Convenience Sample Summary Report

NATIONAL HIGH SCHOOL SPORTS-RELATED INJURY SURVEILLANCE STUDY

2021-22 School Year

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ACKNOWLEDGEMENTS

We thank the certified athletic trainers (ATs) for their hard work and dedication in providing us with complete and accurate data. Without their efforts, this study would not have been possible. We would like to thank the National Federation of State High School Associations (NFHS) for their support of this project. The content of this report was funded in part by the Centers for Disease Control and Prevention (CDC) grants #R49/CE000674-01 and #R49/CE001172-01. The content of this report is solely the responsibility of the authors and does not necessarily represent the official views of the CDC. We would also like to acknowledge the generous research funding contributions of the NFHS, NFHS Foundation, 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, Dr. Christy Collins, 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 participate in physically active sports, recreation, and leisure activities. Participation in high school sports, one of the most popular physical activities among adolescents, has grown rapidly from an estimated 4.0 million participants in 1971-72 to over 7.6 million in 2021-22. 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 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 Study has monitored injuries among US high school athletes participating in boys' football, boys' and girls' soccer, girls' volleyball, boys' and girls' basketball, boys' wrestling, boys' baseball, and girls' softball. Other sports were added in subsequent years including girls' field hockey, girls' gymnastics, boys' volleyball, boys' ice hockey, boys' and girls' lacrosse, boys' and girls' swimming & diving, boys' and girls' track & field, boys' and girls' tennis, boys' and girls' cross country, and cheerleading (boys' volleyball, girls' gymnastics, and boys' and girls' tennis are no longer under surveillance). The study data have been collected using the time- and cost-efficient RIO™ (Reporting Information Online) surveillance system. Through the generous contributions of the National Federation of State High School Associations (NFHS) and the NFHS Foundation, the National High School Sports-Related Injury Surveillance Study was able to be continued during the 2021-22 school year. Previous years of this study were funded by the Centers for Disease Control and Prevention (CDC), National Federation of State High School Associations (NFHS), the National Operating Committee on Standards for Athletic Equipment (NOCSAE), the Research Institute at Nationwide Children's Hospital, DonJoy Orthotics, EyeBlack, and The Ohio State University.

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

1.3 Specific Aims

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

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

1.4 Project Design

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

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

An athlete exposure was defined as one athlete participating in one practice or competition where he or she is exposed to the possibility of athletic injury. Exposure was expressed in 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 junior varsity game, and 14 in a varsity game, the number of athlete-competitions would equal 35.
C. Number of athlete-performances = the sum of the number of cheerleading athletes at each performance during the past week. For example, if 9 cheerleading athletes performed 3 times in one weekend, the number of athlete-performances would equal 27.

1.5 Sample Recruitment

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

A. All schools were categorized into 8 sampling strata by geographic location (northeast, midwest, south, and west) and high school size (enrollment <= 1,000 or > 1,000 students). Participant schools were then randomly selected from each substrata to obtain 100 study schools to report for each of the 9 sports included in the original National High School Sports-Related Injury Surveillance Study (boys' football, soccer, basketball, wrestling, and baseball and girls' soccer, volleyball, basketball, and softball). This subset of 100 study schools was 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-$350 honorarium depending on the number of sports reported along with an individualized injury report and 10 Category B CEUs following the study's conclusion.

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

School Participation by Sport, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

	# Schools in Random Sample	# Schools in Convenience Sample	# Schools Total
Original Sports			
Football	75	20	95
Boys' Soccer	71	18	89
Girls' Soccer	73	14	87
Girls' Volleyball	71	15	86
Boys' Basketball	85	22	107
Girls' Basketball	84	24	108
Boys' Wrestling	73	20	93
Boys' Baseball	82	17	99
Girls' Softball	81	16	97
Convenience Sports			
Girls' Field Hockey	26	10	36
Boys' Ice hockey	11	3	14
Boys' Lacrosse	32	7	39
Girls' Lacrosse	33	9	42
Boys' Swimming and Diving	33	11	44
Girls' Swimming and Diving	35	10	45
Boys' Track and Field	58	15	73
Girls' Track and Field	58	16	74
Boys' Cross Country	47	14	61
Girls' Cross Country	46	12	58
Cheerleading	48	12	60
Total	**91**	**29**	**120**

1.6 Data Collection

ATs enrolled in the National High School Sports-Related Injury Surveillance Study received an email every Monday throughout the study period reminding them to enter their school's data into the RIO surveillance system. Each participating AT was asked to complete 48 weekly exposure reports: one for each week from July 26, 2021 through June 26, 2022. Exposure reports collected exposure information (number of athlete-competitions, athlete-practices, and athlete-performances for cheerleading) and the number of reportable injuries sustained by student athletes for each sport currently in session at their school. For each reportable injury, the AT was asked to complete an injury report. The injury report collected detailed information about the injured player (e.g., age, year in school, etc.), the injury (e.g., site, type, severity, etc.) and the injury event (e.g., position played, phase of play, etc.). The internet-based surveillance tool provided ATs with the ability to view all their submitted data throughout the study and update reports as needed (e.g., need for surgery, days till resuming play, etc.).

1.7 Data Management

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

1.8 Data Analysis

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

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

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

Injury proportions were compared using injury proportion ratios (IPR) and corresponding 95% CIs. 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. CIs not including 1.00 were considered statistically significant.

II. Overall Injury Epidemiology

REPORTING INFORMATION ONLINE

Table 2.1 Injury Rates by Sport and Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Event Type	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Overall	***Total***	***4,702***	***2,461,127***	***1.91***
	Competition	2,455	632,304	3.88
	Performance	16	22,480	0.71
	Practice	2,231	1,806,343	1.24
Boys' Football	***Total***	***1,483***	***375,772***	***3.95***
	Competition	874	67,752	12.90
	Practice	609	308,020	1.98
Boys' Soccer	***Total***	***293***	***169,291***	***1.73***
	Competition	188	50,698	3.71
	Practice	105	118,593	0.89
Girls' Soccer	***Total***	***319***	***138,979***	***2.30***
	Competition	219	43,543	5.03
	Practice	100	95,436	1.05
Girls' Volleyball	***Total***	***188***	***145,427***	***1.29***
	Competition	83	50,143	1.66
	Practice	105	95,284	1.10
Boys' Basketball	***Total***	***385***	***225,675***	***1.71***
	Competition	205	70,049	2.93
	Practice	180	155,626	1.16
Girls' Basketball	***Total***	***373***	***159,013***	***2.35***
	Competition	191	49,586	3.85
	Practice	182	109,427	1.66
Boys' Wrestling	***Total***	***412***	***142,954***	***2.88***
	Competition	190	35,910	5.29
	Practice	222	107,044	2.07

Boys' Baseball	***Total***	***167***	***182,274***	***0.92***
	Competition	90	67,087	1.34
	Practice	77	115,187	0.67
Girls' Softball	***Total***	***178***	***118,019***	***1.51***
	Competition	82	41,782	1.96
	Practice	96	76,237	1.26
Girls' Field Hockey	***Total***	***99***	***47,349***	***2.09***
	Competition	50	15,632	3.20
	Practice	49	31,717	1.54
Boys' Ice Hockey	***Total***	***44***	***28,159***	***1.56***
	Competition	39	9,631	4.05
	Practice	5	18,528	0.27
Boys' Lacrosse	***Total***	***158***	***75,973***	***2.08***
	Competition	83	23,199	3.58
	Practice	75	52,774	1.42
Girls' Lacrosse	***Total***	***114***	***57,360***	***1.99***
	Competition	55	17,820	3.09
	Practice	59	39,540	1.49
Boys' Swimming and Diving	***Total***	***15***	***46,973***	***0.32***
	Competition	6	9,058	0.66
	Practice	9	37,915	0.24
Girls' Swimming and Diving	***Total***	***21***	***52,676***	***0.40***
	Competition	3	10,280	0.29
	Practice	18	42,396	0.42
Boys' Track and Field	***Total***	***121***	***159,758***	***0.76***
	Competition	43	28,565	1.51
	Practice	78	131,193	0.59

Girls' Track and Field	***Total***	***146***	***126,586***	***1.15***
	Competition	38	23,406	1.62
	Practice	108	103,180	1.05
Boys' Cross Country	***Total***	***42***	***58,356***	***0.72***
	Competition	6	8,462	0.71
	Practice	36	49,894	0.72
Girls' Cross Country	***Total***	***41***	***44,079***	***0.93***
	Competition	5	6,346	0.79
	Practice	36	37,733	0.95
Cheerleading	***Total***	***103***	***106,454***	***0.97***
	Competition	5	3,355	1.49
	Performance	16	22,480	0.71
	Practice	82	80,619	1.02

* Only includes injuries resulting in ≥1 day time loss. COVID-19 may have affected these results.

REPORTING INFORMATION ONLINE

Table 2.2 Proportion of Injuries Resulting in Time Loss, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	< 1 Day Time Loss	≥ 1 Day Time Loss	Time Loss Data Missing	Total
	%	%	%	%
Overall	***1.0%***	***94.8%***	***4.2%***	***100.0%***
Boys' Football	1.3%	94.1%	4.6%	100.0%
Boys' Soccer	*1.6%*	*95.4%*	*2.9%*	*100.0%*
Girls' Soccer	*0.6%*	*92.7%*	*6.7%*	*100.0%*
Girls' Volleyball	*1.0%*	*90.8%*	*8.2%*	*100.0%*
Boys' Basketball	*0.8%*	*96.5%*	*2.8%*	*100.0%*
Girls' Basketball	*0.3%*	*94.9%*	*4.8%*	*100.0%*
Boys' Wrestling	*0.0%*	*96.3%*	*3.7%*	*100.0%*
Boys' Baseball	*2.3%*	*94.4%*	*3.4%*	*100.0%*
Girls' Softball	*0.0%*	*97.3%*	*2.7%*	*100.0%*
Girls' Field Hockey	*2.8%*	*91.7%*	*5.6%*	*100.0%*
Boys' Ice Hockey	*0.0%*	*93.6%*	*6.4%*	*100.0%*
Boys' Lacrosse	*0.6%*	*96.3%*	*3.0%*	*100.0%*
Girls' Lacrosse	*1.7%*	*95.0%*	*3.3%*	*100.0%*
Boys' Swimming	*0.0%*	*100.0%*	*0.0%*	*100.0%*
Girls' Swimming	*0.0%*	*95.5%*	*4.5%*	*100.0%*
Boys' Track	*0.0%*	*98.4%*	*1.6%*	*100.0%*
Girls' Track	*0.7%*	*97.3%*	*2.0%*	*100.0%*
Boys' Cross Country	*0.0%*	*100.0%*	*0.0%*	*100.0%*
Girls' Cross Country	*2.3%*	*93.2%*	*4.5%*	*100.0%*
Cheerleading	*3.6%*	*92.0%*	*4.5%*	*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. 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, 2021-22 School Year *

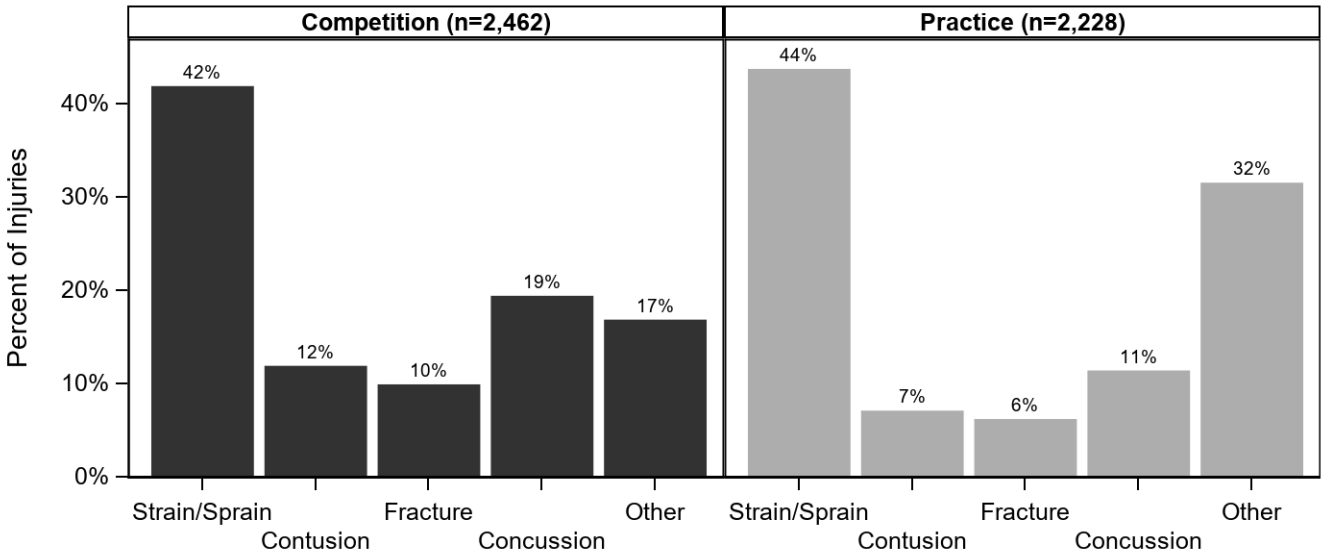
	Male		Female	
Year in School	**N**	**%**	**n**	**%**
Freshman	632	21.3%	387	25.8%
Sophomore	730	24.6%	403	26.8%
Junior	787	26.6%	359	23.9%
Senior	815	27.5%	353	23.5%
Total **	***2,964***	***100.0%***	***1,502***	***100.0%***

Age (years)		
Minimum	10	11
Maximum	19	19
Mean (SD)	16.0 (1.2)	15.8 (1.2)
n	2,475	1,199

BMI		
Minimum	14.1	13.8
Maximum	50.8	51.9
Mean (SD)	24.6 (4.8)	22.6 (4.1)
n	1,953	942

* All analyses in this report present un-weighted data. COVID-19 may have affected these results.
** Throughout this report, totals and n's represent the total un-weighted number of injury reports containing a valid response for the particular question. Due to a low level of non-response, these totals are always similar but are not always equal to the total number of injuries.

Figure 2.1 Injury Diagnosis by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year



* Competition includes cheerleading performance related injuries. 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, 2021-22 School Year *

	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	545	22.1%	318	14.3%	863	18.4%
Ankle	407	16.5%	373	16.7%	780	16.6%
Knee	406	16.4%	289	13.0%	695	14.8%
Hip/Thigh/Upper Leg	205	8.3%	305	13.7%	510	10.8%
Hand/Wrist	211	8.5%	158	7.1%	369	7.8%
Shoulder	184	7.4%	125	5.6%	309	6.6%
Lower Leg	99	4.0%	205	9.2%	304	6.5%
Trunk	104	4.2%	114	5.1%	218	4.6%
Foot	94	3.8%	91	4.1%	185	3.9%
Arm/Elbow	100	4.0%	80	3.6%	180	3.8%
Systemic	30	1.2%	134	6.0%	164	3.5%
Other	52	2.1%	15	0.7%	67	1.4%
Neck	34	1.4%	23	1.0%	57	1.2%
Total	***2,471***	***100.0%***	***2,230***	***100.0%***	***4,701***	***100.0%***

* Competition includes cheerleading performance related injuries. These were not summarized individually due to them totaling less than 1.0% of all injuries. Totals and n's are not always equal due to slight rounding or missing responses. COVID-19 may have affected these results.

Table 2.5 Most Commonly Injured Ankle Structures, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Male (n=453)		Female (n=298)		Overall (n=751)	
Ankle Ligament Injuries	**n**	**%**	**n**	**%**	**n**	**%**
Anterior Talofibular Ligament	320	70.6%	214	71.8%	534	71.1%
Calcaneofibular Ligament	149	32.9%	94	31.5%	243	32.4%
Anterior Tibiofibular Ligament	86	19.0%	59	19.8%	145	19.3%
Posterior Talofibular Ligament	50	11.0%	23	7.7%	73	9.7%
Deltoid Ligament	25	5.5%	18	6.0%	43	5.7%
Posterior Tibiofibular Ligament	20	4.4%	14	4.7%	34	4.5%

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

Table 2.6 Most Commonly Injured Knee Structures, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Male (n=447)		Female (n=230)		Overall (n=677)	
Knee Ligament Injuries	**n**	**%**	**n**	**%**	**n**	**%**
Patella and/or Patellar Tendon	114	25.5%	74	32.2%	188	27.8%
Medial Collateral Ligament	108	24.2%	45	19.6%	153	22.6%
Anterior Cruciate Ligament	92	20.6%	50	21.7%	142	21.0%
Torn Cartilage (Meniscus)	81	18.1%	39	17.0%	120	17.7%
Lateral Collateral Ligament	26	5.8%	11	4.8%	37	5.5%
Posterior Cruciate Ligament	9	2.0%	5	2.2%	14	2.1%

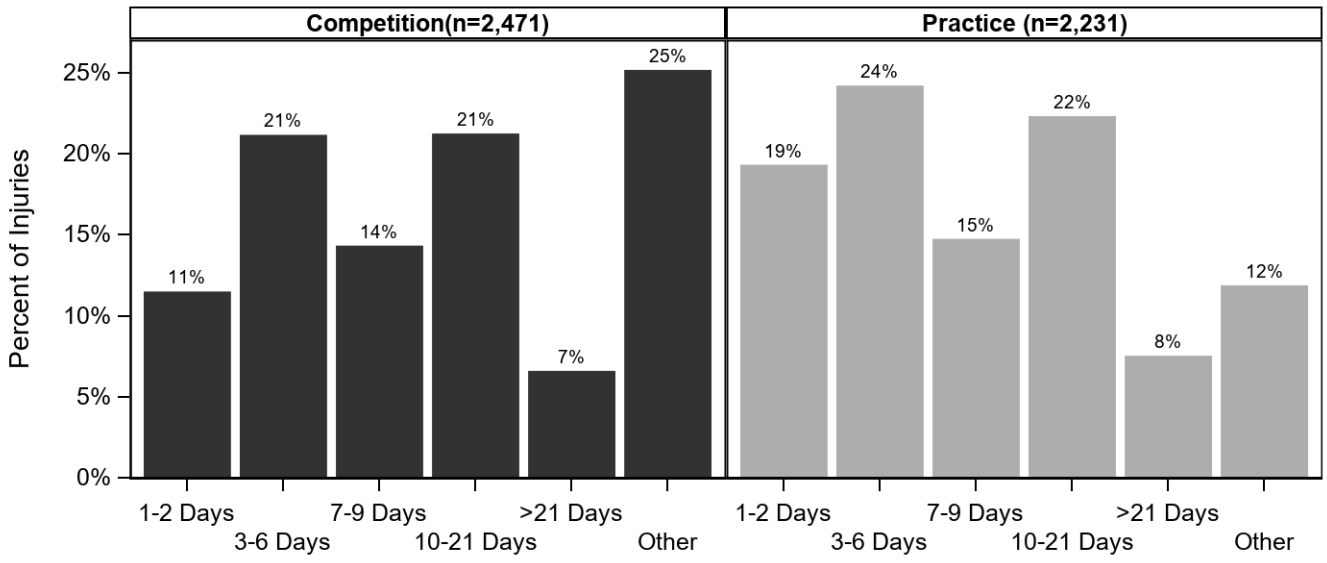
* Multiple ligament responses allowed per injury report. Totals and n's are not always equal due to slight rounding or missing responses. COVID-19 may have affected these results.

Table 2.7 Ten Most Common Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition (n=2,462)		Practice (n=2,227)		Overall (n=4,689)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	478	19.4%	254	11.4%	732	15.6%
Ankle Strain/Sprain	368	14.9%	325	14.6%	693	14.8%
Hip/Thigh/Upper Leg Strain/Sprain	143	5.8%	254	11.4%	397	8.5%
Knee Strain/Sprain	213	8.7%	101	4.5%	314	6.7%
Knee Other	126	5.1%	142	6.4%	268	5.7%
Systemic Other	30	1.2%	134	6.0%	164	3.5%
Lower Leg Other	16	0.6%	147	6.6%	163	3.5%
Shoulder Other	97	3.9%	62	2.8%	159	3.4%
Hand/Wrist Fracture	96	3.9%	62	2.8%	158	3.4%
Shoulder Strain/Sprain	75	3.0%	54	2.4%	129	2.8%

* Competition includes cheerleading performance related injuries. These were not summarized individually due to them totaling less than 1.0% of all injuries. COVID-19 may have affected these results.

Figure 2.2 Time Loss by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year



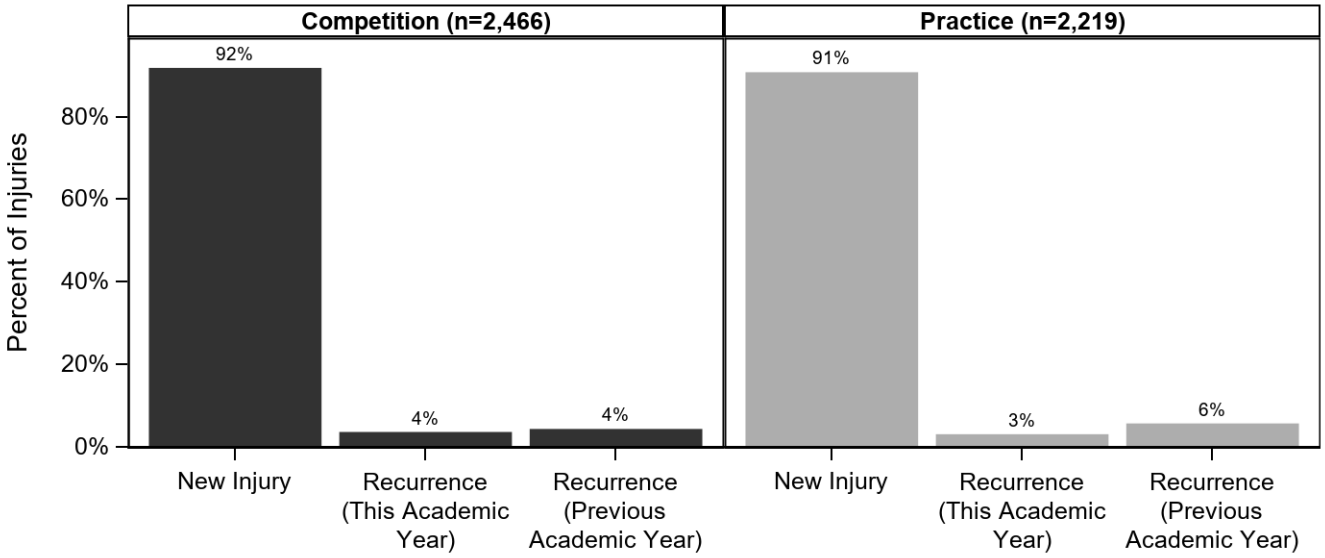
* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play. Competition includes cheerleading performance related injuries. COVID-19 may have affected these results.

Table 2.8 Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	207	8.5%	70	3.2%	277	5.9%
Did Not Require Surgery	2,234	91.5%	2,146	96.8%	4,380	94.1%
Total	***2,441***	***100.0%***	***2,216***	***100.0%***	***4,657***	***100.0%***

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

Figure 2.3 New and Recurring Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year



* Competition includes cheerleading performance related injuries. COVID-19 may have affected these results.

Table 2.9 Time during Season of Injury, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	965	20.6%
Regular Season	3,495	74.5%
Post Season	226	4.8%
Unknown/Other	8	0.2%
Total	***4,694***	***100.0%***

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

Table 2.10 Practice-Related Variables, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	135	6.3%
Second 1/2 Hour	303	14.1%
1-2 Hours into Practice	951	44.2%
>2 Hours into Practice	87	4.0%
Unknown	675	31.4%
Total	***2,151***	***100.0%***

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

Table 2.11 Methods for Injury Evaluation and Assessment, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Injuries Evaluated By:	n=4,702	%
Certified Athletic Trainer	4,304	91.5%
Orthopedic Physician	878	18.7%
Physician/Pediatrician	700	14.9%
Other	107	2.3%
Physician's Assistant	78	1.7%
Nurse Practitioner	43	0.9%
Chiropractor	27	0.6%
Neurologist/Neuropsychologist	24	0.5%
Dentist/Oral Surgeon	8	0.2%

Assessment Method:	n=4,702	%
Evaluation	4,536	96.5%
X-Ray	1,606	34.2%
MRI	527	11.2%
Blood Work/Lab Test	131	2.8%
CT-Scan	77	1.6%
Other	38	0.8%

* Multiple responses allowed per injury report. Totals and n's are not always equal due to slight rounding or missing responses. 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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***1,483***	***375,772***	***3.95***
Competition	874	67,752	12.90
Practice	609	308,020	1.98

* All analyses in this report present un-weighted data. COVID-19 may have affected these results.

Table 3.2 Demographic Characteristics of Injured Football Athletes, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Year in School	n	%
Freshman	306	21.2%
Sophomore	336	23.3%
Junior	400	27.7%
Senior	402	27.8%
Total	***1,444***	***100.0%***

Age (years)	
Minimum	10
Maximum	19
Mean (SD)	15.9 (1.3)
N	1,221

BMI	
Minimum	14.8
Maximum	50.5
Mean (SD)	25.9 (5.0)
N	978

* 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, 2021-22 School Year

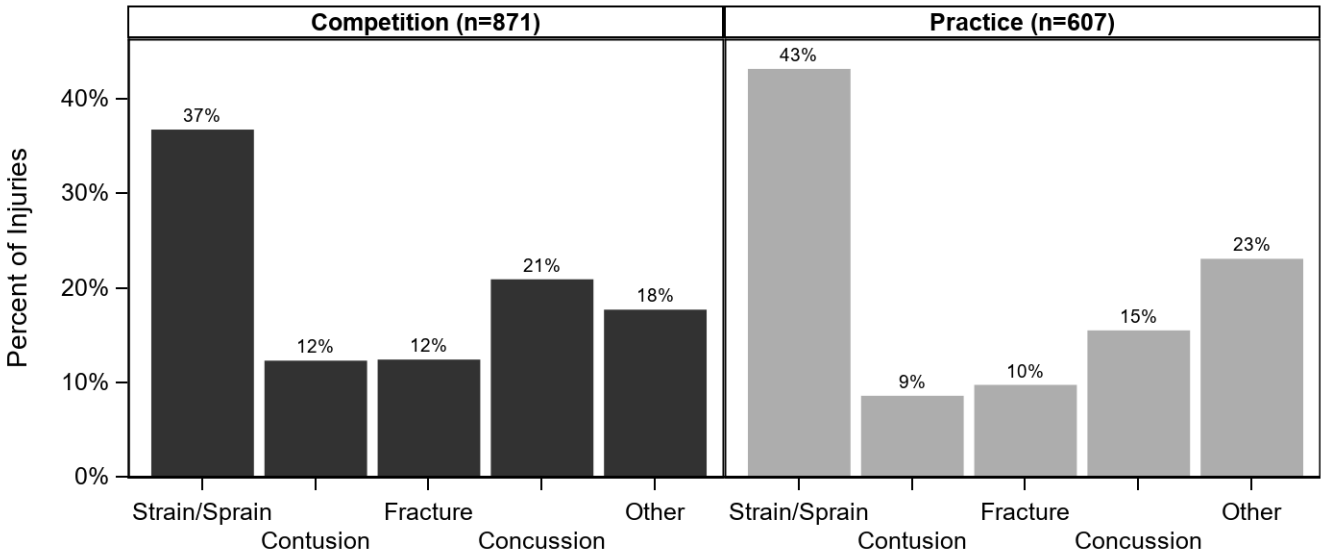


Table 3.3 Body Site of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

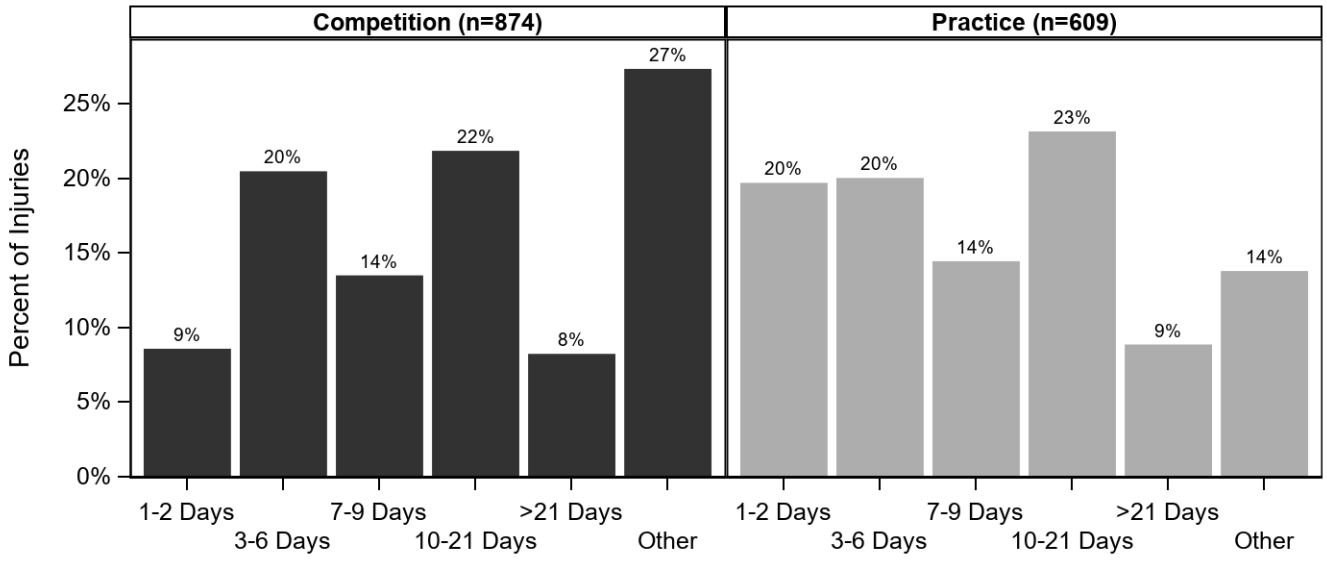
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	187	21.4%	97	15.9%	284	19.2%
Knee	157	18.0%	93	15.3%	250	16.9%
Ankle	103	11.8%	80	13.1%	183	12.3%
Hand/Wrist	81	9.3%	62	10.2%	143	9.6%
Shoulder	99	11.3%	44	7.2%	143	9.6%
Hip/Thigh/Upper Leg	53	6.1%	74	12.2%	127	8.6%
Arm/Elbow	45	5.1%	23	3.8%	68	4.6%
Lower Leg	35	4.0%	32	5.3%	67	4.5%
Trunk	37	4.2%	22	3.6%	59	4.0%
Foot	27	3.1%	22	3.6%	49	3.3%
Systemic	6	0.7%	38	6.2%	44	3.0%
Other	26	3.0%	10	1.6%	36	2.4%
Neck	18	2.1%	12	2.0%	30	2.0%
Total	***874***	***100.0%***	***609***	***100.0%***	***1,483***	***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, 2021-22 School Year

	Competition (n=871)		Practice (n=607)		Overall (n=1,478)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	182	20.9%	94	15.5%	276	18.7%
Ankle Strain/Sprain	91	10.4%	69	11.4%	160	10.8%
Knee Strain/Sprain	89	10.2%	42	6.9%	131	8.9%
Hip/Thigh/Upper Leg Strain/Sprain	28	3.2%	64	10.5%	92	6.2%
Shoulder Other	62	7.1%	23	3.8%	85	5.8%
Knee Other	45	5.2%	35	5.8%	80	5.4%
Hand/Wrist Fracture	40	4.6%	31	5.1%	71	4.8%
Shoulder Strain/Sprain	33	3.8%	17	2.8%	50	3.4%
Systemic Other	6	0.7%	38	6.3%	44	3.0%
Hand/Wrist Strain/Sprain	22	2.5%	18	3.0%	40	2.7%

Figure 3.2 Time Loss of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	89	10.3%	35	5.8%	124	8.5%
Did Not Require Surgery	771	89.7%	572	94.2%	1,343	91.5%
Total	***860***	***100.0%***	***607***	***100.0%***	***1,467***	***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, 2021-22 School Year

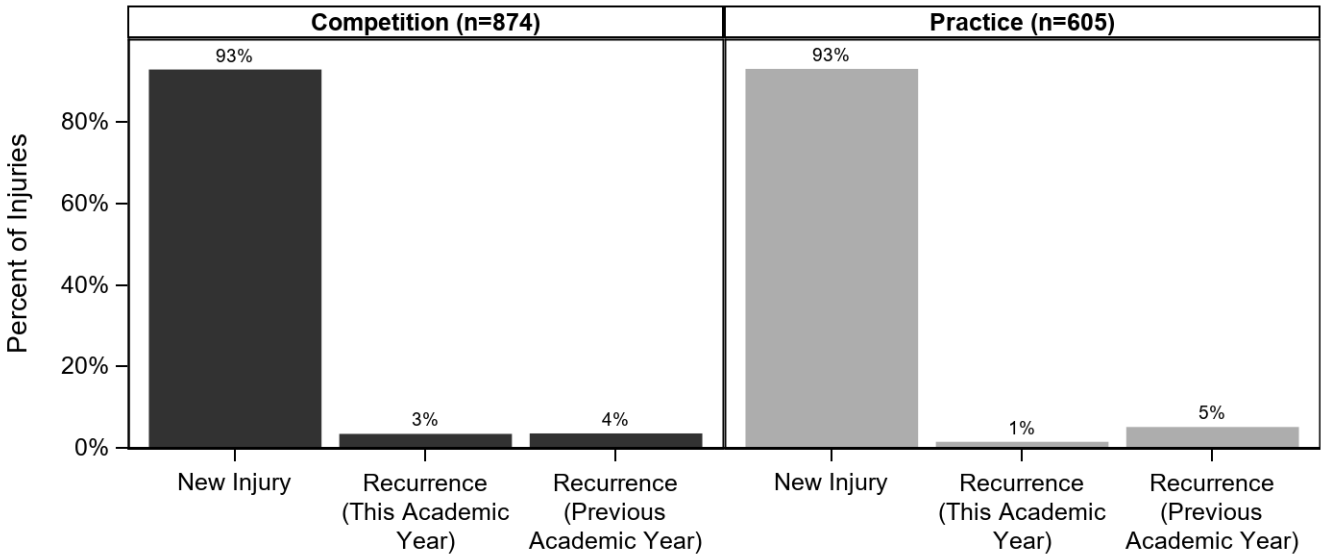


Table 3.6 Time during Season of Football Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	312	21.1%
Regular Season	1,104	74.6%
Post Season	63	4.3%
Total	***1,479***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	10	1.2%
First Quarter	102	12.7%
Second Quarter	235	29.3%
Third Quarter	258	32.1%
Fourth Quarter	194	24.2%
Overtime	4	0.5%
Total	***803***	***100.0%***

Field Location		
End Zone	19	2.3%
Red Zone (20 Yard Line to Goal Line)	139	16.6%
Between the 20 Yard Lines	459	55.0%
Off the Field	5	0.6%
Unknown	213	25.5%
Total	***835***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	40	6.8%
Second 1/2 Hour	84	14.3%
1-2 Hours into Practice	299	50.9%
>2 Hours into Practice	39	6.6%
Unknown	125	21.3%
Total	***587***	***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, 2021-22 School Year

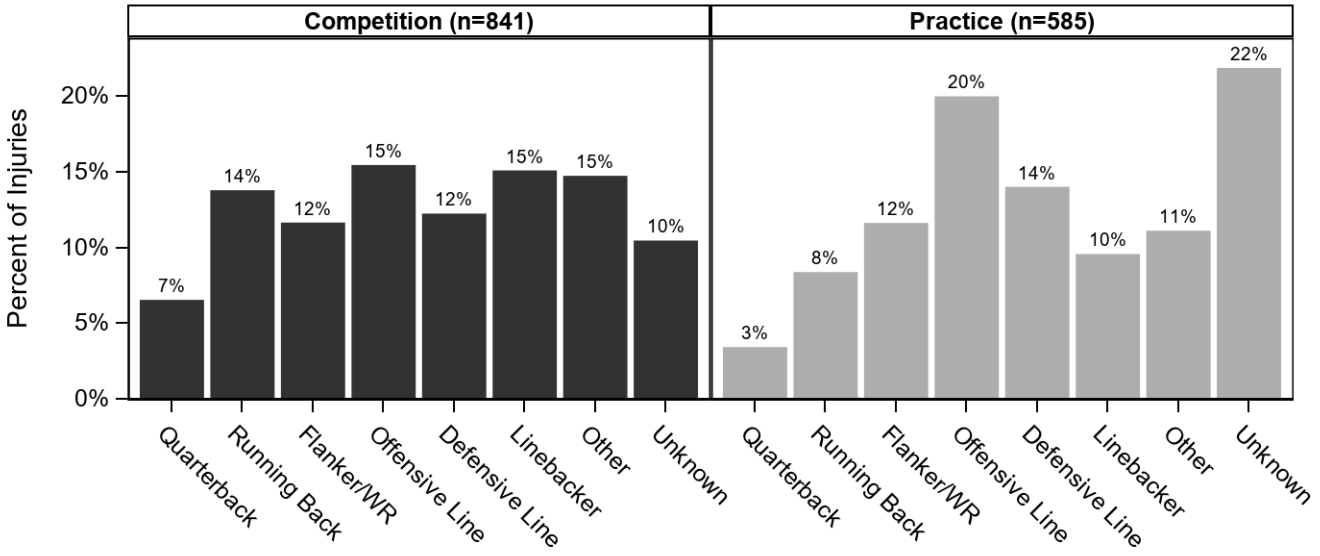


Table 3.9 Activities Leading to Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Being Tackled	243	28.7%	72	12.2%	315	21.9%
Tackling	209	24.7%	75	12.7%	284	19.7%
Blocking	114	13.5%	98	16.6%	212	14.7%
Unknown	90	10.6%	85	14.4%	175	12.2%
N/A **	15	1.8%	99	16.7%	114	7.9%
Being Blocked	59	7.0%	28	4.7%	87	6.1%
Stepped On, Fell On or Kicked	51	6.0%	26	4.4%	77	5.4%
Rotation Around a Planted Foot/Inversion	32	3.8%	43	7.3%	75	5.2%
Other	28	3.3%	34	5.7%	62	4.3%
Uneven Playing Surface	4	0.5%	11	1.9%	15	1.0%
Contact with Ball	1	0.1%	11	1.9%	12	0.8%
Contact with Blocking Sled/Dummy	0	0.0%	10	1.7%	10	0.7%
Total	***846***	***100.0%***	***592***	***100.0%***	***1,438***	***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 3.10 Activity Resulting in Football Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Being Blocked	26	4.6%	17	11.0%	4	2.4%	26	9.8%	14	4.9%
Being Tackled	110	19.4%	45	29.0%	42	25.5%	81	30.7%	36	12.7%
Blocking	78	13.8%	9	5.8%	28	17.0%	51	19.3%	45	15.9%
Contact with Ball	3	0.5%	1	0.6%	5	3.0%	0	0.0%	3	1.1%
Contact with Blocking Sled/Dummy	5	0.9%	1	0.6%	1	0.6%	0	0.0%	3	1.1%
N/A **	52	9.2%	0	0.0%	2	1.2%	0	0.0%	60	21.2%
Other	36	6.4%	6	3.9%	7	4.2%	3	1.1%	10	3.5%
Rotation Around a Planted Foot/Inversion	59	10.4%	1	0.6%	5	3.0%	0	0.0%	9	3.2%
Stepped On, Fell On or Kicked	30	5.3%	20	12.9%	16	9.7%	1	0.4%	10	3.5%
Tackling	93	16.4%	30	19.4%	35	21.2%	67	25.4%	58	20.5%
Uneven Playing Surface	13	2.3%	0	0.0%	1	0.6%	0	0.0%	1	0.4%
Unknown	61	10.8%	25	16.1%	19	11.5%	35	13.3%	34	12.0%
Total	***566***	***100.0%***	***155***	***100.0%***	***165***	***100.0%***	***264***	***100.0%***	***283***	***100.0%***

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

IV. Boys' Soccer Injury Epidemiology

Table 4.1 Boys' Soccer Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***293***	***169,291***	***1.73***
Competition	188	50,698	3.71
Practice	105	118,593	0.89

* All analyses in this report present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	67	23.3%
Sophomore	56	19.5%
Junior	62	21.6%
Senior	102	35.5%
Total	***287***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	16.0 (1.3)
n	221

BMI	
Minimum	16.3
Maximum	44.4
Mean (SD)	22.0 (3.3)
n	184

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

Figure 4.1 Diagnosis of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

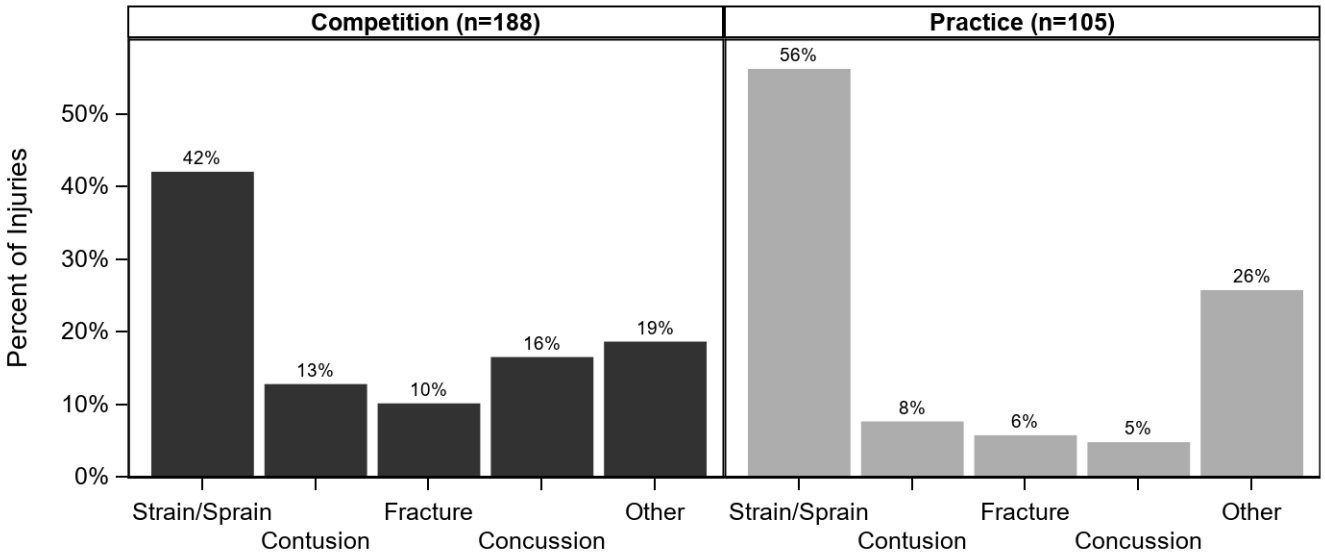


Table 4.3 Body Site of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

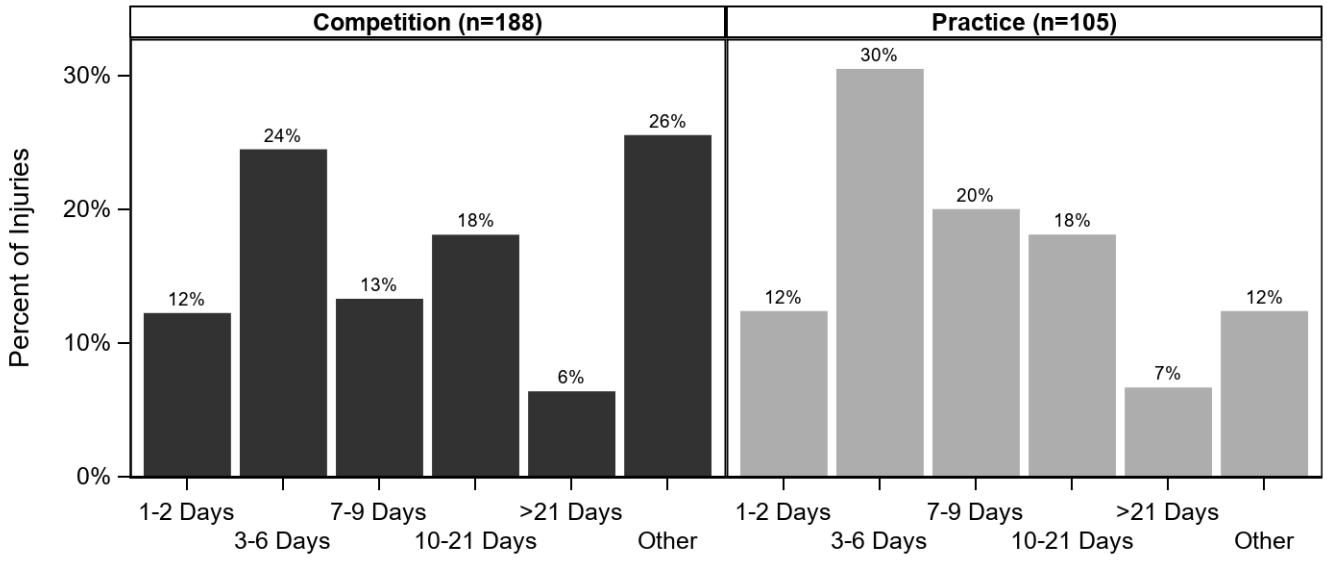
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	34	18.1%	25	23.8%	59	20.1%
Ankle	30	16.0%	26	24.8%	56	19.1%
Head/Face	39	20.7%	9	8.6%	48	16.4%
Knee	31	16.5%	14	13.3%	45	15.4%
Foot	16	8.5%	8	7.6%	24	8.2%
Lower Leg	9	4.8%	9	8.6%	18	6.1%
Hand/Wrist	9	4.8%	6	5.7%	15	5.1%
Trunk	7	3.7%	4	3.8%	11	3.8%
Other	5	2.7%	1	1.0%	6	2.0%
Neck	3	1.6%	0	0.0%	3	1.0%
Shoulder	3	1.6%	0	0.0%	3	1.0%
Systemic	0	0.0%	3	2.9%	3	1.0%
Arm/Elbow	2	1.1%	0	0.0%	2	0.7%
Total	***188***	***100.0%***	***105***	***100.0%***	***293***	***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, 2021-22 School Year

	Competition (n=188)		Practice (n=105)		Overall (n=293)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	26	13.8%	23	21.9%	49	16.7%
Hip/Thigh/Upper Leg Strain/Sprain	21	11.2%	20	19.0%	41	14.0%
Head/Face Concussion	31	16.5%	5	4.8%	36	12.3%
Knee Strain/Sprain	16	8.5%	8	7.6%	24	8.2%
Knee Other	11	5.9%	4	3.8%	15	5.1%
Foot Other	6	3.2%	4	3.8%	10	3.4%
Hip/Thigh/Upper Leg Contusion	8	4.3%	2	1.9%	10	3.4%
Hand/Wrist Fracture	7	3.7%	2	1.9%	9	3.1%
Hip/Thigh/Upper Leg Other	5	2.7%	3	2.9%	8	2.7%
Lower Leg Other	1	0.5%	6	5.7%	7	2.4%

Figure 4.2 Time Loss of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	16	8.6%	2	1.9%	18	6.2%
Did Not Require Surgery	170	91.4%	103	98.1%	273	93.8%
Total	***186***	***100.0%***	***105***	***100.0%***	***291***	***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, 2021-22 School Year

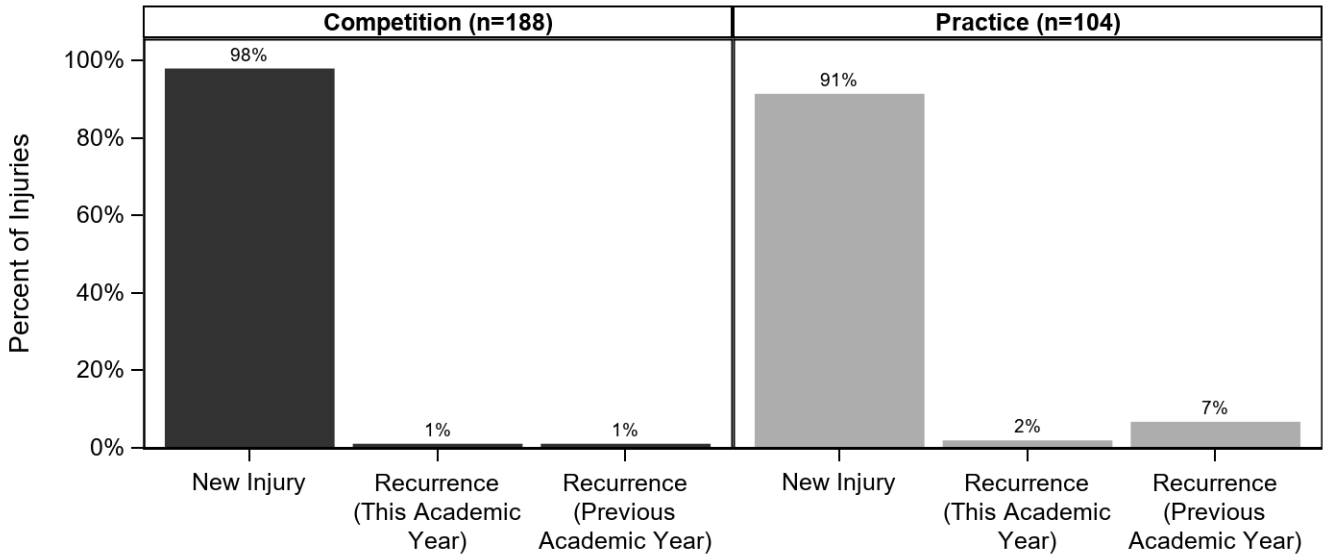


Table 4.6 Time during Season of Boys' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	56	19.1%
Regular Season	218	74.4%
Post Season	19	6.5%
Total	***293***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	2	1.1%
First Half	50	28.4%
Second Half	88	50.0%
Overtime	1	0.6%
Unknown	35	19.9%
Total	***176***	***100.0%***

Field Location		
Goal Box (Defense)	23	13.0%
Goal Box (Offense)	16	9.0%
Side of Goal Box (Defense)	12	6.8%
Side of Goal Box (Offense)	15	8.5%
Top of Goal Box Extended to Center Line (Offense)	36	20.3%
Top of Goal Box Extended to Center Line (Defense)	12	6.8%
Off the Field	3	1.7%
Unknown	60	33.9%
Total	***177***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	4	3.9%
Second 1/2 Hour	13	12.6%
1-2 Hours into Practice	54	52.4%
>2 Hours into Practice	4	3.9%
Unknown	28	27.2%
Total	***103***	***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, 2021-22 School Year

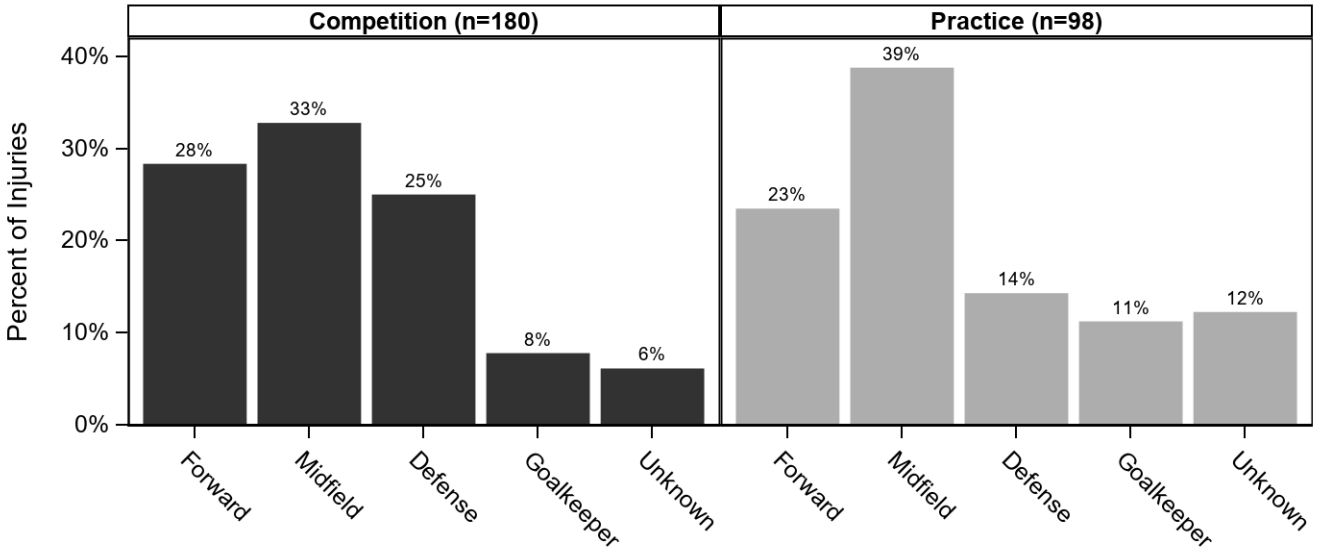


Table 4.9 Activities Leading to Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	27	14.9%	34	34.7%	61	21.9%
Chasing Loose Ball	32	17.7%	3	3.1%	35	12.5%
Unknown	24	13.3%	8	8.2%	32	11.5%
Defending	17	9.4%	9	9.2%	26	9.3%
Ball Handling/Dribbling	20	11.0%	4	4.1%	24	8.6%
Shooting	13	7.2%	7	7.1%	20	7.2%
Goaltending	11	6.1%	8	8.2%	19	6.8%
Passing	9	5.0%	6	6.1%	15	5.4%
Heading Ball	12	6.6%	2	2.0%	14	5.0%
Conditioning	0	0.0%	11	11.2%	11	3.9%
Receiving Pass	4	2.2%	4	4.1%	8	2.9%
Attempting a Slide Tackle	3	1.7%	1	1.0%	4	1.4%
Receiving a Slide Tackle	4	2.2%	0	0.0%	4	1.4%
Other	2	1.1%	1	1.0%	3	1.1%
Blocking Shot	3	1.7%	0	0.0%	3	1.1%
Total	***181***	***100.0%***	***98***	***100.0%***	***279***	***100.0%***

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

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Table 4.10 Activity Resulting in Boys' Soccer Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Attempting a Slide Tackle	1	0.7%	1	3.1%	0	0.0%	0	0.0%	2	3.6%
Ball Handling/Dribbling	13	9.7%	5	15.6%	3	12.0%	2	6.3%	1	1.8%
Blocking Shot	0	0.0%	0	0.0%	1	4.0%	1	3.1%	1	1.8%
Chasing Loose Ball	24	17.9%	3	9.4%	1	4.0%	3	9.4%	4	7.1%
Conditioning	7	5.2%	0	0.0%	1	4.0%	0	0.0%	3	5.4%
Defending	9	6.7%	5	15.6%	3	12.0%	7	21.9%	2	3.6%
General Play	33	24.6%	7	21.9%	4	16.0%	3	9.4%	14	25.0%
Goaltending	5	3.7%	2	6.3%	3	12.0%	3	9.4%	6	10.7%
Heading Ball	3	2.2%	0	0.0%	2	8.0%	7	21.9%	2	3.6%
Other	2	1.5%	0	0.0%	0	0.0%	0	0.0%	1	1.8%
Passing	10	7.5%	1	3.1%	1	4.0%	0	0.0%	3	5.4%
Receiving Pass	6	4.5%	0	0.0%	0	0.0%	0	0.0%	2	3.6%
Receiving a Slide Tackle	1	0.7%	2	6.3%	0	0.0%	0	0.0%	1	1.8%
Shooting	12	9.0%	1	3.1%	1	4.0%	1	3.1%	5	8.9%
Unknown	8	6.0%	5	15.6%	5	20.0%	5	15.6%	9	16.1%
Total	***134***	***100.0%***	***32***	***100.0%***	***25***	***100.0%***	***32***	***100.0%***	***56***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***319***	***138,979***	***2.30***
Competition	219	43,543	5.03
Practice	100	95,436	1.05

* All analyses in this report present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	74	24.4%
Sophomore	102	33.7%
Junior	60	19.8%
Senior	67	22.1%
Total	***303***	***100.0%***

Age (years)	
Minimum	13
Maximum	19
Mean (SD)	15.6 (1.2)
n	221

BMI	
Minimum	16.2
Maximum	32.5
Mean (SD)	22.2 (2.6)
n	181

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

Figure 5.1 Diagnosis of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

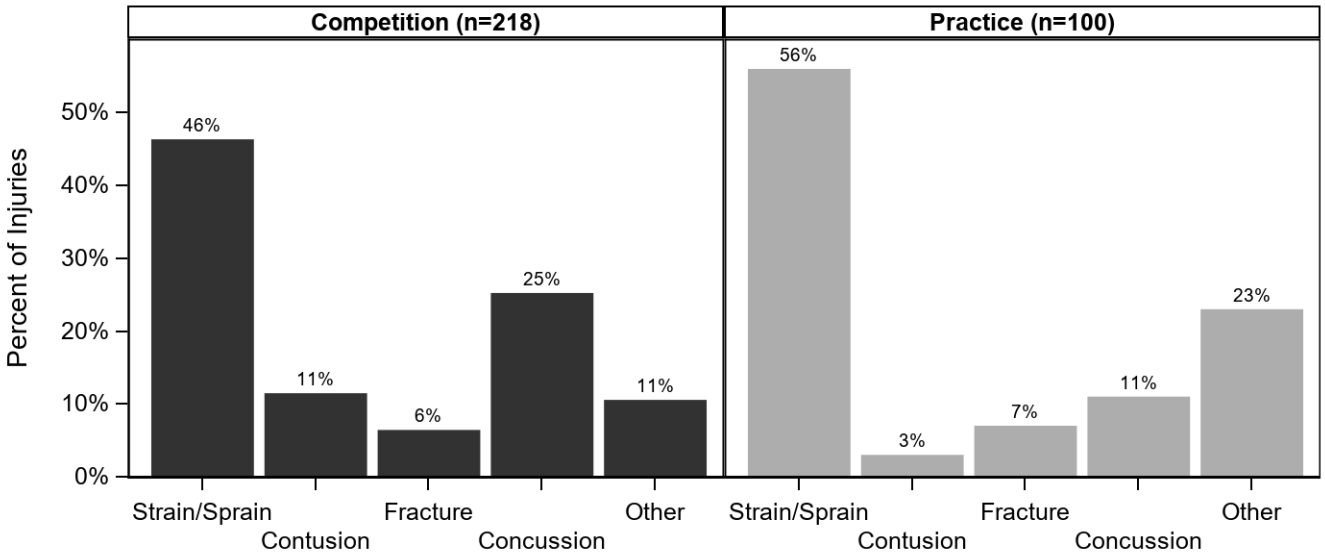


Table 5.3 Body Site of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

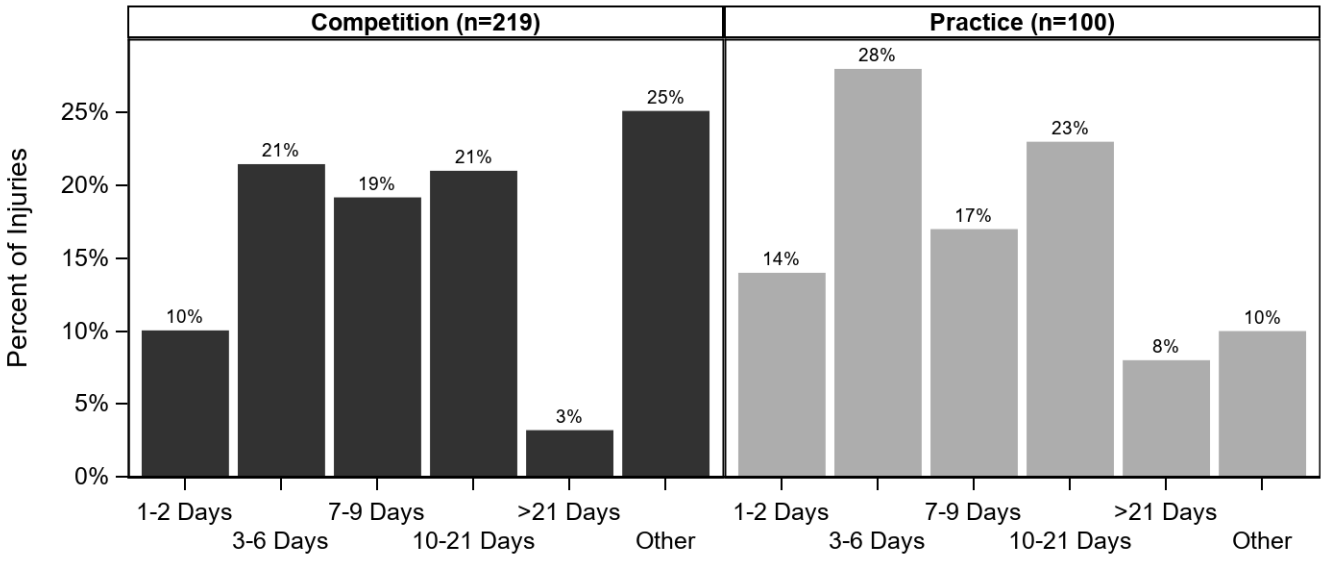
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	60	27.4%	14	14.0%	74	23.2%
Ankle	47	21.5%	23	23.0%	70	21.9%
Knee	47	21.5%	19	19.0%	66	20.7%
Hip/Thigh/Upper Leg	20	9.1%	19	19.0%	39	12.2%
Lower Leg	9	4.1%	9	9.0%	18	5.6%
Foot	9	4.1%	7	7.0%	16	5.0%
Trunk	6	2.7%	4	4.0%	10	3.1%
Systemic	5	2.3%	3	3.0%	8	2.5%
Hand/Wrist	5	2.3%	0	0.0%	5	1.6%
Shoulder	4	1.8%	1	1.0%	5	1.6%
Arm/Elbow	3	1.4%	0	0.0%	3	0.9%
Other	2	0.9%	1	1.0%	3	0.9%
Neck	2	0.9%	0	0.0%	2	0.6%
Total	***219***	***100.0%***	***100***	***100.0%***	***319***	***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, 2021-22 School Year

	Competition (n=218)		Practice (n=100)		Overall (n=318)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	55	25.2%	11	11.0%	66	20.8%
Ankle Strain/Sprain	43	19.7%	18	18.0%	61	19.2%
Knee Strain/Sprain	28	12.8%	11	11.0%	39	12.3%
Hip/Thigh/Upper Leg Strain/Sprain	13	6.0%	18	18.0%	31	9.7%
Knee Other	11	5.0%	7	7.0%	18	5.7%
Systemic Other	5	2.3%	3	3.0%	8	2.5%
Lower Leg Other	1	0.5%	6	6.0%	7	2.2%
Trunk Strain/Sprain	4	1.8%	3	3.0%	7	2.2%
Foot Fracture	4	1.8%	2	2.0%	6	1.9%
Hip/Thigh/Upper Leg Contusion	6	2.8%	0	0.0%	6	1.9%

Figure 5.2 Time Loss of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	18	8.3%	2	2.0%	20	6.3%
Did Not Require Surgery	200	91.7%	97	98.0%	297	93.7%
Total	***218***	***100.0%***	***99***	***100.0%***	***317***	***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, 2021-22 School Year

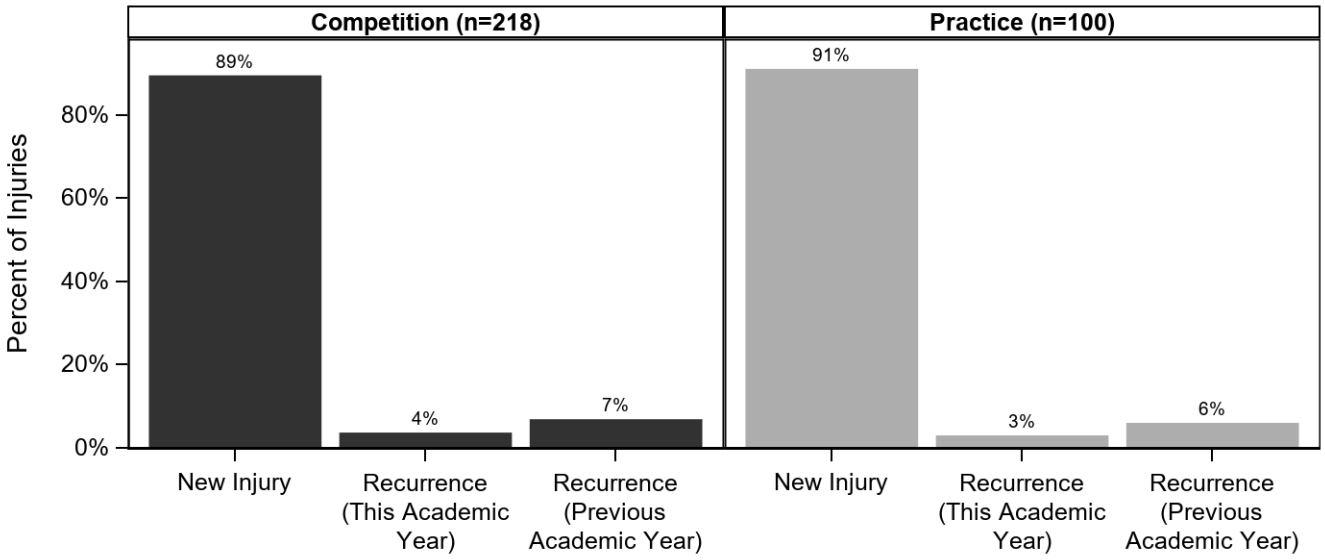


Table 5.6 Time during Season of Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	55	17.3%
Regular Season	248	78.0%
Post Season	15	4.7%
Total	***318***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	8	3.9%
First Half	61	29.9%
Second Half	86	42.2%
Overtime	1	0.5%
Unknown	48	23.5%
Total	***204***	***100.0%***

Field Location		
Goal Box (Defense)	30	14.9%
Goal Box (Offense)	11	5.5%
Side of Goal Box (Defense)	10	5.0%
Side of Goal Box (Offense)	15	7.5%
Top of Goal Box Extended to Center Line (Offense)	24	11.9%
Top of Goal Box Extended to Center Line (Defense)	25	12.4%
Off the Field	1	0.5%
Unknown	85	42.3%
Total	***201***	***100.0%***

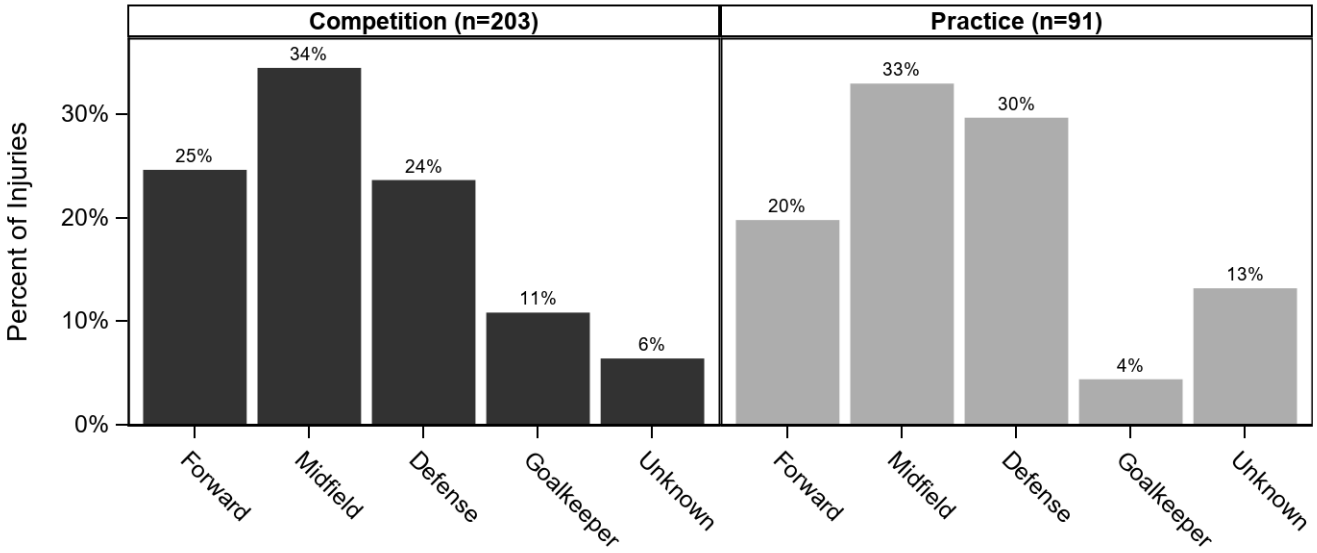
* Totals and n's are not always equal due to slight rounding or missing responses.

Table 5.8 Practice-Related Variables for Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	2	2.1%
Second 1/2 Hour	11	11.3%
1-2 Hours into Practice	48	49.5%
>2 Hours into Practice	5	5.2%
Unknown	31	32.0%
Total	***97***	***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, 2021-22 School Year



REPORTING INFORMATION ONLINE

Table 5.9 Activities Leading to Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	50	24.6%	40	43.5%	90	30.5%
Defending	42	20.7%	12	13.0%	54	18.3%
Unknown	20	9.9%	11	12.0%	31	10.5%
Chasing Loose Ball	16	7.9%	7	7.6%	23	7.8%
Ball Handling/Dribbling	18	8.9%	5	5.4%	23	7.8%
Goaltending	14	6.9%	2	2.2%	16	5.4%
Heading Ball	12	5.9%	3	3.3%	15	5.1%
Receiving Pass	11	5.4%	1	1.1%	12	4.1%
Shooting	8	3.9%	3	3.3%	11	3.7%
Passing	5	2.5%	1	1.1%	6	2.0%
Conditioning	0	0.0%	5	5.4%	5	1.7%
Blocking Shot	2	1.0%	2	2.2%	4	1.4%
Other	3	1.5%	0	0.0%	3	1.0%
Attempting a Slide Tackle	1	0.5%	0	0.0%	1	0.3%
Receiving a Slide Tackle	1	0.5%	0	0.0%	1	0.3%
Total	***203***	***100.0%***	***92***	***100.0%***	***295***	***100.0%***

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

REPORTING INFORMATION ONLINE

Table 5.10 Activity Resulting in Girls' Soccer Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Attempting a Slide Tackle	1	0.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ball Handling/Dribbling	19	13.0%	1	3.8%	2	11.8%	0	0.0%	1	2.4%
Blocking Shot	3	2.1%	1	3.8%	0	0.0%	0	0.0%	0	0.0%
Chasing Loose Ball	10	6.8%	4	15.4%	2	11.8%	4	6.3%	2	4.9%
Conditioning	3	2.1%	0	0.0%	0	0.0%	0	0.0%	2	4.9%
Defending	21	14.4%	4	15.4%	5	29.4%	23	35.9%	1	2.4%
General Play	39	26.7%	5	19.2%	6	35.3%	17	26.6%	23	56.1%
Goaltending	7	4.8%	2	7.7%	0	0.0%	4	6.3%	3	7.3%
Heading Ball	2	1.4%	1	3.8%	0	0.0%	12	18.8%	0	0.0%
Other	3	2.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Passing	5	3.4%	1	3.8%	0	0.0%	0	0.0%	0	0.0%
Receiving Pass	6	4.1%	1	3.8%	0	0.0%	2	3.1%	3	7.3%
Receiving a Slide Tackle	1	0.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shooting	8	5.5%	1	3.8%	0	0.0%	0	0.0%	2	4.9%
Unknown	18	12.3%	5	19.2%	2	11.8%	2	3.1%	4	9.8%
Total	***146***	***100.0%***	***26***	***100.0%***	***17***	***100.0%***	***64***	***100.0%***	***41***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***188***	***145,427***	***1.29***
Competition	83	50,143	1.66
Practice	105	95,284	1.10

* All analyses in this report present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	55	29.6%
Sophomore	48	25.8%
Junior	35	18.8%
Senior	48	25.8%
Total	***186***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.6 (1.3)
n	144

BMI	
Minimum	15.4
Maximum	34.3
Mean (SD)	22.7 (3.5)
n	117

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

Figure 6.1 Diagnosis of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

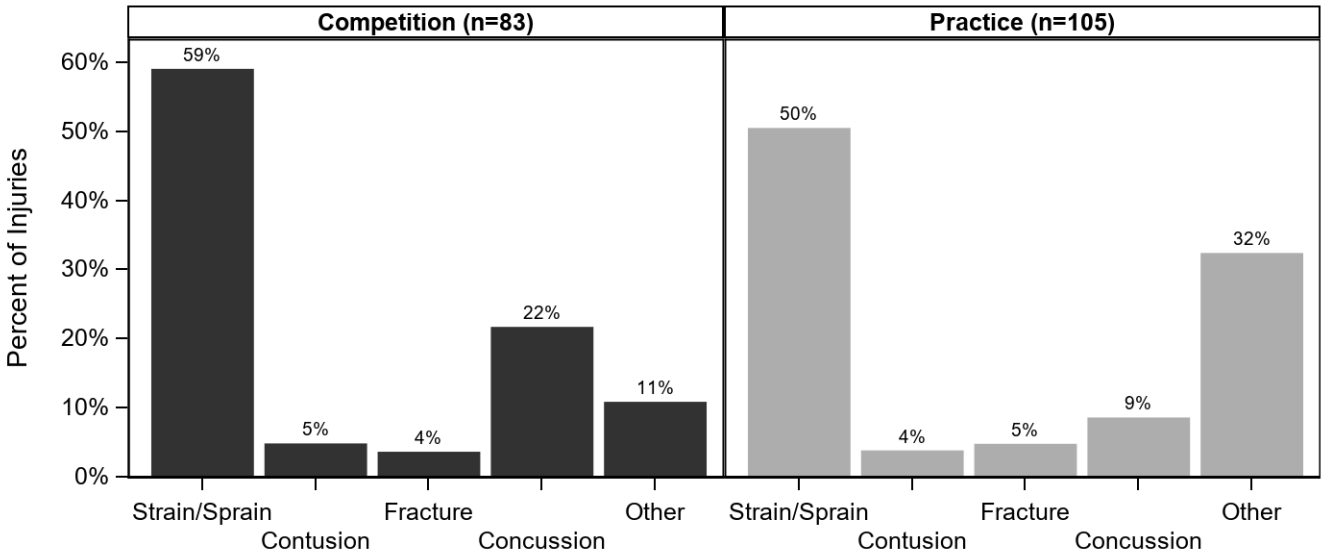


Table 6.3 Body Site of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

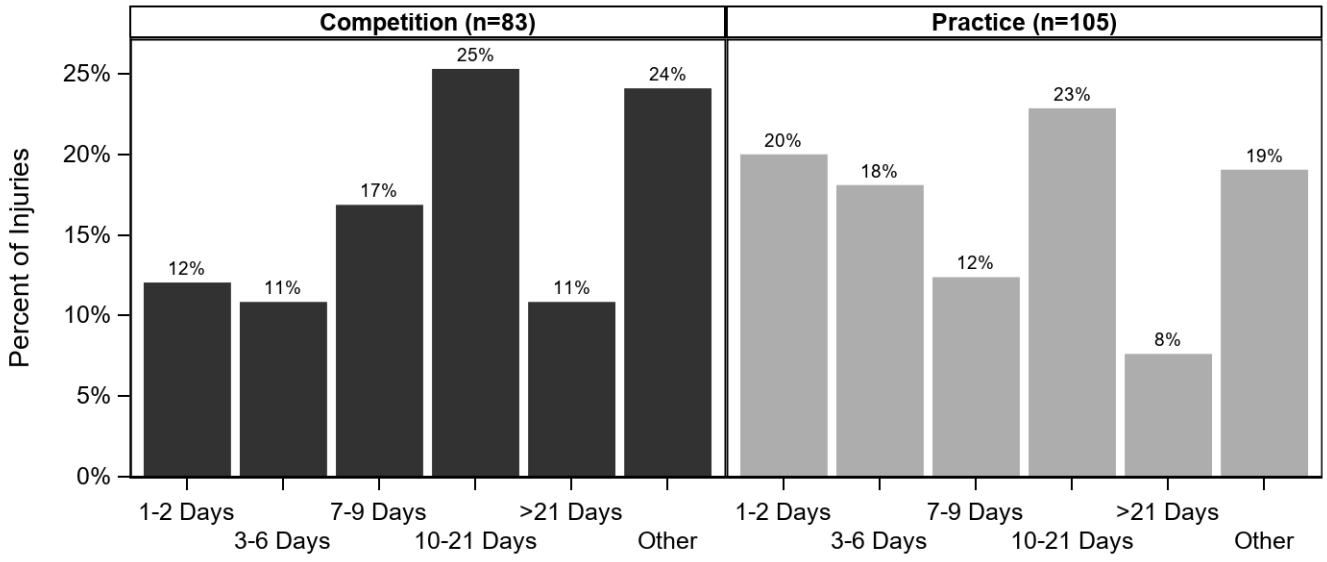
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	29	34.9%	33	31.4%	62	33.0%
Head/Face	19	22.9%	11	10.5%	30	16.0%
Knee	10	12.0%	15	14.3%	25	13.3%
Hand/Wrist	13	15.7%	7	6.7%	20	10.6%
Systemic	0	0.0%	13	12.4%	13	6.9%
Shoulder	2	2.4%	7	6.7%	9	4.8%
Trunk	2	2.4%	6	5.7%	8	4.3%
Foot	4	4.8%	3	2.9%	7	3.7%
Lower Leg	4	4.8%	3	2.9%	7	3.7%
Arm/Elbow	0	0.0%	4	3.8%	4	2.1%
Hip/Thigh/Upper Leg	0	0.0%	3	2.9%	3	1.6%
Total	***83***	***100.0%***	***105***	***100.0%***	***188***	***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, 2021-22 School Year

	Competition (n=83)		Practice (n=105)		Overall (n=188)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	27	32.5%	31	29.5%	58	30.9%
Head/Face Concussion	18	21.7%	9	8.6%	27	14.4%
Knee Other	5	6.0%	8	7.6%	13	6.9%
Systemic Other	0	0.0%	13	12.4%	13	6.9%
Hand/Wrist Strain/Sprain	7	8.4%	4	3.8%	11	5.9%
Knee Strain/Sprain	4	4.8%	4	3.8%	8	4.3%
Trunk Strain/Sprain	2	2.4%	5	4.8%	7	3.7%
Shoulder Strain/Sprain	2	2.4%	4	3.8%	6	3.2%
Hand/Wrist Fracture	2	2.4%	2	1.9%	4	2.1%
Knee Contusion	1	1.2%	3	2.9%	4	2.1%

Figure 6.2 Time Loss of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	2	2.5%	2	1.9%	4	2.2%
Did Not Require Surgery	78	97.5%	102	98.1%	180	97.8%
Total	***80***	***100.0%***	***104***	***100.0%***	***184***	***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, 2021-22 School Year

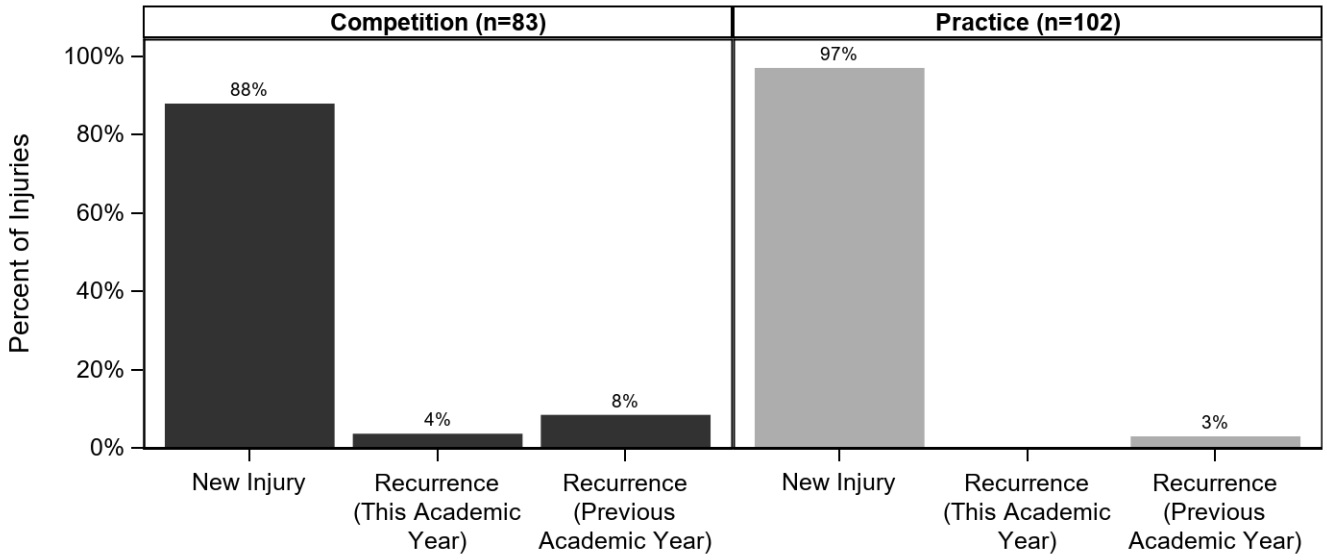


Table 6.6 Time during Season of Girls' Volleyball Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	30	16.0%
Regular Season	150	79.8%
Post Season	8	4.3%
Total	***188***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	12	15.0%
First Set	9	11.3%
Second Set	13	16.3%
Third Set	12	15.0%
Fourth Set	5	6.3%
Unknown	29	36.3%
Total	***80***	***100.0%***

Court Location		
Right Back (Server)	2	2.5%
Right Forward	9	11.3%
Middle Forward	10	12.5%
Left Forward	8	10.0%
Left Back	3	3.8%
Outside the Playable Area	1	1.3%
At the Net	5	6.3%
Unknown	42	52.5%
Total	***80***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	11	10.5%
Second 1/2 Hour	15	14.3%
1-2 Hours into Practice	37	35.2%
>2 Hours into Practice	4	3.8%
Unknown	38	36.2%
Total	***105***	***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, 2021-22 School Year

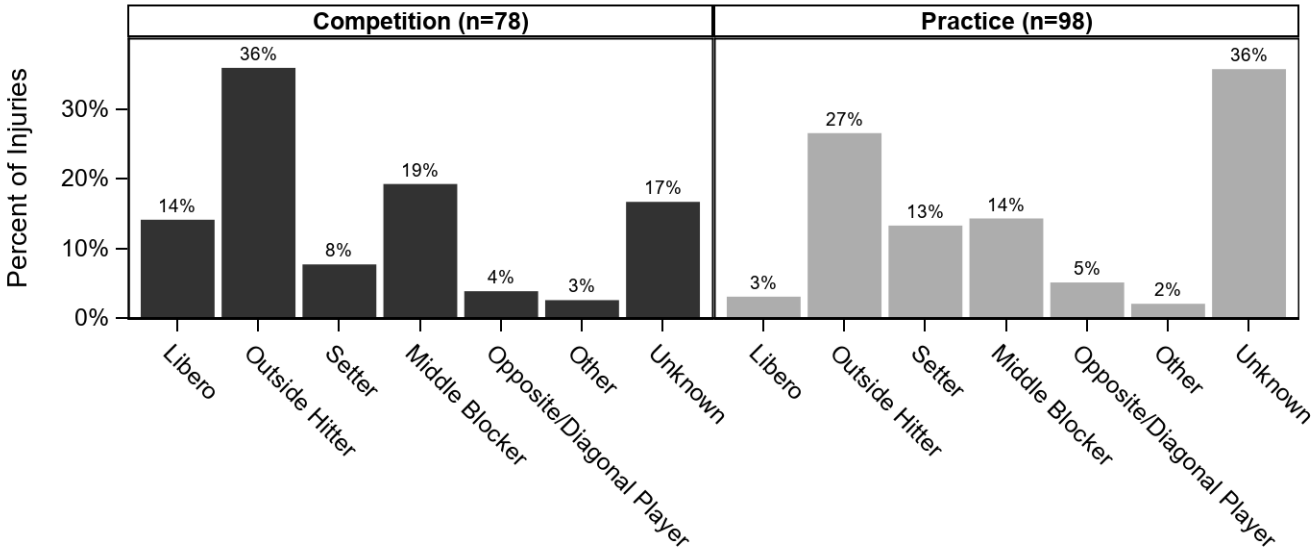


Table 6.9 Activities Leading to Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Blocking	20	25.0%	18	18.4%	38	21.3%
Unknown	9	11.3%	25	25.5%	34	19.1%
Digging	18	22.5%	10	10.2%	28	15.7%
General Play	10	12.5%	14	14.3%	24	13.5%
Spiking	10	12.5%	7	7.1%	17	9.6%
Passing	2	2.5%	10	10.2%	12	6.7%
Setting	7	8.8%	3	3.1%	10	5.6%
Serving	1	1.3%	9	9.2%	10	5.6%
Other	3	3.8%	0	0.0%	3	1.7%
Conditioning	0	0.0%	2	2.0%	2	1.1%
Total	***80***	***100.0%***	***98***	***100.0%***	***178***	***100.0%***

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

Table 6.10 Activity Resulting in Girls' Volleyball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Blocking	31	31.3%	2	25.0%	3	42.9%	1	3.8%	1	2.6%
Conditioning	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	5.3%
Digging	8	8.1%	3	37.5%	1	14.3%	12	46.2%	4	10.5%
General Play	9	9.1%	1	12.5%	1	14.3%	3	11.5%	10	26.3%
Other	0	0.0%	0	0.0%	0	0.0%	3	11.5%	0	0.0%
Passing	6	6.1%	0	0.0%	1	14.3%	2	7.7%	3	7.9%
Serving	8	8.1%	0	0.0%	0	0.0%	1	3.8%	1	2.6%
Setting	6	6.1%	0	0.0%	0	0.0%	2	7.7%	2	5.3%
Spiking	13	13.1%	2	25.0%	0	0.0%	0	0.0%	2	5.3%
Unknown	18	18.2%	0	0.0%	1	14.3%	2	7.7%	13	34.2%
Total	***99***	***100.0%***	***8***	***100.0%***	***7***	***100.0%***	***26***	***100.0%***	***38***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***385***	***225,675***	***1.71***
Competition	205	70,049	2.93
Practice	180	155,626	1.16

* All analyses in this report present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	73	19.3%
Sophomore	98	25.9%
Junior	106	28.0%
Senior	101	26.7%
Total	***378***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	16.1 (1.2)
n	282

BMI	
Minimum	14.1
Maximum	33.4
Mean (SD)	23.1 (3.1)
n	203

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

Figure 7.1 Diagnosis of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

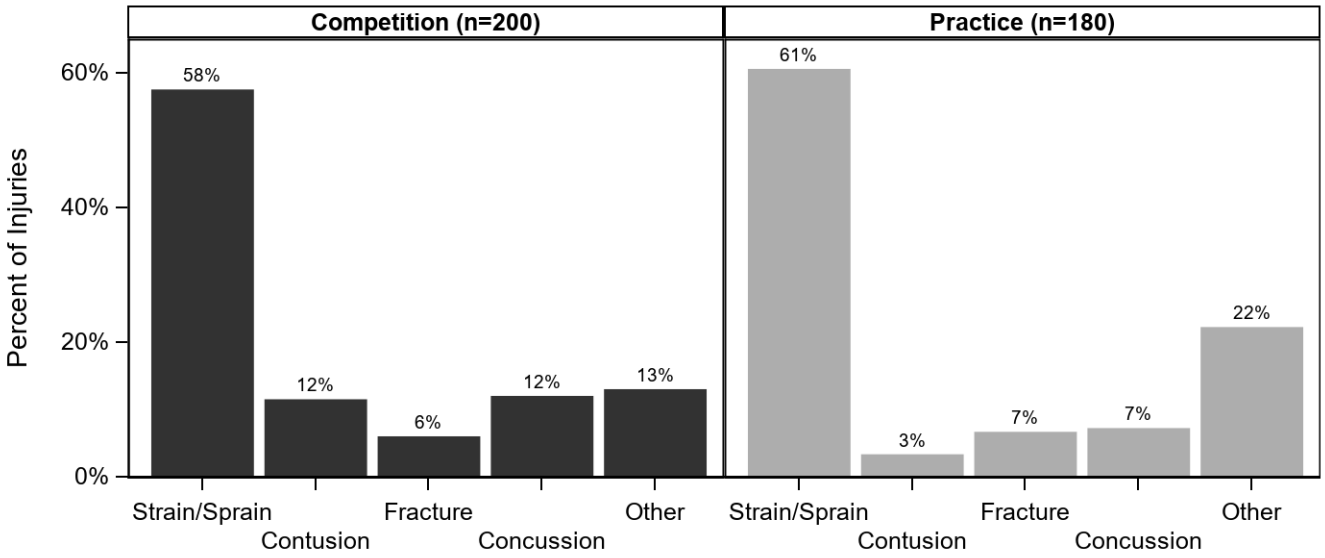


Table 7.3 Body Site of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

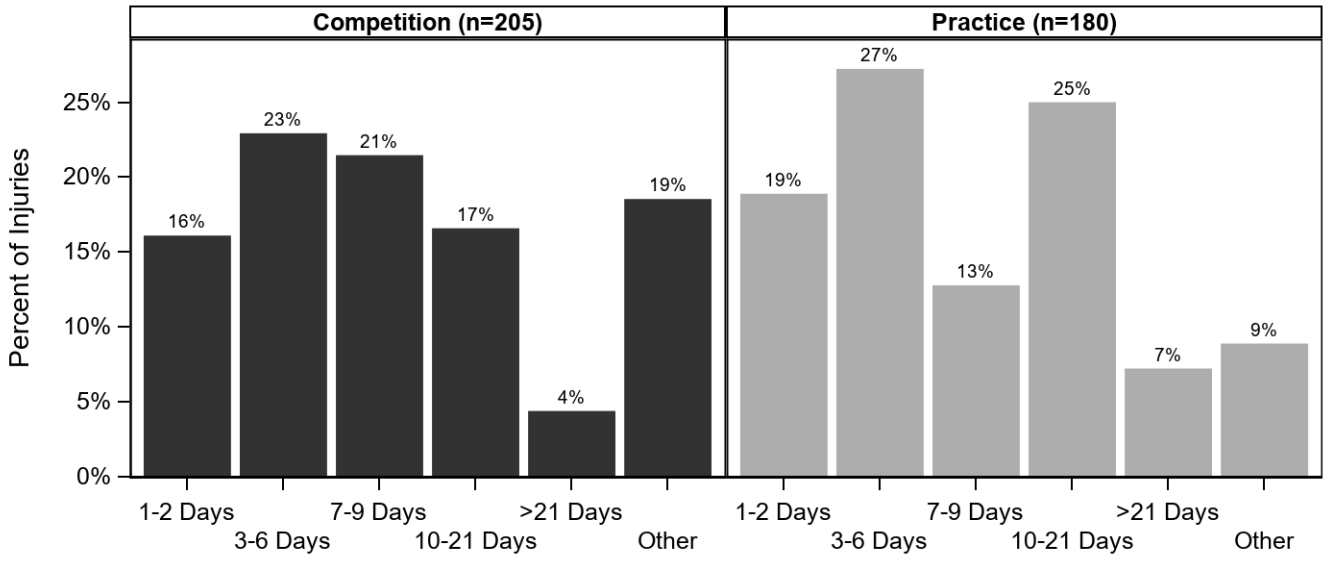
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	74	36.1%	69	38.3%	143	37.1%
Head/Face	35	17.1%	18	10.0%	53	13.8%
Knee	32	15.6%	14	7.8%	46	11.9%
Hip/Thigh/Upper Leg	15	7.3%	18	10.0%	33	8.6%
Hand/Wrist	16	7.8%	15	8.3%	31	8.1%
Systemic	4	2.0%	16	8.9%	20	5.2%
Trunk	9	4.4%	7	3.9%	16	4.2%
Foot	5	2.4%	9	5.0%	14	3.6%
Arm/Elbow	6	2.9%	5	2.8%	11	2.9%
Lower Leg	4	2.0%	7	3.9%	11	2.9%
Shoulder	3	1.5%	2	1.1%	5	1.3%
Neck	1	0.5%	0	0.0%	1	0.3%
Other	1	0.5%	0	0.0%	1	0.3%
Total	***205***	***100.0%***	***180***	***100.0%***	***385***	***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, 2021-22 School Year

	Competition (n=200)		Practice (n=180)		Overall (n=380)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	68	34.0%	67	37.2%	135	35.5%
Head/Face Concussion	24	12.0%	13	7.2%	37	9.7%
Hip/Thigh/Upper Leg Strain/Sprain	13	6.5%	14	7.8%	27	7.1%
Systemic Other	4	2.0%	16	8.9%	20	5.3%
Hand/Wrist Strain/Sprain	10	5.0%	9	5.0%	19	5.0%
Knee Other	10	5.0%	9	5.0%	19	5.0%
Knee Strain/Sprain	13	6.5%	3	1.7%	16	4.2%
Head/Face Other	7	3.5%	3	1.7%	10	2.6%
Foot Strain/Sprain	2	1.0%	6	3.3%	8	2.1%
Hand/Wrist Fracture	4	2.0%	4	2.2%	8	2.1%

Figure 7.2 Time Loss of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	17	8.4%	4	2.3%	21	5.6%
Did Not Require Surgery	186	91.6%	170	97.7%	356	94.4%
Total	***203***	***100.0%***	***174***	***100.0%***	***377***	***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, 2021-22 School Year

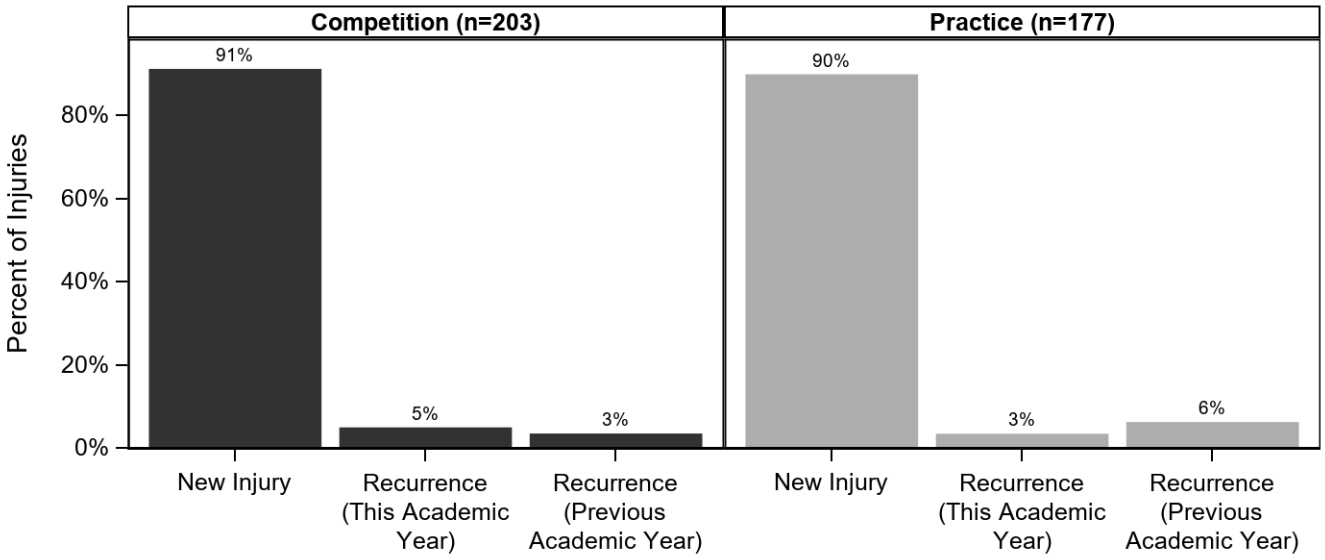


Table 7.6 Time during Season of Boys' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	74	19.3%
Regular Season	291	75.8%
Post Season	15	3.9%
Unknown/Other	4	1.0%
Total	***384***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	4	2.1%
First Quarter	11	5.9%
Second Quarter	40	21.4%
Third Quarter	46	24.6%
Fourth Quarter	38	20.3%
Overtime	2	1.1%
Unknown	46	24.6%
Total	***187***	***100.0%***

Court Location		
Inside Lane (Offense)	35	18.8%
Inside Lane (Defense)	40	21.5%
Between 3 Point Arc and Lane (Offense)	10	5.4%
Between 3 Point Arc and Lane (Defense)	12	6.5%
Outside 3 Point Arc (Offense)	6	3.2%
Outside 3 Point Arc (Defense)	3	1.6%
Out of Bounds	4	2.2%
Off the Court	2	1.1%
Backcourt	3	1.6%
Unknown	71	38.2%
Total	***186***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	11	6.7%
Second 1/2 Hour	19	11.6%
1-2 Hours into Practice	75	45.7%
>2 Hours into Practice	9	5.5%
Unknown	50	30.5%
Total	***164***	***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, 2021-22 School Year

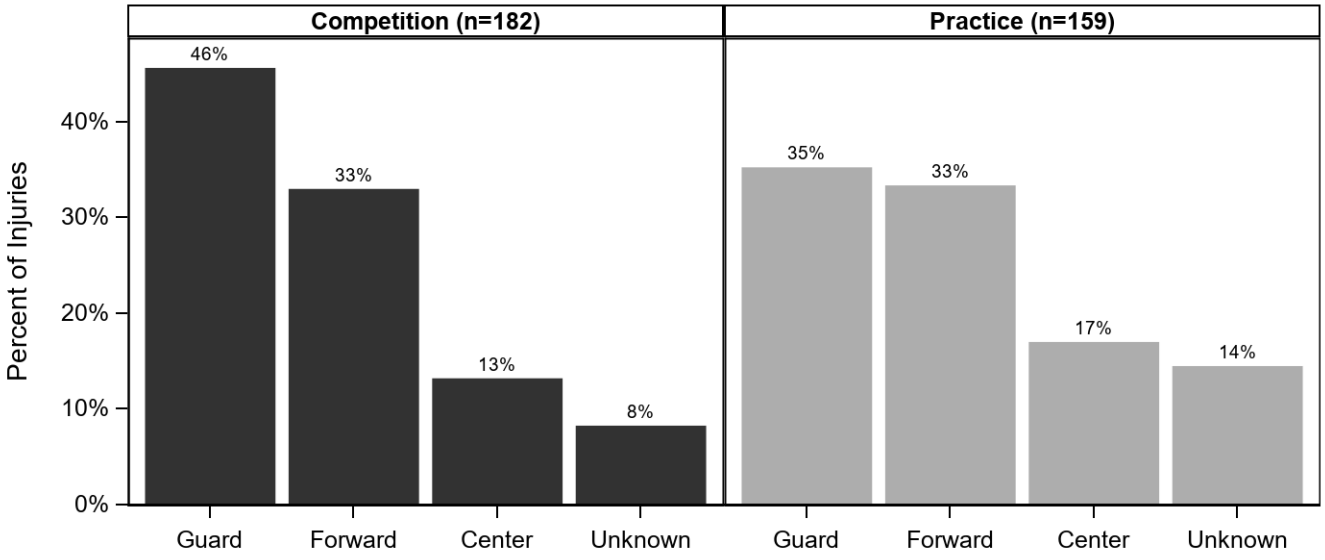


Table 7.9 Activities Leading to Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Rebounding	48	25.5%	37	23.1%	85	24.4%
General Play	31	16.5%	36	22.5%	67	19.3%
Unknown	23	12.2%	34	21.3%	57	16.4%
Defending	29	15.4%	8	5.0%	37	10.6%
Ball Handling/Dribbling	21	11.2%	7	4.4%	28	8.0%
Shooting	13	6.9%	11	6.9%	24	6.9%
Chasing Loose Ball	15	8.0%	6	3.8%	21	6.0%
Receiving Pass	4	2.1%	9	5.6%	13	3.7%
Conditioning	0	0.0%	7	4.4%	7	2.0%
Other	2	1.1%	3	1.9%	5	1.4%
Passing	2	1.1%	1	0.6%	3	0.9%
Screening	0	0.0%	1	0.6%	1	0.3%
Total	***188***	***100.0%***	***160***	***100.0%***	***348***	***100.0%***

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

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Table 7.10 Activity Resulting in Boys' Basketball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	18	8.5%	3	12.5%	0	0.0%	0	0.0%	7	14.6%
Chasing Loose Ball	13	6.1%	5	20.8%	1	4.2%	1	2.9%	0	0.0%
Conditioning	4	1.9%	1	4.2%	0	0.0%	0	0.0%	2	4.2%
Defending	17	8.0%	3	12.5%	5	20.8%	7	20.0%	5	10.4%
General Play	44	20.7%	3	12.5%	5	20.8%	5	14.3%	10	20.8%
Other	3	1.4%	0	0.0%	0	0.0%	0	0.0%	2	4.2%
Passing	3	1.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Rebounding	58	27.2%	2	8.3%	7	29.2%	11	31.4%	5	10.4%
Receiving Pass	7	3.3%	0	0.0%	2	8.3%	1	2.9%	3	6.3%
Screening	0	0.0%	0	0.0%	0	0.0%	1	2.9%	0	0.0%
Shooting	14	6.6%	2	8.3%	1	4.2%	3	8.6%	3	6.3%
Unknown	32	15.0%	5	20.8%	3	12.5%	6	17.1%	11	22.9%
Total	***213***	***100.0%***	***24***	***100.0%***	***24***	***100.0%***	***35***	***100.0%***	***48***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***373***	***159,013***	***2.35***
Competition	191	49,586	3.85
Practice	182	109,427	1.66

* All analyses in this report present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	95	25.7%
Sophomore	87	23.6%
Junior	97	26.3%
Senior	90	24.4%
Total	***369***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.9 (1.2)
n	283

BMI	
Minimum	16.6
Maximum	51.9
Mean (SD)	22.6 (4.0)
n	203

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

Figure 8.1 Diagnosis of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

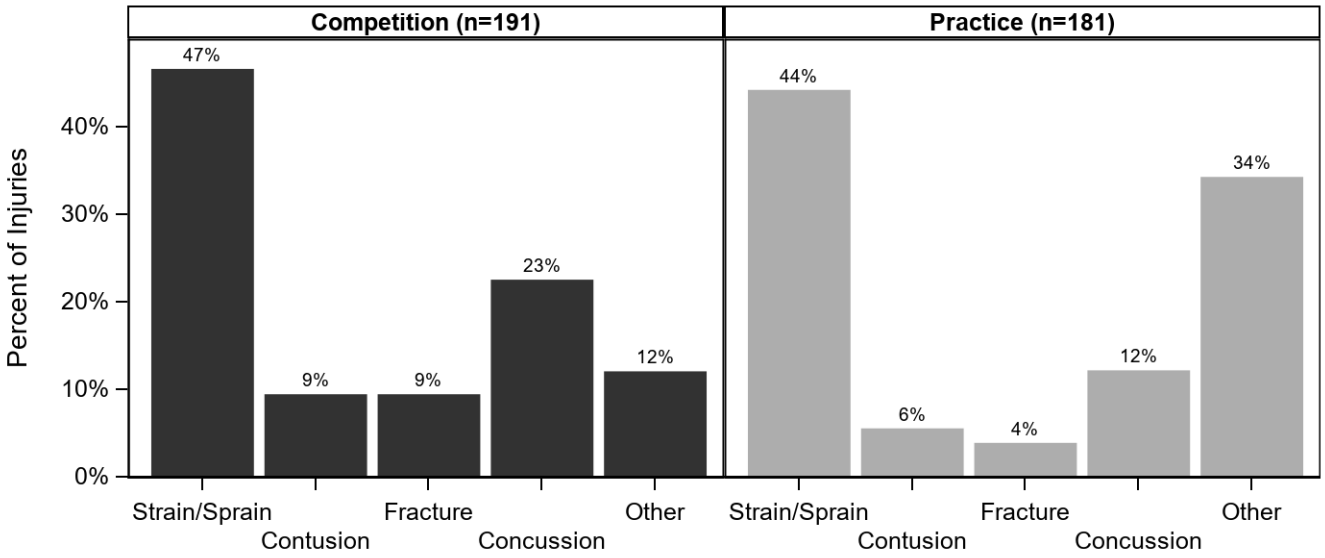


Table 8.3 Body Site of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

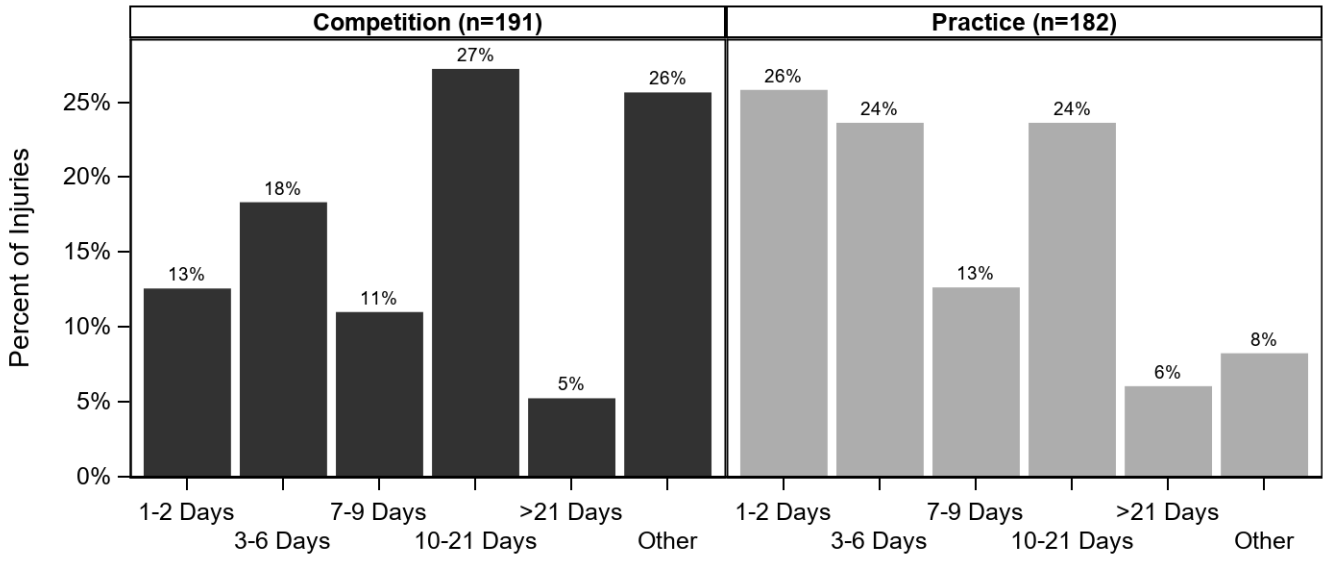
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	58	30.4%	39	21.5%	97	26.1%
Head/Face	50	26.2%	26	14.4%	76	20.4%
Knee	39	20.4%	23	12.7%	62	16.7%
Hip/Thigh/Upper Leg	4	2.1%	26	14.4%	30	8.1%
Hand/Wrist	15	7.9%	12	6.6%	27	7.3%
Lower Leg	3	1.6%	20	11.0%	23	6.2%
Systemic	2	1.0%	20	11.0%	22	5.9%
Foot	6	3.1%	7	3.9%	13	3.5%
Trunk	4	2.1%	5	2.8%	9	2.4%
Arm/Elbow	3	1.6%	2	1.1%	5	1.3%
Shoulder	4	2.1%	1	0.6%	5	1.3%
Neck	2	1.0%	0	0.0%	2	0.5%
Other	1	0.5%	0	0.0%	1	0.3%
Total	***191***	***100.0%***	***181***	***100.0%***	***372***	***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, 2021-22 School Year

	Competition (n=191)		Practice (n=180)		Overall (n=371)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	56	29.3%	32	17.8%	88	23.7%
Head/Face Concussion	43	22.5%	22	12.2%	65	17.5%
Hip/Thigh/Upper Leg Strain/Sprain	0	0.0%	25	13.9%	25	6.7%
Knee Strain/Sprain	19	9.9%	5	2.8%	24	6.5%
Systemic Other	2	1.0%	20	11.1%	22	5.9%
Knee Other	10	5.2%	11	6.1%	21	5.7%
Lower Leg Other	1	0.5%	17	9.4%	18	4.9%
Knee Contusion	8	4.2%	7	3.9%	15	4.0%
Hand/Wrist Strain/Sprain	6	3.1%	8	4.4%	14	3.8%
Hand/Wrist Fracture	9	4.7%	4	2.2%	13	3.5%

Figure 8.2 Time Loss of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	17	8.9%	1	0.6%	18	4.8%
Did Not Require Surgery	174	91.1%	180	99.4%	354	95.2%
Total	***191***	***100.0%***	***181***	***100.0%***	***372***	***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, 2021-22 School Year

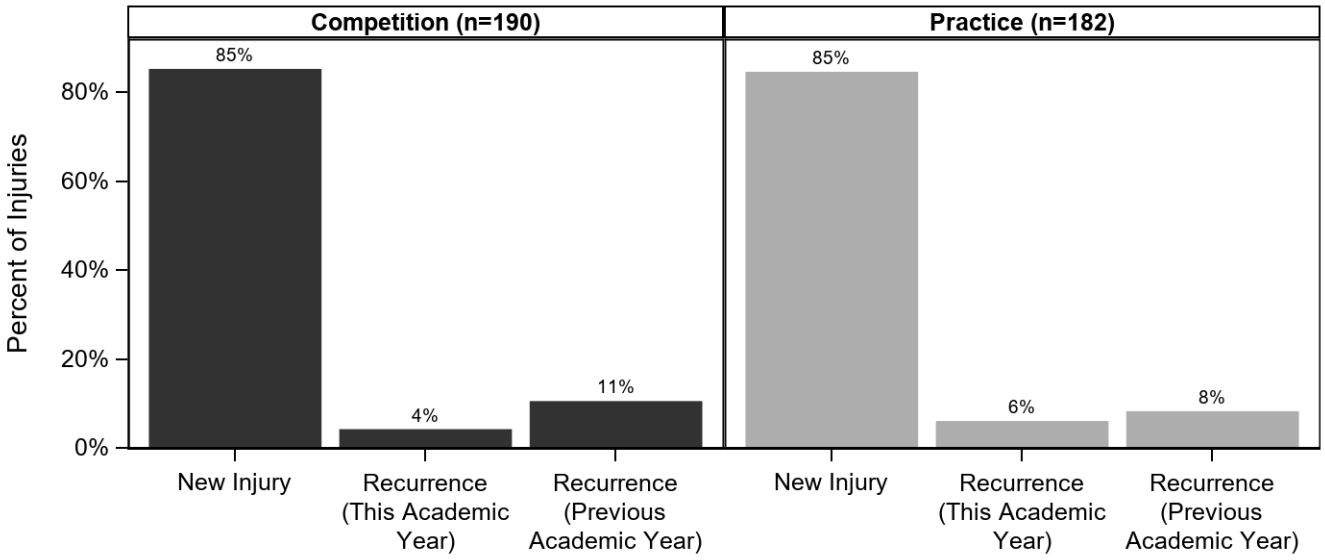


Table 8.6 Time during Season of Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	75	20.2%
Regular Season	280	75.3%
Post Season	16	4.3%
Unknown/Other	1	0.3%
Total	***372***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	5	2.7%
First Quarter	14	7.6%
Second Quarter	36	19.5%
Third Quarter	41	22.2%
Fourth Quarter	46	24.9%
Unknown	43	23.2%
Total	***185***	***100.0%***

Court Location		
Inside Lane (Offense)	36	19.8%
Inside Lane (Defense)	24	13.2%
Between 3 Point Arc and Lane (Offense)	14	7.7%
Between 3 Point Arc and Lane (Defense)	11	6.0%
Outside 3 Point Arc (Offense)	13	7.1%
Outside 3 Point Arc (Defense)	15	8.2%
Out of Bounds	3	1.6%
Backcourt	6	3.3%
Unknown	60	33.0%
Total	***182***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	11	6.3%
Second 1/2 Hour	22	12.6%
1-2 Hours into Practice	61	35.1%
>2 Hours into Practice	4	2.3%
Unknown	76	43.7%
Total	***174***	***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, 2021-22 School Year

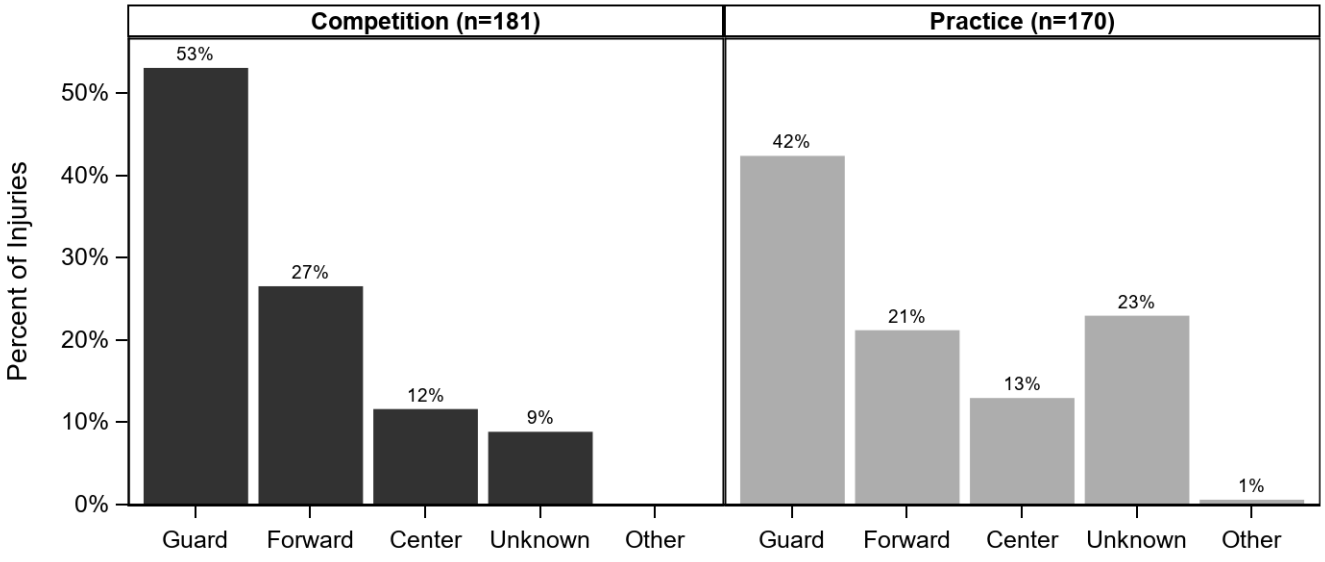


Table 8.9 Activities Leading to Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	24	13.2%	52	31.0%	76	21.7%
Unknown	31	17.0%	42	25.0%	73	20.9%
Rebounding	28	15.4%	20	11.9%	48	13.7%
Defending	26	14.3%	10	6.0%	36	10.3%
Ball Handling/Dribbling	22	12.1%	7	4.2%	29	8.3%
Chasing Loose Ball	25	13.7%	3	1.8%	28	8.0%
Shooting	15	8.2%	7	4.2%	22	6.3%
Receiving Pass	6	3.3%	12	7.1%	18	5.1%
Conditioning	0	0.0%	13	7.7%	13	3.7%
Other	2	1.1%	2	1.2%	4	1.1%
Passing	2	1.1%	0	0.0%	2	0.6%
Screening	1	0.5%	0	0.0%	1	0.3%
Total	***182***	***100.0%***	***168***	***100.0%***	***350***	***100.0%***

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

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Table 8.10 Activity Resulting in Girls' Basketball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	18	11.3%	5	18.5%	0	0.0%	2	3.2%	4	5.3%
Chasing Loose Ball	5	3.1%	3	11.1%	0	0.0%	16	25.8%	4	5.3%
Conditioning	6	3.8%	1	3.7%	0	0.0%	0	0.0%	6	7.9%
Defending	14	8.8%	3	11.1%	2	8.0%	12	19.4%	5	6.6%
General Play	35	22.0%	4	14.8%	3	12.0%	5	8.1%	29	38.2%
Other	3	1.9%	0	0.0%	0	0.0%	0	0.0%	1	1.3%
Passing	1	0.6%	0	0.0%	0	0.0%	1	1.6%	0	0.0%
Rebounding	28	17.6%	2	7.4%	6	24.0%	7	11.3%	5	6.6%
Receiving Pass	9	5.7%	0	0.0%	6	24.0%	3	4.8%	0	0.0%
Screening	0	0.0%	1	3.7%	0	0.0%	0	0.0%	0	0.0%
Shooting	15	9.4%	1	3.7%	2	8.0%	1	1.6%	2	2.6%
Unknown	25	15.7%	7	25.9%	6	24.0%	15	24.2%	20	26.3%
Total	***159***	***100.0%***	***27***	***100.0%***	***25***	***100.0%***	***62***	***100.0%***	***76***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***412***	***142,954***	***2.88***
Competition	190	35,910	5.29
Practice	222	107,044	2.07

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	92	22.9%
Sophomore	130	32.3%
Junior	91	22.6%
Senior	89	22.1%
Total	***402***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.9 (1.2)
n	336

BMI	
Minimum	15.8
Maximum	50.8
Mean (SD)	24.5 (5.7)
n	263

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

Figure 9.1 Diagnosis of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

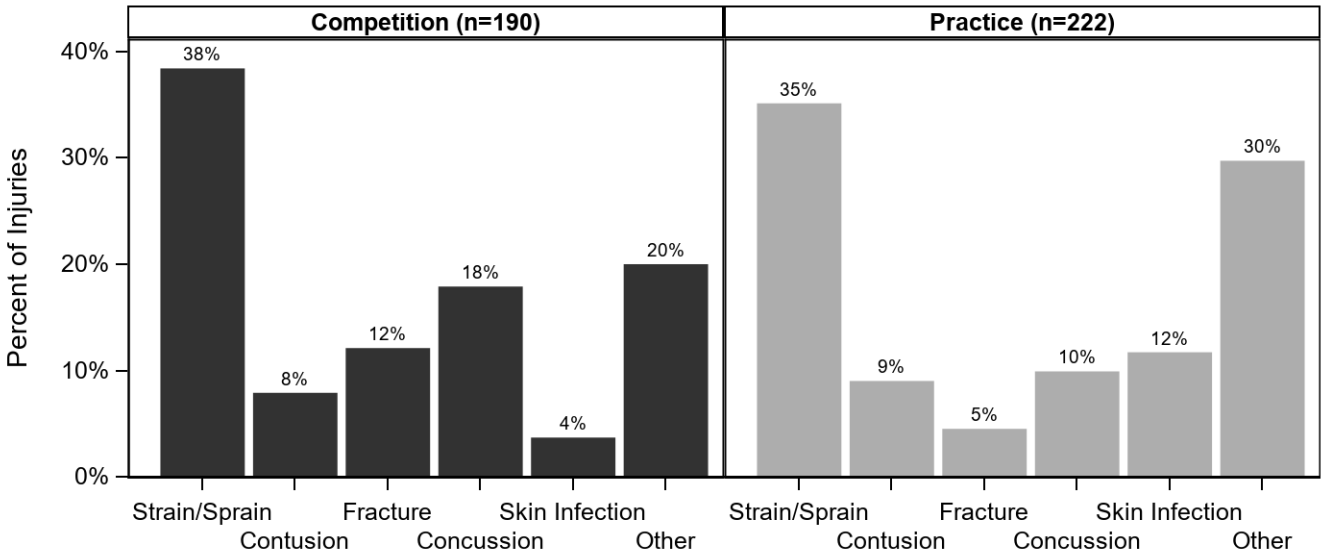


Table 9.3 Body Site of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

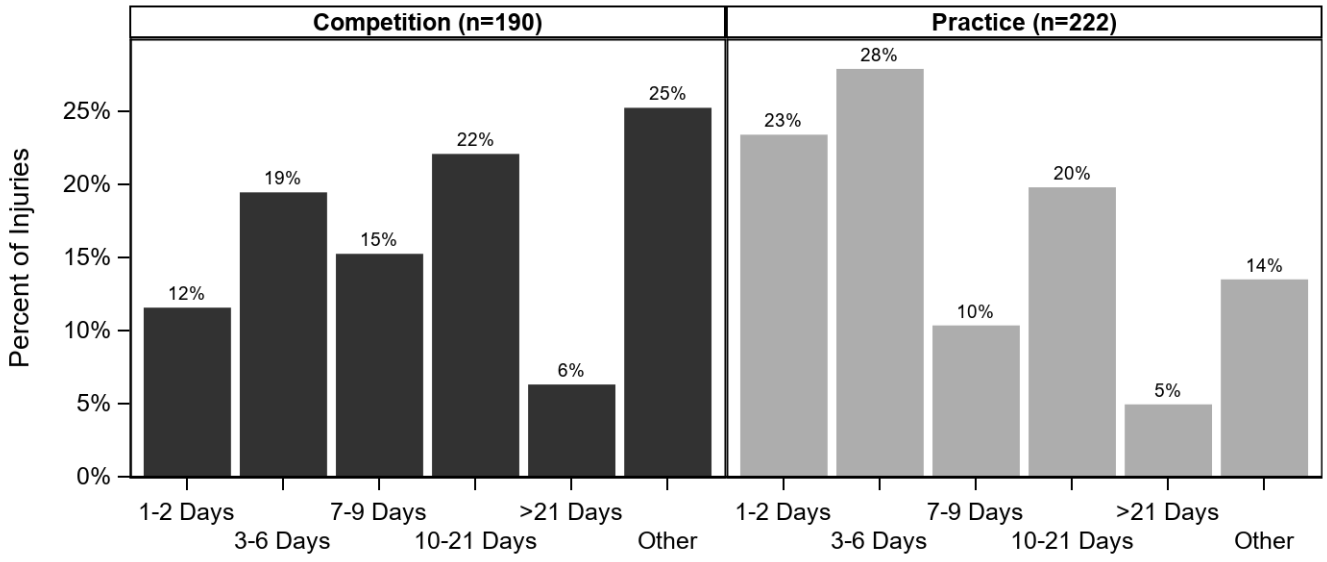
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	45	23.7%	41	18.5%	86	20.9%
Knee	26	13.7%	39	17.6%	65	15.8%
Shoulder	30	15.8%	23	10.4%	53	12.9%
Trunk	18	9.5%	18	8.1%	36	8.7%
Ankle	16	8.4%	19	8.6%	35	8.5%
Arm/Elbow	20	10.5%	14	6.3%	34	8.3%
Hand/Wrist	12	6.3%	20	9.0%	32	7.8%
Systemic	2	1.1%	19	8.6%	21	5.1%
Hip/Thigh/Upper Leg	4	2.1%	14	6.3%	18	4.4%
Neck	6	3.2%	8	3.6%	14	3.4%
Other	4	2.1%	3	1.4%	7	1.7%
Foot	5	2.6%	1	0.5%	6	1.5%
Lower Leg	2	1.1%	3	1.4%	5	1.2%
Total	***190***	***100.0%***	***222***	***100.0%***	***412***	***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, 2021-22 School Year

	Competition (n=190)		Practice (n=222)		Overall (n=412)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	34	17.9%	22	9.9%	56	13.6%
Knee Other	12	6.3%	23	10.4%	35	8.5%
Shoulder Strain/Sprain	17	8.9%	15	6.8%	32	7.8%
Ankle Strain/Sprain	13	6.8%	16	7.2%	29	7.0%
Knee Strain/Sprain	12	6.3%	10	4.5%	22	5.3%
Head/Face Other	6	3.2%	15	6.8%	21	5.1%
Systemic Other	2	1.1%	19	8.6%	21	5.1%
Shoulder Other	12	6.3%	8	3.6%	20	4.9%
Hip/Thigh/Upper Leg Strain/Sprain	4	2.1%	12	5.4%	16	3.9%
Arm/Elbow Other	5	2.6%	9	4.1%	14	3.4%

Figure 9.2 Time Loss of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	11	5.8%	9	4.1%	20	4.9%
Did Not Require Surgery	178	94.2%	212	95.9%	390	95.1%
Total	***189***	***100.0%***	***221***	***100.0%***	***410***	***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, 2021-22 School Year

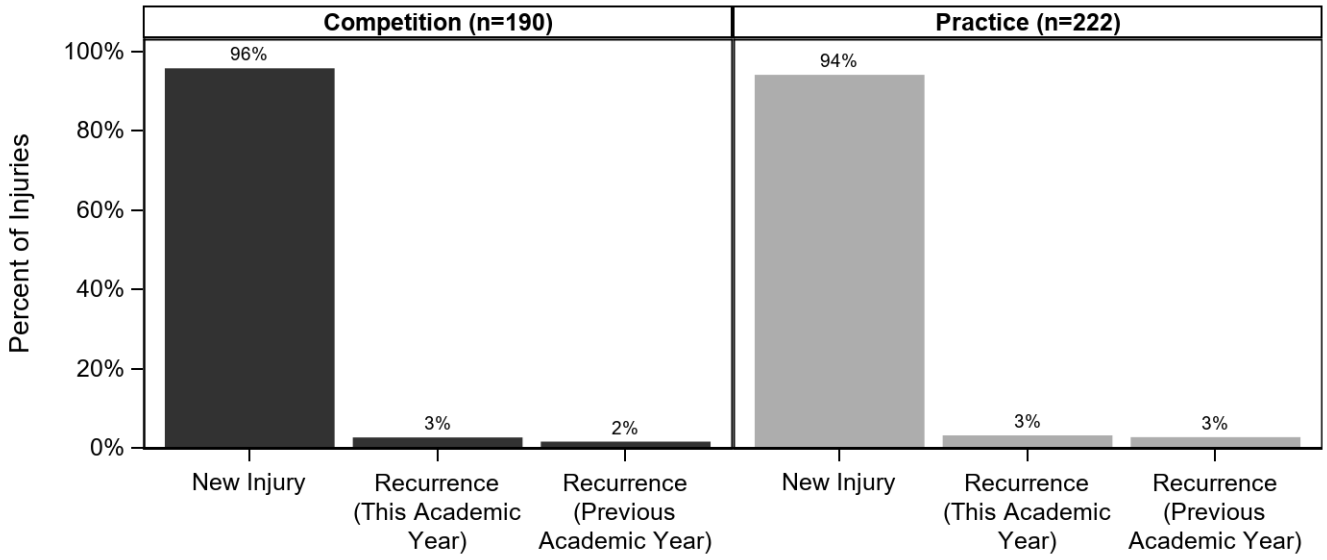


Table 9.6 Time during Season of Boys' Wrestling Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	65	15.8%
Regular Season	305	74.0%
Post Season	42	10.2%
Total	***412***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	2	1.1%
First Period	17	9.1%
Second Period	36	19.4%
Third Period	33	17.7%
Overtime	1	0.5%
Unknown	97	52.2%
Total	***186***	***100.0%***

Mat Location		
Within 28ft Circle	232	58.7%
Out of Bounds	1	0.3%
Off Mat	8	2.0%
Unknown	154	39.0%
Total	***395***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	14	6.5%
Second 1/2 Hour	22	10.2%
1-2 Hours into Practice	100	46.3%
>2 Hours into Practice	7	3.2%
Unknown	73	33.8%
Total	***216***	***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, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Takedown	78	41.9%	54	25.4%	132	33.1%
Unknown	50	26.9%	53	24.9%	103	25.8%
Sparring	18	9.7%	38	17.8%	56	14.0%
N/A **	3	1.6%	22	10.3%	25	6.3%
Fall	11	5.9%	7	3.3%	18	4.5%
Conditioning	0	0.0%	16	7.5%	16	4.0%
Other	4	2.2%	11	5.2%	15	3.8%
Escape	9	4.8%	6	2.8%	15	3.8%
Near Fall	8	4.3%	2	0.9%	10	2.5%
Reversal	3	1.6%	4	1.9%	7	1.8%
Riding	2	1.1%	0	0.0%	2	0.5%
Total	***186***	***100.0%***	***213***	***100.0%***	***399***	***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, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	7	4.7%	2	5.7%	1	3.0%	0	0.0%	6	4.7%
Escape	8	5.4%	0	0.0%	1	3.0%	0	0.0%	6	4.7%
Fall	5	3.4%	4	11.4%	4	12.1%	3	5.5%	2	1.6%
N/A **	1	0.7%	0	0.0%	0	0.0%	0	0.0%	24	18.8%
Near Fall	5	3.4%	0	0.0%	1	3.0%	0	0.0%	4	3.1%
Other	8	5.4%	2	5.7%	1	3.0%	1	1.8%	3	2.3%
Reversal	4	2.7%	1	2.9%	1	3.0%	1	1.8%	0	0.0%
Riding	1	0.7%	0	0.0%	1	3.0%	0	0.0%	0	0.0%
Sparring	25	16.9%	5	14.3%	2	6.1%	7	12.7%	17	13.3%
Takedown	46	31.1%	19	54.3%	15	45.5%	25	45.5%	27	21.1%
Unknown	38	25.7%	2	5.7%	6	18.2%	18	32.7%	39	30.5%
Total	***148***	***100.0%***	***35***	***100.0%***	***33***	***100.0%***	***55***	***100.0%***	***128***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***167***	***182,274***	***0.92***
Competition	90	67,087	1.34
Practice	77	115,187	0.67

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	40	24.1%
Sophomore	39	23.5%
Junior	39	23.5%
Senior	48	28.9%
Total	***166***	***100.0%***

Age (years)	
Minimum	13
Maximum	19
Mean (SD)	16.1 (1.3)
n	134

BMI	
Minimum	16.1
Maximum	32.8
Mean (SD)	23.2 (3.5)
n	101

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

Figure 10.1 Diagnosis of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

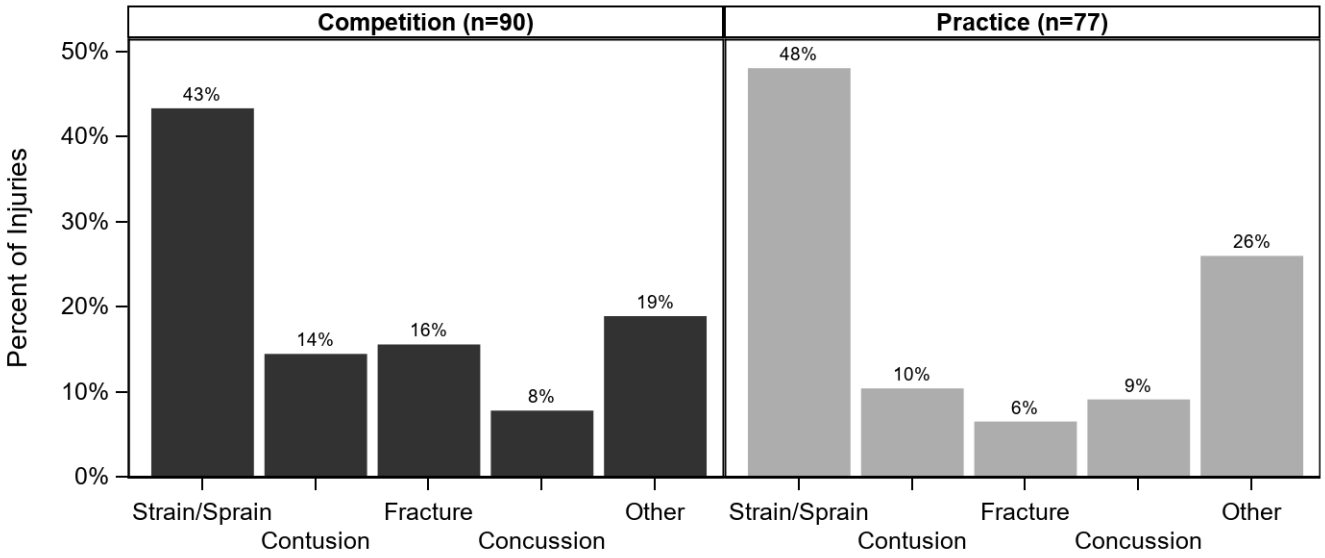


Table 10.3 Body Site of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

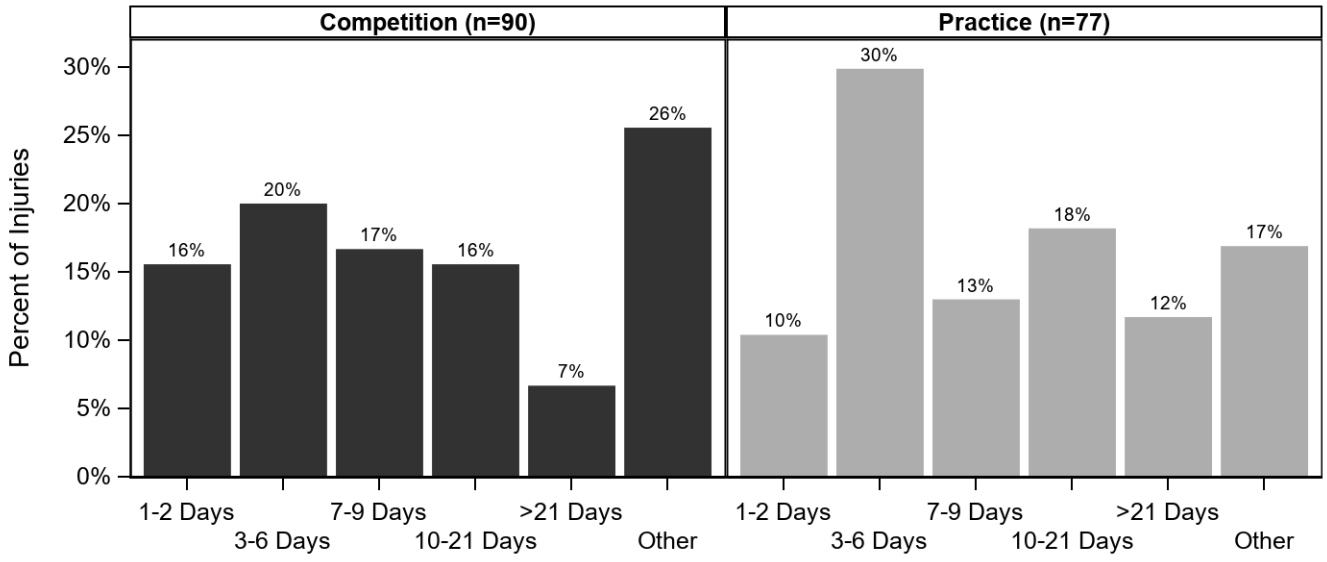
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Arm/Elbow	13	14.4%	16	20.8%	29	17.4%
Shoulder	8	8.9%	15	19.5%	23	13.8%
Head/Face	10	11.1%	12	15.6%	22	13.2%
Hand/Wrist	17	18.9%	4	5.2%	21	12.6%
Hip/Thigh/Upper Leg	16	17.8%	5	6.5%	21	12.6%
Ankle	6	6.7%	10	13.0%	16	9.6%
Trunk	4	4.4%	10	13.0%	14	8.4%
Knee	9	10.0%	1	1.3%	10	6.0%
Lower Leg	4	4.4%	3	3.9%	7	4.2%
Foot	2	2.2%	1	1.3%	3	1.8%
Other	1	1.1%	0	0.0%	1	0.6%
Total	***90***	***100.0%***	***77***	***100.0%***	***167***	***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, 2021-22 School Year

	Competition (n=90)		Practice (n=77)		Overall (n=167)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Arm/Elbow Strain/Sprain	9	10.0%	9	11.7%	18	10.8%
Hip/Thigh/Upper Leg Strain/Sprain	14	15.6%	4	5.2%	18	10.8%
Hand/Wrist Fracture	12	13.3%	3	3.9%	15	9.0%
Head/Face Concussion	7	7.8%	7	9.1%	14	8.4%
Shoulder Other	5	5.6%	9	11.7%	14	8.4%
Ankle Strain/Sprain	3	3.3%	8	10.4%	11	6.6%
Trunk Strain/Sprain	3	3.3%	8	10.4%	11	6.6%
Shoulder Strain/Sprain	2	2.2%	6	7.8%	8	4.8%
Arm/Elbow Other	2	2.2%	4	5.2%	6	3.6%
Arm/Elbow Contusion	2	2.2%	3	3.9%	5	3.0%

Figure 10.2 Time Loss of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	7	7.9%	3	3.9%	10	6.0%
Did Not Require Surgery	82	92.1%	74	96.1%	156	94.0%
Total	***89***	***100.0%***	***77***	***100.0%***	***166***	***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, 2021-22 School Year

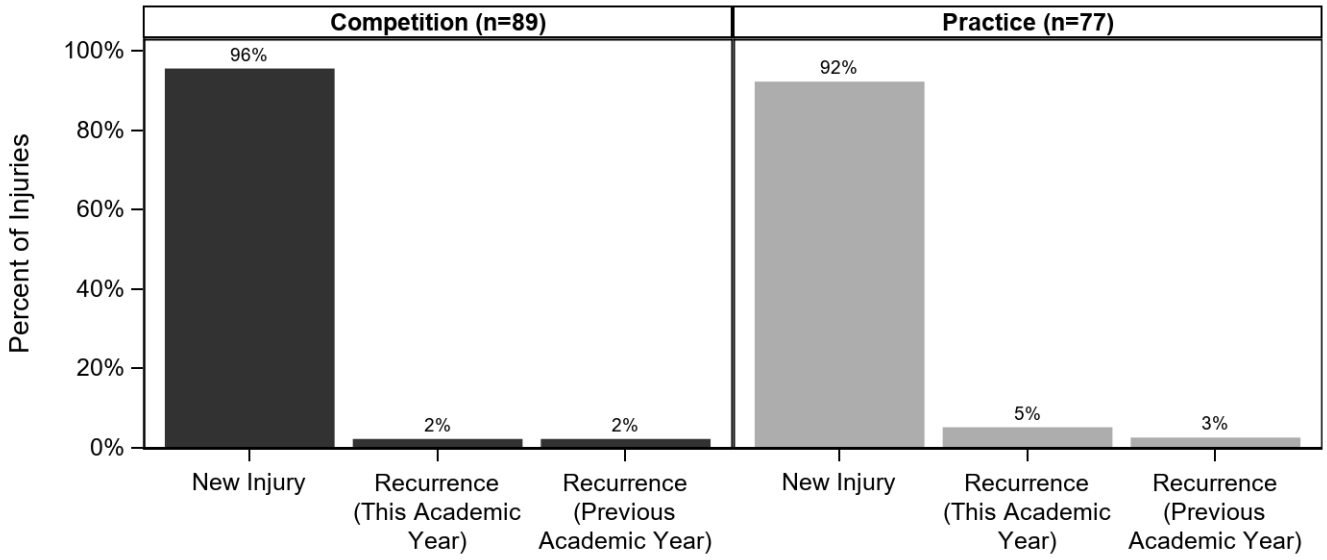


Table 10.6 Time during Season of Boys' Baseball Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	39	23.4%
Regular Season	123	73.7%
Post Season	4	2.4%
Unknown/Other	1	0.6%
Total	***167***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	3	3.4%
First Inning	4	4.6%
Second Inning	2	2.3%
Third Inning	13	14.9%
Fourth Inning	15	17.2%
Fifth Inning	7	8.0%
Sixth Inning	11	12.6%
Seventh Inning	8	9.2%
Unknown	24	27.6%
Total	***87***	***100.0%***

Field Location		
Pitchers Mound	15	17.2%
Home Plate	23	26.4%
First Base	17	19.5%
Second Base	8	9.2%
Third Base	6	6.9%
Infield	2	2.3%
Outfield	8	9.2%
Foul Territory	1	1.1%
Other	2	2.3%
Unknown	5	5.7%
Total	***87***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	8	10.8%
Second 1/2 Hour	13	17.6%
1-2 Hours into Practice	34	45.9%
Unknown	19	25.7%
Total	***74***	***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, 2021-22 School Year

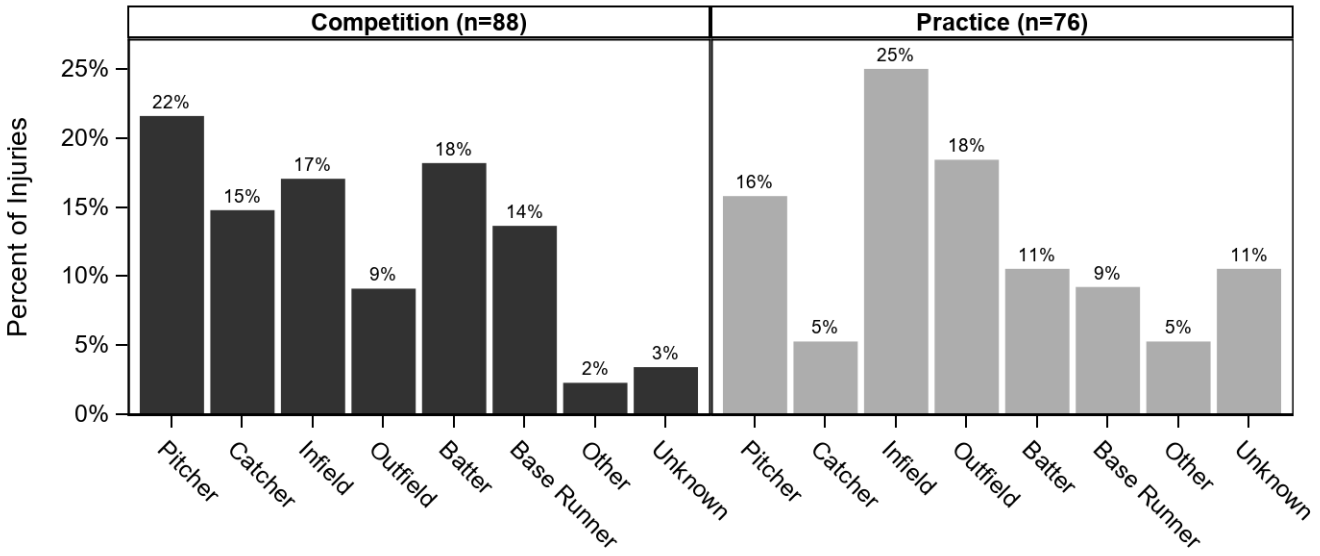


Table 10.9 Activities Leading to Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running Bases	21	23.6%	9	11.8%	30	18.2%
Batting	14	15.7%	12	15.8%	26	15.8%
Pitching	16	18.0%	8	10.5%	24	14.5%
Throwing	5	5.6%	18	23.7%	23	13.9%
Fielding a Batted Ball	9	10.1%	8	10.5%	17	10.3%
Catching	9	10.1%	2	2.6%	11	6.7%
Fielding a Thrown Ball	5	5.6%	3	3.9%	8	4.8%
Sliding	6	6.7%	1	1.3%	7	4.2%
Unknown	1	1.1%	6	7.9%	7	4.2%
General Play	1	1.1%	5	6.6%	6	3.6%
Conditioning	1	1.1%	3	3.9%	4	2.4%
Other	1	1.1%	1	1.3%	2	1.2%
Total	***89***	***100.0%***	***76***	***100.0%***	***165***	***100.0%***

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

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Table 10.10 Activity Resulting in Boys' Baseball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Batting	7	9.3%	8	38.1%	5	26.3%	1	7.1%	5	13.9%
Catching	2	2.7%	1	4.8%	3	15.8%	3	21.4%	2	5.6%
Conditioning	3	4.0%	0	0.0%	0	0.0%	1	7.1%	0	0.0%
Fielding a Batted Ball	5	6.7%	4	19.0%	3	15.8%	5	35.7%	0	0.0%
Fielding a Thrown Ball	3	4.0%	2	9.5%	1	5.3%	1	7.1%	1	2.8%
General Play	3	4.0%	0	0.0%	1	5.3%	2	14.3%	0	0.0%
Other	1	1.3%	0	0.0%	0	0.0%	0	0.0%	1	2.8%
Pitching	16	21.3%	2	9.5%	0	0.0%	0	0.0%	6	16.7%
Running Bases	20	26.7%	2	9.5%	4	21.1%	0	0.0%	4	11.1%
Sliding	2	2.7%	1	4.8%	1	5.3%	0	0.0%	3	8.3%
Throwing	11	14.7%	1	4.8%	1	5.3%	0	0.0%	10	27.8%
Unknown	2	2.7%	0	0.0%	0	0.0%	1	7.1%	4	11.1%
Total	***75***	***100.0%***	***21***	***100.0%***	***19***	***100.0%***	***14***	***100.0%***	***36***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***178***	***118,019***	***1.51***
Competition	82	41,782	1.96
Practice	96	76,237	1.26

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	48	27.9%
Sophomore	47	27.3%
Junior	40	23.3%
Senior	37	21.5%
Total	***172***	***100.0%***

Age (years)	
Minimum	12
Maximum	18
Mean (SD)	15.8 (1.3)
n	137

BMI	
Minimum	16.0
Maximum	45.0
Mean (SD)	24.9 (6.2)
n	102

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

Figure 11.1 Diagnosis of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

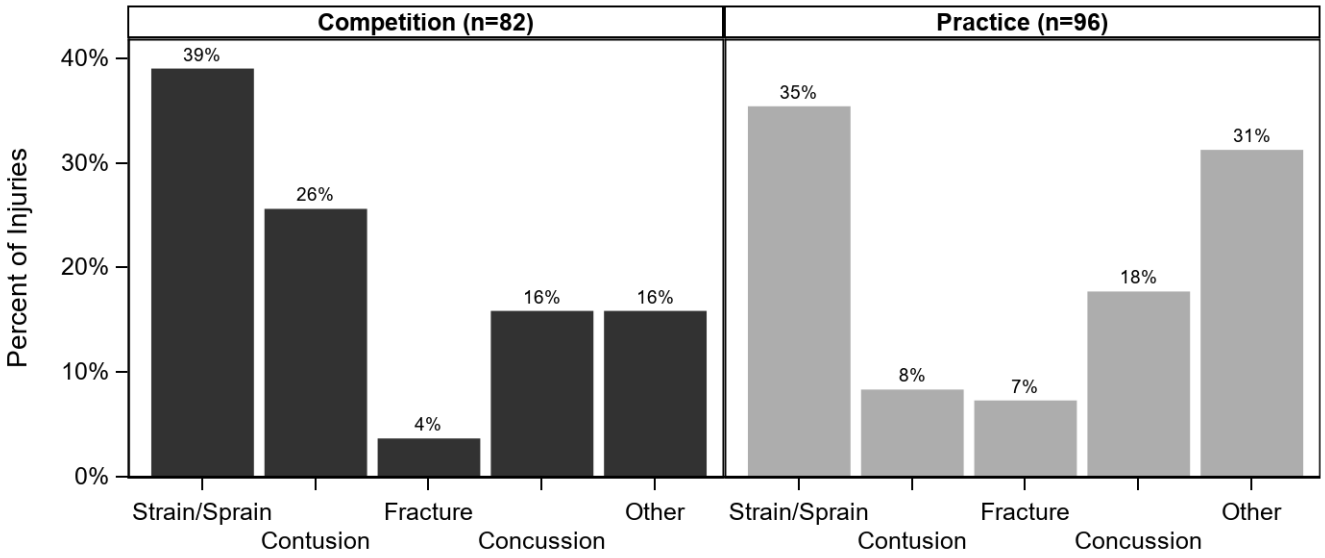


Table 11.3 Body Site of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

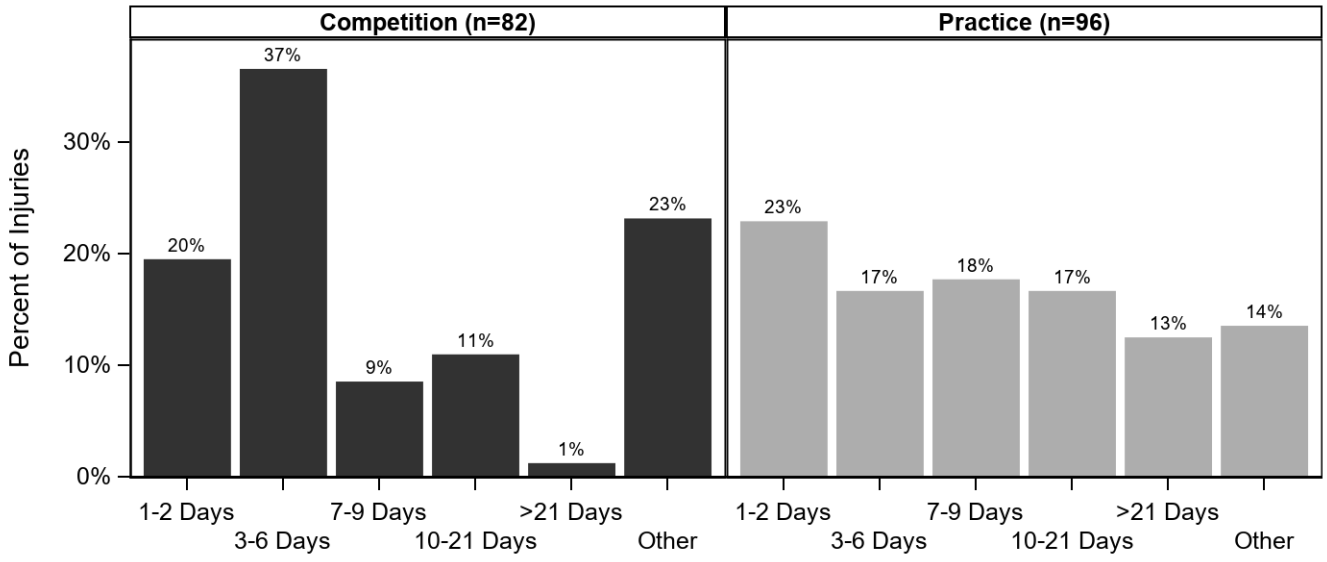
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	16	19.5%	26	27.1%	42	23.6%
Knee	13	15.9%	11	11.5%	24	13.5%
Hand/Wrist	13	15.9%	9	9.4%	22	12.4%
Ankle	10	12.2%	10	10.4%	20	11.2%
Shoulder	10	12.2%	10	10.4%	20	11.2%
Foot	6	7.3%	6	6.3%	12	6.7%
Hip/Thigh/Upper Leg	3	3.7%	9	9.4%	12	6.7%
Arm/Elbow	4	4.9%	6	6.3%	10	5.6%
Lower Leg	2	2.4%	5	5.2%	7	3.9%
Trunk	2	2.4%	2	2.1%	4	2.2%
Neck	2	2.4%	0	0.0%	2	1.1%
Systemic	0	0.0%	2	2.1%	2	1.1%
Other	1	1.2%	0	0.0%	1	0.6%
Total	***82***	***100.0%***	***96***	***100.0%***	***178***	***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, 2021-22 School Year

	Competition (n=82)		Practice (n=96)		Overall (n=178)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	13	15.9%	17	17.7%	30	16.9%
Ankle Strain/Sprain	8	9.8%	9	9.4%	17	9.6%
Shoulder Other	6	7.3%	6	6.3%	12	6.7%
Hip/Thigh/Upper Leg Strain/Sprain	3	3.7%	8	8.3%	11	6.2%
Knee Other	4	4.9%	7	7.3%	11	6.2%
Knee Strain/Sprain	7	8.5%	3	3.1%	10	5.6%
Hand/Wrist Contusion	7	8.5%	1	1.0%	8	4.5%
Hand/Wrist Strain/Sprain	5	6.1%	3	3.1%	8	4.5%
Head/Face Contusion	2	2.4%	4	4.2%	6	3.4%
Foot Strain/Sprain	2	2.4%	3	3.1%	5	2.8%

Figure 11.2 Time Loss of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	8	9.8%	6	6.3%	14	7.9%
Did Not Require Surgery	74	90.2%	90	93.8%	164	92.1%
Total	***82***	***100.0%***	***96***	***100.0%***	***178***	***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, 2021-22 School Year

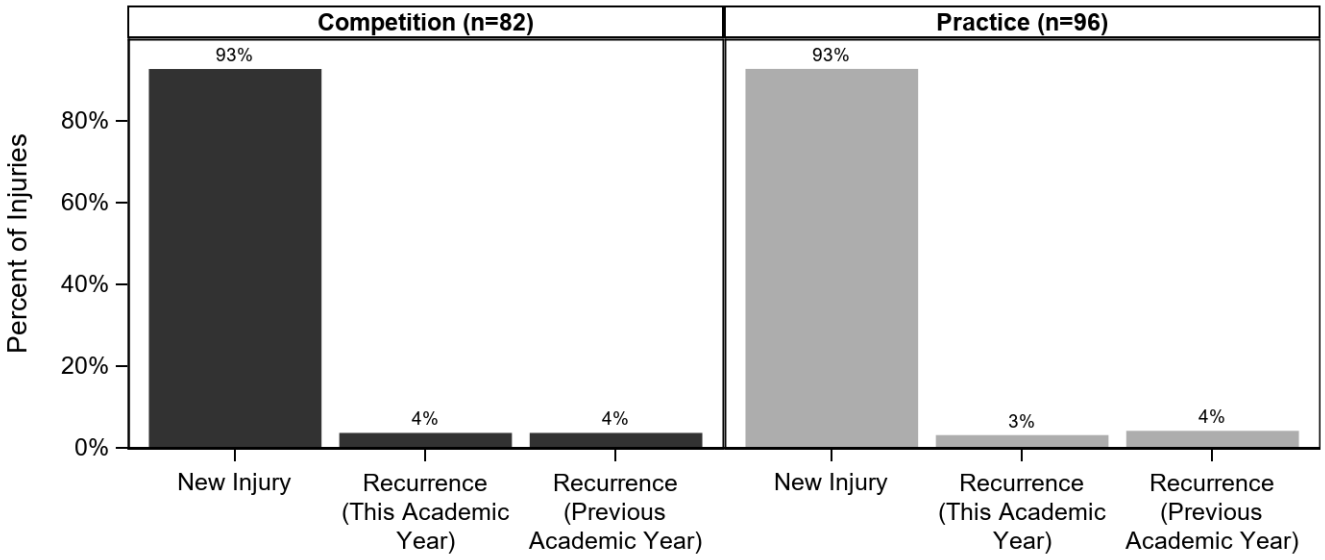


Table 11.6 Time during Season of Girls' Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	52	29.2%
Regular Season	120	67.4%
Post Season	5	2.8%
Unknown/Other	1	0.6%
Total	***178***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	4	5.1%
First Inning	3	3.8%
Second Inning	2	2.6%
Third Inning	10	12.8%
Fourth Inning	8	10.3%
Fifth Inning	15	19.2%
Sixth Inning	4	5.1%
Seventh Inning	3	3.8%
Unknown	29	37.2%
Total	***78***	***100.0%***

Field Location		
Pitchers Mound	12	15.2%
Home Plate	18	22.8%
First Base	12	15.2%
Second Base	10	12.7%
Third Base	11	13.9%
Outfield	6	7.6%
Foul Territory	3	3.8%
Other	4	5.1%
Unknown	3	3.8%
Total	***79***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	6	6.5%
Second 1/2 Hour	16	17.2%
1-2 Hours into Practice	47	50.5%
>2 Hours into Practice	2	2.2%
Unknown	22	23.7%
Total	***93***	***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, 2021-22 School Year

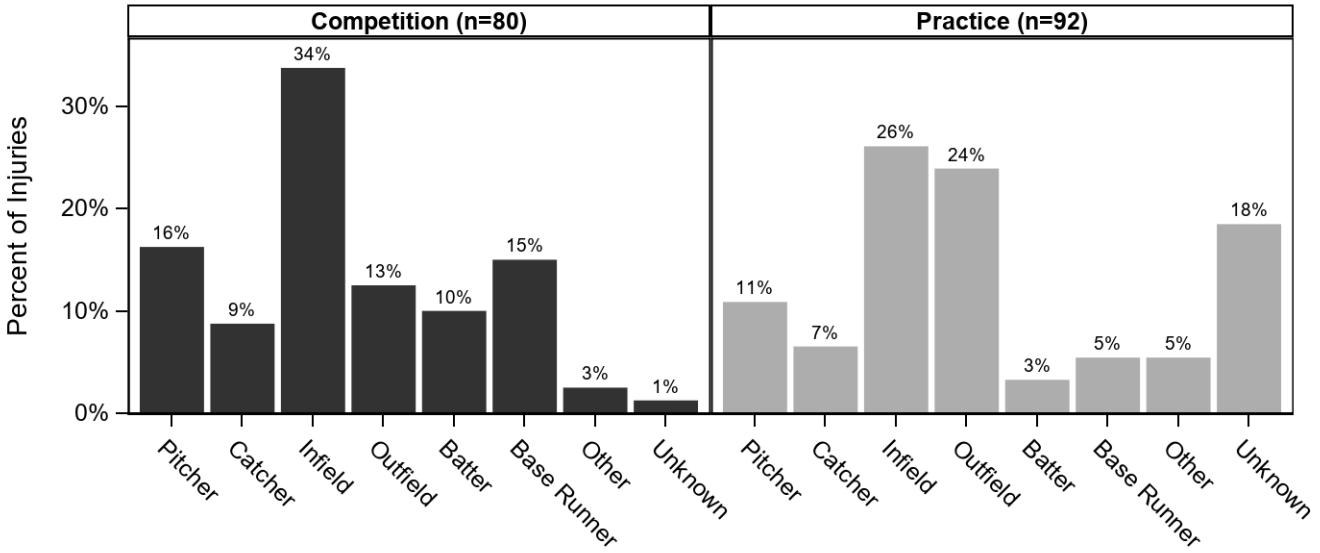


Table 11.9 Activities Leading to Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Fielding a Batted Ball	15	18.8%	22	23.7%	37	21.4%
Running Bases	14	17.5%	16	17.2%	30	17.3%
Throwing	1	1.3%	16	17.2%	17	9.8%
Pitching	12	15.0%	4	4.3%	16	9.2%
General Play	4	5.0%	11	11.8%	15	8.7%
Batting	7	8.8%	5	5.4%	12	6.9%
Catching	8	10.0%	4	4.3%	12	6.9%
Sliding	9	11.3%	0	0.0%	9	5.2%
Other	3	3.8%	5	5.4%	8	4.6%
Conditioning	0	0.0%	7	7.5%	7	4.0%
Fielding a Thrown Ball	6	7.5%	1	1.1%	7	4.0%
Unknown	1	1.3%	2	2.2%	3	1.7%
Total	***80***	***100.0%***	***93***	***100.0%***	***173***	***100.0%***

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

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Table 11.10 Activity Resulting in Girls' Softball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Batting	1	1.5%	3	10.7%	1	10.0%	3	10.7%	4	9.8%
Catching	4	6.1%	2	7.1%	0	0.0%	5	17.9%	1	2.4%
Conditioning	6	9.1%	0	0.0%	0	0.0%	0	0.0%	1	2.4%
Fielding a Batted Ball	9	13.6%	6	21.4%	5	50.0%	8	28.6%	9	22.0%
Fielding a Thrown Ball	1	1.5%	2	7.1%	1	10.0%	2	7.1%	1	2.4%
General Play	5	7.6%	1	3.6%	0	0.0%	2	7.1%	7	17.1%
Other	1	1.5%	2	7.1%	1	10.0%	4	14.3%	0	0.0%
Pitching	9	13.6%	4	14.3%	0	0.0%	1	3.6%	2	4.9%
Running Bases	20	30.3%	2	7.1%	2	20.0%	2	7.1%	4	9.8%
Sliding	5	7.6%	2	7.1%	0	0.0%	0	0.0%	2	4.9%
Throwing	4	6.1%	3	10.7%	0	0.0%	1	3.6%	9	22.0%
Unknown	1	1.5%	1	3.6%	0	0.0%	0	0.0%	1	2.4%
Total	***66***	***100.0%***	***28***	***100.0%***	***10***	***100.0%***	***28***	***100.0%***	***41***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***99***	***47,349***	***2.09***
Competition	50	15,632	3.20
Practice	49	31,717	1.54

* All analyses in this report present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	14	14.3%
Sophomore	30	30.6%
Junior	22	22.4%
Senior	32	32.7%
Total	***98***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.9 (1.1)
n	89

BMI	
Minimum	18.5
Maximum	40.2
Mean (SD)	23.1 (4.0)
n	73

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

Figure 12.1 Diagnosis of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

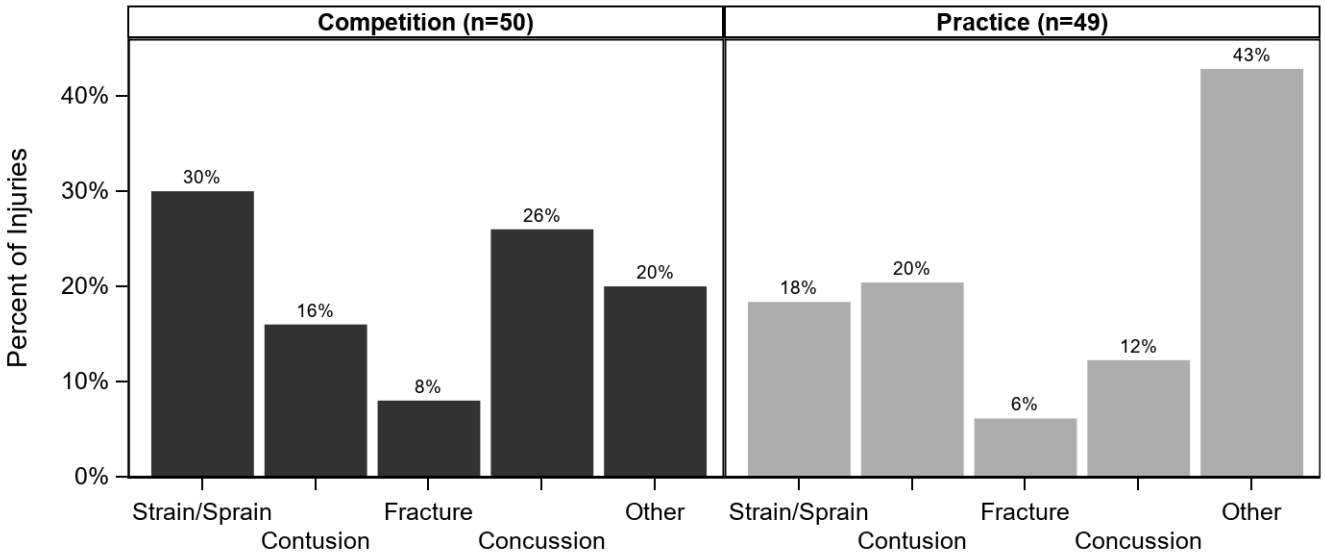


Table 12.3 Body Site of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

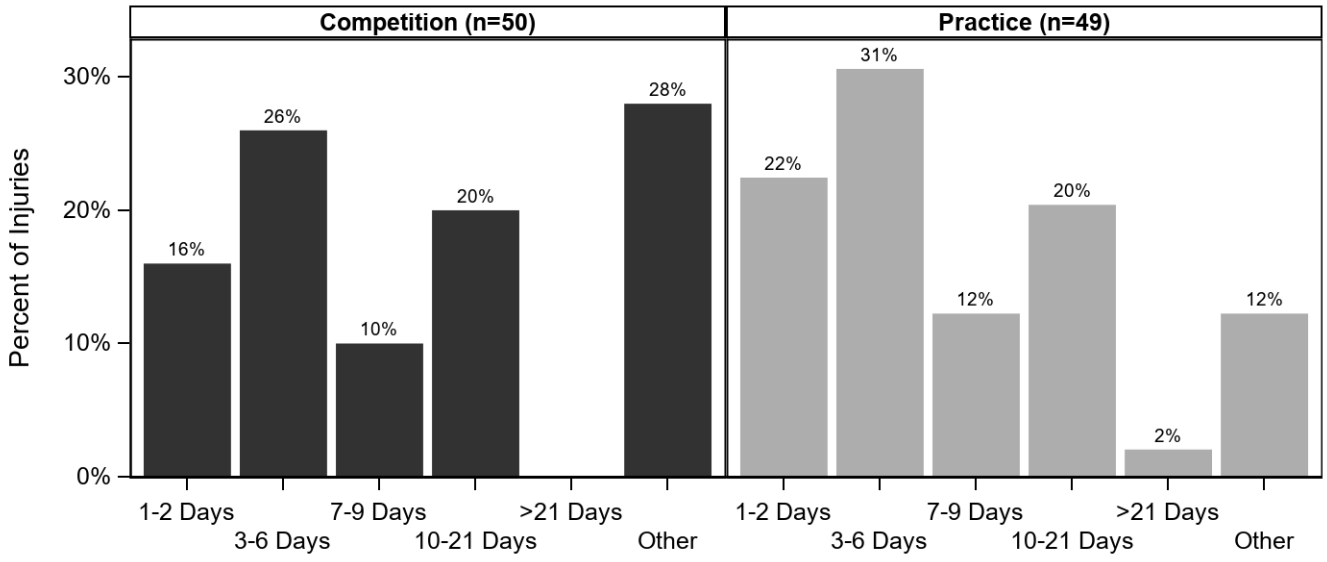
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	17	34.0%	9	18.4%	26	26.3%
Hand/Wrist	10	20.0%	4	8.2%	14	14.1%
Lower Leg	4	8.0%	8	16.3%	12	12.1%
Hip/Thigh/Upper Leg	3	6.0%	8	16.3%	11	11.1%
Ankle	5	10.0%	5	10.2%	10	10.1%
Knee	6	12.0%	4	8.2%	10	10.1%
Foot	2	4.0%	4	8.2%	6	6.1%
Systemic	1	2.0%	3	6.1%	4	4.0%
Shoulder	1	2.0%	1	2.0%	2	2.0%
Trunk	0	0.0%	2	4.1%	2	2.0%
Arm/Elbow	0	0.0%	1	2.0%	1	1.0%
Other	1	2.0%	0	0.0%	1	1.0%
Total	***50***	***100.0%***	***49***	***100.0%***	***99***	***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, 2021-22 School Year

	Competition (n=50)		Practice (n=49)		Overall (n=99)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	13	26.0%	6	12.2%	19	19.2%
Hip/Thigh/Upper Leg Strain/Sprain	3	6.0%	5	10.2%	8	8.1%
Ankle Strain/Sprain	5	10.0%	2	4.1%	7	7.1%
Hand/Wrist Contusion	5	10.0%	2	4.1%	7	7.1%
Knee Other	3	6.0%	4	8.2%	7	7.1%
Lower Leg Other	1	2.0%	6	12.2%	7	7.1%
Systemic Other	1	2.0%	3	6.1%	4	4.0%
Ankle Other	0	0.0%	3	6.1%	3	3.0%
Foot Contusion	0	0.0%	3	6.1%	3	3.0%
Hand/Wrist Fracture	2	4.0%	1	2.0%	3	3.0%

Figure 12.2 Time Loss of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	3	6.1%	1	2.0%	4	4.1%
Did Not Require Surgery	46	93.9%	48	98.0%	94	95.9%
Total	***49***	***100.0%***	***49***	***100.0%***	***98***	***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, 2021-22 School Year

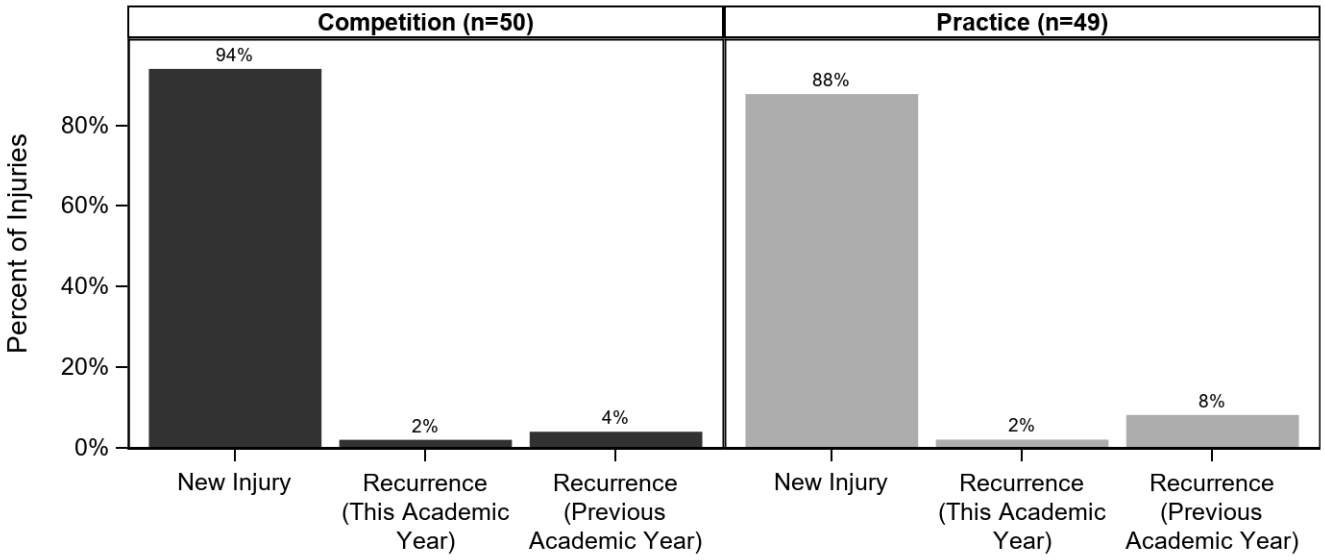


Table 12.6 Time during Season of Girls' Field Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	17	17.2%
Regular Season	76	76.8%
Post Season	6	6.1%
Total	***99***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	3	20.0%
Unknown	12	80.0%
Total	***15***	***100.0%***

Field Location		
Goal Area/Circle	7	15.2%
Within 16-yard Arc	7	15.2%
Within 25-yard Line	2	4.3%
Between 25-yard Line and Center Line	3	6.5%
Sideline	2	4.3%
Unknown	25	54.3%
Total	***46***	***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, 2021-22 School Year *

Time in Practice	n	%
Second 1/2 Hour	6	12.5%
1-2 Hours into Practice	22	45.8%
>2 Hours into Practice	3	6.3%
Unknown	17	35.4%
Total	***48***	***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, 2021-22 School Year

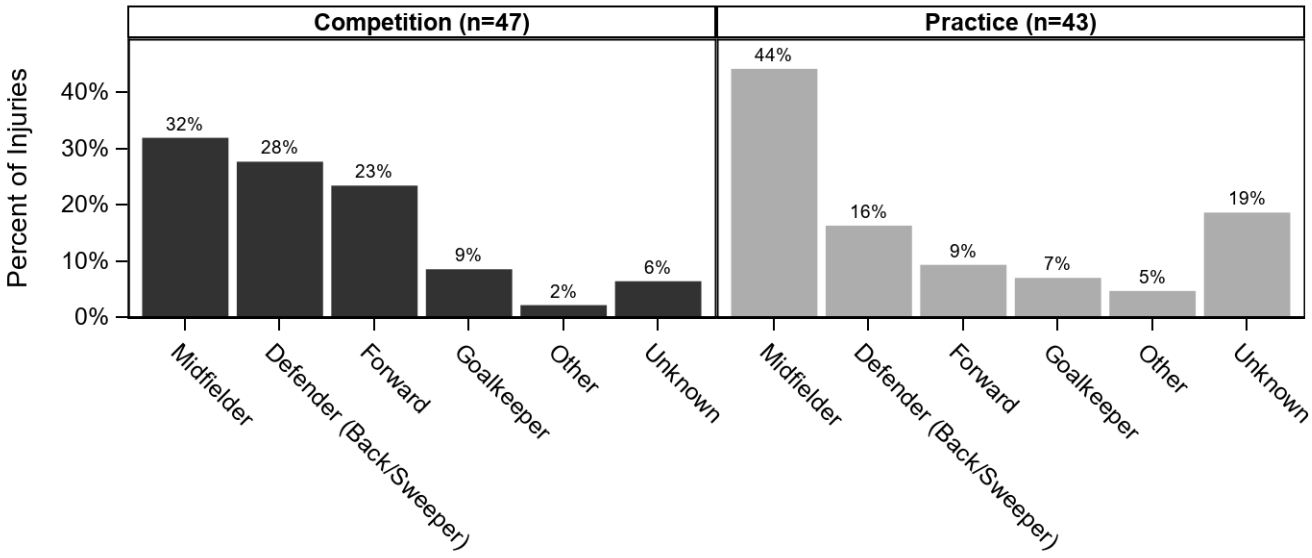


Table 12.9 Activities Leading to Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	10	20.8%	17	40.5%	27	30.0%
Defending	17	35.4%	4	9.5%	21	23.3%
Unknown	6	12.5%	6	14.3%	12	13.3%
Blocking Shot	4	8.3%	4	9.5%	8	8.9%
Chasing a Loose Ball	3	6.3%	3	7.1%	6	6.7%
Goaltending	3	6.3%	2	4.8%	5	5.6%
Ball Handling/Dribbling	3	6.3%	1	2.4%	4	4.4%
Passing	1	2.1%	1	2.4%	2	2.2%
Conditioning	0	0.0%	2	4.8%	2	2.2%
Other	1	2.1%	1	2.4%	2	2.2%
Shooting	0	0.0%	1	2.4%	1	1.1%
Total	***48***	***100.0%***	***42***	***100.0%***	***90***	***100.0%***

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

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Table 12.10 Activity Resulting in Girls' Field Hockey Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	2	9.5%	1	6.3%	0	0.0%	1	5.3%	0	0.0%
Blocking Shot	0	0.0%	5	31.3%	2	28.6%	0	0.0%	1	3.7%
Chasing a Loose Ball	2	9.5%	3	18.8%	1	14.3%	0	0.0%	0	0.0%
Conditioning	2	9.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Defending	3	14.3%	6	37.5%	2	28.6%	6	31.6%	4	14.8%
General Play	8	38.1%	1	6.3%	0	0.0%	5	26.3%	13	48.1%
Goaltending	2	9.5%	0	0.0%	0	0.0%	2	10.5%	1	3.7%
Other	0	0.0%	0	0.0%	0	0.0%	1	5.3%	1	3.7%
Passing	0	0.0%	0	0.0%	0	0.0%	1	5.3%	1	3.7%
Shooting	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	3.7%
Unknown	2	9.5%	0	0.0%	2	28.6%	3	15.8%	5	18.5%
Total	***21***	***100.0%***	***16***	***100.0%***	***7***	***100.0%***	***19***	***100.0%***	***27***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***44***	***28,159***	***1.56***
Competition	39	9,631	4.05
Practice	5	18,528	0.27

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	4	9.1%
Sophomore	12	27.3%
Junior	14	31.8%
Senior	14	31.8%
Total	***44***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	16.3 (1.1)
n	36

BMI	
Minimum	19.5
Maximum	30.8
Mean (SD)	23.2 (3.0)
n	27

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

Figure 13.1 Diagnosis of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

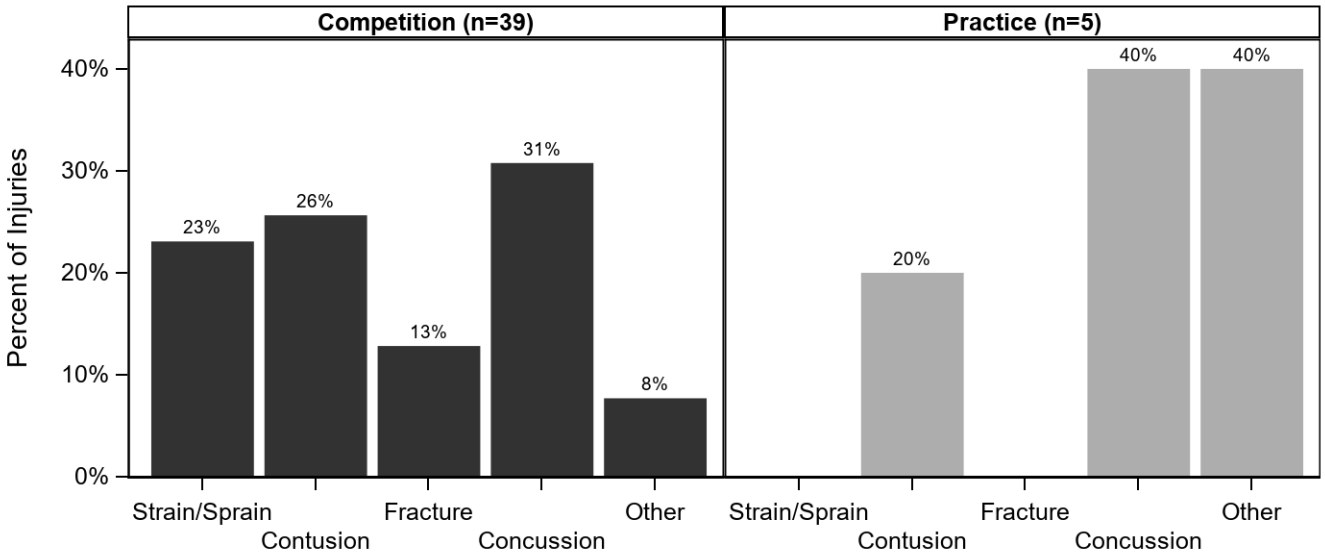


Table 13.3 Body Site of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

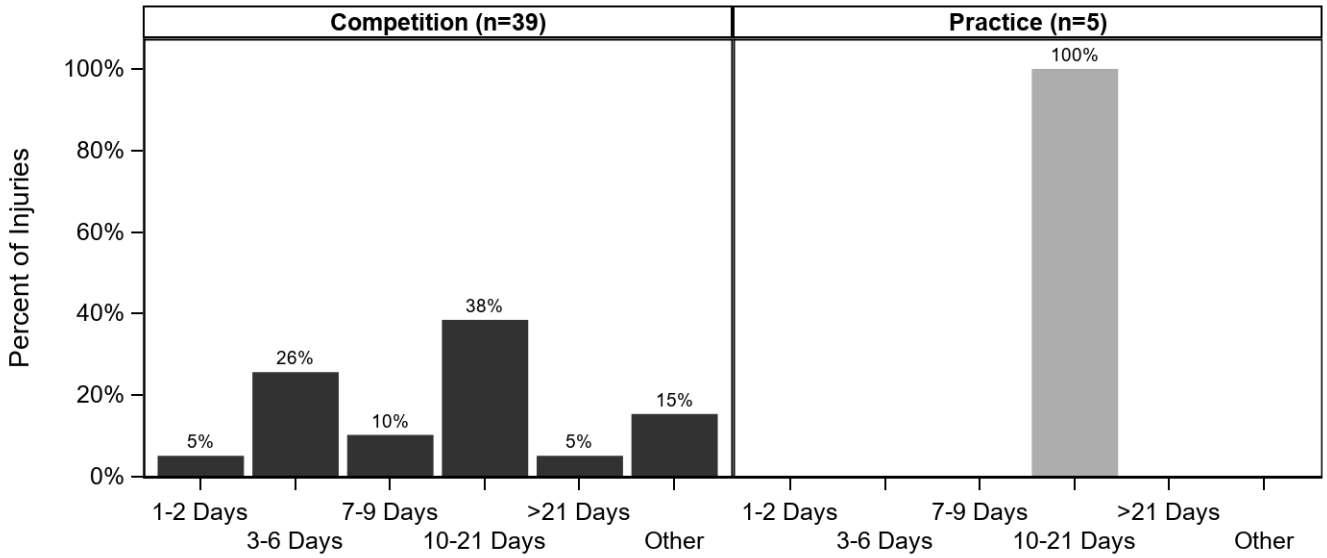
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	13	33.3%	2	40.0%	15	34.1%
Shoulder	5	12.8%	0	0.0%	5	11.4%
Other	4	10.3%	0	0.0%	4	9.1%
Trunk	3	7.7%	1	20.0%	4	9.1%
Hand/Wrist	3	7.7%	0	0.0%	3	6.8%
Hip/Thigh/Upper Leg	3	7.7%	0	0.0%	3	6.8%
Knee	3	7.7%	0	0.0%	3	6.8%
Lower Leg	3	7.7%	0	0.0%	3	6.8%
Systemic	0	0.0%	2	40.0%	2	4.5%
Arm/Elbow	1	2.6%	0	0.0%	1	2.3%
Foot	1	2.6%	0	0.0%	1	2.3%
Total	***39***	***100.0%***	***5***	***100.0%***	***44***	***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, 2021-22 School Year

	Competition (n=39)		Practice (n=5)		Overall (n=44)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	12	30.8%	2	40.0%	14	31.8%
Shoulder Strain/Sprain	4	10.3%	0	0.0%	4	9.1%
Trunk Contusion	3	7.7%	1	20.0%	4	9.1%
Hip/Thigh/Upper Leg Strain/Sprain	3	7.7%	0	0.0%	3	6.8%
Other Fracture	3	7.7%	0	0.0%	3	6.8%
Hand/Wrist Fracture	2	5.1%	0	0.0%	2	4.5%
Systemic Other	0	0.0%	2	40.0%	2	4.5%
Arm/Elbow Contusion	1	2.6%	0	0.0%	1	2.3%
Foot Contusion	1	2.6%	0	0.0%	1	2.3%
Hand/Wrist Other	1	2.6%	0	0.0%	1	2.3%

Figure 13.2 Time Loss of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	1	2.6%	0	0.0%	1	2.4%
Did Not Require Surgery	37	97.4%	4	100.0%	41	97.6%
Total	***38***	***100.0%***	***4***	***100.0%***	***42***	***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, 2021-22 School Year

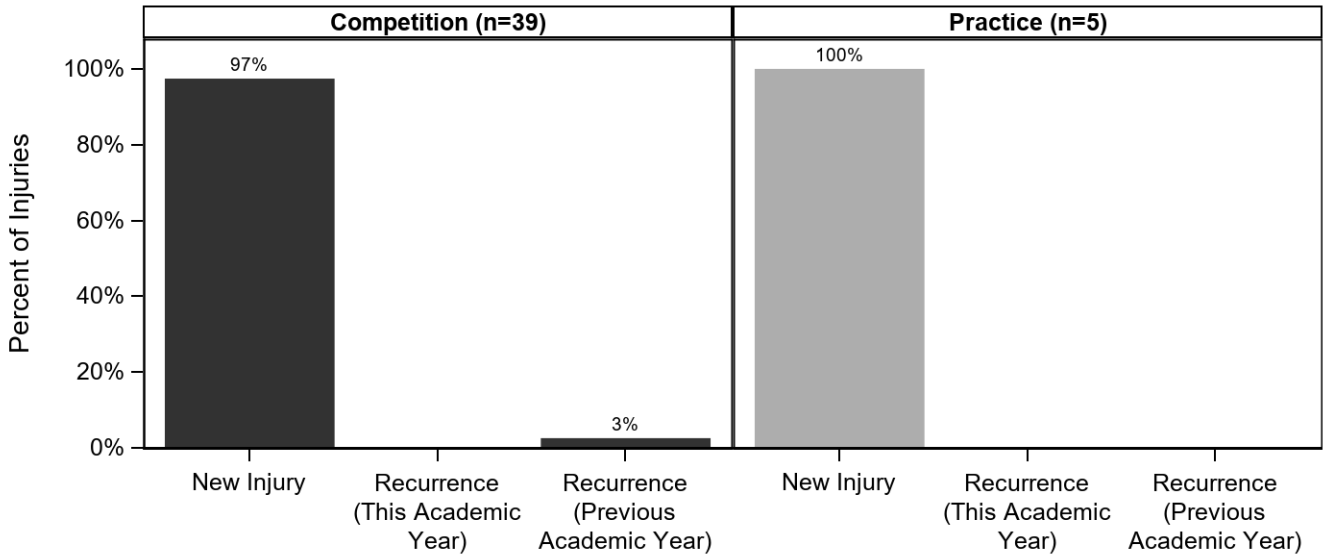


Table 13.6 Time during Season of Boys' Ice Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	5	11.4%
Regular Season	38	86.4%
Post Season	1	2.3%
Total	***44***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	1	2.6%
First Period	4	10.3%
Second Period	17	43.6%
Third Period	12	30.8%
Overtime	1	2.6%
Unknown	4	10.3%
Total	***39***	***100.0%***

Rink Location		
Corner	7	17.9%
Behind Goal	5	12.8%
Goal Area	2	5.1%
Between Goal Line and Blue Line	11	28.2%
Neutral Zone	7	17.9%
Bench	1	2.6%
Unknown	6	15.4%
Total	***39***	***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, 2021-22 School Year *

Time in Practice	n	%
Second 1/2 Hour	1	25.0%
1-2 Hours into Practice	1	25.0%
Unknown	2	50.0%
Total	***4***	***100.0%***

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

Figure 13.4 Player Position of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

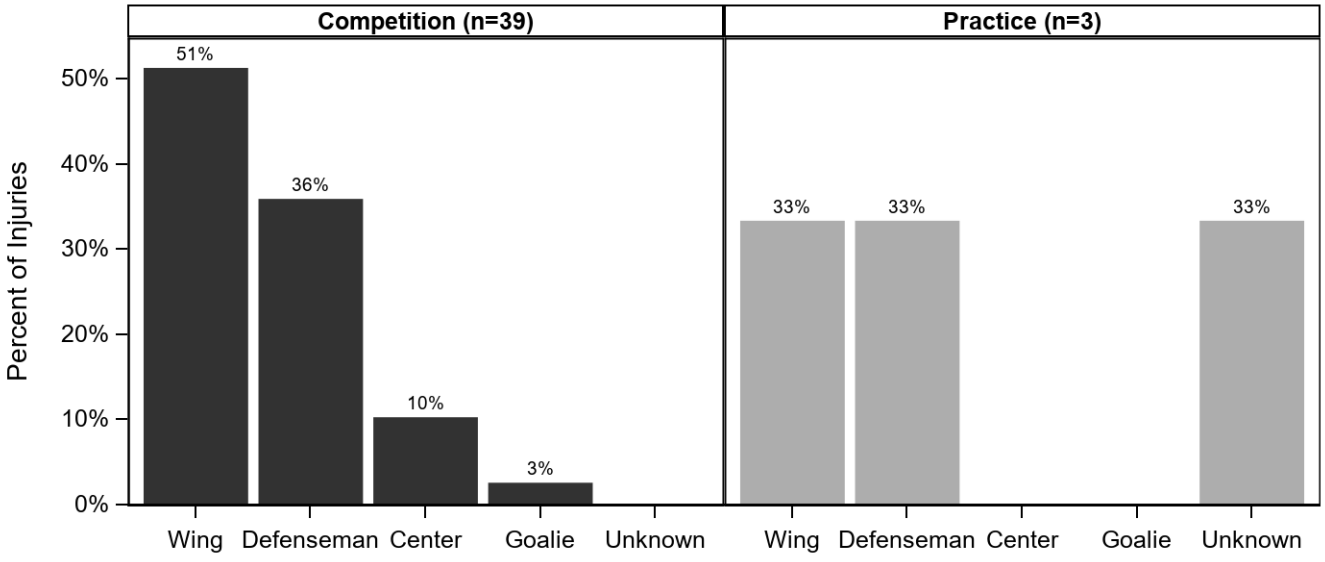


Table 13.9 Activities Leading to Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Being Checked	18	46.2%	1	33.3%	19	45.2%
Checking	9	23.1%	0	0.0%	9	21.4%
Skating	3	7.7%	1	33.3%	4	9.5%
Unknown	4	10.3%	0	0.0%	4	9.5%
Chasing Loose Puck	1	2.6%	1	33.3%	2	4.8%
Receiving Pass	1	2.6%	0	0.0%	1	2.4%
Other	1	2.6%	0	0.0%	1	2.4%
Conditioning	1	2.6%	0	0.0%	1	2.4%
Line Change	1	2.6%	0	0.0%	1	2.4%
Total	***39***	***100.0%***	***3***	***100.0%***	***42***	***100.0%***

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

REPORTING INFORMATION ONLINE

Table 13.10 Activity Resulting in Boys' Ice Hockey Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Being Checked	3	33.3%	8	72.7%	1	20.0%	6	42.9%	1	33.3%
Chasing Loose Puck	1	11.1%	0	0.0%	0	0.0%	1	7.1%	0	0.0%
Checking	0	0.0%	2	18.2%	3	60.0%	2	14.3%	2	66.7%
Conditioning	1	11.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Line Change	0	0.0%	0	0.0%	0	0.0%	1	7.1%	0	0.0%
Other	0	0.0%	0	0.0%	1	20.0%	0	0.0%	0	0.0%
Receiving Pass	0	0.0%	0	0.0%	0	0.0%	1	7.1%	0	0.0%
Skating	2	22.2%	1	9.1%	0	0.0%	1	7.1%	0	0.0%
Unknown	2	22.2%	0	0.0%	0	0.0%	2	14.3%	0	0.0%
Total	***9***	***100.0%***	***11***	***100.0%***	***5***	***100.0%***	***14***	***100.0%***	***3***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***158***	***75,973***	***2.08***
Competition	83	23,199	3.58
Practice	75	52,774	1.42

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	29	19.0%
Sophomore	40	26.1%
Junior	43	28.1%
Senior	41	26.8%
Total	***153***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	16.3 (1.1)
n	144

BMI	
Minimum	16.2
Maximum	38.3
Mean (SD)	24.2 (4.1)
n	113

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

Figure 14.1 Diagnosis of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

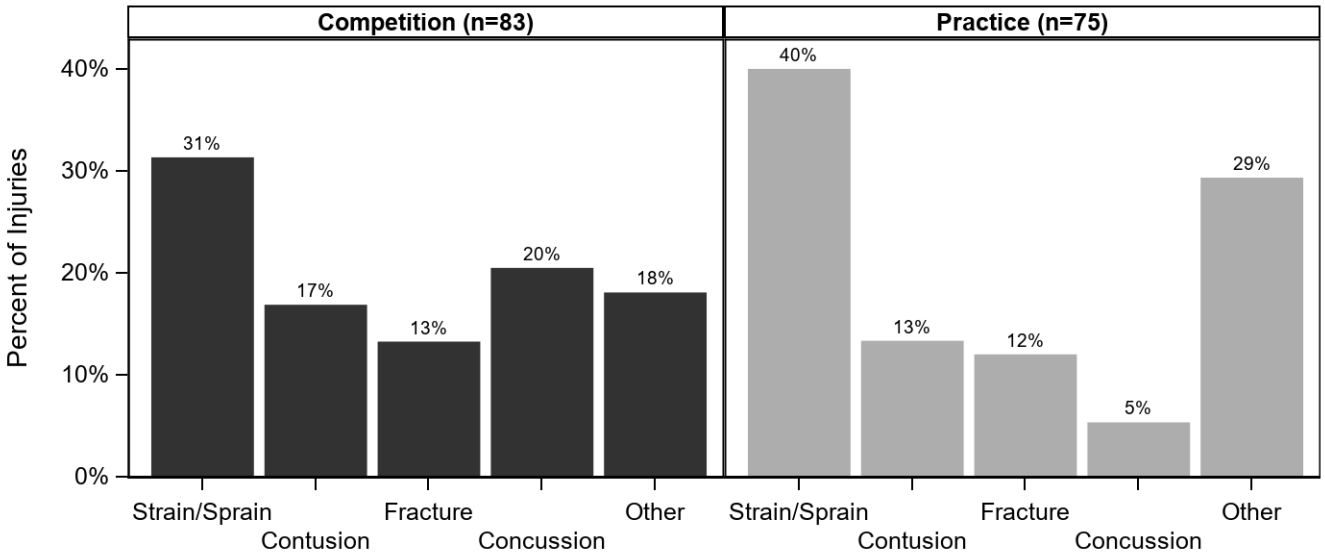


Table 14.3 Body Site of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

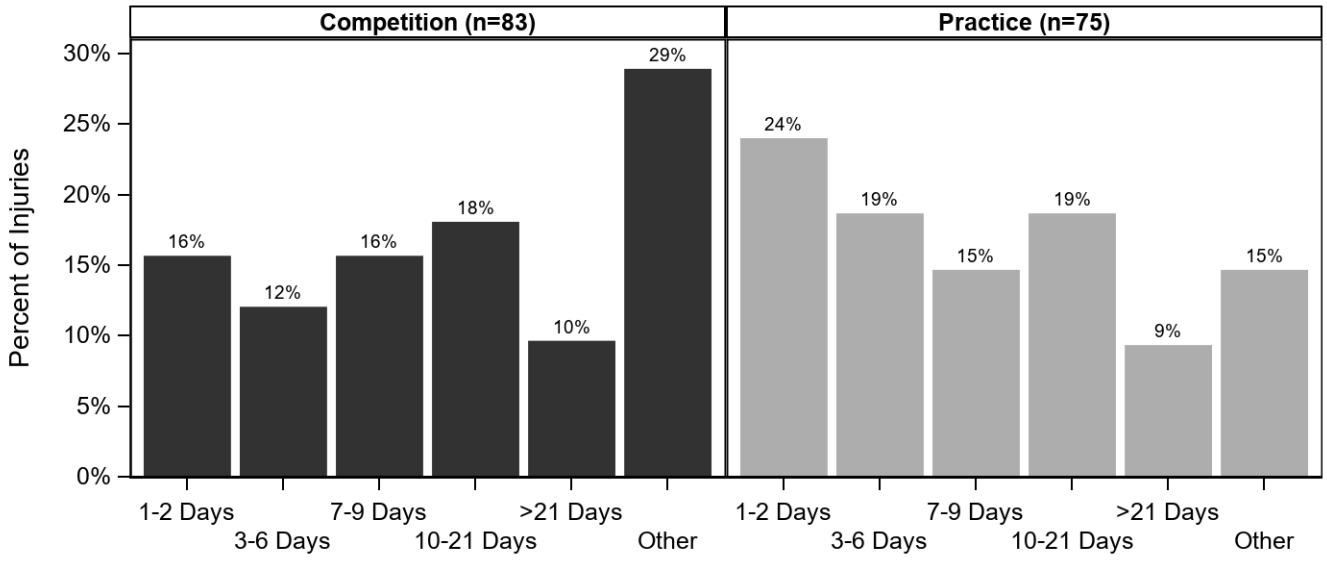
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	20	24.1%	6	8.0%	26	16.5%
Hip/Thigh/Upper Leg	10	12.0%	12	16.0%	22	13.9%
Hand/Wrist	10	12.0%	11	14.7%	21	13.3%
Knee	11	13.3%	7	9.3%	18	11.4%
Ankle	8	9.6%	7	9.3%	15	9.5%
Shoulder	9	10.8%	6	8.0%	15	9.5%
Lower Leg	3	3.6%	11	14.7%	14	8.9%
Trunk	7	8.4%	7	9.3%	14	8.9%
Arm/Elbow	1	1.2%	4	5.3%	5	3.2%
Other	4	4.8%	0	0.0%	4	2.5%
Foot	0	0.0%	3	4.0%	3	1.9%
Neck	0	0.0%	1	1.3%	1	0.6%
Total	***83***	***100.0%***	***75***	***100.0%***	***158***	***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, 2021-22 School Year

	Competition (n=83)		Practice (n=75)		Overall (n=158)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	17	20.5%	4	5.3%	21	13.3%
Hip/Thigh/Upper Leg Strain/Sprain	6	7.2%	12	16.0%	18	11.4%
Ankle Strain/Sprain	8	9.6%	7	9.3%	15	9.5%
Hand/Wrist Fracture	6	7.2%	5	6.7%	11	7.0%
Lower Leg Other	3	3.6%	8	10.7%	11	7.0%
Knee Strain/Sprain	6	7.2%	3	4.0%	9	5.7%
Trunk Contusion	6	7.2%	1	1.3%	7	4.4%
Knee Other	3	3.6%	3	4.0%	6	3.8%
Shoulder Other	5	6.0%	1	1.3%	6	3.8%
Hand/Wrist Contusion	2	2.4%	3	4.0%	5	3.2%

Figure 14.2 Time Loss of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	12	14.6%	1	1.3%	13	8.3%
Did Not Require Surgery	70	85.4%	74	98.7%	144	91.7%
Total	***82***	***100.0%***	***75***	***100.0%***	***157***	***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, 2021-22 School Year

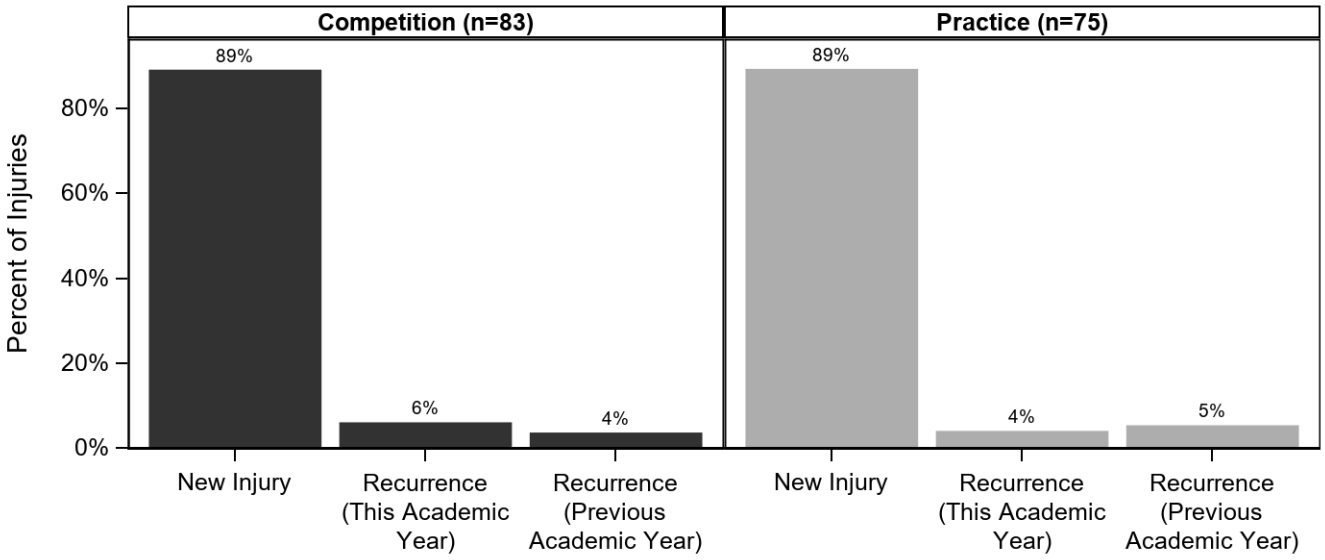


Table 14.6 Time during Season of Boys' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	34	21.5%
Regular Season	119	75.3%
Post Season	5	3.2%
Total	***158***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	1	1.3%
First Quarter	6	7.7%
Second Quarter	20	25.6%
Third Quarter	22	28.2%
Fourth Quarter	15	19.2%
Unknown	14	17.9%
Total	***78***	***100.0%***

Rink Location		
Midfield	24	30.0%
Wing Area	4	5.0%
Defensive Area	8	10.0%
Goal Area	21	26.3%
Crease Area	3	3.8%
Unknown	20	25.0%
Total	***80***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	1	1.4%
Second 1/2 Hour	8	10.8%
1-2 Hours into Practice	43	58.1%
>2 Hours into Practice	3	4.1%
Unknown	19	25.7%
Total	***74***	***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, 2021-22 School Year

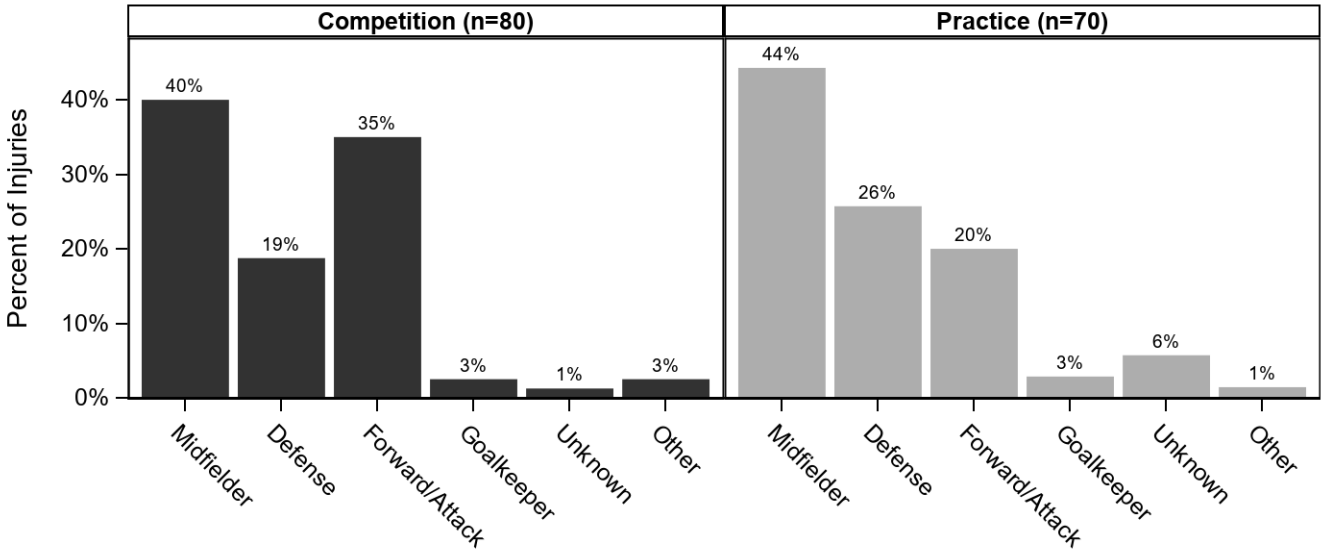


Table 14.9 Activities Leading to Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	9	11.3%	26	37.1%	35	23.3%
Being Body Checked	16	20.0%	2	2.9%	18	12.0%
Being Cross/Stick Checked	13	16.3%	3	4.3%	16	10.7%
Unknown	5	6.3%	10	14.3%	15	10.0%
Defending	6	7.5%	6	8.6%	12	8.0%
Chasing Loose Ball	4	5.0%	5	7.1%	9	6.0%
Body Checking	5	6.3%	3	4.3%	8	5.3%
Receiving Pass	4	5.0%	3	4.3%	7	4.7%
Cross/Stick Checking	5	6.3%	2	2.9%	7	4.7%
Passing	3	3.8%	2	2.9%	5	3.3%
Shooting	3	3.8%	1	1.4%	4	2.7%
Face-Off	4	5.0%	0	0.0%	4	2.7%
Ball Handling/Cradling	2	2.5%	1	1.4%	3	2.0%
Goaltending	1	1.3%	2	2.9%	3	2.0%
Conditioning	0	0.0%	2	2.9%	2	1.3%
Blocking Shot	0	0.0%	1	1.4%	1	0.7%
Other	0	0.0%	1	1.4%	1	0.7%
Total	***80***	***100.0%***	***70***	***100.0%***	***150***	***100.0%***

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

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Table 14.10 Activity Resulting in Boys' Lacrosse Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Cradling	0	0.0%	1	4.3%	0	0.0%	1	4.8%	1	2.8%
Being Body Checked	3	6.0%	3	13.0%	3	15.0%	6	28.6%	3	8.3%
Being Cross/Stick Checked	2	4.0%	3	13.0%	6	30.0%	3	14.3%	2	5.6%
Blocking Shot	0	0.0%	1	4.3%	0	0.0%	0	0.0%	0	0.0%
Body Checking	2	4.0%	2	8.7%	0	0.0%	3	14.3%	1	2.8%
Chasing Loose Ball	4	8.0%	0	0.0%	3	15.0%	1	4.8%	1	2.8%
Conditioning	1	2.0%	0	0.0%	0	0.0%	0	0.0%	1	2.8%
Cross/Stick Checking	1	2.0%	4	17.4%	0	0.0%	1	4.8%	1	2.8%
Defending	5	10.0%	2	8.7%	1	5.0%	0	0.0%	4	11.1%
Face-Off	2	4.0%	0	0.0%	1	5.0%	0	0.0%	1	2.8%
General Play	15	30.0%	1	4.3%	2	10.0%	3	14.3%	14	38.9%
Goaltending	2	4.0%	0	0.0%	1	5.0%	0	0.0%	0	0.0%
Other	0	0.0%	0	0.0%	1	5.0%	0	0.0%	0	0.0%
Passing	1	2.0%	1	4.3%	1	5.0%	2	9.5%	0	0.0%
Receiving Pass	2	4.0%	3	13.0%	0	0.0%	0	0.0%	2	5.6%
Shooting	3	6.0%	1	4.3%	0	0.0%	0	0.0%	0	0.0%
Unknown	7	14.0%	1	4.3%	1	5.0%	1	4.8%	5	13.9%
Total	***50***	***100.0%***	***23***	***100.0%***	***20***	***100.0%***	***21***	***100.0%***	***36***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***114***	***57,360***	***1.99***
Competition	55	17,820	3.09
Practice	59	39,540	1.49

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	30	27.3%
Sophomore	25	22.7%
Junior	28	25.5%
Senior	27	24.5%
Total	***110***	***100.0%***

Age (years)	
Minimum	12
Maximum	18
Mean (SD)	15.9 (1.3)
n	98

BMI	
Minimum	16.3
Maximum	32.5
Mean (SD)	22.2 (2.9)
n	73

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

Figure 15.1 Diagnosis of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

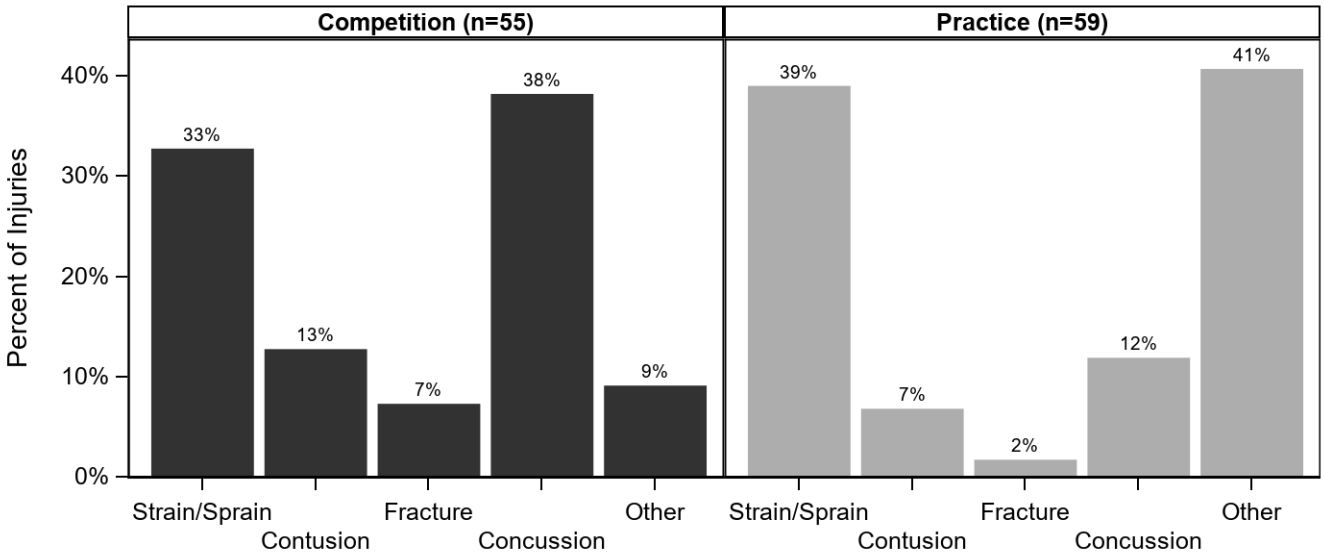


Table 15.3 Body Site of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

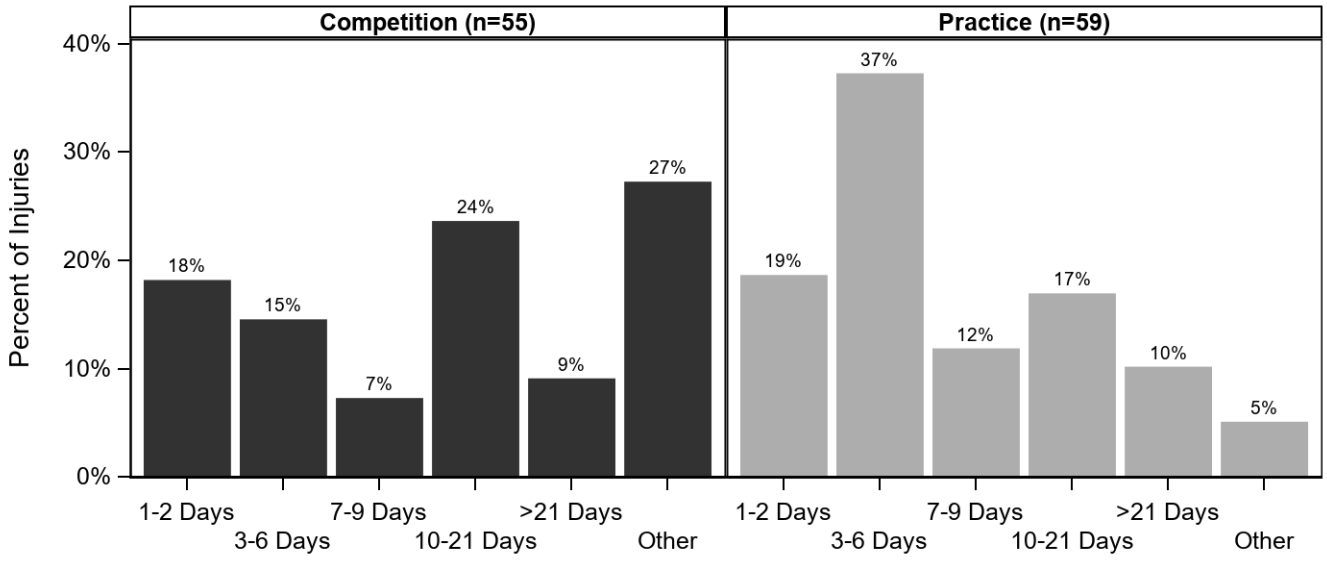
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	23	41.8%	8	13.6%	31	27.2%
Knee	9	16.4%	6	10.2%	15	13.2%
Lower Leg	5	9.1%	10	16.9%	15	13.2%
Ankle	6	10.9%	8	13.6%	14	12.3%
Hip/Thigh/Upper Leg	2	3.6%	12	20.3%	14	12.3%
Trunk	4	7.3%	8	13.6%	12	10.5%
Foot	0	0.0%	4	6.8%	4	3.5%
Hand/Wrist	4	7.3%	0	0.0%	4	3.5%
Shoulder	1	1.8%	1	1.7%	2	1.8%
Systemic	0	0.0%	2	3.4%	2	1.8%
Other	1	1.8%	0	0.0%	1	0.9%
Total	***55***	***100.0%***	***59***	***100.0%***	***114***	***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, 2021-22 School Year

	Competition (n=55)		Practice (n=59)		Overall (n=114)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	21	38.2%	7	11.9%	28	24.6%
Ankle Strain/Sprain	5	9.1%	8	13.6%	13	11.4%
Lower Leg Other	1	1.8%	10	16.9%	11	9.6%
Hip/Thigh/Upper Leg Strain/Sprain	2	3.6%	8	13.6%	10	8.8%
Knee Strain/Sprain	5	9.1%	1	1.7%	6	5.3%
Trunk Strain/Sprain	0	0.0%	6	10.2%	6	5.3%
Knee Other	2	3.6%	3	5.1%	5	4.4%
Hip/Thigh/Upper Leg Other	0	0.0%	4	6.8%	4	3.5%
Knee Contusion	2	3.6%	2	3.4%	4	3.5%
Lower Leg Strain/Sprain	3	5.5%	0	0.0%	3	2.6%

Figure 15.2 Time Loss of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	4	7.4%	1	1.7%	5	4.4%
Did Not Require Surgery	50	92.6%	58	98.3%	108	95.6%
Total	***54***	***100.0%***	***59***	***100.0%***	***113***	***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, 2021-22 School Year

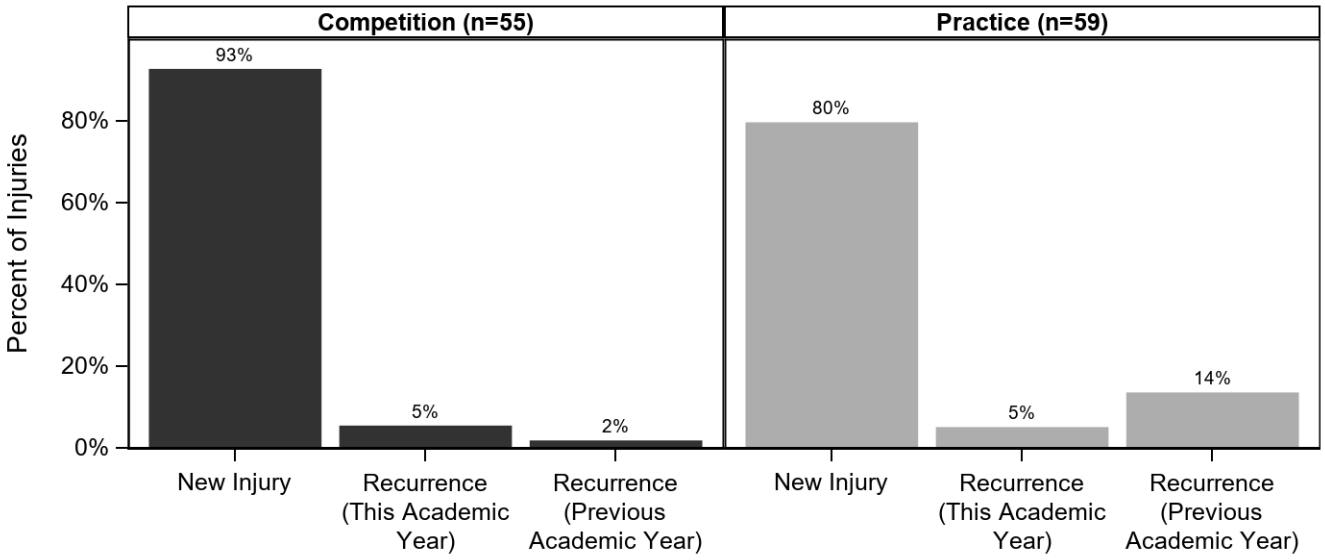


Table 15.6 Time during Season of Girls' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	29	25.4%
Regular Season	81	71.1%
Post Season	4	3.5%
Total	***114***	***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, 2021-22 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	2	4.3%
First Half	21	44.7%
Second Half	19	40.4%
Overtime	1	2.1%
Unknown	4	8.5%
Total	***47***	***100.0%***

Rink Location		
Center Circle	3	6.4%
Midfield (Between Restraining Lines)	14	29.8%
Critical Scoring Area (including the Fan and Arc)	11	23.4%
Goal Circle	5	10.6%
Sideline	5	10.6%
Unknown	9	19.1%
Total	***47***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	5	9.1%
Second 1/2 Hour	2	3.6%
1-2 Hours into Practice	26	47.3%
Unknown	22	40.0%
Total	***55***	***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, 2021-22 School Year

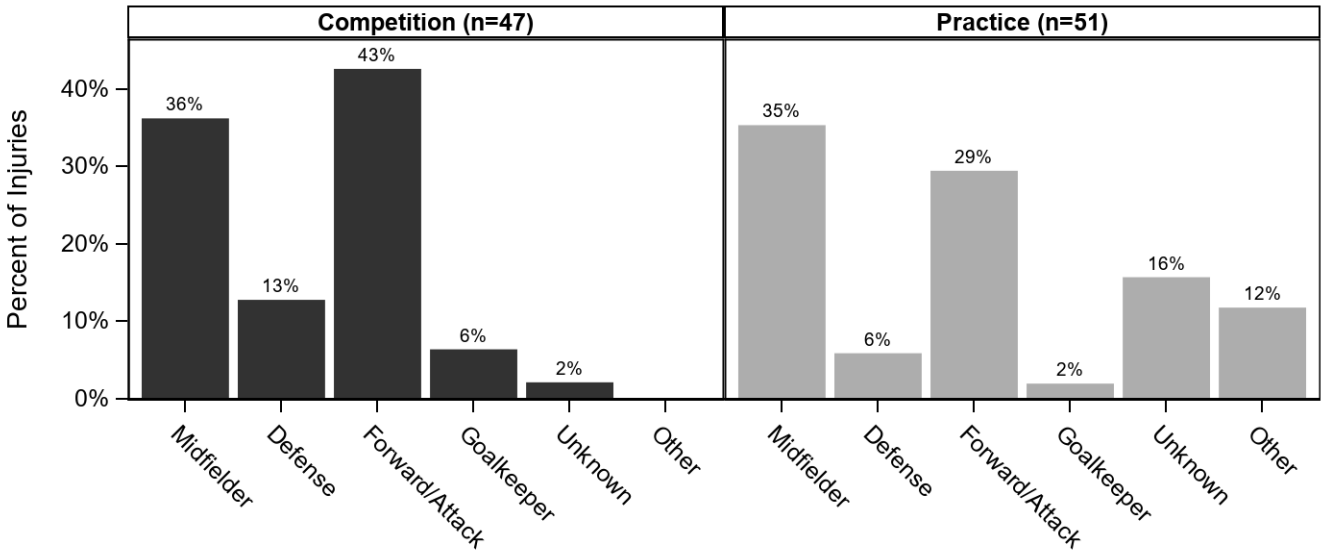


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Table 15.9 Activities Leading to Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	7	14.9%	23	44.2%	30	30.3%
Defending	8	17.0%	4	7.7%	12	12.1%
Being Cross/Stick Checked	7	14.9%	2	3.8%	9	9.1%
Shooting	4	8.5%	4	7.7%	8	8.1%
Chasing Loose Ball	6	12.8%	1	1.9%	7	7.1%
Conditioning	0	0.0%	6	11.5%	6	6.1%
Receiving Pass	3	6.4%	2	3.8%	5	5.1%
Unknown	1	2.1%	4	7.7%	5	5.1%
Ball Handling/Cradling	4	8.5%	0	0.0%	4	4.0%
Passing	2	4.3%	1	1.9%	3	3.0%
Goaltending	2	4.3%	1	1.9%	3	3.0%
Cross/Stick Checking	0	0.0%	2	3.8%	2	2.0%
Draw	2	4.3%	0	0.0%	2	2.0%
Being Body Checked	0	0.0%	1	1.9%	1	1.0%
Other	0	0.0%	1	1.9%	1	1.0%
Face-Off	1	2.1%	0	0.0%	1	1.0%
Total	***47***	***100.0%***	***52***	***100.0%***	***99***	***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, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Cradling	1	2.7%	1	9.1%	1	20.0%	0	0.0%	1	4.0%
Being Body Checked	0	0.0%	1	9.1%	0	0.0%	0	0.0%	0	0.0%
Being Cross/Stick Checked	0	0.0%	2	18.2%	1	20.0%	6	28.6%	0	0.0%
Chasing Loose Ball	3	8.1%	1	9.1%	2	40.0%	1	4.8%	0	0.0%
Conditioning	3	8.1%	0	0.0%	0	0.0%	0	0.0%	3	12.0%
Cross/Stick Checking	0	0.0%	0	0.0%	0	0.0%	2	9.5%	0	0.0%
Defending	4	10.8%	3	27.3%	0	0.0%	3	14.3%	2	8.0%
Draw	2	5.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Face-Off	1	2.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
General Play	12	32.4%	1	9.1%	1	20.0%	1	4.8%	15	60.0%
Goaltending	1	2.7%	0	0.0%	0	0.0%	2	9.5%	0	0.0%
Other	1	2.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Passing	1	2.7%	0	0.0%	0	0.0%	2	9.5%	0	0.0%
Receiving Pass	1	2.7%	2	18.2%	0	0.0%	1	4.8%	1	4.0%
Shooting	5	13.5%	0	0.0%	0	0.0%	2	9.5%	1	4.0%
Unknown	2	5.4%	0	0.0%	0	0.0%	1	4.8%	2	8.0%
Total	***37***	***100.0%***	***11***	***100.0%***	***5***	***100.0%***	***21***	***100.0%***	***25***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***15***	***46,973***	***0.32***
Competition	6	9,058	0.66
Practice	9	37,915	0.24

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	4	26.7%
Sophomore	2	13.3%
Junior	6	40.0%
Senior	3	20.0%
Total	***15***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.4 (1.3)
n	11

BMI	
Minimum	19.1
Maximum	25.8
Mean (SD)	22.2 (2.4)
n	9

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

Figure 16.1 Diagnosis of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

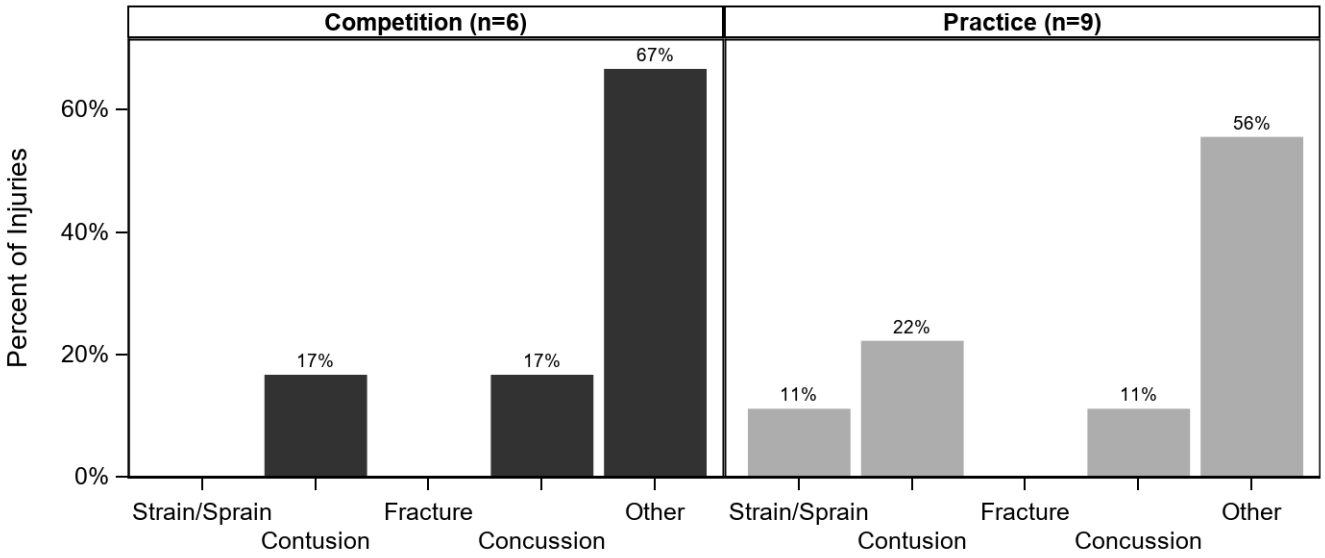


Table 16.3 Body Site of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

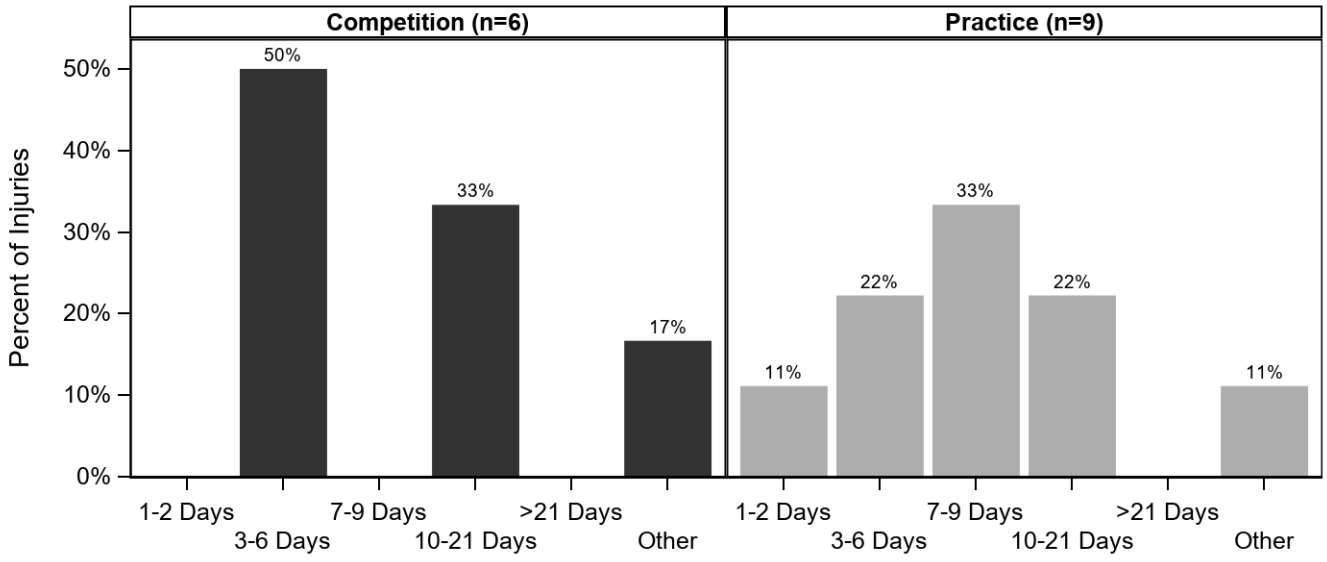
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Shoulder	1	16.7%	4	44.4%	5	33.3%
Head/Face	2	33.3%	1	11.1%	3	20.0%
Systemic	2	33.3%	1	11.1%	3	20.0%
Knee	1	16.7%	1	11.1%	2	13.3%
Foot	0	0.0%	1	11.1%	1	6.7%
Hand/Wrist	0	0.0%	1	11.1%	1	6.7%
Total	***6***	***100.0%***	***9***	***100.0%***	***15***	***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, 2021-22 School Year

	Competition (n=6)		Practice (n=9)		Overall (n=15)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Shoulder Other	1	16.7%	3	33.3%	4	26.7%
Systemic Other	2	33.3%	1	11.1%	3	20.0%
Head/Face Concussion	1	16.7%	1	11.1%	2	13.3%
Knee Other	1	16.7%	1	11.1%	2	13.3%
Foot Contusion	0	0.0%	1	11.1%	1	6.7%
Hand/Wrist Contusion	0	0.0%	1	11.1%	1	6.7%
Head/Face Contusion	1	16.7%	0	0.0%	1	6.7%
Shoulder Strain/Sprain	0	0.0%	1	11.1%	1	6.7%

Figure 16.2 Time Loss of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	6	100.0%	9	100.0%	15	100.0%
Total	***6***	***100.0%***	***9***	***100.0%***	***15***	***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, 2021-22 School Year

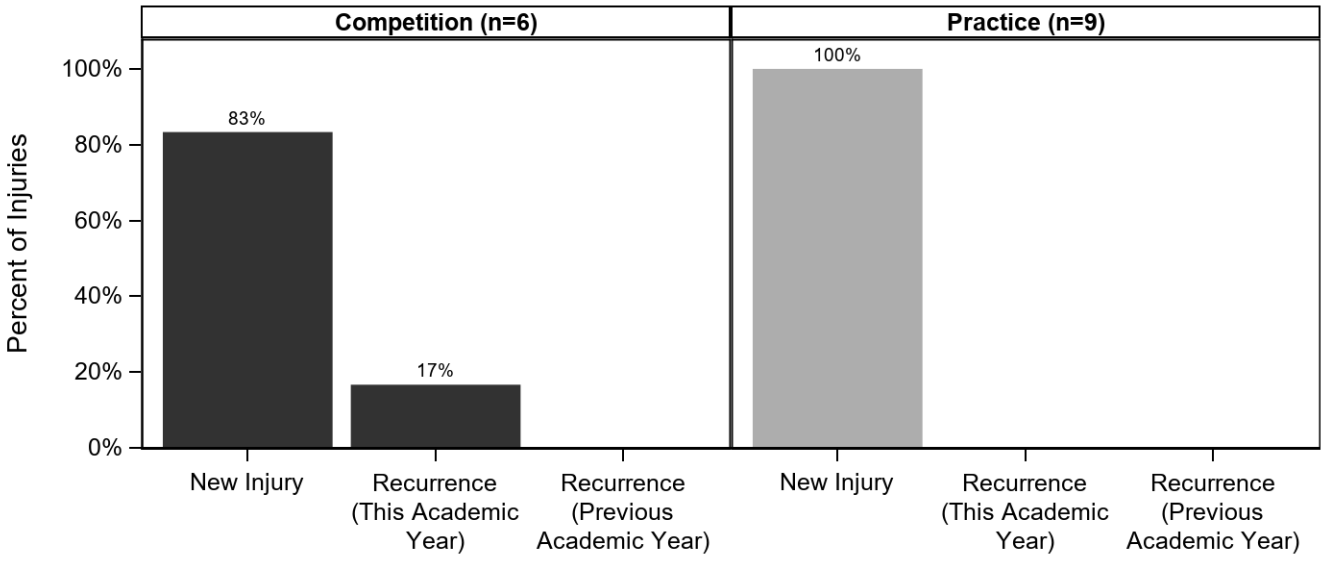


Table 16.6 Time during Season of Boys' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	1	6.7%
Regular Season	14	93.3%
Total	***15***	***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, 2021-22 School Year *

Pool Location		
In Pool	1	16.7%
Poolside	4	66.7%
Other	1	16.7%
Total	***6***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	1	16.7%
1-2 Hours into Practice	1	16.7%
Unknown	4	66.7%
Total	***6***	***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, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Swimming	3	50.0%	4	66.7%	7	58.3%
Other	3	50.0%	0	0.0%	3	25.0%
Conditioning	0	0.0%	2	33.3%	2	16.7%
Total	***6***	***100.0%***	***6***	***100.0%***	***12***	***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, 2021-22 School Year *

	Diagnosis							
	Strain/Sprain		Contusion		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	0	0.0%	0	0.0%	0	0.0%	2	28.6%
Other	0	0.0%	1	50.0%	1	50.0%	1	14.3%
Swimming	1	100.0%	1	50.0%	1	50.0%	4	57.1%
Total	***1***	***100.0%***	***2***	***100.0%***	***2***	***100.0%***	***7***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***21***	***52,676***	***0.40***
Competition	3	10,280	0.29
Practice	18	42,396	0.42

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	4	19.0%
Sophomore	4	19.0%
Junior	7	33.3%
Senior	6	28.6%
Total	***21***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	16.1 (1.2)
n	16

BMI	
Minimum	18.7
Maximum	25.8
Mean (SD)	21.8 (2.4)
n	16

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

Figure 17.1 Diagnosis of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

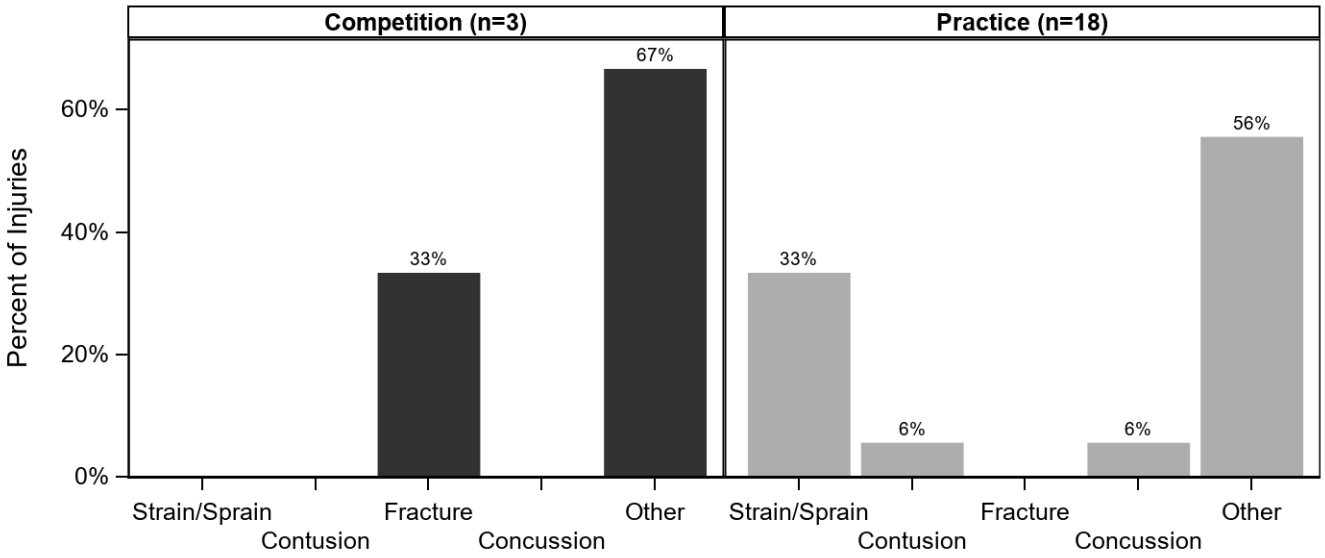


Table 17.3 Body Site of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

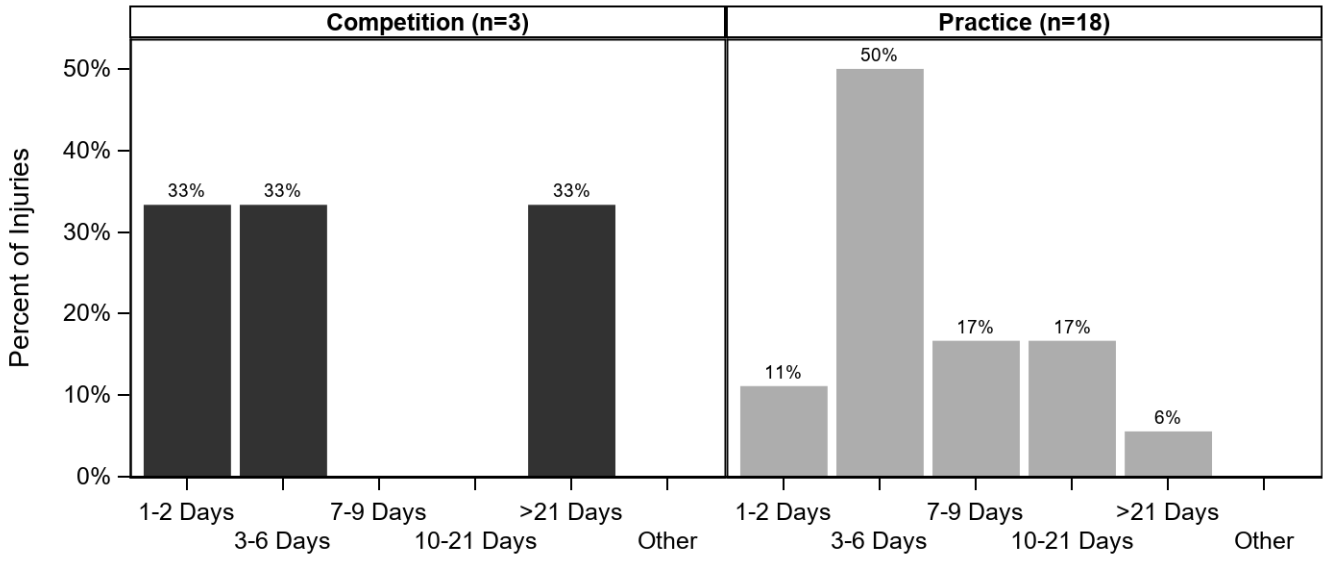
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Shoulder	1	33.3%	7	38.9%	8	38.1%
Trunk	0	0.0%	3	16.7%	3	14.3%
Ankle	0	0.0%	2	11.1%	2	9.5%
Head/Face	0	0.0%	2	11.1%	2	9.5%
Knee	0	0.0%	2	11.1%	2	9.5%
Systemic	1	33.3%	1	5.6%	2	9.5%
Foot	1	33.3%	0	0.0%	1	4.8%
Hip/Thigh/Upper Leg	0	0.0%	1	5.6%	1	4.8%
Total	***3***	***100.0%***	***18***	***100.0%***	***21***	***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, 2021-22 School Year

	Competition (n=3)		Practice (n=18)		Overall (n=21)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Shoulder Other	1	33.3%	5	27.8%	6	28.6%
Knee Other	0	0.0%	2	11.1%	2	9.5%
Shoulder Strain/Sprain	0	0.0%	2	11.1%	2	9.5%
Systemic Other	1	33.3%	1	5.6%	2	9.5%
Trunk Strain/Sprain	0	0.0%	2	11.1%	2	9.5%
Ankle Other	0	0.0%	1	5.6%	1	4.8%
Ankle Strain/Sprain	0	0.0%	1	5.6%	1	4.8%
Foot Fracture	1	33.3%	0	0.0%	1	4.8%
Head/Face Concussion	0	0.0%	1	5.6%	1	4.8%
Head/Face Other	0	0.0%	1	5.6%	1	4.8%

Figure 17.2 Time Loss of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	3	100.0%	18	100.0%	21	100.0%
Total	***3***	***100.0%***	***18***	***100.0%***	***21***	***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, 2021-22 School Year

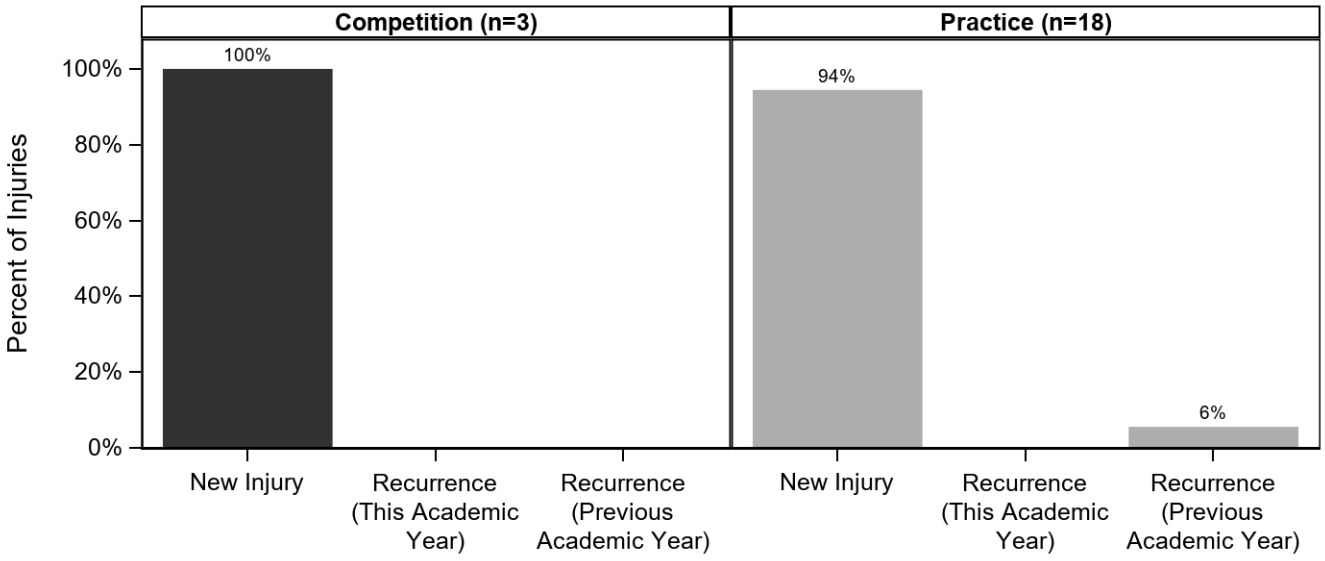


Table 17.6 Time during Season of Girls' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	4	20.0%
Regular Season	15	75.0%
Post Season	1	5.0%
Total	***20***	***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, 2021-22 School Year *

Pool Location		
In Pool	2	66.7%
Poolside	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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	1	5.9%
Second 1/2 Hour	4	23.5%
1-2 Hours into Practice	2	11.8%
Unknown	10	58.8%
Total	***17***	***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, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Swimming	0	0.0%	6	42.9%	6	35.3%
Diving Off Board, Platform or Block	2	66.7%	2	14.3%	4	23.5%
Unknown	0	0.0%	4	28.6%	4	23.5%
Conditioning	0	0.0%	1	7.1%	1	5.9%
Other	0	0.0%	1	7.1%	1	5.9%
Flip Off Wall	1	33.3%	0	0.0%	1	5.9%
Total	***3***	***100.0%***	***14***	***100.0%***	***17***	***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, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	11.1%
Diving Off Board, Platform or Block	0	0.0%	1	100.0%	0	0.0%	0	0.0%	3	33.3%
Flip Off Wall	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0	0.0%
Other	1	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Swimming	2	40.0%	0	0.0%	0	0.0%	1	100.0%	3	33.3%
Unknown	2	40.0%	0	0.0%	0	0.0%	0	0.0%	2	22.2%
Total	***5***	***100.0%***	***1***	***100.0%***	***1***	***100.0%***	***1***	***100.0%***	***9***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***121***	***159,758***	***0.76***
Competition	43	28,565	1.51
Practice	78	131,193	0.59

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	26	21.7%
Sophomore	31	25.8%
Junior	37	30.8%
Senior	26	21.7%
Total	***120***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	16.1 (1.2)
n	104

BMI	
Minimum	16.2
Maximum	36.6
Mean (SD)	22.5 (3.5)
n	78

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

Figure 18.1 Diagnosis of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

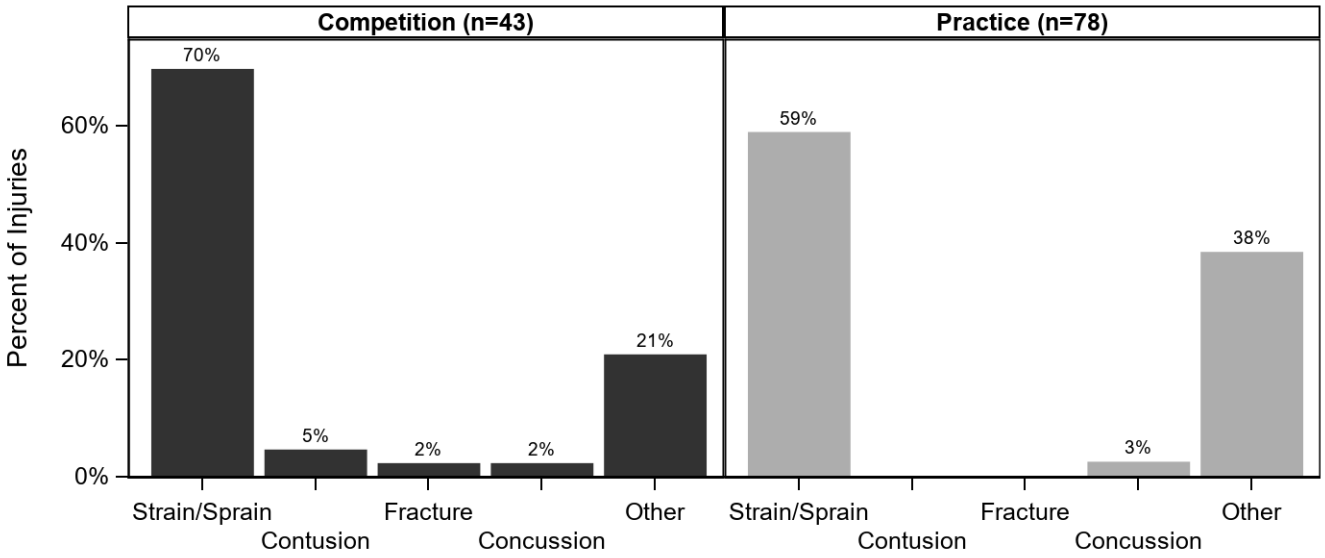


Table 18.3 Body Site of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

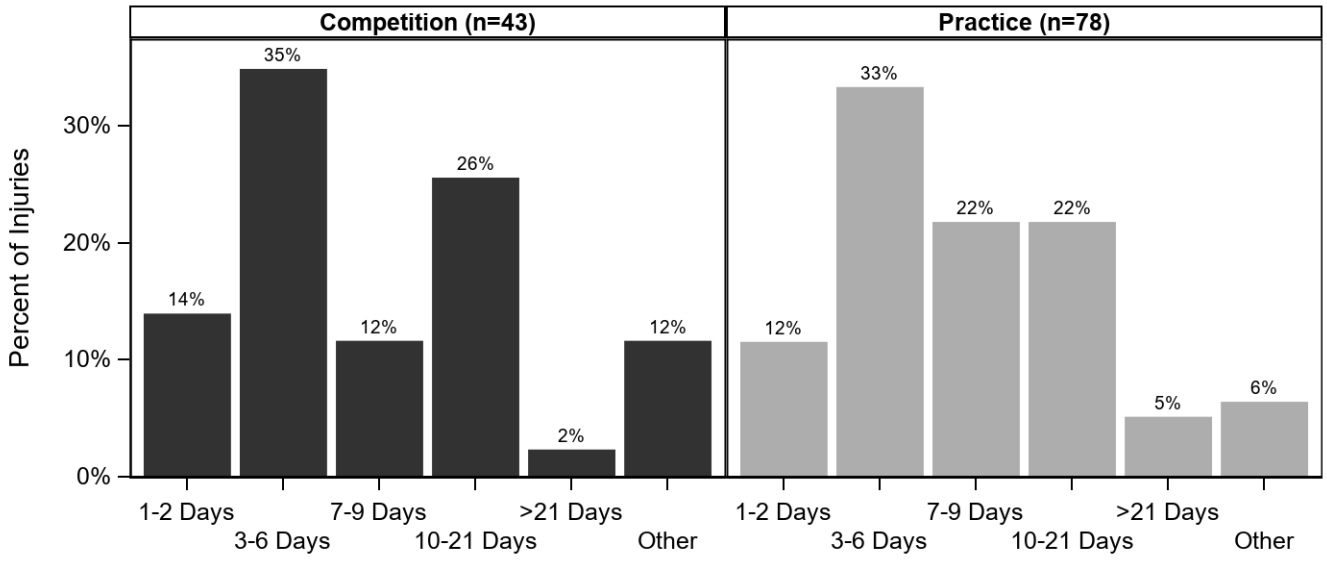
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	24	55.8%	28	35.9%	52	43.0%
Lower Leg	6	14.0%	18	23.1%	24	19.8%
Ankle	1	2.3%	13	16.7%	14	11.6%
Knee	3	7.0%	9	11.5%	12	9.9%
Trunk	1	2.3%	5	6.4%	6	5.0%
Head/Face	3	7.0%	2	2.6%	5	4.1%
Foot	2	4.7%	1	1.3%	3	2.5%
Shoulder	1	2.3%	1	1.3%	2	1.7%
Hand/Wrist	0	0.0%	1	1.3%	1	0.8%
Other	1	2.3%	0	0.0%	1	0.8%
Systemic	1	2.3%	0	0.0%	1	0.8%
Total	***43***	***100.0%***	***78***	***100.0%***	***121***	***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, 2021-22 School Year

	Competition (n=43)		Practice (n=78)		Overall (n=121)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	22	51.2%	24	30.8%	46	38.0%
Lower Leg Other	2	4.7%	15	19.2%	17	14.0%
Ankle Strain/Sprain	1	2.3%	10	12.8%	11	9.1%
Knee Other	1	2.3%	6	7.7%	7	5.8%
Lower Leg Strain/Sprain	4	9.3%	3	3.8%	7	5.8%
Hip/Thigh/Upper Leg Other	2	4.7%	4	5.1%	6	5.0%
Trunk Strain/Sprain	1	2.3%	5	6.4%	6	5.0%
Knee Strain/Sprain	1	2.3%	3	3.8%	4	3.3%
Ankle Other	0	0.0%	3	3.8%	3	2.5%
Head/Face Concussion	1	2.3%	2	2.6%	3	2.5%

Figure 18.2 Time Loss of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	0	0.0%	1	1.3%	1	0.8%
Did Not Require Surgery	43	100.0%	77	98.7%	120	99.2%
Total	***43***	***100.0%***	***78***	***100.0%***	***121***	***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, 2021-22 School Year

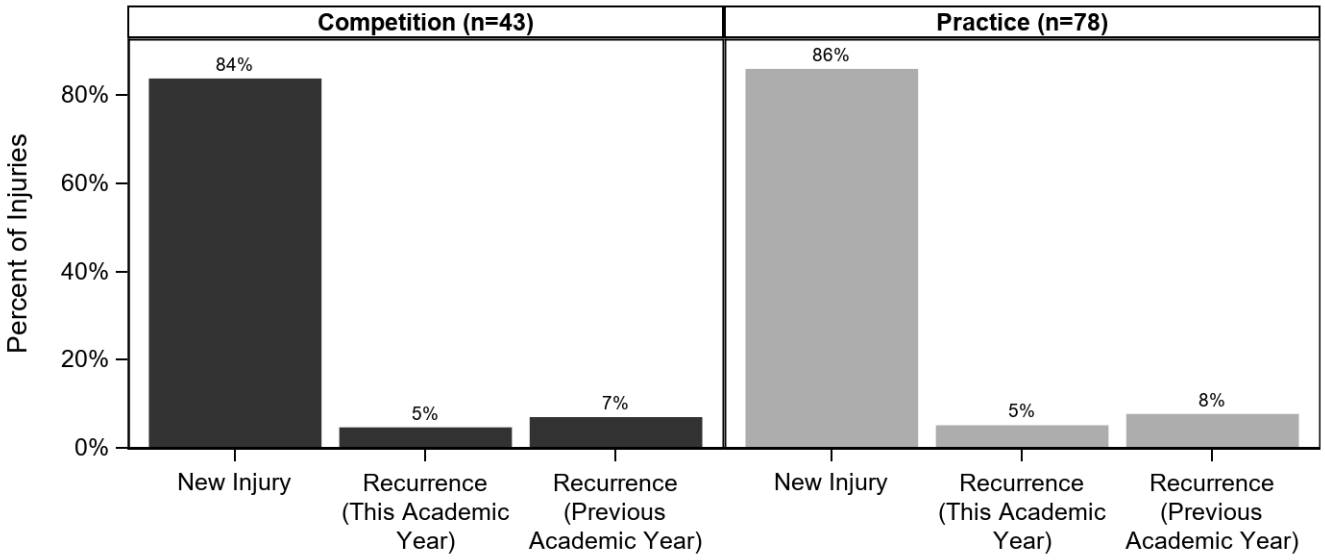


Table 18.6 Time during Season of Boys' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	35	28.9%
Regular Season	82	67.8%
Post Season	4	3.3%
Total	***121***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	5	6.7%
Second 1/2 Hour	21	28.0%
1-2 Hours into Practice	26	34.7%
>2 Hours into Practice	1	1.3%
Unknown	22	29.3%
Total	***75***	***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, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	23	53.5%	47	66.2%	70	61.4%
Jumping/Landing	9	20.9%	11	15.5%	20	17.5%
Running Hurdles	5	11.6%	2	2.8%	7	6.1%
Throwing	0	0.0%	5	7.0%	5	4.4%
Other	2	4.7%	1	1.4%	3	2.6%
Unknown	2	4.7%	1	1.4%	3	2.6%
Warming Up	0	0.0%	3	4.2%	3	2.6%
Leaving Block	1	2.3%	1	1.4%	2	1.8%
Baton Hand Off	1	2.3%	0	0.0%	1	0.9%
Total	***43***	***100.0%***	***71***	***100.0%***	***114***	***100.0%***

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

REPORTING INFORMATION ONLINE

Table 18.9 Activity Resulting in Boys' Track and Field Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Baton Hand Off	1	1.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Jumping/Landing	11	15.7%	1	50.0%	0	0.0%	1	33.3%	7	18.4%
Leaving Block	2	2.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other	1	1.4%	0	0.0%	0	0.0%	0	0.0%	2	5.3%
Running	43	61.4%	0	0.0%	1	100.0%	1	33.3%	25	65.8%
Running Hurdles	3	4.3%	1	50.0%	0	0.0%	1	33.3%	2	5.3%
Throwing	4	5.7%	0	0.0%	0	0.0%	0	0.0%	1	2.6%
Unknown	2	2.9%	0	0.0%	0	0.0%	0	0.0%	1	2.6%
Warming Up	3	4.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	***70***	***100.0%***	***2***	***100.0%***	***1***	***100.0%***	***3***	***100.0%***	***38***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***146***	***126,586***	***1.15***
Competition	38	23,406	1.62
Practice	108	103,180	1.05

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	36	24.8%
Sophomore	44	30.3%
Junior	43	29.7%
Senior	22	15.2%
Total	***145***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.9 (1.2)
n	117

BMI	
Minimum	13.8
Maximum	47.0
Mean (SD)	21.6 (4.3)
n	89

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

Figure 19.1 Diagnosis of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

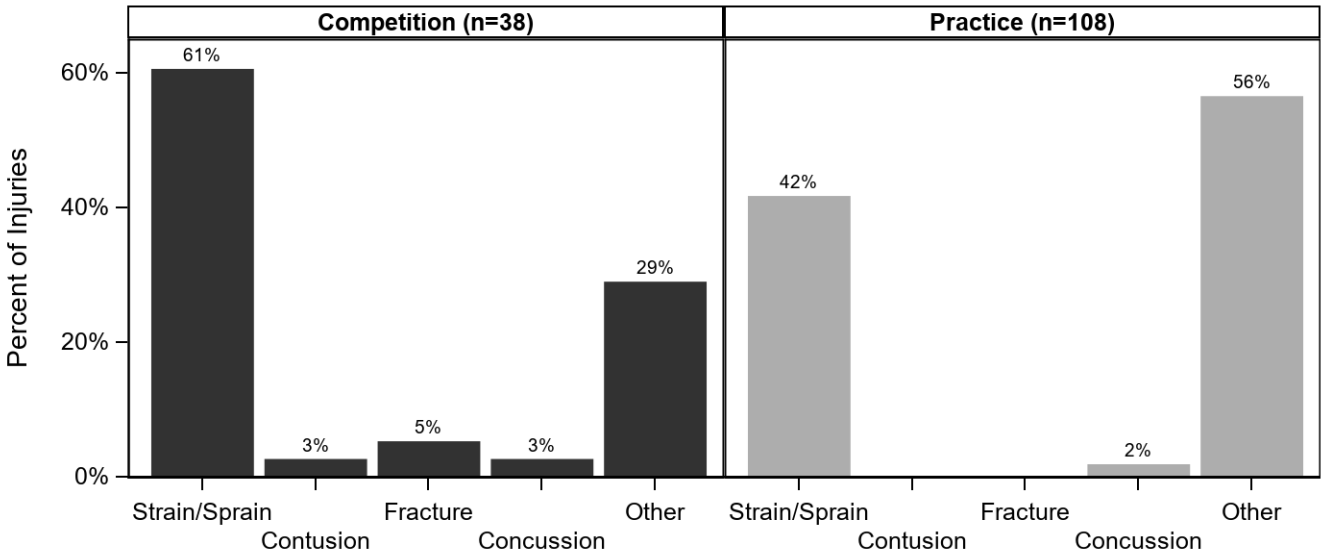


Table 19.3 Body Site of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

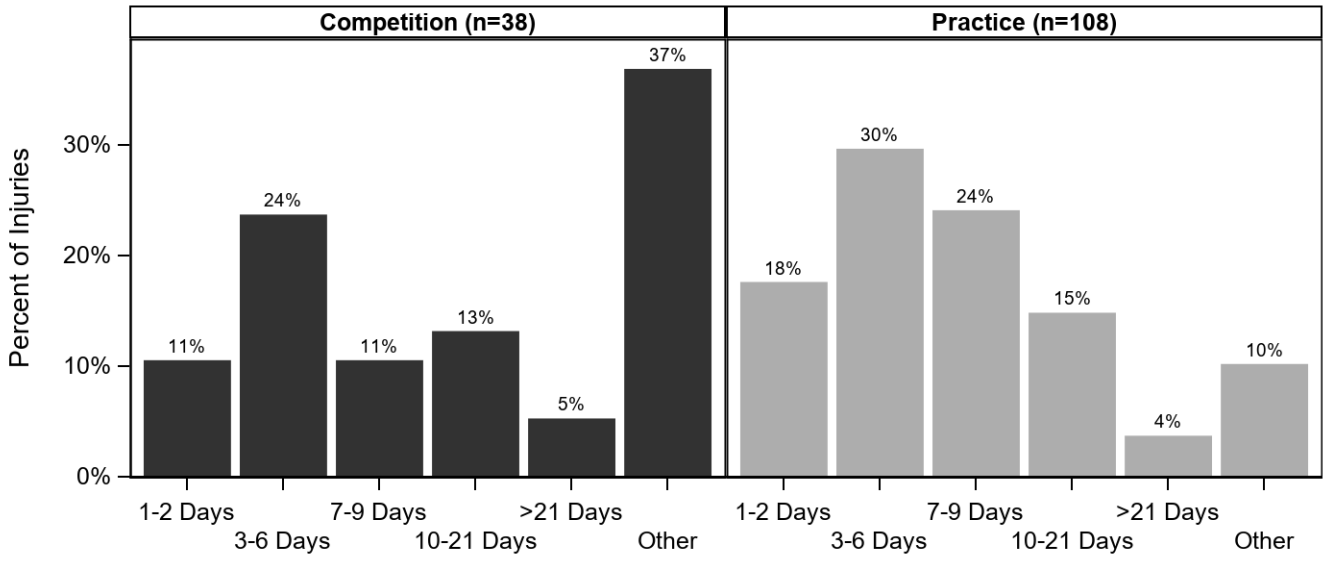
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	11	28.9%	33	30.6%	44	30.1%
Lower Leg	2	5.3%	34	31.5%	36	24.7%
Knee	5	13.2%	15	13.9%	20	13.7%
Ankle	7	18.4%	10	9.3%	17	11.6%
Foot	6	15.8%	6	5.6%	12	8.2%
Shoulder	2	5.3%	2	1.9%	4	2.7%
Trunk	0	0.0%	4	3.7%	4	2.7%
Head/Face	1	2.6%	2	1.9%	3	2.1%
Hand/Wrist	2	5.3%	0	0.0%	2	1.4%
Systemic	2	5.3%	0	0.0%	2	1.4%
Arm/Elbow	0	0.0%	1	0.9%	1	0.7%
Neck	0	0.0%	1	0.9%	1	0.7%
Total	***38***	***100.0%***	***108***	***100.0%***	***146***	***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, 2021-22 School Year

	Competition (n=38)		Practice (n=108)		Overall (n=146)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	8	21.1%	25	23.1%	33	22.6%
Lower Leg Other	1	2.6%	31	28.7%	32	21.9%
Ankle Strain/Sprain	7	18.4%	9	8.3%	16	11.0%
Knee Other	1	2.6%	11	10.2%	12	8.2%
Hip/Thigh/Upper Leg Other	3	7.9%	8	7.4%	11	7.5%
Foot Other	3	7.9%	5	4.6%	8	5.5%
Knee Strain/Sprain	4	10.5%	4	3.7%	8	5.5%
Lower Leg Strain/Sprain	1	2.6%	3	2.8%	4	2.7%
Head/Face Concussion	1	2.6%	2	1.9%	3	2.1%
Trunk Strain/Sprain	0	0.0%	3	2.8%	3	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, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	1	2.6%	1	0.9%	2	1.4%
Did Not Require Surgery	37	97.4%	106	99.1%	143	98.6%
Total	***38***	***100.0%***	***107***	***100.0%***	***145***	***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, 2021-22 School Year

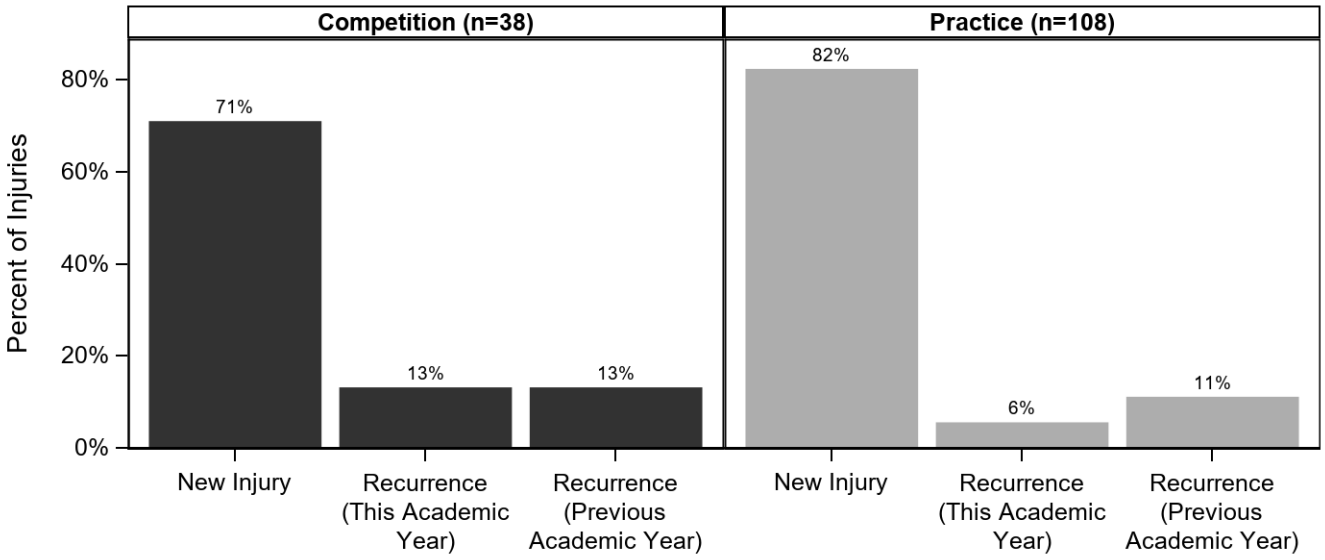


Table 19.6 Time during Season of Girls' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	54	37.0%
Regular Season	89	61.0%
Post Season	3	2.1%
Total	***146***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	8	7.5%
Second 1/2 Hour	22	20.6%
1-2 Hours into Practice	27	25.2%
>2 Hours into Practice	2	1.9%
Unknown	48	44.9%
Total	***107***	***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, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	15	39.5%	74	74.0%	89	64.5%
Jumping/Landing	11	28.9%	6	6.0%	17	12.3%
Throwing	4	10.5%	5	5.0%	9	6.5%
Running Hurdles	5	13.2%	3	3.0%	8	5.8%
Other	2	5.3%	5	5.0%	7	5.1%
Warming Up	1	2.6%	4	4.0%	5	3.6%
Conditioning	0	0.0%	3	3.0%	3	2.2%
Total	***38***	***100.0%***	***100***	***100.0%***	***138***	***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, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	1	1.6%	0	0.0%	0	0.0%	0	0.0%	2	2.9%
Jumping/Landing	10	15.6%	1	100.0%	0	0.0%	1	33.3%	5	7.4%
Other	2	3.1%	0	0.0%	0	0.0%	1	33.3%	4	5.9%
Running	37	57.8%	0	0.0%	1	50.0%	1	33.3%	50	73.5%
Running Hurdles	6	9.4%	0	0.0%	1	50.0%	0	0.0%	1	1.5%
Throwing	5	7.8%	0	0.0%	0	0.0%	0	0.0%	4	5.9%
Warming Up	3	4.7%	0	0.0%	0	0.0%	0	0.0%	2	2.9%
Total	***64***	***100.0%***	***1***	***100.0%***	***2***	***100.0%***	***3***	***100.0%***	***68***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***42***	***58,356***	***0.72***
Competition	6	8,462	0.71
Practice	36	49,894	0.72

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	11	28.2%
Sophomore	10	25.6%
Junior	10	25.6%
Senior	8	20.5%
Total	***39***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.5 (1.2)
n	35

BMI	
Minimum	15.1
Maximum	28.3
Mean (SD)	20.5 (3.0)
n	32

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

Figure 20.1 Diagnosis of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

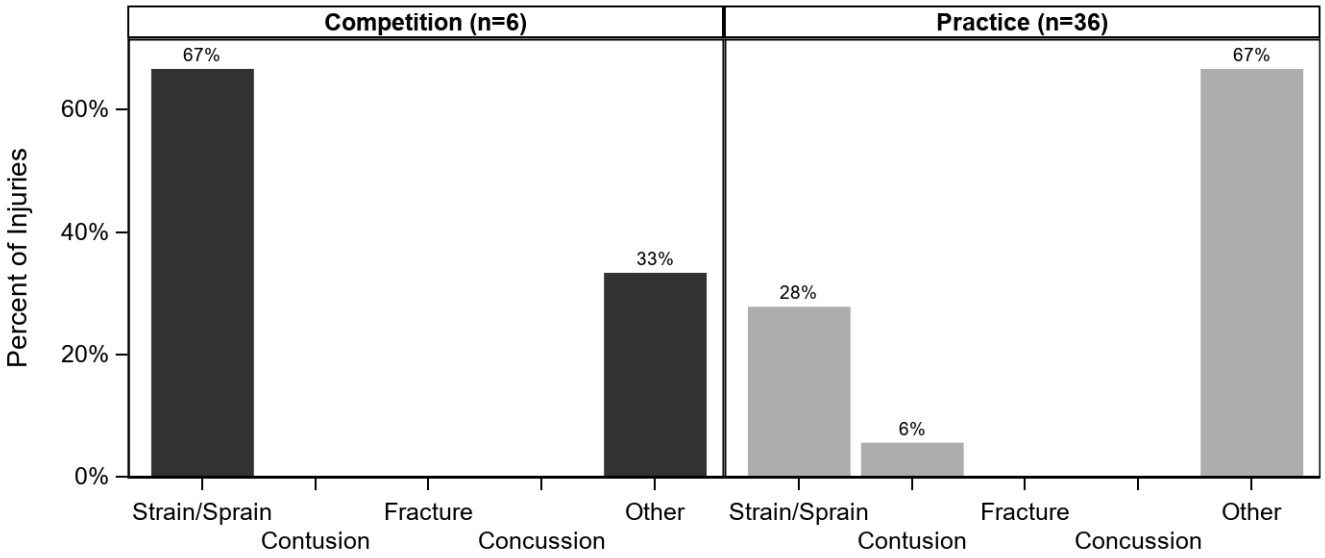


Table 20.3 Body Site of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

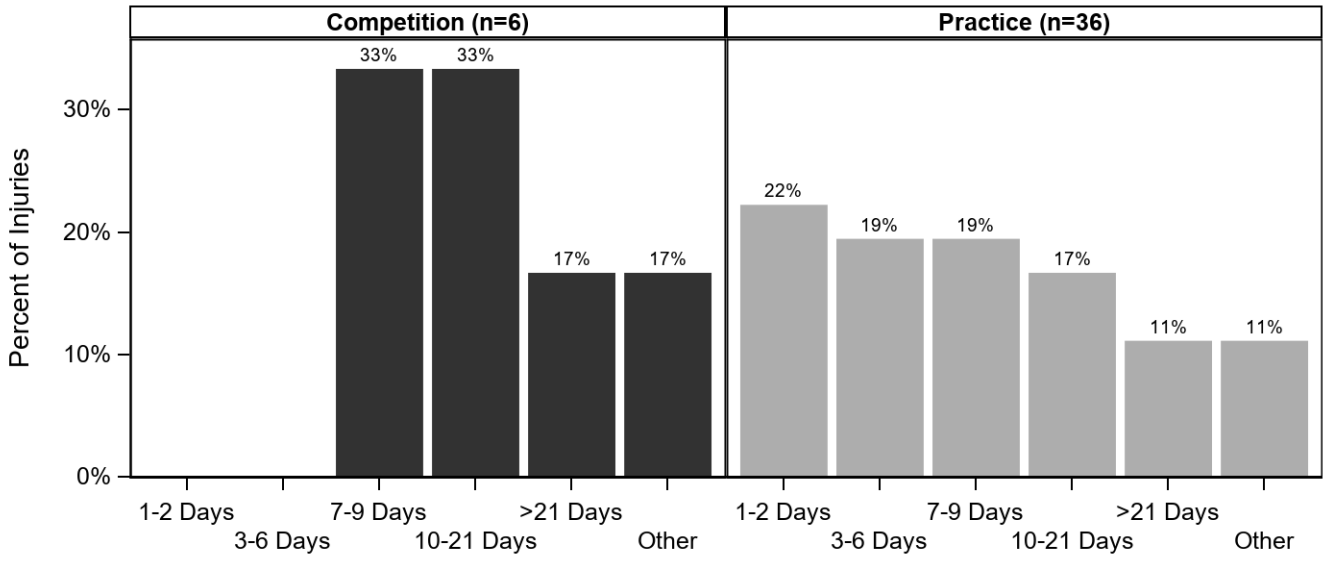
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg	3	50.0%	16	44.4%	19	45.2%
Knee	0	0.0%	8	22.2%	8	19.0%
Ankle	0	0.0%	5	13.9%	5	11.9%
Foot	2	33.3%	2	5.6%	4	9.5%
Hip/Thigh/Upper Leg	1	16.7%	3	8.3%	4	9.5%
Systemic	0	0.0%	2	5.6%	2	4.8%
Total	***6***	***100.0%***	***36***	***100.0%***	***42***	***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, 2021-22 School Year

	Competition (n=6)		Practice (n=36)		Overall (n=42)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg Other	1	16.7%	13	36.1%	14	33.3%
Knee Other	0	0.0%	6	16.7%	6	14.3%
Lower Leg Strain/Sprain	2	33.3%	3	8.3%	5	11.9%
Ankle Strain/Sprain	0	0.0%	4	11.1%	4	9.5%
Hip/Thigh/Upper Leg Strain/Sprain	1	16.7%	2	5.6%	3	7.1%
Foot Other	1	16.7%	1	2.8%	2	4.8%
Systemic Other	0	0.0%	2	5.6%	2	4.8%
Ankle Other	0	0.0%	1	2.8%	1	2.4%
Foot Contusion	0	0.0%	1	2.8%	1	2.4%
Foot Strain/Sprain	1	16.7%	0	0.0%	1	2.4%

Figure 20.2 Time Loss of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	6	100.0%	36	100.0%	42	100.0%
Total	***6***	***100.0%***	***36***	***100.0%***	***42***	***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, 2021-22 School Year

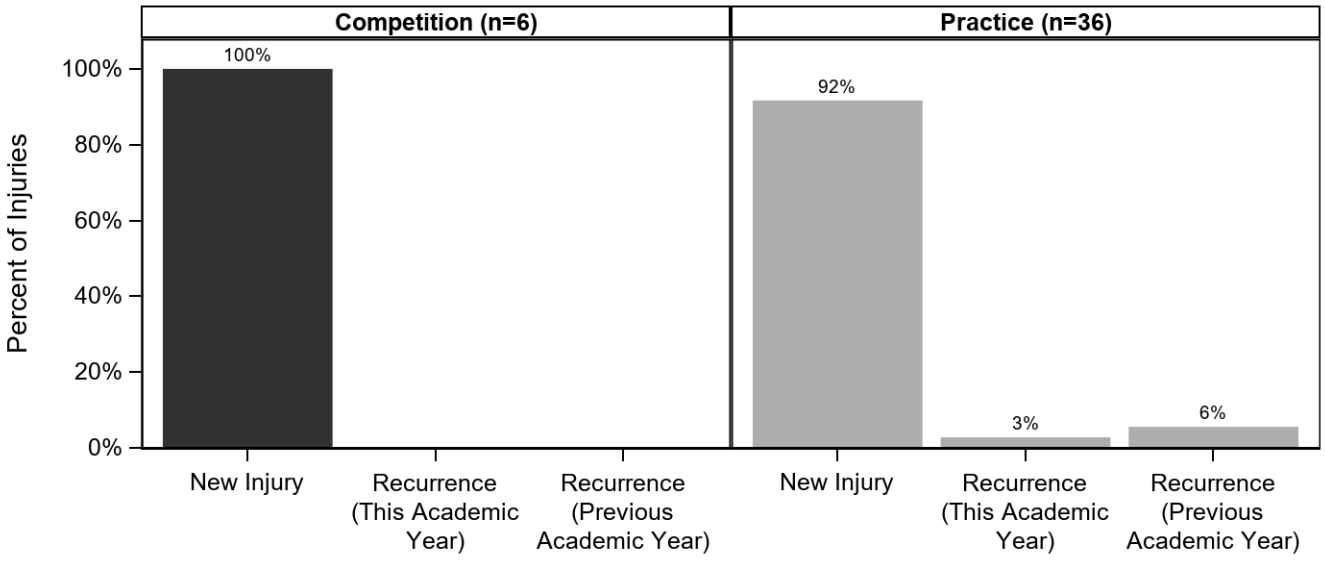


Table 20.6 Time during Season of Boys' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	4	9.5%
Regular Season	36	85.7%
Post Season	2	4.8%
Total	***42***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	4	11.1%
Second 1/2 Hour	6	16.7%
1-2 Hours into Practice	11	30.6%
Unknown	15	41.7%
Total	***36***	***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, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	5	83.3%	22	66.7%	27	69.2%
Unknown	1	16.7%	10	30.3%	11	28.2%
Conditioning	0	0.0%	1	3.0%	1	2.6%
Total	***6***	***100.0%***	***33***	***100.0%***	***39***	***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, 2021-22 School Year *

	Diagnosis					
	Strain/Sprain		Contusion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	0	0.0%	0	0.0%	1	4.2%
Running	10	76.9%	2	100.0%	15	62.5%
Unknown	3	23.1%	0	0.0%	8	33.3%
Total	***13***	***100.0%***	***2***	***100.0%***	***24***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***41***	***44,079***	***0.93***
Competition	5	6,346	0.79
Practice	36	37,733	0.95

* All analyses in this chapter present un-weighted data. 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, 2021-22 School Year *

Year in School	n	%
Freshman	11	31.4%
Sophomore	12	34.3%
Junior	7	20.0%
Senior	5	14.3%
Total	***35***	***100.0%***

Age (years)	
Minimum	11
Maximum	18
Mean (SD)	15.2 (1.4)
n	34

BMI	
Minimum	16.2
Maximum	30.3
Mean (SD)	20.3 (3.2)
n	31

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

Figure 21.1 Diagnosis of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

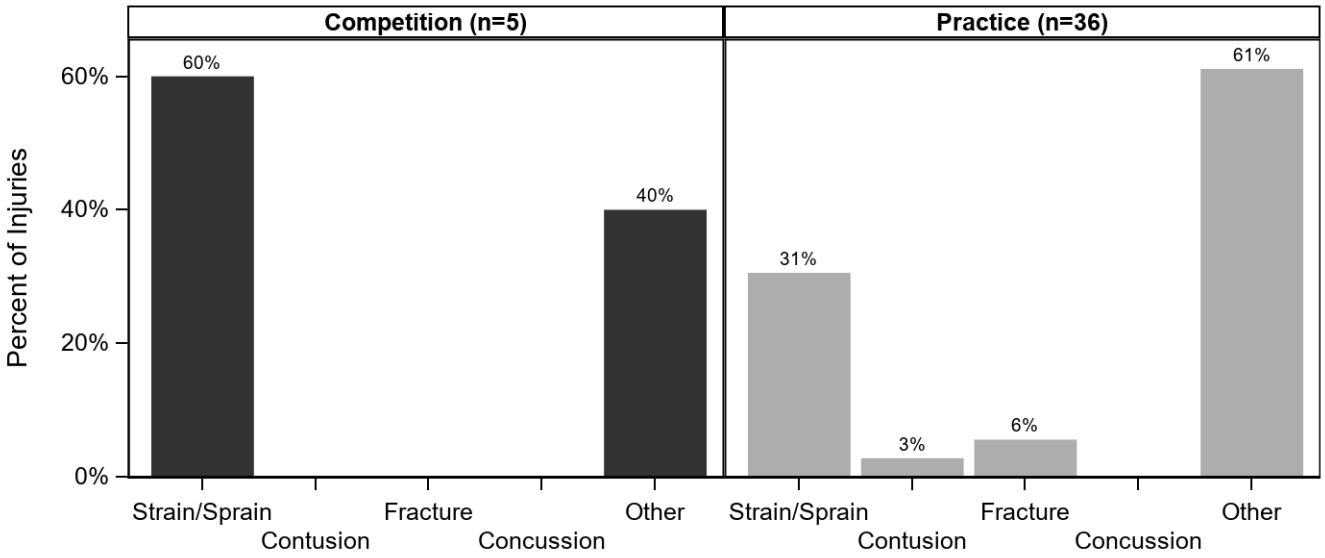


Table 21.3 Body Site of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

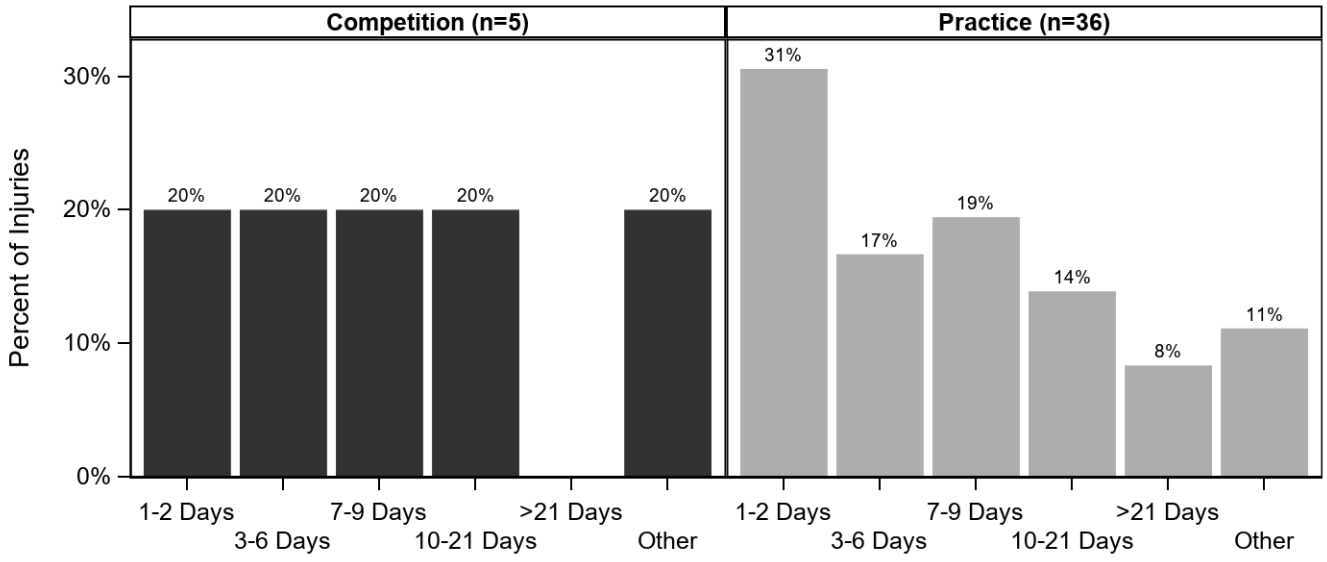
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg	0	0.0%	15	41.7%	15	36.6%
Hip/Thigh/Upper Leg	2	40.0%	10	27.8%	12	29.3%
Ankle	1	20.0%	4	11.1%	5	12.2%
Foot	0	0.0%	4	11.1%	4	9.8%
Knee	1	20.0%	2	5.6%	3	7.3%
Systemic	1	20.0%	1	2.8%	2	4.9%
Total	***5***	***100.0%***	***36***	***100.0%***	***41***	***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, 2021-22 School Year

	Competition (n=5)		Practice (n=36)		Overall (n=41)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg Other	0	0.0%	12	33.3%	12	29.3%
Hip/Thigh/Upper Leg Strain/Sprain	2	40.0%	5	13.9%	7	17.1%
Hip/Thigh/Upper Leg Other	0	0.0%	5	13.9%	5	12.2%
Ankle Strain/Sprain	1	20.0%	3	8.3%	4	9.8%
Knee Other	1	20.0%	2	5.6%	3	7.3%
Lower Leg Strain/Sprain	0	0.0%	2	5.6%	2	4.9%
Systemic Other	1	20.0%	1	2.8%	2	4.9%
Ankle Other	0	0.0%	1	2.8%	1	2.4%
Foot Contusion	0	0.0%	1	2.8%	1	2.4%
Foot Fracture	0	0.0%	1	2.8%	1	2.4%

Figure 21.2 Time Loss of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *



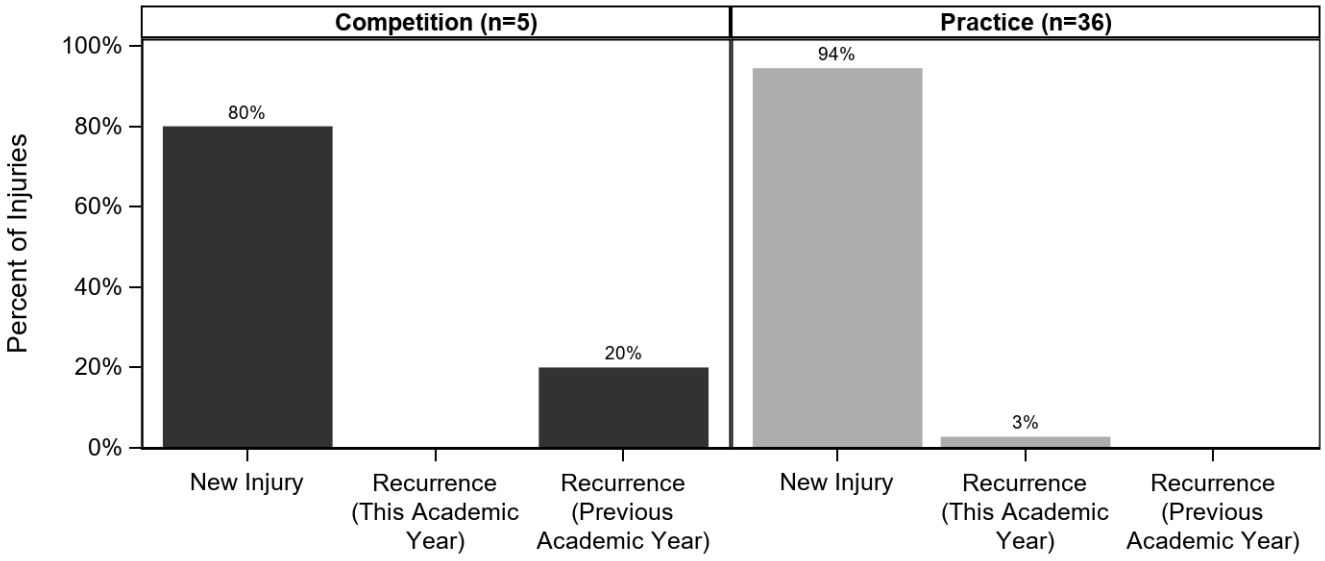
* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play.

Table 21.5 Girls' Cross Country Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	5	100.0%	36	100.0%	41	100.0%
Total	***5***	***100.0%***	***36***	***100.0%***	***41***	***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, 2021-22 School Year



* History of injury was unknown for 3% of practice injuries

Table 21.6 Time during Season of Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	7	17.1%
Regular Season	31	75.6%
Post Season	3	7.3%
Total	***41***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	2	5.6%
Second 1/2 Hour	8	22.2%
1-2 Hours into Practice	11	30.6%
>2 Hours into Practice	2	5.6%
Unknown	13	36.1%
Total	***36***	***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, 2021-22 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	4	80.0%	23	71.9%	27	73.0%
Conditioning	0	0.0%	5	15.6%	5	13.5%
Unknown	1	20.0%	3	9.4%	4	10.8%
Warming Up	0	0.0%	1	3.1%	1	2.7%
Total	***5***	***100.0%***	***32***	***100.0%***	***37***	***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, 2021-22 School Year *

	Diagnosis							
	Strain/Sprain		Contusion		Fracture		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	1	7.1%	0	0.0%	1	50.0%	3	15.0%
Running	12	85.7%	1	100.0%	0	0.0%	14	70.0%
Unknown	1	7.1%	0	0.0%	1	50.0%	2	10.0%
Warming Up	0	0.0%	0	0.0%	0	0.0%	1	5.0%
Total	***14***	***100.0%***	***1***	***100.0%***	***2***	***100.0%***	***20***	***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, 2021-22 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***103***	***106,454***	***0.97***
Competition	5	3,355	1.49
Performance	16	22,480	0.71
Practice	82	80,619	1.02

* All analyses in this chapter present un-weighted data. COVID-19 may have affected these results.

Table 22.2 Demographic Characteristics of Injured Cheerleading Athletes, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Year in School	n	%
Freshman	26	26.5%
Sophomore	16	16.3%
Junior	32	32.7%
Senior	24	24.5%
Total	***98***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.7 (1.4)
n	85

BMI	
Minimum	17.1
Maximum	38.3
Mean (SD)	23.2 (4.5)
n	68

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

Figure 22.1 Diagnosis of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

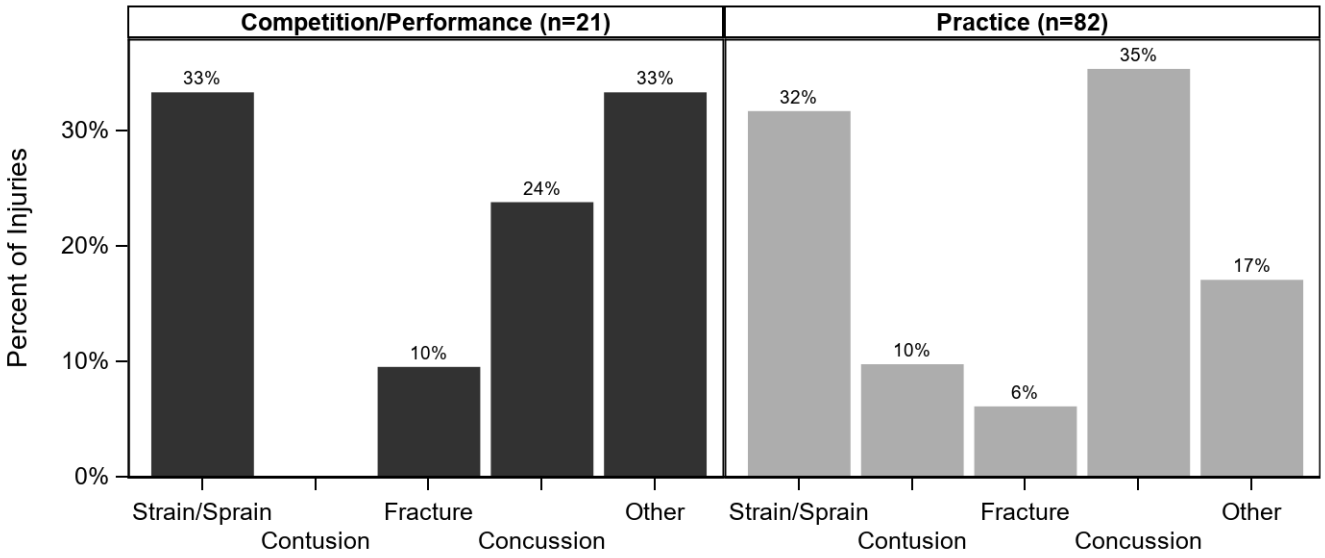


Table 22.3 Body Site of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

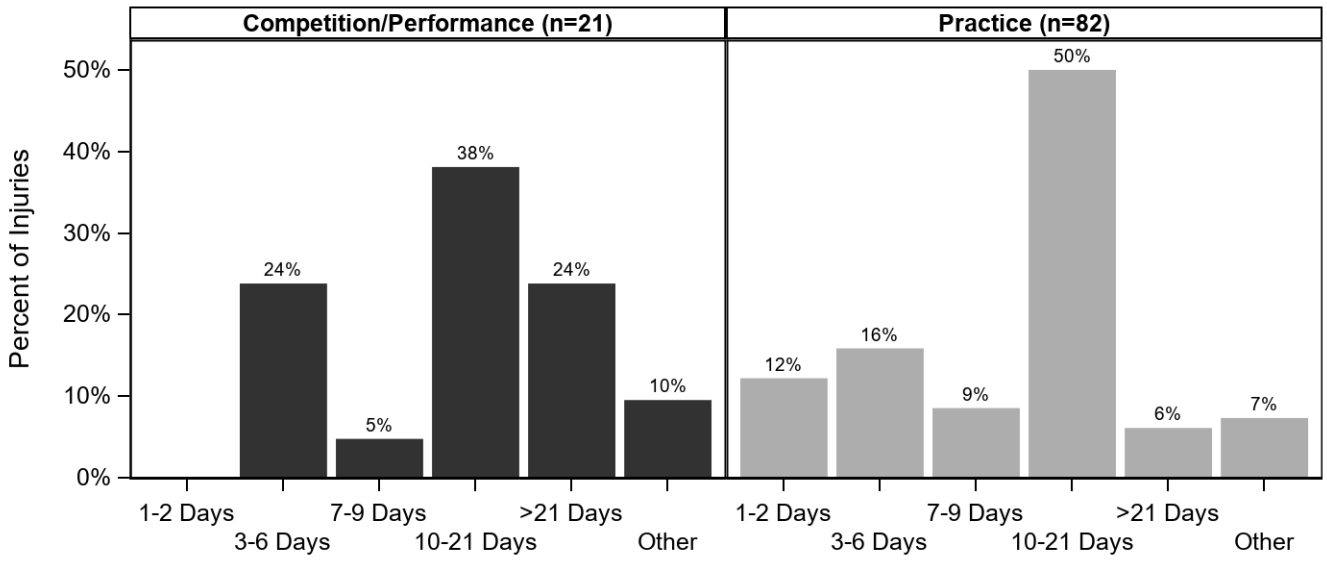
	Competition		Performance		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	2	40.0%	3	18.8%	32	39.0%	37	35.9%
Ankle	2	40.0%	4	25.0%	10	12.2%	16	15.5%
Systemic	0	0.0%	3	18.8%	8	9.8%	11	10.7%
Knee	1	20.0%	2	12.5%	6	7.3%	9	8.7%
Hand/Wrist	0	0.0%	1	6.3%	6	7.3%	7	6.8%
Arm/Elbow	0	0.0%	2	12.5%	4	4.9%	6	5.8%
Trunk	0	0.0%	0	0.0%	6	7.3%	6	5.8%
Hip/Thigh/Upper Leg	0	0.0%	0	0.0%	5	6.1%	5	4.9%
Lower Leg	0	0.0%	1	6.3%	2	2.4%	3	2.9%
Foot	0	0.0%	0	0.0%	2	2.4%	2	1.9%
Neck	0	0.0%	0	0.0%	1	1.2%	1	1.0%
Total	***5***	***100.0%***	***16***	***100.0%***	***82***	***100.0%***	***103***	***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, 2021-22 School Year

	Competition (n=5)		Performance (n=16)		Practice (n=82)		Overall (n=103)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	2	40.0%	3	3.7%	29	35.4%	34	33.0%
Ankle Strain/Sprain	2	40.0%	4	4.9%	8	9.8%	14	13.6%
Systemic Other	0	0.0%	3	3.7%	8	9.8%	11	10.7%
Hip/Thigh/Upper Leg Strain/Sprain	0	0.0%	0	0.0%	4	4.9%	4	3.9%
Trunk Strain/Sprain	0	0.0%	0	0.0%	4	4.9%	4	3.9%
Arm/Elbow Strain/Sprain	0	0.0%	1	1.2%	2	2.4%	3	2.9%
Hand/Wrist Strain/Sprain	0	0.0%	0	0.0%	3	3.7%	3	2.9%
Knee Contusion	0	0.0%	0	0.0%	3	3.7%	3	2.9%
Knee Other	1	20.0%	2	2.4%	0	0.0%	3	2.9%
Knee Strain/Sprain	0	0.0%	0	0.0%	3	3.7%	3	2.9%

Figure 22.2 Time Loss of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2021-22 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, 2021-22 School Year *

	Competition		Performance		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	0	0.0%	1	6.7%	1	1.2%	2	2.0%
Did Not Require Surgery	4	100.0%	14	93.3%	80	98.8%	98	98.0%
Total	***4***	***100.0%***	***15***	***100.0%***	***81***	***100.0%***	***100***	***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, 2021-22 School Year

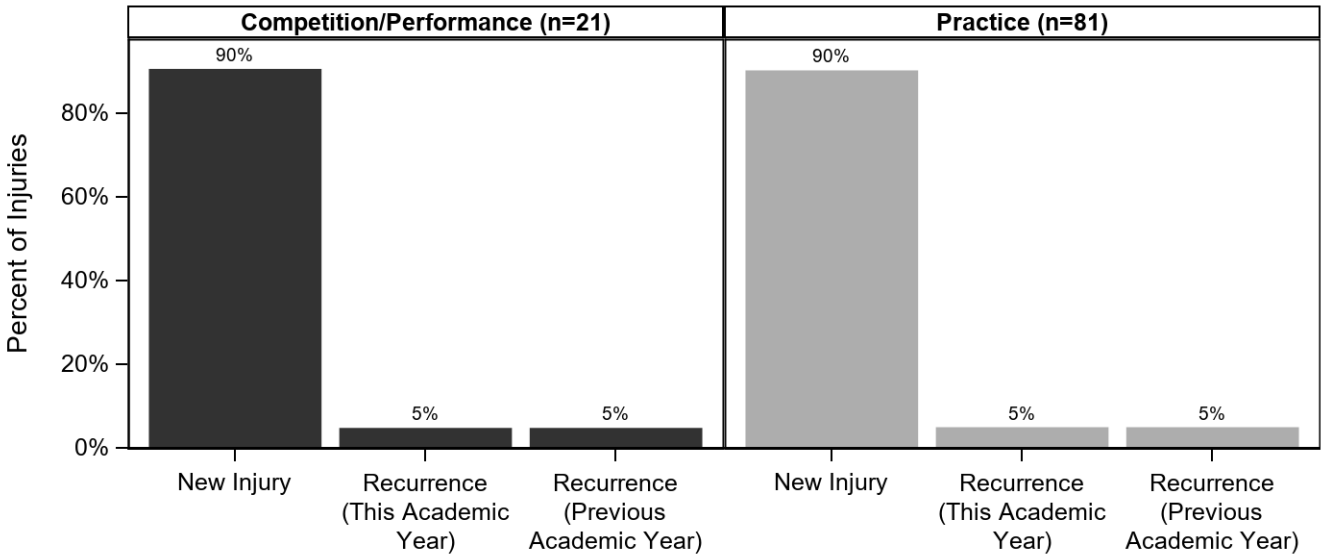


Table 22.6 Time during Season of Cheerleading Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Time in Season	n	%
Preseason	17	16.5%
Regular Season	75	72.8%
Post Season	10	9.7%
Unknown/Other	1	1.0%
Total	***103***	***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, 2021-22 School Year *

Time in Practice	n	%
First 1/2 Hour	1	1.3%
Second 1/2 Hour	10	12.5%
1-2 Hours into Practice	26	32.5%
>2 Hours into Practice	2	2.5%
Unknown	41	51.3%
Total	***80***	***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, 2021-22 School Year *

	Competition		Performance		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Partner Stunt	2	40.0%	3	18.8%	17	26.2%	22	25.6%
Moving Tumbling	0	0.0%	4	25.0%	12	18.5%	16	18.6%
Toss	0	0.0%	1	6.3%	12	18.5%	13	15.1%
Unknown	0	0.0%	5	31.3%	7	10.8%	12	14.0%
Pyramid	0	0.0%	0	0.0%	8	12.3%	8	9.3%
Other	0	0.0%	2	12.5%	4	6.2%	6	7.0%
Standing Tumbling	0	0.0%	0	0.0%	3	4.6%	3	3.5%
Warm-Up	2	40.0%	1	6.3%	0	0.0%	3	3.5%
Jump	1	20.0%	0	0.0%	2	3.1%	3	3.5%
Total	***5***	***100.0%***	***16***	***100.0%***	***65***	***100.0%***	***86***	***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, 2021-22 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Jump	2	6.3%	0	0.0%	1	14.3%	0	0.0%	0	0.0%
Moving Tumbling	11	34.4%	0	0.0%	2	28.6%	0	0.0%	3	25.0%
Other	3	9.4%	0	0.0%	0	0.0%	1	3.6%	2	16.7%
Partner Stunt	4	12.5%	2	28.6%	3	42.9%	12	42.9%	1	8.3%
Pyramid	2	6.3%	1	14.3%	0	0.0%	5	17.9%	0	0.0%
Standing Tumbling	1	3.1%	1	14.3%	0	0.0%	1	3.6%	0	0.0%
Toss	3	9.4%	2	28.6%	0	0.0%	8	28.6%	0	0.0%
Unknown	4	12.5%	1	14.3%	1	14.3%	1	3.6%	5	41.7%
Warm-Up	2	6.3%	0	0.0%	0	0.0%	0	0.0%	1	8.3%
Total	***32***	***100.0%***	***7***	***100.0%***	***7***	***100.0%***	***28***	***100.0%***	***12***	***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, 2021-22 School Year

	Boys' Soccer	Girls' Soccer *	RR (95% CI) **
Total	1.73	**2.30**	**1.33 (1.13-1.55)**
Competition	3.71	**5.03**	**1.36 (1.12-1.65)**
Practice	0.89	**1.05**	1.18 (0.90-1.56)

* 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. COVID-19 may have affected these results.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.2 Comparison of Body Sites of Boys' and Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Body Site	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Head/Face	16.4%	**23.2%**	**1.42 (1.02-1.97)**
Neck	**1.0%**	0.6%	1.63 (0.27-9.72)
Shoulder	1.0%	**1.6%**	1.54 (0.37-6.39)
Trunk	**3.8%**	3.1%	1.19 (0.51-2.78)
Arm/Elbow	0.7%	**0.9%**	1.38 (0.23-8.25)
Hand/Wrist	**5.1%**	1.6%	**3.26 (1.19-8.87)**
Hip/Thigh/Upper Leg	**20.1%**	12.2%	**1.64 (1.13-2.38)**
Knee	15.4%	**20.7%**	1.33 (0.94-1.88)
Lower Leg	**6.1%**	5.6%	1.09 (0.57-2.05)
Ankle	19.1%	**21.9%**	1.15 (0.84-1.58)
Foot	**8.2%**	5.0%	1.63 (0.88-3.01)
Other	**2.0%**	0.9%	2.17 (0.55-8.63)
Systemic	1.0%	**2.5%**	2.46 (0.66-9.21)
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, 2021-22 School Year *

Diagnosis	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Strain/Sprain	47.1%	**49.4%**	1.05 (0.89-1.24)
Contusion	**10.9%**	8.8%	1.24 (0.77-2.01)
Fracture	**8.5%**	6.6%	1.29 (0.74-2.26)
Concussion	12.3%	**20.8%**	**1.69 (1.16-2.46)**
Other	**21.2%**	14.5%	**1.46 (1.03-2.07)**
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, 2021-22 School Year *

Diagnosis	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Ankle Strain/Sprain	16.7%	**19.2%**	1.15 (0.81-1.61)
Head/Face Concussion	12.3%	**20.8%**	**1.69 (1.16-2.46)**
Hip/Thigh/Upper Leg Strain/Sprain	**14.0%**	9.7%	1.44 (0.92-2.23)
Knee Other	5.1%	**5.7%**	1.11 (0.57-2.16)
Knee Strain/Sprain	8.2%	**12.3%**	1.50 (0.92-2.43)

* 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, 2021-22 School Year *

Time Loss	Boys' Soccer	Girls' Soccer	IPR (95% CI)
1-2 Days	**12.3%**	11.3%	1.09 (0.70-1.68)
3-6 Days	**26.6%**	23.5%	1.13 (0.86-1.49)
7-9 Days	15.7%	**18.5%**	1.18 (0.83-1.68)
10-21 Days	18.1%	**21.6%**	1.18 (0.86-1.63)
>21 Days	**6.5%**	4.7%	1.37 (0.71-2.66)
Other	**20.8%**	20.4%	1.02 (0.75-1.39)
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, 2021-22 School Year *

Soccer Mechanism	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Contact with Another Player	**25.5%**	24.2%	1.05 (0.79-1.40)
Contact with Ball	11.9%	**16.8%**	1.42 (0.94-2.14)
N/A **	**16.2%**	14.8%	1.09 (0.74-1.60)
Other	**10.4%**	9.4%	1.11 (0.67-1.81)
Rotation Around a Planted Foot/Inversion	10.8%	**12.5%**	1.15 (0.73-1.82)
Slide Tackle	**7.9%**	3.0%	**2.61 (1.22-5.59)**
Stepped On/Fell On/Kicked	10.8%	**12.8%**	1.19 (0.76-1.86)
Uneven Playing Surface	1.8%	**2.0%**	1.12 (0.35-3.65)
Unknown	**4.7%**	4.4%	1.07 (0.50-2.27)
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, 2021-22 School Year *

Soccer Activity	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Attempting a Slide Tackle	**1.4%**	0.3%	4.23 (0.47-37.86)
Ball Handling/Dribbling	**8.6%**	7.8%	1.10 (0.64-1.91)
Blocking Shot	1.1%	**1.4%**	1.26 (0.28-5.61)
Chasing Loose Ball	**12.5%**	7.8%	1.61 (0.97-2.66)
Conditioning	**3.9%**	1.7%	2.33 (0.82-6.63)
Defending	9.3%	**18.3%**	**1.96 (1.27-3.05)**
General Play	21.9%	**30.5%**	**1.40 (1.05-1.85)**
Goaltending	**6.8%**	5.4%	1.26 (0.66-2.40)
Heading Ball	5.0%	**5.1%**	1.01 (0.50-2.06)
Other	**1.1%**	1.0%	1.06 (0.21-5.22)
Passing	**5.4%**	2.0%	**2.64 (1.04-6.74)**
Receiving Pass	2.9%	**4.1%**	1.42 (0.59-3.43)
Receiving a Slide Tackle	**1.4%**	0.3%	4.23 (0.47-37.86)
Shooting	**7.2%**	3.7%	1.92 (0.94-3.95)
Unknown	**11.5%**	10.5%	1.09 (0.68-1.74)
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, 2021-22 School Year

	Boys' Basketball	Girls' Basketball *	RR (95% CI) **
Total	1.71	**2.35**	**1.37 (1.19-1.59)**
Competition	2.93	**3.85**	**1.32 (1.08-1.60)**
Practice	1.16	**1.66**	**1.44 (1.17-1.77)**

* 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. COVID-19 may have affected these results.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.9 Comparison of Body Sites of Boys' and Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Body Site	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Head/Face	13.8%	**20.4%**	**1.50 (1.08-2.07)**
Neck	0.3%	**0.5%**	2.05 (0.19-22.62)
Shoulder	1.3%	**1.3%**	1.02 (0.30-3.52)
Trunk	**4.2%**	2.4%	1.74 (0.78-3.89)
Arm/Elbow	**2.9%**	1.3%	1.95 (0.67-5.67)
Hand/Wrist	**8.1%**	7.3%	1.12 (0.68-1.84)
Hip/Thigh/Upper Leg	**8.6%**	8.1%	1.07 (0.67-1.73)
Knee	11.9%	**16.7%**	**1.44 (1.01-2.07)**
Lower Leg	2.9%	**6.2%**	**2.14 (1.06-4.34)**
Ankle	**37.1%**	26.1%	**1.44 (1.16-1.79)**
Foot	**3.6%**	3.5%	1.05 (0.50-2.21)
Other	0.3%	**0.3%**	1.02 (0.06-16.42)
Systemic	5.2%	**5.9%**	1.13 (0.62-2.03)
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, 2021-22 School Year *

Diagnosis	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Strain/Sprain	**58.9%**	45.4%	**1.30 (1.13-1.50)**
Contusion	**7.6%**	7.5%	1.01 (0.61-1.67)
Fracture	6.3%	**6.7%**	1.07 (0.62-1.84)
Concussion	9.7%	**17.5%**	**1.80 (1.23-2.63)**
Other	17.4%	**22.8%**	1.32 (0.99-1.76)
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, 2021-22 School Year *

Diagnosis	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Ankle Strain/Sprain	**35.5%**	23.7%	**1.50 (1.19-1.88)**
Head/Face Concussion	9.7%	**17.5%**	**1.80 (1.23-2.63)**
Hip/Thigh/Upper Leg Strain/Sprain	**7.1%**	6.7%	1.05 (0.62-1.78)
Knee Other	5.0%	**5.7%**	1.13 (0.62-2.07)
Knee Strain/Sprain	4.2%	**6.5%**	1.54 (0.83-2.85)
Systemic Other	5.3%	**5.9%**	1.13 (0.62-2.03)

* 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, 2021-22 School Year *

Time Loss	Boys' Basketball	Girls' Basketball	IPR (95% CI)
1-2 Days	17.4%	**19.0%**	1.07 (0.79-1.45)
3-6 Days	**24.9%**	20.9%	1.20 (0.92-1.56)
7-9 Days	**17.4%**	11.8%	**1.44 (1.01-2.06)**
10-21 Days	20.5%	**25.5%**	1.22 (0.94-1.59)
>21 Days	**5.7%**	5.6%	1.08 (0.59-1.95)
Other	14.0%	**17.2%**	1.24 (0.88-1.73)
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, 2021-22 School Year *

Basketball Mechanism	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Collision with Another Player	20.6%	**20.6%**	1.00 (0.75-1.34)
Contact with Ball	4.3%	**7.8%**	1.82 (0.99-3.35)
Jumping/Landing	**27.1%**	17.3%	**1.57 (1.18-2.09)**
N/A **	10.6%	**20.6%**	**1.95 (1.35-2.81)**
Other	9.4%	**10.9%**	1.15 (0.74-1.79)
Rotation Around a Planted Foot/Inversion	**12.0%**	11.4%	1.05 (0.70-1.58)
Stepped On/Fell On/Kicked	**12.3%**	8.4%	1.47 (0.94-2.29)
Unknown	**3.7%**	3.1%	1.21 (0.55-2.67)
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, 2021-22 School Year *

Basketball Activity	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Ball Handling/Dribbling	8.0%	**8.3%**	1.03 (0.63-1.70)
Chasing Loose Ball	6.0%	**8.0%**	1.33 (0.77-2.29)
Conditioning	2.0%	**3.7%**	1.85 (0.74-4.58)
Defending	**10.6%**	10.3%	1.03 (0.67-1.60)
General Play	19.3%	**21.7%**	1.13 (0.84-1.51)
Other	**1.4%**	1.1%	1.26 (0.34-4.66)
Passing	**0.9%**	0.6%	1.51 (0.25-9.01)
Rebounding	**24.4%**	13.7%	**1.78 (1.29-2.46)**
Receiving Pass	3.7%	**5.1%**	1.38 (0.68-2.77)
Screening	**0.3%**	0.3%	1.01 (0.06-16.12)
Shooting	**6.9%**	6.3%	1.10 (0.63-1.92)
Unknown	16.4%	**20.9%**	1.27 (0.93-1.74)
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, 2021-22 School Year

	Boys' Baseball	Girls' Softball *	RR (95% CI) **
Total	0.92	**1.51**	**1.65 (1.33-2.03)**
Competition	1.34	**1.96**	**1.46 (1.08-1.97)**
Practice	0.67	**1.26**	**1.88 (1.40-2.54)**

* 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. COVID-19 may have affected these results.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.16 Comparison of Body Sites of Baseball and Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Body Site	Boys' Baseball	Girls' Softball	IPR (95% CI)
Head/Face	13.2%	**23.6%**	**1.79 (1.12-2.87)**
Neck	0.0%	**1.1%**	--
Shoulder	**13.8%**	11.2%	1.23 (0.70-2.15)
Trunk	**8.4%**	2.2%	**3.73 (1.25-11.17)**
Arm/Elbow	**17.4%**	5.6%	**3.09 (1.55-6.17)**
Hand/Wrist	**12.6%**	12.4%	1.02 (0.58-1.79)
Hip/Thigh/Upper Leg	**12.6%**	6.7%	1.87 (0.94-3.68)
Knee	6.0%	**13.5%**	**2.25 (1.11-4.58)**
Lower Leg	**4.2%**	3.9%	1.07 (0.38-2.99)
Ankle	9.6%	**11.2%**	1.17 (0.63-2.19)
Foot	1.8%	**6.7%**	**3.75 (1.07-13.15)**
Other	**0.6%**	0.6%	1.07 (0.07-17.14)
Systemic	0.0%	**1.1%**	--
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, 2021-22 School Year *

Diagnosis	Boys' Baseball	Girls' Softball	IPR (95% CI)
Strain/Sprain	**45.5%**	37.1%	1.23 (0.95-1.58)
Contusion	12.6%	**16.3%**	1.30 (0.77-2.19)
Fracture	**11.4%**	5.6%	2.03 (0.97-4.24)
Concussion	8.4%	**16.9%**	**2.01 (1.10-3.67)**
Other	22.2%	**24.2%**	1.09 (0.74-1.61)
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, 2021-22 School Year *

Diagnosis	Boys' Baseball	Girls' Softball	IPR (95% CI)
Ankle Strain/Sprain	6.6%	**9.6%**	1.45 (0.70-3.01)
Arm/Elbow Strain/Sprain	**10.8%**	2.2%	**4.80 (1.65-13.95)**
Hand/Wrist Fracture	**9.0%**	2.8%	**3.20 (1.18-8.65)**
Head/Face Concussion	8.4%	**16.9%**	**2.01 (1.10-3.67)**
Hip/Thigh/Upper Leg Strain/Sprain	**10.8%**	6.2%	1.74 (0.85-3.60)
Knee Other	1.2%	**6.2%**	**5.16 (1.15-23.11)**
Knee Strain/Sprain	3.0%	**5.6%**	1.88 (0.65-5.40)
Shoulder Other	**8.4%**	6.7%	1.24 (0.59-2.62)
Trunk Strain/Sprain	**6.6%**	1.7%	**3.91 (1.10-13.85)**

* 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, 2021-22 School Year *

Time Loss	Boys' Baseball	Girls' Softball	IPR (95% CI)
1-2 Days	13.2%	**21.3%**	1.62 (1.00-2.63)
3-6 Days	24.6%	**25.8%**	1.05 (0.73-1.52)
7-9 Days	**15.0%**	13.5%	1.11 (0.66-1.87)
10-21 Days	**16.8%**	14.0%	1.19 (0.72-1.97)
>21 Days	**9.0%**	7.3%	1.23 (0.60-2.52)
Other	**21.6%**	18.0%	1.20 (0.78-1.84)
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, 2021-22 School Year *

Baseball Mechanism	Boys' Baseball	Girls' Softball	IPR (95% CI)
Contact with Another Player	**10.3%**	9.2%	1.12 (0.58-2.15)
Contact with Bases	10.3%	**10.3%**	1.00 (0.53-1.89)
Contact with Thrown Ball (Non-Pitch)	3.6%	**9.8%**	**2.69 (1.08-6.68)**
Hit by Batted Ball	3.6%	**15.5%**	**4.27 (1.80-10.11)**
Hit by Pitch	**7.9%**	2.9%	2.74 (0.99-7.56)
N/A **	**15.2%**	11.5%	1.32 (0.76-2.29)
Other	18.2%	**19.0%**	1.04 (0.67-1.63)
Rotation Around a Planted Foot/Inversion	6.1%	**10.3%**	1.71 (0.81-3.60)
Throwing (Not Pitching)	**11.5%**	5.2%	**2.23 (1.03-4.80)**
Throwing (Pitching)	**9.7%**	5.2%	1.87 (0.85-4.14)
Unknown	**3.6%**	1.1%	3.16 (0.64-15.58)
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, 2021-22 School Year *

Baseball Activity	Boys' Baseball	Girls' Softball	IPR (95% CI)
Batting	**15.8%**	6.9%	**2.27 (1.18-4.37)**
Catching	6.7%	**6.9%**	1.04 (0.47-2.30)
Conditioning	2.4%	**4.0%**	1.67 (0.49-5.63)
Fielding a Batted Ball	10.3%	**21.4%**	**2.08 (1.21-3.55)**
Fielding a Thrown Ball	**4.8%**	4.0%	1.20 (0.44-3.25)
General Play	3.6%	**8.7%**	2.38 (0.94-6.03)
Other	1.2%	**4.6%**	3.82 (0.82-17.84)
Pitching	**14.5%**	9.2%	1.57 (0.86-2.86)
Running Bases	**18.2%**	17.3%	1.05 (0.66-1.66)
Sliding	4.2%	**5.2%**	1.23 (0.47-3.23)
Throwing	**13.9%**	9.8%	1.42 (0.78-2.57)
Unknown	**4.2%**	1.7%	2.45 (0.64-9.37)
Total	***100.0%***	***100.0%***	**--**

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

23.4 Boys' and Girls' Swimming

Table 23.22 Comparison of Boys' and Girls' Swimming Injury Rates, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year

	Boys' Swimming	Girls' Swimming *	RR (95% CI) **
Total	0.32	**0.40**	1.25 (0.64-2.42)
Competition	**0.66**	0.29	2.27 (0.57-9.08)
Practice	0.24	**0.42**	1.79 (0.80-3.98)

* Throughout this chapter, rate ratios (RR) and injury proportion ratios (IPR) compare the gender with a higher injury rate/proportion (bolded) to the gender with a lower injury rate/proportion. COVID-19 may have affected these results.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.23 Comparison of Body Sites of Boys' and Girls' Swimming Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Body Site	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Head/Face	**20.0%**	9.5%	2.10 (0.37-12.04)
Shoulder	33.3%	**38.1%**	1.14 (0.44-2.94)
Trunk	0.0%	**14.3%**	--
Hand/Wrist	**6.7%**	0.0%	--
Hip/Thigh/Upper Leg	0.0%	**4.8%**	--
Knee	**13.3%**	9.5%	1.40 (0.20-9.72)
Ankle	0.0%	**9.5%**	--
Foot	**6.7%**	4.8%	1.40 (0.08-23.66)
Systemic	**20.0%**	9.5%	2.10 (0.37-12.04)
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, 2021-22 School Year *

Diagnosis	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Strain/Sprain	6.7%	**28.6%**	4.29 (0.52-35.43)
Contusion	**20.0%**	4.8%	4.20 (0.43-40.79)
Fracture	0.0%	**4.8%**	--
Concussion	**13.3%**	4.8%	2.80 (0.25-31.60)
Other	**60.0%**	57.1%	1.05 (0.59-1.88)
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, 2021-22 School Year *

Diagnosis	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Foot Contusion	**6.7%**	0.0%	--
Hand/Wrist Contusion	**6.7%**	0.0%	--
Head/Face Concussion	**13.3%**	4.8%	2.80 (0.25-31.60)
Head/Face Contusion	**6.7%**	0.0%	--
Knee Other	**13.3%**	9.5%	1.40 (0.20-9.72)
Shoulder Other	26.7%	**28.6%**	1.07 (0.35-3.32)
Shoulder Strain/Sprain	6.7%	**9.5%**	1.43 (0.13-16.12)
Systemic Other	**20.0%**	9.5%	2.10 (0.37-12.04)
Trunk Strain/Sprain	0.0%	**9.5%**	--

* 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, 2021-22 School Year *

Time Loss	Boys' Swimming	Girls' Swimming	IPR (95% CI)
1-2 Days	6.7%	**14.3%**	2.14 (0.22-20.81)
3-6 Days	33.3%	**47.6%**	1.43 (0.59-3.47)
7-9 Days	**20.0%**	14.3%	1.40 (0.30-6.47)
10-21 Days	**26.7%**	14.3%	1.87 (0.46-7.65)
>21 Days	0.0%	**9.5%**	--
Other	**13.3%**	0.0%	--
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, 2021-22 School Year *

Swimming Mechanism	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Contact with Another Person	**25.0%**	5.9%	4.25 (0.44-41.35)
Contact with Wall	**8.3%**	5.9%	1.42 (0.08-24.28)
N/A **	50.0%	**52.9%**	1.06 (0.49-2.28)
Other	16.7%	**29.4%**	1.76 (0.37-8.37)
Unknown	0.0%	**5.9%**	--
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, 2021-22 School Year *

Swimming Activity	Boys' Swimming	Girls' Swimming	IPR (95% CI)
Conditioning	**16.7%**	5.9%	2.83 (0.25-32.16)
Diving Off Board, Platform or Block	0.0%	**23.5%**	--
Flip Off Wall	0.0%	**5.9%**	--
Other	**25.0%**	5.9%	4.25 (0.44-41.35)
Swimming	**58.3%**	35.3%	1.65 (0.70-3.88)
Unknown	0.0%	**23.5%**	--
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, 2021-22 School Year

	Boys' Track	Girls' Track *	RR (95% CI) **
Total	0.76	**1.15**	**1.52 (1.20-1.94)**
Competition	1.51	**1.62**	1.08 (0.70-1.67)
Practice	0.59	**1.05**	**1.76 (1.32-2.36)**

* 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. COVID-19 may have affected these results.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.30 Comparison of Body Sites of Boys' and Girls' Track Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Body Site	Boys' Track	Girls' Track	IPR (95% CI)
Head/Face	**4.1%**	2.1%	2.01 (0.49-8.32)
Neck	0.0%	**0.7%**	--
Shoulder	1.7%	**2.7%**	1.66 (0.31-8.99)
Trunk	**5.0%**	2.7%	1.81 (0.52-6.32)
Arm/Elbow	0.0%	**0.7%**	--
Hand/Wrist	0.8%	**1.4%**	1.66 (0.15-18.34)
Hip/Thigh/Upper Leg	**43.0%**	30.1%	**1.43 (1.03-1.97)**
Knee	9.9%	**13.7%**	1.38 (0.70-2.72)
Lower Leg	19.8%	**24.7%**	1.24 (0.78-1.97)
Ankle	11.6%	**11.6%**	1.01 (0.52-1.97)
Foot	2.5%	**8.2%**	3.32 (0.95-11.57)
Other	**0.8%**	0.0%	--
Systemic	0.8%	**1.4%**	1.66 (0.15-18.34)
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, 2021-22 School Year *

Diagnosis	Boys' Track	Girls' Track	IPR (95% CI)
Strain/Sprain	**62.8%**	46.6%	**1.35 (1.08-1.69)**
Contusion	**1.7%**	0.7%	2.41 (0.22-26.70)
Fracture	0.8%	**1.4%**	1.66 (0.15-18.34)
Concussion	**2.5%**	2.1%	1.21 (0.25-5.93)
Other	32.2%	**49.3%**	**1.53 (1.12-2.08)**
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, 2021-22 School Year *

Diagnosis	Boys' Track	Girls' Track	IPR (95% CI)
Ankle Strain/Sprain	9.1%	**11.0%**	1.21 (0.58-2.51)
Foot Other	1.7%	**5.5%**	3.32 (0.71-15.47)
Hip/Thigh/Upper Leg Other	5.0%	**7.5%**	1.52 (0.58-4.01)
Hip/Thigh/Upper Leg Strain/Sprain	**38.0%**	22.6%	**1.68 (1.15-2.46)**
Knee Other	5.8%	**8.2%**	1.42 (0.57-3.52)
Knee Strain/Sprain	3.3%	**5.5%**	1.66 (0.51-5.41)
Lower Leg Other	14.0%	**21.9%**	1.56 (0.91-2.68)
Lower Leg Strain/Sprain	**5.8%**	2.7%	2.11 (0.63-7.10)

* 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, 2021-22 School Year *

Time Loss	Boys' Track	Girls' Track	IPR (95% CI)
1-2 Days	12.4%	**15.8%**	1.27 (0.69-2.33)
3-6 Days	**33.9%**	28.1%	1.21 (0.84-1.73)
7-9 Days	18.2%	**20.5%**	1.13 (0.69-1.86)
10-21 Days	**23.1%**	14.4%	1.61 (0.96-2.69)
>21 Days	**4.1%**	4.1%	1.01 (0.31-3.24)
Other	8.3%	**17.1%**	**2.07 (1.03-4.16)**
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, 2021-22 School Year *

Track Mechanism	Boys' Track	Girls' Track	IPR (95% CI)
Contact with Another Person	0.0%	**0.7%**	--
Contact with Field Equipment	**9.0%**	1.5%	**6.17 (1.37-27.87)**
Contact with Ground	12.6%	**13.9%**	1.10 (0.58-2.10)
Fall/Trip	**4.5%**	4.4%	1.03 (0.32-3.31)
N/A **	50.5%	**59.9%**	1.19 (0.94-1.50)
Other	**15.3%**	8.8%	1.75 (0.87-3.52)
Rotation Around Planted Foot/Inversion	3.6%	**5.8%**	1.62 (0.50-5.28)
Stepped On/Kicked	0.0%	**0.7%**	--
Unknown	**4.5%**	4.4%	1.03 (0.32-3.31)
Total	***100.0%***	***100.0%***	**--**

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

Table 23.35 Comparison of Activities of Boys' and Girls' Track Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Track Activity	Boys' Track	Girls' Track	IPR (95% CI)
Baton Hand Off	**0.9%**	0.0%	--
Conditioning	0.0%	**2.2%**	--
Jumping/Landing	**17.5%**	12.3%	1.42 (0.78-2.60)
Leaving Block	**1.8%**	0.0%	--
Other	2.6%	**5.1%**	1.93 (0.51-7.35)
Running	61.4%	**64.5%**	1.05 (0.87-1.27)
Running Hurdles	**6.1%**	5.8%	1.06 (0.39-2.85)
Throwing	4.4%	**6.5%**	1.49 (0.51-4.34)
Unknown	**2.6%**	0.0%	--
Warming Up	2.6%	**3.6%**	1.38 (0.33-5.69)
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, 2021-22 School Year

	Boys' Cross Country	Girls' Cross Country *	RR (95% CI) **
Total	0.72	**0.93**	1.29 (0.84-1.99)
Competition	0.71	**0.79**	1.11 (0.34-3.64)
Practice	0.72	**0.95**	1.32 (0.83-2.10)

* 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. COVID-19 may have affected these results.
** Throughout this chapter, statistically significant RR and IPR are bolded.

Table 23.37 Comparison of Body Sites of Boys' and Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Body Site	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Hip/Thigh/Upper Leg	9.5%	**29.3%**	**3.07 (1.06-8.95)**
Knee	**19.0%**	7.3%	2.60 (0.72-9.38)
Lower Leg	**45.2%**	36.6%	1.24 (0.73-2.11)
Ankle	11.9%	**12.2%**	1.02 (0.31-3.36)
Foot	9.5%	**9.8%**	1.02 (0.27-3.93)
Systemic	4.8%	**4.9%**	1.02 (0.15-7.22)
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, 2021-22 School Year *

Diagnosis	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Strain/Sprain	33.3%	**34.1%**	1.02 (0.55-1.90)
Contusion	**4.8%**	2.4%	1.95 (0.18-21.77)
Fracture	0.0%	**4.9%**	--
Other	**61.9%**	58.5%	1.06 (0.74-1.51)
Total	***100.0%***	***100.0%***	**--**

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

Table 23.39 Most Common Boys' and Girls' Cross Country Injury Diagnoses, High School Sports-Related Injury Surveillance Study, US, 2021-22 School Year *

Diagnosis	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Ankle Strain/Sprain	9.5%	**9.8%**	1.02 (0.27-3.93)
Hip/Thigh/Upper Leg Other	2.4%	**12.2%**	5.12 (0.60-43.88)
Hip/Thigh/Upper Leg Strain/Sprain	7.1%	**17.1%**	2.39 (0.65-8.85)
Knee Other	**14.3%**	7.3%	1.95 (0.51-7.50)
Lower Leg Other	**33.3%**	29.3%	1.14 (0.59-2.19)
Lower Leg Strain/Sprain	**11.9%**	4.9%	2.44 (0.48-12.28)

* 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, 2021-22 School Year *

Time Loss	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
1-2 Days	19.0%	**29.3%**	1.54 (0.69-3.42)
3-6 Days	16.7%	**17.1%**	1.02 (0.39-2.72)
7-9 Days	**21.4%**	19.5%	1.10 (0.46-2.62)
10-21 Days	**19.0%**	14.6%	1.30 (0.48-3.49)
>21 Days	**11.9%**	7.3%	1.63 (0.40-6.56)
Other	11.9%	**12.2%**	1.02 (0.31-3.36)
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, 2021-22 School Year *

Cross Country Mechanism	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Contact with Ground	**7.7%**	2.6%	2.92 (0.30-28.27)
Contact with Obstacle	2.6%	**2.6%**	1.03 (0.06-16.84)
Fall/Trip	2.6%	**2.6%**	1.03 (0.06-16.84)
N/A **	**7.7%**	5.3%	1.46 (0.25-8.60)
Other	**2.6%**	0.0%	--
Overuse	59.0%	**73.7%**	1.25 (0.90-1.74)
Rotation Around Planted Foot/Inversion	5.1%	**7.9%**	1.54 (0.26-9.06)
Uneven Surface	2.6%	**2.6%**	1.03 (0.06-16.84)
Unknown	**10.3%**	2.6%	3.90 (0.43-34.97)
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, 2021-22 School Year *

Cross Country Activity	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Conditioning	2.6%	**13.5%**	5.27 (0.62-45.15)
Running	69.2%	**73.0%**	1.05 (0.79-1.41)
Unknown	**28.2%**	10.8%	2.61 (0.89-7.66)
Warming Up	0.0%	**2.7%**	--
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 2021-22 school year, 137 ATs enrolled to participate in the study. ATs were expected to report for every week in which they were enrolled. For example, an AT who joined the study as a replacement school in week 10 was not expected to report for weeks 1-9. Overall, 120 enrolled ATs reported an average of 41 study weeks. The majority of ATs (91%) reported for more than 20 weeks of the study. Internal validity checks of a 5% randomly selected sample of the 175 schools participating in the convenience sample during the 2018-19 academic year yielded 76.7% sensitivity, 96.4% specificity, a positive predictive value of 74.2%, and a negative predictive value of 96.9%. Internal validity checks are typically completed every other year but were not conducted in 2020-21 due to the pandemic. The next internal validity check will occur using data from the 2022-23 academic year.

Prior to the start of the study, participating ATs were asked to complete a short demographics survey. Over three-quarters (82%) of participating high schools were public schools, with the remainder being private. All ATs except for three provided services to their athletes 5 or more days each week. 78% of ATs participating during the 2021-22 school year had previously participated in the National High School Sports-Related Injury Surveillance Study.

An online “End of Season” survey gave all participating ATs (both in the original study as well as in the expanded study including those ATs who did not report any data) the opportunity to provide feedback on their experiences with the study. This survey was completed by 76 ATs (55%). Average reporting time burdens were 17 minutes for the weekly exposure report and 8 minutes for the injury report form. Using a 5-point Likert scale, RIO was overwhelmingly reported to be either very easy (52%) or somewhat easy (44%) to use (5 and 4 on the Likert scale, respectively), with ATs being either very satisfied (65%) or somewhat satisfied (28%) with the system (5 and 4 on the Likert scale, respectively). Suggestions provided by ATs, such as the addition or clarification of questions or answer choices, will be used to improve the National High School Sports-Related Injury Surveillance Study for the 2022-23 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 or improved protective equipment, rule changes, other policy changes, etc. The morbidity, mortality, and disability caused by high school sports-related injuries can be reduced through the development and implementation of improved injury diagnosis and treatment modalities as well as through effective prevention strategies. However, surveillance of exposure-based injury rates in a nationally representative sample of high school athletes and subsequent epidemiologic analysis of patterns of injury are needed to drive evidence-based prevention practices.

Prior to the implementation of the National High School Sports-Related Injury Surveillance Study, the study of high school sports-related injuries had largely been limited by an inability to calculate injury rates due to a lack of exposure data (i.e., frequency of participation in athletic activities including practice and competition), an inability to compare findings across groups (i.e., sports/activities, genders, schools, and levels of competition), or an inability to generalize findings from small non-representative samples. The value of national injury surveillance studies that collect injury, exposure, and risk factor data from representative samples has been well demonstrated by the National Collegiate Athletic Association's Injury Surveillance System (NCAA ISS), now known as the Injury Surveillance Program (ISP). Data collected by the NCAA has been used to develop preventive interventions including increased use of protective equipment and rule changes that have had proven success in reducing injuries among collegiate athletes.

For example, NCAA ISP data 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 time limitations, and a gradual increase in equipment for conditioning and heat acclimation. Additionally, several committees have considered NCAA ISP data when making recommendations including the NCAA Committee on Competitive Safeguards and Medical Aspects of Sports' recommendation for mandatory eye protection in women's lacrosse, the NCAA Men's Ice Hockey Rules Committee's recommendation for stricter penalties for hitting from behind, checking into the boards, and not wearing a mouthpiece, and the NCAA Men's Basketball Rules Committee's discussions of widening the free-throw lane to prevent injuries related to player contact. Unfortunately, because an equivalent injury surveillance system to collect injury and exposure data from a nationally representative sample of high school athletes had not previously existed, injury prevention efforts targeted to reduce injury rates in this population were based largely upon data collected from collegiate athletes. This is unacceptable because distinct biophysiological differences (e.g., lower muscle mass, immature growth plates, etc.) means high school athletes are not merely miniature versions of their collegiate counterparts.

The successful implementation and maintenance of the National High School Sports-Related Injury Surveillance Study demonstrates the value of a national injury surveillance system at the high school level. Dr. Collins and her research staff are committed to maintaining a permanent national high school sports injury surveillance system.

While the health benefits of a physically active lifestyle including sports participation are undeniable, participants are at risk of injury because a certain endemic level of injury can be expected during any physical activity, especially those with a competitive component. However, injury rates among high school athletes should be reduced to the lowest possible level without discouraging adolescents from engaging in this important form of physical activity. This goal can be best accomplished by monitoring injury rates and patterns of injury among high school athletes over time; investigating the etiology of preventable injuries; and developing, implementing, and evaluating evidence-based preventive interventions. Surveillance systems such as the model used for this study are critical in achieving these goals.