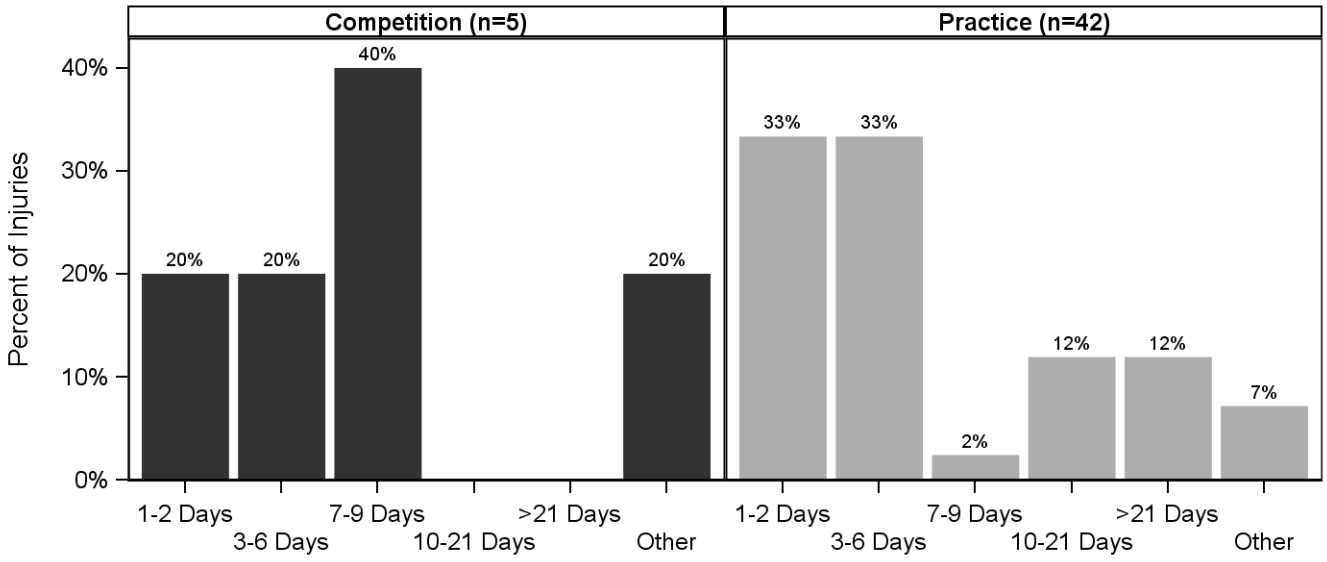
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	2	40.0%	21	50.0%	23	48.9%
Lower Leg	1	20.0%	8	19.0%	9	19.1%
Ankle	1	20.0%	3	7.1%	4	8.5%
Knee	0	0.0%	4	9.5%	4	8.5%
Foot	0	0.0%	3	7.1%	3	6.4%
Shoulder	1	20.0%	1	2.4%	2	4.3%
Other	0	0.0%	1	2.4%	1	2.1%
Trunk	0	0.0%	1	2.4%	1	2.1%
Total	***5***	***100.0%***	***42***	***100.0%***	***47***	***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, 2019-20 School Year

	Competition (n=5)		Practice (n=42)		Overall (n=47)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	2	40.0%	18	42.9%	20	42.6%
Lower Leg Other	0	0.0%	8	19.0%	8	17.0%
Knee Other	0	0.0%	4	9.5%	4	8.5%
Ankle Strain/Sprain	1	20.0%	2	4.8%	3	6.4%
Hip/Thigh/Upper Leg Other	0	0.0%	3	7.1%	3	6.4%
Foot Other	0	0.0%	2	4.8%	2	4.3%
Shoulder Strain/Sprain	1	20.0%	1	2.4%	2	4.3%
Ankle Other	0	0.0%	1	2.4%	1	2.1%
Foot Strain/Sprain	0	0.0%	1	2.4%	1	2.1%
Lower Leg Strain/Sprain	1	20.0%	0	0.0%	1	2.1%

Figure 19.2 Time Loss of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	5	100.0%	42	100.0%	47	100.0%
Total	***5***	***100.0%***	***42***	***100.0%***	***47***	***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, 2019-20 School Year

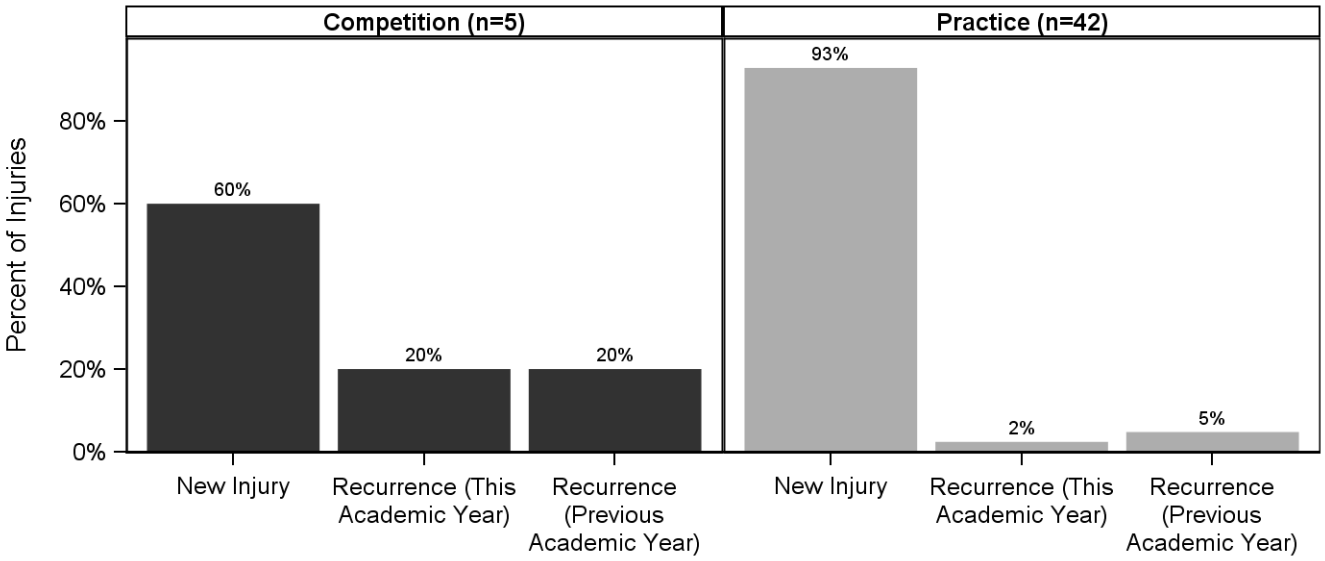


Table 19.6 Time during Season of Girls' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	24	51.1%
Regular Season	23	48.9%
Total	***47***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	9	21.4%
Second 1/2 Hour	11	26.2%
1-2 Hours into Practice	10	23.8%
>2 Hours into Practice	2	4.8%
Unknown	10	23.8%
Total	***42***	***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, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	2	40.0%	32	80.0%	34	75.6%
Running Hurdles	1	20.0%	2	5.0%	3	6.7%
Other	0	0.0%	2	5.0%	2	4.4%
Jumping/Landing	1	20.0%	1	2.5%	2	4.4%
Leaving Block	0	0.0%	1	2.5%	1	2.2%
Throwing	1	20.0%	0	0.0%	1	2.2%
Unknown	0	0.0%	1	2.5%	1	2.2%
Conditioning	0	0.0%	1	2.5%	1	2.2%
Total	***5***	***100.0%***	***40***	***100.0%***	***45***	***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, 2019-20 School Year *

	Diagnosis			
	Strain/Sprain		Other	
Activity	**n**	**%**	**n**	**%**
Conditioning	1	3.6%	0	0.0%
Jumping/Landing	2	7.1%	0	0.0%
Leaving Block	1	3.6%	0	0.0%
Other	2	7.1%	0	0.0%
Running	18	64.3%	16	94.1%
Running Hurdles	3	10.7%	0	0.0%
Throwing	1	3.6%	0	0.0%
Unknown	0	0.0%	1	5.9%
Total	***28***	***100.0%***	***17***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***74***	***100,016***	***0.74***
Competition	14	16,374	0.86
Practice	60	83,642	0.72

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 20.2 Demographic Characteristics of Injured Boys' Cross Country Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	18	25.4%
Sophomore	17	23.9%
Junior	18	25.4%
Senior	18	25.4%
Total	***71***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.6 (1.2)
n	62

BMI	
Minimum	15.6
Maximum	26.2
Mean (SD)	21.3 (2.3)
n	57

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

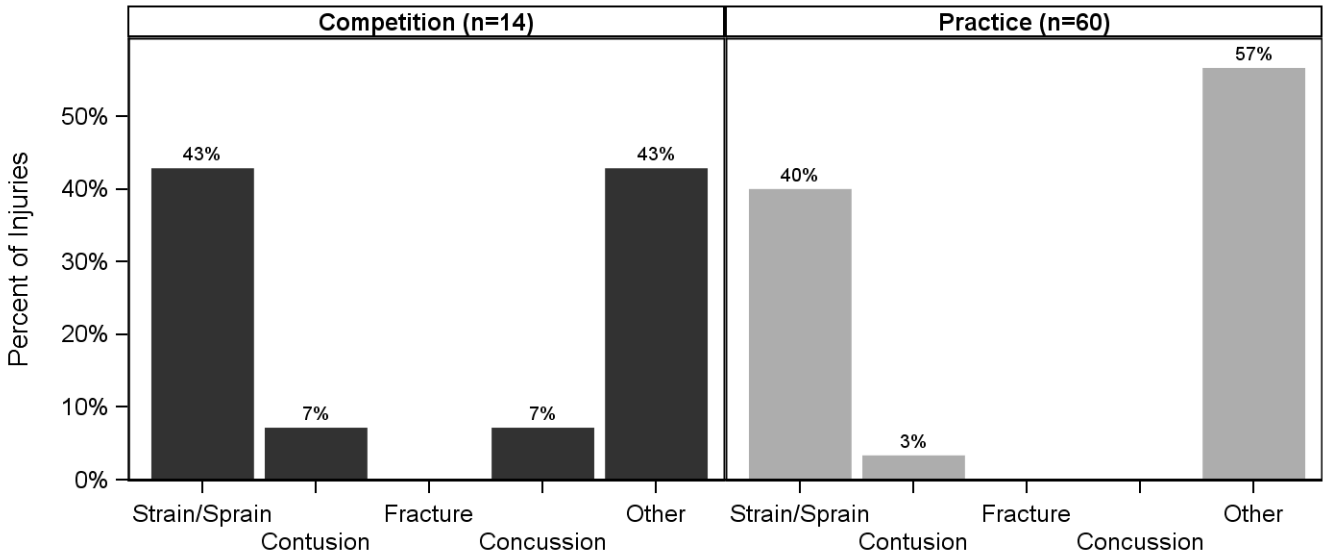


Table 20.3 Body Site of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

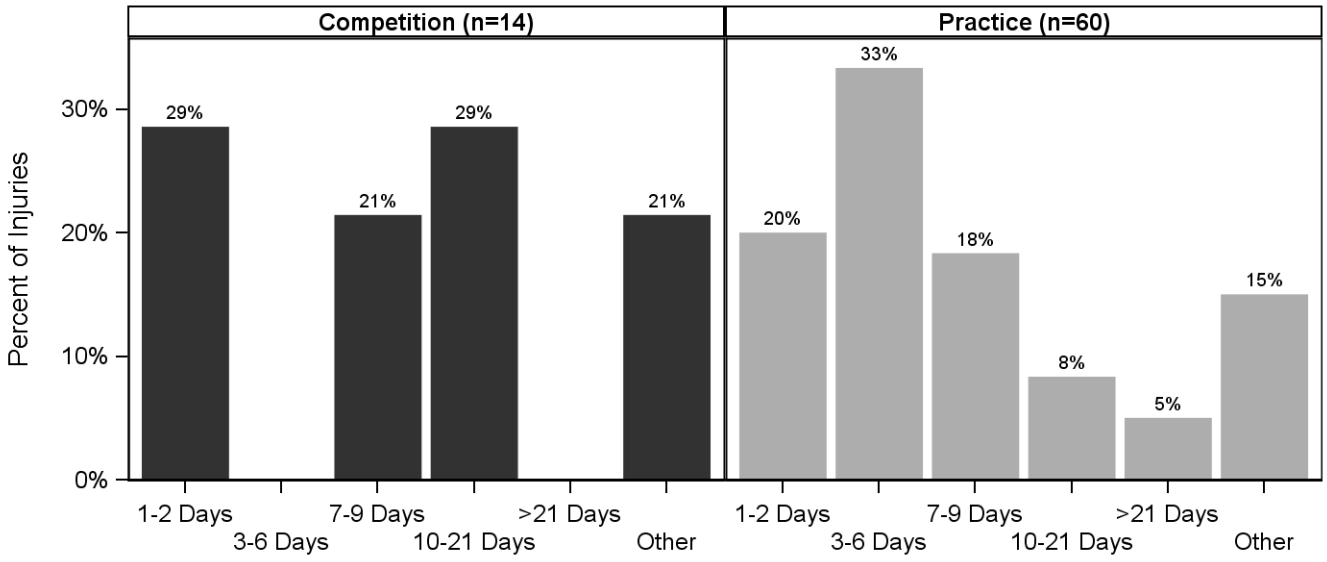
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Knee	1	7.1%	17	28.3%	18	24.3%
Lower Leg	2	14.3%	15	25.0%	17	23.0%
Hip/Thigh/Upper Leg	4	28.6%	11	18.3%	15	20.3%
Ankle	3	21.4%	8	13.3%	11	14.9%
Foot	1	7.1%	6	10.0%	7	9.5%
Trunk	1	7.1%	2	3.3%	3	4.1%
Other	1	7.1%	1	1.7%	2	2.7%
Head/Face	1	7.1%	0	0.0%	1	1.4%
Total	***14***	***100.0%***	***60***	***100.0%***	***74***	***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, 2019-20 School Year

	Competition (n=14)		Practice (n=60)		Overall (n=74)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Knee Other	1	7.1%	13	21.7%	14	18.9%
Hip/Thigh/Upper Leg Strain/Sprain	3	21.4%	10	16.7%	13	17.6%
Lower Leg Other	2	14.3%	11	18.3%	13	17.6%
Ankle Strain/Sprain	2	14.3%	8	13.3%	10	13.5%
Foot Other	0	0.0%	6	10.0%	6	8.1%
Lower Leg Strain/Sprain	0	0.0%	4	6.7%	4	5.4%
Hip/Thigh/Upper Leg Other	1	7.1%	1	1.7%	2	2.7%
Knee Contusion	0	0.0%	2	3.3%	2	2.7%
Knee Strain/Sprain	0	0.0%	2	3.3%	2	2.7%
Other Other	1	7.1%	1	1.7%	2	2.7%

Figure 20.2 Time Loss of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	1	7.1%	0	0.0%	1	1.4%
Did Not Require Surgery	13	92.9%	60	100.0%	73	98.6%
Total	***14***	***100.0%***	***60***	***100.0%***	***74***	***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, 2019-20 School Year

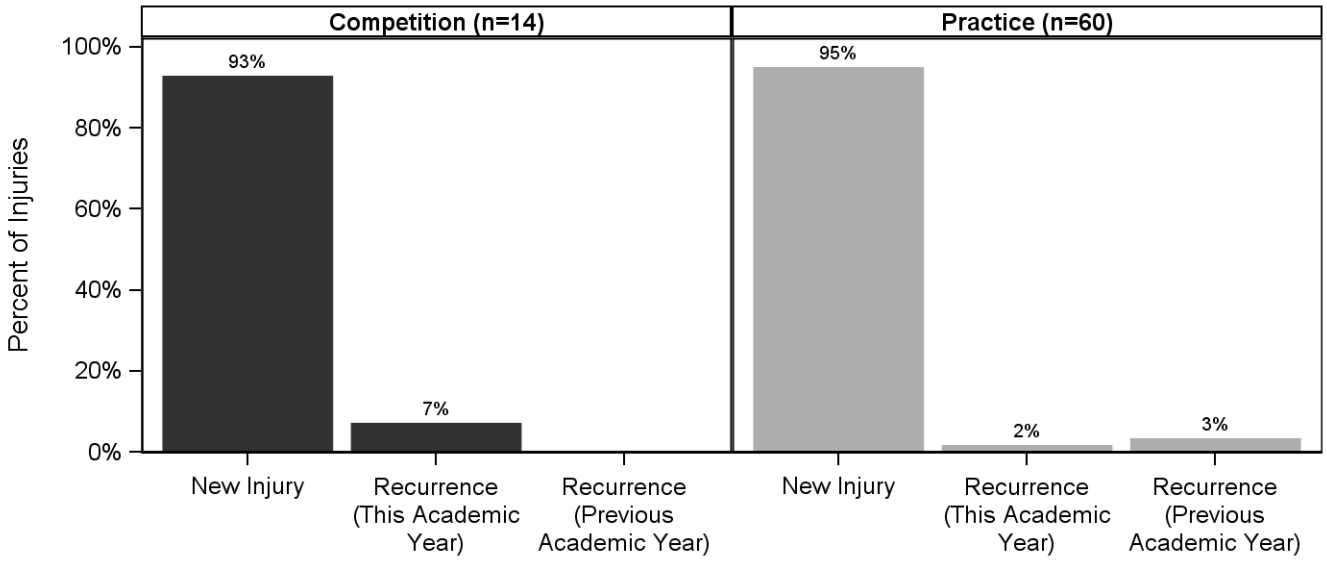


Table 20.6 Time during Season of Boys' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	15	20.3%
Regular Season	57	77.0%
Post Season	2	2.7%
Total	***74***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	2	3.6%
Second 1/2 Hour	14	25.5%
1-2 Hours into Practice	15	27.3%
Unknown	24	43.6%
Total	***55***	***100.0%***

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

Table 20.8 Activities Leading to Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	12	85.7%	40	72.7%	52	75.4%
Unknown	1	7.1%	11	20.0%	12	17.4%
Conditioning	0	0.0%	3	5.5%	3	4.3%
Cooling Down	1	7.1%	1	1.8%	2	2.9%
Total	***14***	***100.0%***	***55***	***100.0%***	***69***	***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, 2019-20 School Year *

	Diagnosis							
	Strain/Sprain		Contusion		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	1	3.4%	0	0.0%	0	0.0%	2	5.3%
Cooling Down	1	3.4%	0	0.0%	0	0.0%	1	2.6%
Running	22	75.9%	1	100.0%	1	100.0%	28	73.7%
Unknown	5	17.2%	0	0.0%	0	0.0%	7	18.4%
Total	***29***	***100.0%***	***1***	***100.0%***	***1***	***100.0%***	***38***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***67***	***80,595***	***0.83***
Competition	12	13,062	0.92
Practice	55	67,533	0.81

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 21.2 Demographic Characteristics of Injured Girls' Cross Country Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	17	28.3%
Sophomore	17	28.3%
Junior	16	26.7%
Senior	10	16.7%
Total	***60***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.4 (1.4)
n	44

BMI	
Minimum	16.2
Maximum	26.0
Mean (SD)	19.9 (2.0)
n	37

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

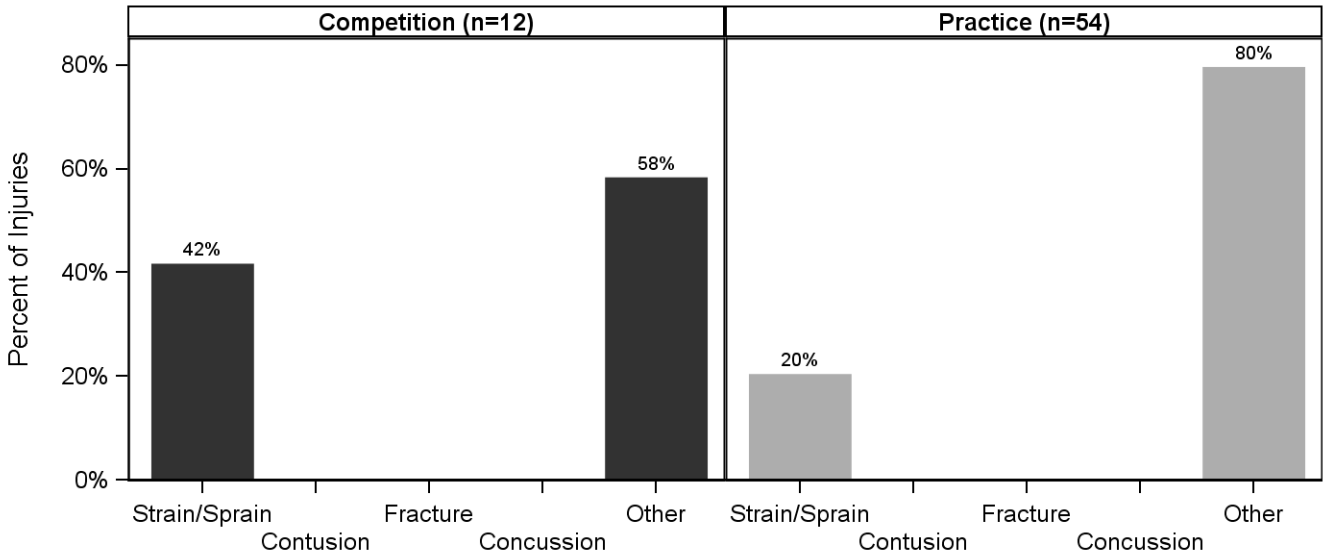


Table 21.3 Body Site of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

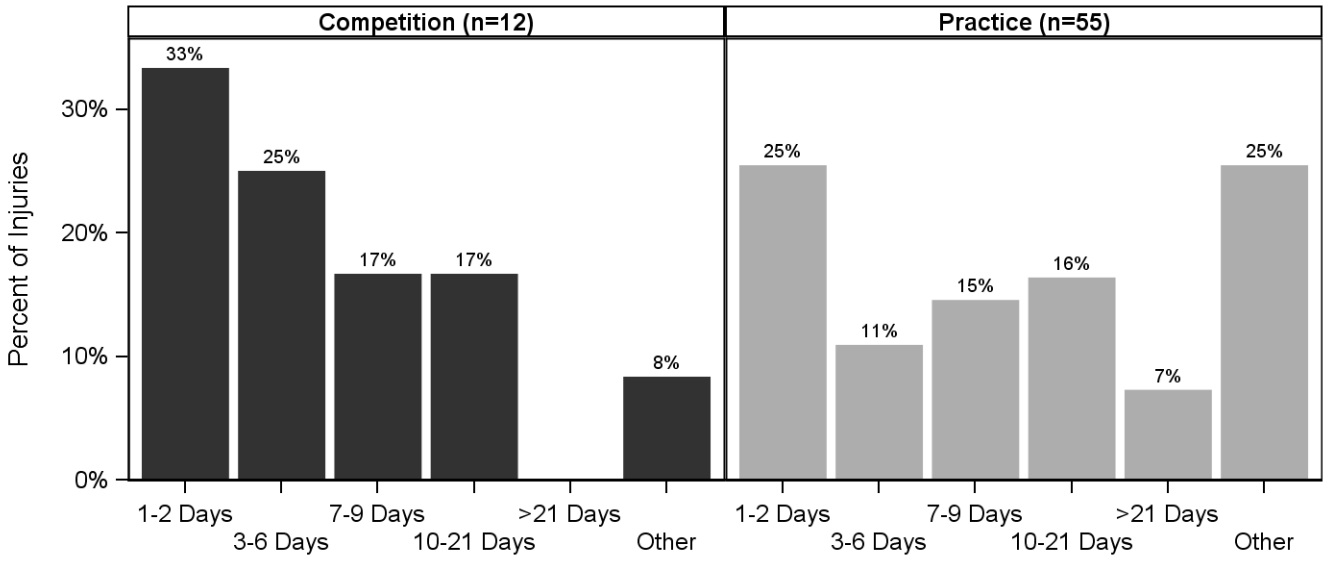
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg	3	25.0%	19	34.5%	22	32.8%
Hip/Thigh/Upper Leg	4	33.3%	12	21.8%	16	23.9%
Foot	0	0.0%	13	23.6%	13	19.4%
Ankle	2	16.7%	4	7.3%	6	9.0%
Knee	1	8.3%	5	9.1%	6	9.0%
Trunk	1	8.3%	2	3.6%	3	4.5%
Other	1	8.3%	0	0.0%	1	1.5%
Total	***12***	***100.0%***	***55***	***100.0%***	***67***	***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, 2019-20 School Year

	Competition (n=12)		Practice (n=54)		Overall (n=66)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg Other	3	25.0%	19	35.2%	22	33.3%
Foot Other	0	0.0%	11	20.4%	11	16.7%
Hip/Thigh/Upper Leg Other	1	8.3%	7	13.0%	8	12.1%
Hip/Thigh/Upper Leg Strain/Sprain	3	25.0%	4	7.4%	7	10.6%
Ankle Strain/Sprain	2	16.7%	4	7.4%	6	9.1%
Knee Other	1	8.3%	5	9.3%	6	9.1%
Foot Strain/Sprain	0	0.0%	2	3.7%	2	3.0%
Trunk Other	1	8.3%	1	1.9%	2	3.0%
Other Other	1	8.3%	0	0.0%	1	1.5%
Trunk Strain/Sprain	0	0.0%	1	1.9%	1	1.5%

Figure 21.2 Time Loss of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	0	0.0%	2	3.6%	2	3.0%
Did Not Require Surgery	11	100.0%	53	96.4%	64	97.0%
Total	***11***	***100.0%***	***55***	***100.0%***	***66***	***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, 2019-20 School Year

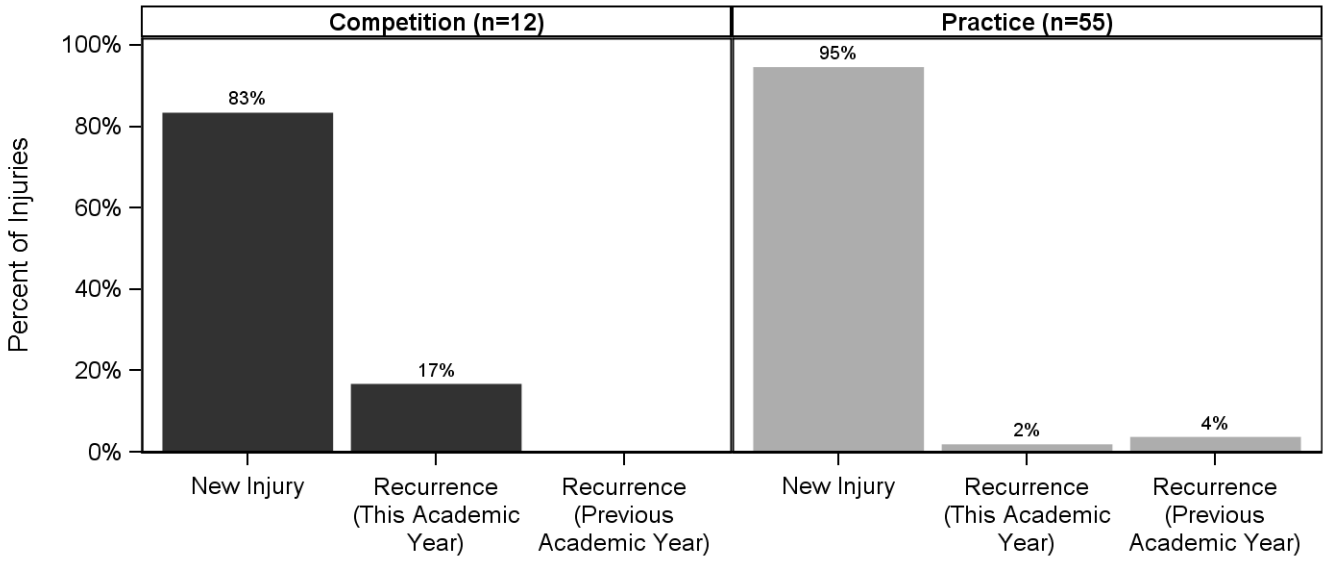


Table 21.6 Time during Season of Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	14	20.9%
Regular Season	53	79.1%
Total	***67***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	5	9.4%
Second 1/2 Hour	3	5.7%
1-2 Hours into Practice	7	13.2%
>2 Hours into Practice	4	7.5%
Unknown	34	64.2%
Total	***53***	***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, 2019-20 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	11	91.7%	22	50.0%	33	58.9%
Unknown	1	8.3%	17	38.6%	18	32.1%
Conditioning	0	0.0%	2	4.5%	2	3.6%
Other	0	0.0%	2	4.5%	2	3.6%
Warming Up	0	0.0%	1	2.3%	1	1.8%
Total	***12***	***100.0%***	***44***	***100.0%***	***56***	***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, 2019-20 School Year *

	Diagnosis			
	Strain/Sprain		Other	
Activity	**n**	**%**	**n**	**%**
Conditioning	1	6.7%	1	2.5%
Other	0	0.0%	2	5.0%
Running	10	66.7%	22	55.0%
Unknown	4	26.7%	14	35.0%
Warming Up	0	0.0%	1	2.5%
Total	***15***	***100.0%***	***40***	***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, 2019-20 School Year *†

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***97***	***136,105***	***0.71***
Competition	6	6,124	0.98
Performance	11	31,828	0.35
Practice	80	98,153	0.82

* All analyses in this chapter present unweighted data.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 22.2 Demographic Characteristics of Injured Cheerleading Athletes, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Year in School	n	%
Freshman	22	23.4%
Sophomore	30	31.9%
Junior	21	22.3%
Senior	21	22.3%
Total	***94***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.5 (1.2)
n	77

BMI	
Minimum	17.2
Maximum	34.4
Mean (SD)	22.7 (3.5)
n	66

* Throughout this report, totals and n's represent the total unweighted 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, 2019-20 School Year

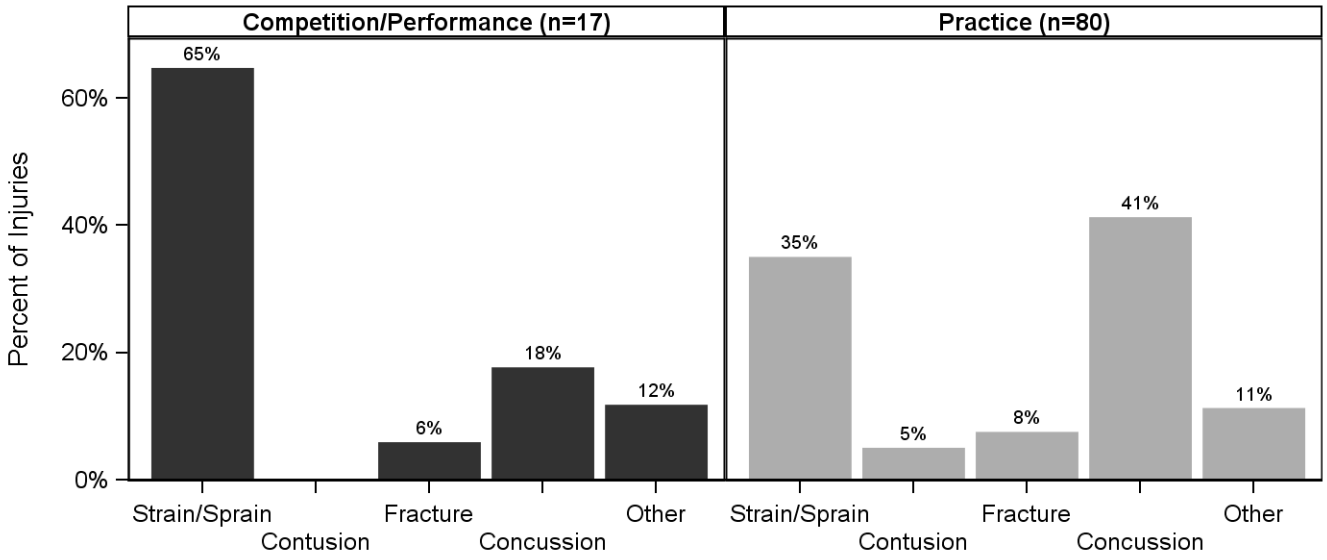


Table 22.3 Body Site of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

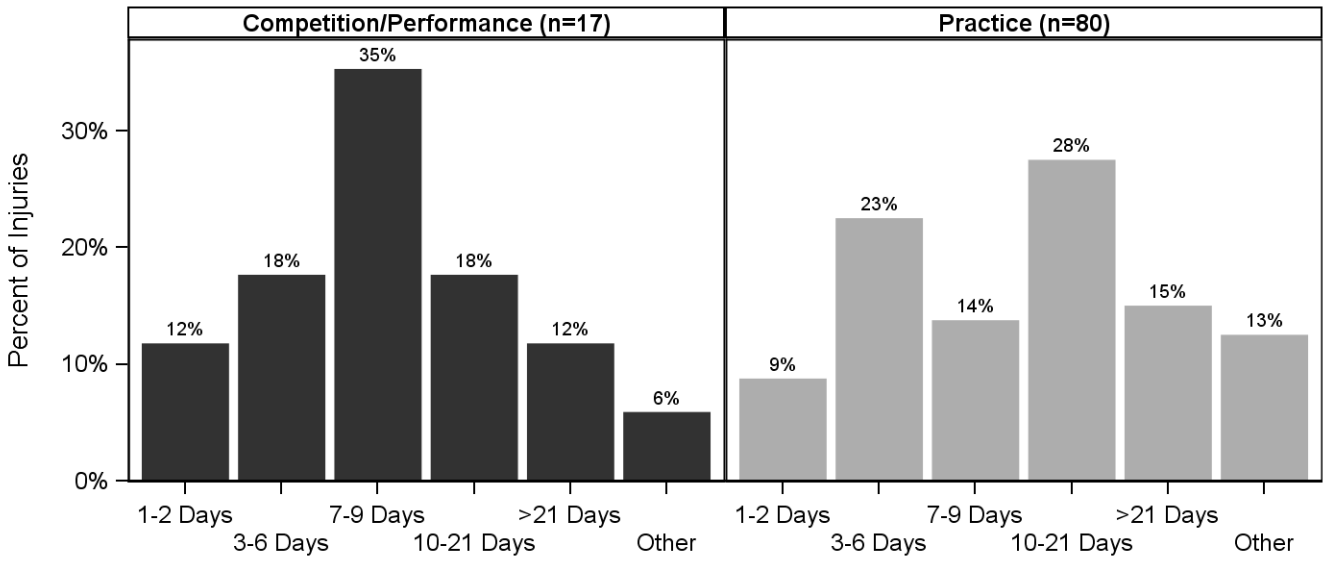
	Competition		Performance		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	1	16.7%	3	27.3%	37	46.3%	41	42.3%
Ankle	4	66.7%	2	18.2%	10	12.5%	16	16.5%
Trunk	0	0.0%	0	0.0%	9	11.3%	9	9.3%
Shoulder	0	0.0%	4	36.4%	4	5.0%	8	8.2%
Hip/Thigh/Upper Leg	1	16.7%	1	9.1%	4	5.0%	6	6.2%
Arm/Elbow	0	0.0%	0	0.0%	5	6.3%	5	5.2%
Hand/Wrist	0	0.0%	0	0.0%	4	5.0%	4	4.1%
Knee	0	0.0%	0	0.0%	3	3.8%	3	3.1%
Neck	0	0.0%	1	9.1%	1	1.3%	2	2.1%
Foot	0	0.0%	0	0.0%	1	1.3%	1	1.0%
Lower Leg	0	0.0%	0	0.0%	1	1.3%	1	1.0%
Other	0	0.0%	0	0.0%	1	1.3%	1	1.0%
Total	***6***	***100.0%***	***11***	***100.0%***	***80***	***100.0%***	***97***	***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, 2019-20 School Year

	Competition (n=6)		Performance (n=11)		Practice (n=80)		Overall (n=97)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	1	16.7%	2	2.5%	33	41.3%	36	37.1%
Ankle Strain/Sprain	4	66.7%	2	2.5%	7	8.8%	13	13.4%
Trunk Strain/Sprain	0	0.0%	0	0.0%	7	8.8%	7	7.2%
Hip/Thigh/Upper Leg Strain/Sprain	1	16.7%	1	1.3%	4	5.0%	6	6.2%
Shoulder Other	0	0.0%	2	2.5%	2	2.5%	4	4.1%
Shoulder Strain/Sprain	0	0.0%	2	2.5%	2	2.5%	4	4.1%
Ankle Fracture	0	0.0%	0	0.0%	3	3.8%	3	3.1%
Hand/Wrist Strain/Sprain	0	0.0%	0	0.0%	3	3.8%	3	3.1%
Head/Face Other	0	0.0%	0	0.0%	3	3.8%	3	3.1%
Arm/Elbow Other	0	0.0%	0	0.0%	2	2.5%	2	2.1%

Figure 22.2 Time Loss of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2019-20 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, 2019-20 School Year *

	Competition		Performance		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	0	0.0%	0	0.0%	2	2.6%	2	2.2%
Did Not Require Surgery	6	100.0%	11	100.0%	74	97.4%	91	97.8%
Total	***6***	***100.0%***	***11***	***100.0%***	***76***	***100.0%***	***93***	***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, 2019-20 School Year

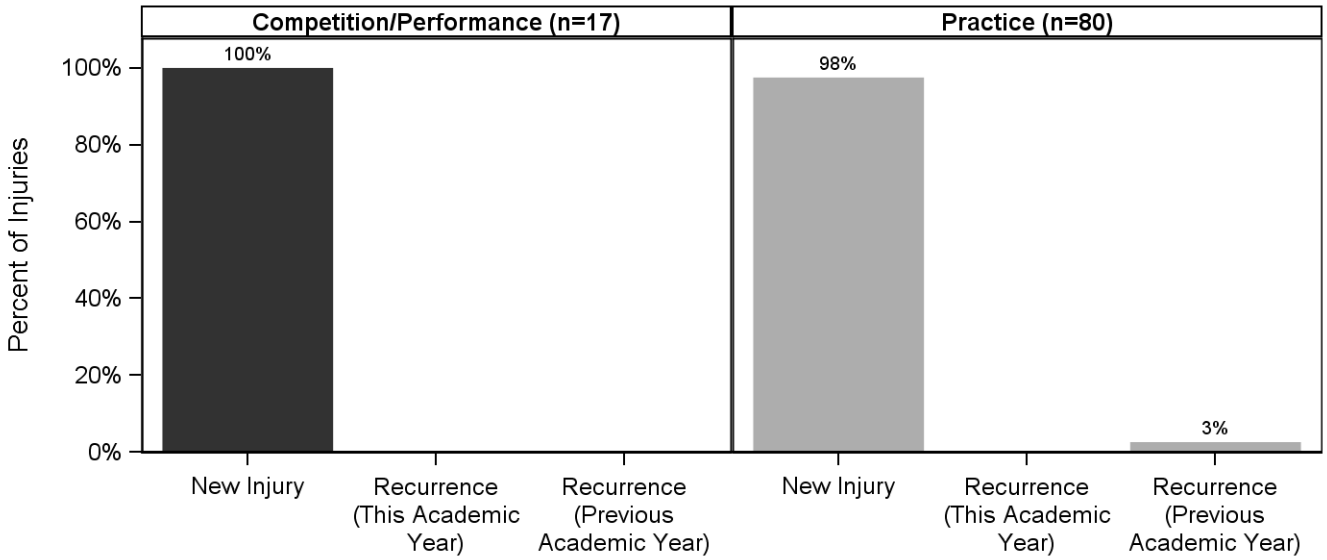


Table 22.6 Time during Season of Cheerleading Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Time in Season	n	%
Preseason	10	10.4%
Regular Season	85	88.5%
Post Season	1	1.0%
Total	***96***	***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, 2019-20 School Year *

Time in Practice	n	%
First 1/2 Hour	7	9.0%
Second 1/2 Hour	19	24.4%
1-2 Hours into Practice	31	39.7%
>2 Hours into Practice	1	1.3%
Unknown	20	25.6%
Total	***78***	***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, 2019-20 School Year *

	Competition		Performance		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Partner Stunt	1	16.7%	3	27.3%	24	30.8%	28	29.5%
Toss	0	0.0%	3	27.3%	17	21.8%	20	21.1%
Moving Tumbling	1	16.7%	1	9.1%	17	21.8%	19	20.0%
Pyramid	2	33.3%	0	0.0%	9	11.5%	11	11.6%
Standing Tumbling	1	16.7%	0	0.0%	3	3.8%	4	4.2%
Other	1	16.7%	2	18.2%	1	1.3%	4	4.2%
Jump	0	0.0%	1	9.1%	3	3.8%	4	4.2%
Unknown	0	0.0%	0	0.0%	3	3.8%	3	3.2%
Warm-Up	0	0.0%	1	9.1%	1	1.3%	2	2.1%
Total	***6***	***100.0%***	***11***	***100.0%***	***78***	***100.0%***	***95***	***100.0%***

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

Table 22.9 Activity Resulting in Cheerleading Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Jump	3	7.7%	0	0.0%	0	0.0%	0	0.0%	1	9.1%
Moving Tumbling	12	30.8%	1	25.0%	1	14.3%	0	0.0%	5	45.5%
Other	3	7.7%	0	0.0%	0	0.0%	0	0.0%	1	9.1%
Partner Stunt	9	23.1%	3	75.0%	4	57.1%	10	29.4%	2	18.2%
Pyramid	2	5.1%	0	0.0%	0	0.0%	9	26.5%	0	0.0%
Standing Tumbling	3	7.7%	0	0.0%	1	14.3%	0	0.0%	0	0.0%
Toss	5	12.8%	0	0.0%	1	14.3%	12	35.3%	2	18.2%
Unknown	2	5.1%	0	0.0%	0	0.0%	1	2.9%	0	0.0%
Warm-Up	0	0.0%	0	0.0%	0	0.0%	2	5.9%	0	0.0%
Total	***39***	***100.0%***	***4***	***100.0%***	***7***	***100.0%***	***34***	***100.0%***	***11***	***100.0%***

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

REPORTING INFORMATION ONLINE

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, 2019-20 School Year†

	Boys' Soccer	Girls' Soccer *	RR (95% CI) **
Total	1.94	**2.48**	**1.27 (1.11-1.46)**
Competition	4.17	**5.64**	**1.35 (1.14-1.60)**
Practice	0.95	**1.15**	1.21 (0.96-1.54)

* 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.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 23.2 Comparison of Body Sites of Boys' and Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Body Site	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Head/Face	26.5%	**26.9%**	1.02 (0.81-1.28)
Neck	0.2%	**0.5%**	2.09 (0.19-23.09)
Shoulder	**3.2%**	1.5%	2.07 (0.79-5.41)
Trunk	2.7%	**5.3%**	2.00 (0.97-4.09)
Arm/Elbow	**1.5%**	0.0%	--
Hand/Wrist	**2.7%**	1.8%	1.50 (0.59-3.85)
Hip/Thigh/Upper Leg	**20.6%**	14.5%	**1.43 (1.05-1.94)**
Knee	8.3%	**20.6%**	**2.49 (1.71-3.63)**
Lower Leg	**7.8%**	4.8%	1.61 (0.93-2.80)
Ankle	**20.1%**	16.8%	1.20 (0.90-1.61)
Foot	4.6%	**5.8%**	1.27 (0.70-2.29)
Other	**1.9%**	1.5%	1.28 (0.45-3.65)
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, 2019-20 School Year *

Diagnosis	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Strain/Sprain	**46.2%**	45.6%	1.01 (0.87-1.17)
Contusion	**10.7%**	10.1%	1.05 (0.70-1.58)
Fracture	**5.3%**	3.3%	1.62 (0.83-3.17)
Concussion	22.5%	**25.8%**	1.15 (0.90-1.47)
Other	**15.3%**	15.2%	1.02 (0.74-1.42)
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, 2019-20 School Year *

Diagnosis	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Ankle Strain/Sprain	**17.2%**	14.2%	1.21 (0.88-1.67)
Head/Face Concussion	22.6%	**25.9%**	1.15 (0.90-1.47)
Hip/Thigh/Upper Leg Strain/Sprain	**16.5%**	11.4%	**1.45 (1.02-2.05)**
Knee Other	2.2%	**6.3%**	**2.90 (1.37-6.15)**
Knee Strain/Sprain	4.1%	**11.7%**	**2.83 (1.65-4.86)**

* 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, 2019-20 School Year *

Time Loss	Boys' Soccer	Girls' Soccer	IPR (95% CI)
1-2 Days	**18.6%**	14.2%	1.30 (0.95-1.78)
3-6 Days	**24.5%**	19.0%	1.29 (0.99-1.68)
7-9 Days	**18.4%**	14.4%	1.28 (0.93-1.75)
10-21 Days	16.0%	**23.3%**	**1.46 (1.10-1.94)**
>21 Days	4.8%	**5.1%**	1.05 (0.57-1.92)
Other	17.7%	**24.1%**	**1.35 (1.02-1.77)**
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, 2019-20 School Year *

Soccer Mechanism	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Contact with Another Player	28.1%	**30.2%**	1.07 (0.86-1.34)
Contact with Ball	**14.7%**	11.8%	1.24 (0.86-1.79)
Contact with Goal	**1.0%**	0.5%	1.96 (0.36-10.70)
N/A **	**19.1%**	16.3%	1.17 (0.86-1.59)
Other	8.8%	**9.2%**	1.05 (0.67-1.65)
Rotation Around a Planted Foot/Inversion	7.7%	**13.4%**	**1.73 (1.13-2.66)**
Slide Tackle	**2.8%**	2.4%	1.20 (0.50-2.87)
Stepped On/Fell On/Kicked	**10.1%**	7.9%	1.28 (0.81-2.01)
Uneven Playing Surface	**2.6%**	2.1%	1.23 (0.49-3.08)
Unknown	5.2%	**6.3%**	1.22 (0.69-2.18)
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, 2019-20 School Year *

Soccer Activity	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Attempting a Slide Tackle	**0.3%**	0.0%	--
Ball Handling/Dribbling	5.7%	**7.9%**	1.39 (0.82-2.37)
Blocking Shot	1.8%	**2.1%**	1.17 (0.43-3.19)
Chasing Loose Ball	6.2%	**9.2%**	1.49 (0.90-2.46)
Conditioning	3.1%	**4.5%**	1.45 (0.70-2.99)
Defending	11.3%	**14.5%**	1.28 (0.88-1.85)
General Play	**28.1%**	23.4%	1.20 (0.94-1.53)
Goaltending	**7.0%**	5.0%	1.39 (0.79-2.46)
Heading Ball	**8.5%**	6.8%	1.24 (0.76-2.04)
Other	**2.8%**	1.6%	1.80 (0.67-4.82)
Passing	2.8%	**3.4%**	1.21 (0.55-2.66)
Receiving Pass	4.6%	**4.7%**	1.02 (0.54-1.93)
Shooting	**3.9%**	3.2%	1.22 (0.58-2.59)
Unknown	**13.9%**	13.7%	1.02 (0.71-1.45)
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, 2019-20 School Year†

	Boys' Basketball	Girls' Basketball *	RR (95% CI) **
Total	1.59	**2.07**	**1.30 (1.14-1.49)**
Competition	2.85	**4.15**	**1.45 (1.22-1.74)**
Practice	1.04	**1.15**	1.10 (0.89-1.36)

* 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.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 23.9 Comparison of Body Sites of Boys' and Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Body Site	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Head/Face	19.6%	**19.6%**	1.01 (0.76-1.32)
Neck	0.5%	**1.3%**	2.77 (0.54-14.26)
Shoulder	2.1%	**3.5%**	1.72 (0.75-3.95)
Trunk	**5.2%**	2.5%	2.07 (1.00-4.31)
Arm/Elbow	**2.7%**	1.0%	2.71 (0.88-8.34)
Hand/Wrist	**10.0%**	8.3%	1.20 (0.78-1.85)
Hip/Thigh/Upper Leg	6.2%	**6.8%**	1.11 (0.66-1.86)
Knee	10.5%	**17.4%**	**1.64 (1.16-2.32)**
Lower Leg	**3.9%**	3.3%	1.18 (0.58-2.40)
Ankle	**35.1%**	32.5%	1.08 (0.89-1.31)
Foot	3.0%	**3.0%**	1.02 (0.47-2.22)
Other	**1.4%**	0.8%	1.80 (0.45-7.18)
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, 2019-20 School Year *

Diagnosis	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Strain/Sprain	51.1%	**52.2%**	1.02 (0.89-1.16)
Contusion	**8.0%**	6.1%	1.32 (0.80-2.17)
Fracture	**8.2%**	5.8%	1.41 (0.85-2.34)
Concussion	11.6%	**17.7%**	**1.52 (1.09-2.13)**
Other	**21.0%**	18.2%	1.15 (0.87-1.52)
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, 2019-20 School Year *

Diagnosis	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Ankle Strain/Sprain	**33.3%**	30.4%	1.10 (0.90-1.34)
Hand/Wrist Strain/Sprain	**5.0%**	3.5%	1.42 (0.73-2.74)
Head/Face Concussion	11.6%	**17.7%**	**1.52 (1.09-2.13)**
Head/Face Other	**5.7%**	0.5%	--
Knee Other	**6.2%**	5.8%	1.06 (0.62-1.82)
Knee Strain/Sprain	2.5%	**8.6%**	**3.43 (1.76-6.68)**

* 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, 2019-20 School Year *

Time Loss	Boys' Basketball	Girls' Basketball	IPR (95% CI)
1-2 Days	**18.7%**	16.9%	1.09 (0.81-1.46)
3-6 Days	**23.7%**	15.6%	**1.54 (1.16-2.05)**
7-9 Days	**18.7%**	14.9%	1.25 (0.92-1.70)
10-21 Days	17.3%	**26.7%**	**1.55 (1.19-2.01)**
>21 Days	**10.0%**	6.3%	1.59 (0.99-2.55)
Other	11.6%	**19.6%**	**1.67 (1.21-2.32)**
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, 2019-20 School Year *

Basketball Mechanism	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Collision with Another Player	**25.7%**	23.0%	1.12 (0.88-1.42)
Contact with Ball	6.1%	**7.2%**	1.18 (0.70-1.98)
Jumping/Landing	**21.5%**	17.6%	1.22 (0.92-1.61)
N/A **	7.9%	**9.2%**	1.16 (0.74-1.82)
Other	10.7%	**12.3%**	1.14 (0.78-1.67)
Rotation Around a Planted Foot/Inversion	12.9%	**14.6%**	1.13 (0.80-1.60)
Stepped On/Fell On/Kicked	**8.9%**	7.4%	1.20 (0.75-1.90)
Unknown	6.3%	**8.7%**	1.38 (0.85-2.24)
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, 2019-20 School Year *

Basketball Activity	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Ball Handling/Dribbling	3.6%	**3.8%**	1.08 (0.52-2.24)
Chasing Loose Ball	10.2%	**10.7%**	1.06 (0.69-1.60)
Conditioning	2.8%	**4.4%**	1.57 (0.74-3.35)
Defending	15.0%	**19.2%**	1.28 (0.94-1.76)
General Play	**23.4%**	22.0%	1.06 (0.82-1.38)
Other	1.5%	**1.6%**	1.08 (0.35-3.33)
Passing	0.3%	**1.1%**	4.33 (0.48-38.75)
Rebounding	**23.9%**	15.7%	**1.52 (1.13-2.05)**
Receiving Pass	3.8%	**5.2%**	1.37 (0.71-2.66)
Screening	0.3%	**0.5%**	2.16 (0.20-23.90)
Unknown	15.5%	**15.7%**	1.01 (0.73-1.41)
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, 2019-20 School Year†

	Boys' Baseball	Girls' Softball *	RR (95% CI) **
Total	0.98	**1.03**	1.05 (0.69-1.61)
Competition	1.29	**1.57**	1.22 (0.51-2.89)
Practice	**0.93**	0.90	1.04 (0.64-1.70)

* 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.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 23.16 Comparison of Body Sites of Baseball and Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Body Site	Boys' Baseball	Girls' Softball	IPR (95% CI)
Head/Face	10.4%	**12.8%**	1.23 (0.37-4.04)
Neck	0.0%	**2.6%**	--
Shoulder	**14.6%**	5.1%	2.84 (0.61-13.32)
Trunk	**6.3%**	5.1%	1.22 (0.21-7.18)
Arm/Elbow	**20.8%**	15.4%	1.35 (0.53-3.46)
Hand/Wrist	**16.7%**	12.8%	1.30 (0.45-3.73)
Hip/Thigh/Upper Leg	**16.7%**	15.4%	1.08 (0.40-2.92)
Knee	2.1%	**10.3%**	4.92 (0.55-44.14)
Lower Leg	**6.3%**	2.6%	2.44 (0.25-23.55)
Ankle	4.2%	**17.9%**	4.31 (0.92-20.18)
Foot	**2.1%**	0.0%	--
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, 2019-20 School Year *

Diagnosis	Boys' Baseball	Girls' Softball	IPR (95% CI)
Strain/Sprain	47.9%	**53.8%**	1.12 (0.74-1.71)
Contusion	10.4%	**15.4%**	1.48 (0.48-4.58)
Fracture	**4.2%**	0.0%	--
Concussion	8.3%	**10.3%**	1.23 (0.32-4.73)
Other	**29.2%**	20.5%	1.42 (0.66-3.08)
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, 2019-20 School Year *

Diagnosis	Boys' Baseball	Girls' Softball	IPR (95% CI)
Ankle Strain/Sprain	4.2%	**17.9%**	4.31 (0.92-20.18)
Arm/Elbow Other	**8.3%**	7.7%	1.08 (0.25-4.69)
Arm/Elbow Strain/Sprain	**12.5%**	5.1%	2.44 (0.50-11.77)
Hand/Wrist Contusion	**8.3%**	0.0%	--
Hand/Wrist Other	4.2%	**5.1%**	1.23 (0.17-8.67)
Hand/Wrist Strain/Sprain	0.0%	**7.7%**	--
Head/Face Concussion	8.3%	**10.3%**	1.23 (0.32-4.73)
Hip/Thigh/Upper Leg Strain/Sprain	**16.7%**	10.3%	1.63 (0.52-5.11)
Knee Contusion	0.0%	**5.1%**	--
Knee Strain/Sprain	0.0%	**5.1%**	--
Shoulder Other	**8.3%**	2.6%	3.25 (0.36-29.14)
Shoulder Strain/Sprain	**6.3%**	2.6%	2.44 (0.25-23.55)

* 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, 2019-20 School Year *

Time Loss	Boys' Baseball	Girls' Softball	IPR (95% CI)
1-2 Days	25.0%	**25.6%**	1.03 (0.49-2.15)
3-6 Days	**33.3%**	23.1%	1.44 (0.71-2.95)
7-9 Days	**10.4%**	7.7%	1.35 (0.34-5.46)
10-21 Days	16.7%	**20.5%**	1.23 (0.50-3.03)
>21 Days	4.2%	**7.7%**	1.85 (0.31-10.88)
Other	10.4%	**15.4%**	1.48 (0.48-4.58)
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, 2019-20 School Year *

Baseball Mechanism	Boys' Baseball	Girls' Softball	IPR (95% CI)
Contact with Another Player	6.3%	**13.2%**	2.11 (0.52-8.49)
Contact with Bases	2.1%	**10.5%**	5.05 (0.56-45.30)
Contact with Thrown Ball (Non-Pitch)	**6.3%**	5.3%	1.19 (0.20-6.99)
Hit by Batted Ball	4.2%	**7.9%**	1.89 (0.32-11.16)
Hit by Pitch	**4.2%**	0.0%	--
N/A **	**20.8%**	15.8%	1.32 (0.52-3.37)
Other	**22.9%**	21.1%	1.09 (0.48-2.48)
Rotation Around a Planted Foot/Inversion	4.2%	**13.2%**	3.16 (0.63-15.89)
Throwing (Not Pitching)	**8.3%**	7.9%	1.06 (0.24-4.57)
Throwing (Pitching)	**16.7%**	2.6%	6.33 (0.79-50.51)
Unknown	**4.2%**	2.6%	1.58 (0.14-17.64)
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, 2019-20 School Year *

Baseball Activity	Boys' Baseball	Girls' Softball	IPR (95% CI)
Batting	**12.5%**	2.7%	4.63 (0.56-38.37)
Catching	4.2%	**5.4%**	1.30 (0.18-9.14)
Conditioning	4.2%	**8.1%**	1.95 (0.33-11.46)
Fielding a Batted Ball	4.2%	**13.5%**	3.24 (0.64-16.31)
Fielding a Thrown Ball	2.1%	**5.4%**	2.59 (0.23-28.91)
General Play	**14.6%**	8.1%	1.80 (0.49-6.66)
Other	**4.2%**	0.0%	--
Pitching	**16.7%**	16.2%	1.03 (0.38-2.76)
Running Bases	**14.6%**	13.5%	1.08 (0.36-3.20)
Sliding	6.3%	**16.2%**	2.59 (0.68-9.96)
Throwing	**10.4%**	8.1%	1.28 (0.32-5.18)
Unknown	**6.3%**	2.7%	2.31 (0.24-22.34)
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, 2019-20 School Year†

	Boys' Swimming	Girls' Swimming *	RR (95% CI) **
Total	0.17	**0.47**	**2.70 (1.33-5.49)**
Competition	**0.48**	0.25	1.93 (0.46-8.08)
Practice	0.11	**0.51**	**4.87 (1.89-12.58)**

* 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.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 23.23 Comparison of Body Sites of Boys' and Girls' Swimming Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Body Site	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Head/Face	**30.0%**	15.6%	1.92 (0.53-7.02)
Shoulder	30.0%	**40.6%**	1.35 (0.46-3.99)
Trunk	**20.0%**	15.6%	1.28 (0.27-5.98)
Arm/Elbow	**10.0%**	3.1%	3.20 (0.20-52.32)
Hip/Thigh/Upper Leg	0.0%	**6.3%**	--
Knee	0.0%	**9.4%**	--
Lower Leg	**10.0%**	6.3%	1.60 (0.15-17.49)
Ankle	0.0%	**3.1%**	--
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, 2019-20 School Year *

Diagnosis	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Strain/Sprain	**40.0%**	31.3%	1.28 (0.49-3.33)
Contusion	0.0%	**3.1%**	--
Concussion	**30.0%**	15.6%	1.92 (0.53-7.02)
Other	30.0%	**50.0%**	1.67 (0.58-4.77)
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, 2019-20 School Year *

Diagnosis	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Arm/Elbow Strain/Sprain	**10.0%**	3.1%	3.20 (0.20-52.32)
Head/Face Concussion	**30.0%**	15.6%	1.92 (0.53-7.02)
Hip/Thigh/Upper Leg Other	0.0%	**6.3%**	--
Knee Other	0.0%	**9.4%**	--
Lower Leg Other	**10.0%**	0.0%	--
Shoulder Other	20.0%	**31.3%**	1.56 (0.39-6.33)
Shoulder Strain/Sprain	**10.0%**	9.4%	1.07 (0.11-10.03)
Trunk Strain/Sprain	**20.0%**	12.5%	1.60 (0.32-7.99)

* 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, 2019-20 School Year *

Time Loss	Boys' Swimming	Girls' Swimming	IPR (95% CI)
1-2 Days	20.0%	**40.6%**	2.03 (0.52-7.95)
3-6 Days	**30.0%**	21.9%	1.37 (0.41-4.56)
7-9 Days	**10.0%**	6.3%	1.60 (0.15-17.49)
10-21 Days	**30.0%**	12.5%	2.40 (0.61-9.49)
>21 Days	0.0%	**9.4%**	--
Other	**10.0%**	9.4%	1.07 (0.11-10.03)
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, 2019-20 School Year *

Swimming Mechanism	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Contact with Another Person	**10.0%**	9.7%	1.03 (0.11-9.73)
Contact with Wall	**20.0%**	9.7%	2.07 (0.37-11.46)
N/A **	60.0%	**64.5%**	1.08 (0.59-1.95)
Other	**10.0%**	9.7%	1.03 (0.11-9.73)
Unknown	0.0%	**6.5%**	--
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, 2019-20 School Year *

Swimming Activity	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Conditioning	**10.0%**	9.7%	1.03 (0.11-9.73)
Diving Off Board, Platform or Block	0.0%	**6.5%**	--
Flip Off Wall	**20.0%**	9.7%	2.07 (0.37-11.46)
Other	0.0%	**6.5%**	--
Swimming	**70.0%**	54.8%	1.28 (0.74-2.19)
Unknown	0.0%	**12.9%**	--
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, 2019-20 School Year†

	Boys' Track	Girls' Track *	RR (95% CI) **
Total	0.87	**1.09**	1.25 (0.83-1.90)
Competition	1.12	**1.38**	1.23 (0.33-4.58)
Practice	0.85	**1.06**	1.25 (0.81-1.94)

* 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.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 23.30 Comparison of Body Sites of Boys' and Girls' Track Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Body Site	Boys' Track	Girls' Track	IPR (95% CI)
Neck	**2.4%**	0.0%	--
Shoulder	2.4%	**4.3%**	1.79 (0.16-19.91)
Trunk	**9.5%**	2.1%	4.48 (0.50-40.15)
Hip/Thigh/Upper Leg	31.0%	**48.9%**	1.58 (0.91-2.74)
Knee	**21.4%**	8.5%	2.52 (0.82-7.74)
Lower Leg	**28.6%**	19.1%	1.49 (0.69-3.23)
Ankle	0.0%	**8.5%**	--
Foot	4.8%	**6.4%**	1.34 (0.23-7.90)
Other	0.0%	**2.1%**	--
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, 2019-20 School Year *

Diagnosis	Boys' Track	Girls' Track	IPR (95% CI)
Strain/Sprain	45.2%	**59.6%**	1.32 (0.87-2.00)
Other	**54.8%**	40.4%	1.35 (0.86-2.13)
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, 2019-20 School Year *

Diagnosis	Boys' Track	Girls' Track	IPR (95% CI)
Ankle Strain/Sprain	0.0%	**6.4%**	--
Hip/Thigh/Upper Leg Other	2.4%	**6.4%**	2.68 (0.28-25.91)
Hip/Thigh/Upper Leg Strain/Sprain	28.6%	**42.6%**	1.49 (0.82-2.70)
Knee Other	**21.4%**	8.5%	2.52 (0.82-7.74)
Lower Leg Other	**26.2%**	17.0%	1.54 (0.67-3.51)
Trunk Strain/Sprain	**7.1%**	2.1%	3.36 (0.35-32.44)

* 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, 2019-20 School Year *

Time Loss	Boys' Track	Girls' Track	IPR (95% CI)
1-2 Days	**35.7%**	31.9%	1.12 (0.62-2.03)
3-6 Days	14.3%	**31.9%**	2.23 (0.94-5.32)
7-9 Days	4.8%	**6.4%**	1.34 (0.23-7.90)
10-21 Days	**21.4%**	10.6%	2.01 (0.72-5.65)
>21 Days	7.1%	**10.6%**	1.49 (0.37-6.02)
Other	**16.7%**	8.5%	1.96 (0.60-6.36)
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, 2019-20 School Year *

Track Mechanism	Boys' Track	Girls' Track	IPR (95% CI)
Contact with Another Person	0.0%	**2.3%**	--
Contact with Field Equipment	0.0%	**4.5%**	--
Contact with Ground	**9.8%**	9.1%	1.07 (0.28-4.12)
Fall/Trip	0.0%	**6.8%**	--
N/A **	**68.3%**	65.9%	1.04 (0.76-1.40)
Other	2.4%	**9.1%**	3.73 (0.42-33.44)
Unknown	**19.5%**	2.3%	--
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, 2019-20 School Year *

Track Activity	Boys' Track	Girls' Track	IPR (95% CI)
Conditioning	**2.4%**	2.2%	1.10 (0.07-17.96)
Jumping/Landing	**4.9%**	4.4%	1.10 (0.16-7.74)
Leaving Block	**2.4%**	2.2%	1.10 (0.07-17.96)
Other	0.0%	**4.4%**	--
Running	**82.9%**	75.6%	1.10 (0.88-1.37)
Running Hurdles	0.0%	**6.7%**	--
Throwing	**4.9%**	2.2%	2.20 (0.20-24.47)
Unknown	**2.4%**	2.2%	1.10 (0.07-17.96)
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, 2019-20 School Year†

	Boys' Cross Country	Girls' Cross Country *	RR (95% CI) **
Total	0.74	**0.83**	1.12 (0.81-1.56)
Competition	0.86	**0.92**	1.07 (0.50-2.32)
Practice	0.72	**0.81**	1.14 (0.79-1.64)

* 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.
†**The suspension of sports due to COVID-19 may have affected these results.**

Table 23.37 Comparison of Body Sites of Boys' and Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2019-20 School Year *

Body Site	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Head/Face	**1.4%**	0.0%	--
Trunk	4.1%	**4.5%**	1.12 (0.23-5.47)
Hip/Thigh/Upper Leg	20.3%	**23.9%**	1.12 (0.59-2.13)
Knee	**24.3%**	9.0%	**2.68 (1.12-6.41)**
Lower Leg	23.0%	**32.8%**	1.45 (0.84-2.50)
Ankle	**14.9%**	9.0%	1.64 (0.63-4.23)
Foot	9.5%	**19.4%**	2.08 (0.87-4.96)
Other	**2.7%**	1.5%	1.78 (0.16-19.80)
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, 2019-20 School Year *

Diagnosis	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Strain/Sprain	**40.5%**	24.2%	1.67 (1.00-2.80)
Contusion	**4.1%**	0.0%	--
Concussion	**1.4%**	0.0%	--
Other	54.1%	**75.8%**	**1.40 (1.09-1.81)**
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, 2019-20 School Year *

Diagnosis	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Ankle Strain/Sprain	**13.5%**	9.1%	1.49 (0.56-3.91)
Foot Other	8.1%	**16.7%**	2.06 (0.80-5.31)
Hip/Thigh/Upper Leg Other	2.7%	**12.1%**	4.48 (0.97-20.76)
Hip/Thigh/Upper Leg Strain/Sprain	**17.6%**	10.6%	1.66 (0.70-3.94)
Knee Other	**18.9%**	9.1%	2.08 (0.84-5.16)
Lower Leg Other	17.6%	**33.3%**	**1.90 (1.03-3.48)**
Lower Leg Strain/Sprain	**5.4%**	0.0%	--

* 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, 2019-20 School Year *

Time Loss	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
1-2 Days	21.6%	**26.9%**	1.26 (0.70-2.28)
3-6 Days	**27.0%**	13.4%	1.98 (0.96-4.08)
7-9 Days	**18.9%**	14.9%	1.25 (0.59-2.64)
10-21 Days	12.2%	**16.4%**	1.25 (0.53-2.91)
>21 Days	4.1%	**6.0%**	1.49 (0.34-6.55)
Other	16.2%	**22.4%**	1.40 (0.70-2.80)
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, 2019-20 School Year *

Cross Country Mechanism	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Contact with Another Person	**1.4%**	0.0%	--
Contact with Ground	7.2%	**8.8%**	1.21 (0.36-4.04)
Fall/Trip	**5.8%**	3.5%	1.65 (0.31-8.90)
N/A **	**7.2%**	7.0%	1.03 (0.29-3.73)
Other	**2.9%**	0.0%	--
Overuse	55.1%	**68.4%**	1.24 (0.94-1.64)
Rotation Around Planted Foot/Inversion	**4.3%**	3.5%	1.24 (0.21-7.34)
Uneven Surface	**10.1%**	5.3%	1.93 (0.51-7.25)
Unknown	**5.8%**	3.5%	1.65 (0.31-8.90)
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, 2019-20 School Year *

Cross Country Activity	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Conditioning	**4.3%**	3.6%	1.22 (0.21-7.21)
Cooling Down	**2.9%**	0.0%	--
Other	0.0%	**3.6%**	--
Running	**75.4%**	58.9%	1.28 (0.99-1.66)
Unknown	17.4%	**32.1%**	1.85 (0.97-3.54)
Warming Up	0.0%	**1.8%**	--
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 2019-20 school year, 167 ATs initially enrolled to participate in the study at the beginning of the school year. 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, 158 enrolled ATs reported an average of 33 study weeks (**NOTE: COVID-19 resulted in high school sports being suspended in March 2020**). The majority of ATs (91.1%) reported for more than 20 weeks of the study. Because internal validity checks conducted during the first six years of the study consistently found high sensitivity, specificity, positive predictive values, and negative predictive values, internal validity checks will be conducted every other year. Internal validity checks of a 5% randomly selected completed every other year, so the next will occur using data from the 2020-21 academic year.

Prior to the start of the 2019-20 High School RIO™ study, participating ATs were asked to complete a short demographics survey. Over three-quarters (80.2%) of participating high schools (both in the original study as well as in the expanded convenience study) were public schools, with the remainder being private. Over 80% of ATs participating during the 2019-20 study year had previously participated in the High School RIO™ study.

An online 'End of Season' survey gave all participating ATs (both in the original study as well as in the expanded convenience study including those ATs who did not report any data) the opportunity to provide feedback on their experiences with High School RIO™. This survey was completed by 96 ATs (57.5%). Average reporting time burdens were 27 minutes for the weekly exposure report and 11 minutes for the injury report form. Using a 5 point Likert scale, RIO™ was overwhelmingly reported to be either very easy (56.3%) or somewhat easy (38.5%) to use (5 and 4 on the Likert scale, respectively), with ATs being either very satisfied (59.4%) or somewhat satisfied (35.4%) with the study (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 2020-21 school year.

REPORTING INFORMATION ONLINE

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/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 large nationally disperse 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 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 training, 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). Data collected by the NCAA ISS since 1982 has been used to develop preventive interventions including changes in coaching habits, increased use of protective equipment, and rule changes which have had proven success in reducing injuries among collegiate athletes.

For example, NCAA ISS data has 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 hour limitations, and a gradual increase in equipment for conditioning and heat acclimation. Additionally, several committees have considered NCAA ISS 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 recent 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 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 best be 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.