Convenience Sample Summary Report

NATIONAL HIGH SCHOOL SPORTS-RELATED INJURY SURVEILLANCE STUDY

2023-24 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 National Federation of State High School Associations (NFHS), National Operating Committee on Standards for Athletic Equipment (NOCSAE), and DonJoy Orthotics.

Note

The analyses presented here provide only a brief summary of collected data, with the feasibility of a more detailed presentation limited by the extensive breadth and detail contained in the dataset. The Principal Investigator, Christy Collins, PhD, is happy to provide further information or to discuss research partnership opportunities upon request. Data contained within these reports should not be published without permission from the Principal Investigator.

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I. Introduction & Methodology

1.1 Project Overview

To combat the epidemic of obesity among youth in the United States (US), adolescents must be encouraged to get up off the couch and participate in physically active sports, recreation, and leisure activities. Participation in high school sports, one of the most popular physical activities among adolescents, has grown rapidly from an estimated 4.0 million participants in 1971-72 to over 8.0 million in the 2023-24 school year. While the health benefits of a physically active lifestyle including participating in sports are undeniable, high school athletes are at risk of sports-related injury because a certain endemic level of injury can be expected among participants of any physical activity. The challenge to injury epidemiologists is to reduce injury rates among high school athletes to the lowest possible level without discouraging adolescents from engaging in this important form of physical activity. This goal can best be accomplished by investigating the etiology of preventable injuries; by developing, implementing, and evaluating protective interventions using such science-based evidence; and by responsibly reporting epidemiologic findings while promoting a physically active lifestyle among adolescents.

1.2 Background and Significance

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

Since the 2005-06 school year, the National High School Sports-Related Injury Surveillance Study has monitored injuries among US high school athletes participating in boys' football, boys' and girls' soccer, girls' volleyball, boys' and girls' basketball, boys' wrestling, boys' baseball, and girls' softball. Other sports were added in subsequent years including girls' field hockey, girls' gymnastics, boys' volleyball, boys' ice hockey, boys' and girls' lacrosse, boys' and girls' swimming & diving, boys' and girls' track & field, boys' and girls' tennis, boys' and girls' cross country, and cheerleading (boys' volleyball, girls' gymnastics, and boys' and girls' tennis are no longer under surveillance). The study data have been collected using the time- and cost-efficient RIO (Reporting Information Online) surveillance system. Through the generous contributions of the National Federation of State High School Associations (NFHS) and the NFHS Foundation, the National High School Sports-Related Injury Surveillance Study was able to be continued during the 2023-24 school year. Previous years of this study were funded by the Centers for Disease Control and Prevention (CDC), National Federation of State High School Associations (NFHS), the National Operating Committee on Standards for Athletic Equipment (NOCSAE), the Research Institute at Nationwide Children's Hospital, DonJoy Orthotics, EyeBlack, and The Ohio State University.

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

1.3 Specific Aims

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

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

1.4 Project Design

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

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

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

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

1.5 SAMPLE RECRUITMENT

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

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

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

School Participation by Sport, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year

	# Schools in Random Sample	# Schools in Convenience Sample	# Schools Total
Original Sports			
Football	78	30	108
Boys' Soccer	76	28	104
Girls' Soccer	75	27	102
Girls' Volleyball	72	29	101
Boys' Basketball	77	30	107
Girls' Basketball	77	27	104
Boys' Wrestling	70	26	96
Boys' Baseball	75	24	99
Girls' Softball	74	21	95
Convenience Sports			
Girls' Field Hockey	20	16	36
Boys' Ice Hockey	10	12	21
Boys' Lacrosse	26	12	38
Girls' Lacrosse	23	11	34
Boys' Swimming and Diving	24	13	37
Girls' Swimming and Diving	24	11	35
Boys' Track and Field	42	21	63
Girls' Track and Field	44	21	65
Boys' Cross Country	41	23	64
Girls' Cross Country	38	22	60
Cheerleading	36	15	51
Total	**82**	**46**	**128**

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 24, 2023 through June 23, 2024. Exposure reports collected exposure information (number of athlete-competitions, athlete-practices, and athlete-performances for cheerleading) and the number of reportable injuries sustained by student athletes for each sport currently in session at their school. For each reportable injury, the AT was asked to complete an injury report. The injury report collected detailed information about the injured player (e.g., age, year in school, etc.), the injury (e.g., site, type, severity, etc.) and the injury event (e.g., position played, phase of play, etc.). The internet-based surveillance tool provided ATs with the ability to view all their submitted data throughout the study and update reports as needed (e.g., need for surgery, days till resuming play, etc.).

1.7 Data Management

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

1.8 Data Analysis

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

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

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

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

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

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

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II. Overall Injury Epidemiology

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Table 2.1 Injury Rates by Sport and Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Event Type	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Overall	***Total***	***5,398***	***2,664,227***	***2.03***
	Competition	2,935	688,035	4.27
	Performance	11	20,440	0.54
	Practice	2,452	1,955,752	1.25
Boys' Football	***Total***	***1,728***	***475,526***	***3.63***
	Competition	1,016	82,584	12.30
	Practice	712	392,942	1.81
Boys' Soccer	***Total***	***419***	***219,722***	***1.91***
	Competition	255	66,996	3.81
	Practice	164	152,726	1.07
Girls' Soccer	***Total***	***480***	***179,428***	***2.68***
	Competition	312	55,419	5.63
	Practice	168	124,009	1.35
Girls' Volleyball	***Total***	***208***	***174,590***	***1.19***
	Competition	77	63,339	1.22
	Practice	131	111,251	1.18
Boys' Basketball	***Total***	***405***	***232,407***	***1.74***
	Competition	206	71,711	2.87
	Practice	199	160,696	1.24
Girls' Basketball	***Total***	***351***	***147,895***	***2.37***
	Competition	239	46,422	5.15
	Practice	112	101,473	1.10
Boys' Wrestling	***Total***	***483***	***191,630***	***2.52***
	Competition	205	49,520	4.14
	Practice	278	142,110	1.96

Boys' Baseball	***Total***	***205***	***186,636***	***1.10***
	Competition	120	65,188	1.84
	Practice	85	121,448	0.70
Girls' Softball	***Total***	***169***	***119,881***	***1.41***
	Competition	95	41,605	2.28
	Practice	74	78,276	0.95
Girls' Field Hockey	***Total***	***93***	***51,909***	***1.79***
	Competition	51	17,621	2.89
	Practice	42	34,288	1.22
Boys' Ice Hockey	***Total***	***47***	***33,584***	***1.40***
	Competition	41	11,680	3.51
	Practice	6	21,904	0.27
Boys' Lacrosse	***Total***	***157***	***74,751***	***2.10***
	Competition	110	20,997	5.24
	Practice	47	53,754	0.87
Girls' Lacrosse	***Total***	***93***	***55,401***	***1.68***
	Competition	48	16,032	2.99
	Practice	45	39,369	1.14
Boys' Swimming and Diving	***Total***	***5***	***37,768***	***0.13***
	Competition	3	7,328	0.41
	Practice	2	30,440	0.07
Girls' Swimming and Diving	***Total***	***11***	***36,179***	***0.30***
	Competition	3	6,857	0.44
	Practice	8	29,322	0.27
Boys' Track and Field	***Total***	***176***	***135,368***	***1.30***
	Competition	80	23,542	3.40
	Practice	96	111,826	0.86

Girls' Track and Field	***Total***	***151***	***118,513***	***1.27***
	Competition	38	20,261	1.88
	Practice	113	98,252	1.15
Boys' Cross Country	***Total***	***55***	***61,725***	***0.89***
	Competition	12	9,190	1.31
	Practice	43	52,535	0.82
Girls' Cross Country	***Total***	***75***	***48,836***	***1.54***
	Competition	16	7,365	2.17
	Practice	59	41,471	1.42
Cheerleading	***Total***	***87***	***82,478***	***1.05***
	Competition	8	4,378	1.83
	Performance	11	20,440	0.54
	Practice	68	57,660	1.18

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

Table 2.2 Proportion of Injuries Resulting in Time Loss, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	< 1 Day Time Loss	≥ 1 Day Time Loss	Time Loss Data Missing	Total
	%	%	%	%
Overall	***4.7%***	***91.4%***	***3.9%***	***100.0%***
Boys' Football	3.6%	92.5%	3.9%	100.0%
Boys' Soccer	2.3%	96.3%	1.4%	100.0%
Girls' Soccer	3.3%	92.8%	3.9%	100.0%
Girls' Volleyball	8.4%	87.8%	3.8%	100.0%
Boys' Basketball	4.3%	91.4%	4.3%	100.0%
Girls' Basketball	3.9%	90.5%	5.7%	100.0%
Boys' Wrestling	2.0%	94.9%	3.1%	100.0%
Boys' Baseball	4.5%	92.8%	2.7%	100.0%
Girls' Softball	15.4%	81.3%	3.4%	100.0%
Girls' Field Hockey	5.1%	93.9%	1.0%	100.0%
Boys' Ice Hockey	0.0%	75.8%	24.2%	100.0%
Boys' Lacrosse	1.7%	89.7%	8.6%	100.0%
Girls' Lacrosse	5.7%	87.7%	6.6%	100.0%
Boys' Swimming and Diving	0.0%	100.0%	0.0%	100.0%
Girls' Swimming and Diving	0.0%	100.0%	0.0%	100.0%
Boys' Track and Field	17.1%	79.3%	3.6%	100.0%
Girls' Track and Field	10.9%	86.8%	2.3%	100.0%
Boys' Cross Country	1.8%	98.2%	0.0%	100.0%
Girls' Cross Country	2.6%	97.4%	0.0%	100.0%
Cheerleading	2.2%	95.6%	2.2%	100.0%

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

Table 2.3 Demographic Characteristics of Injured Athletes by Sex, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

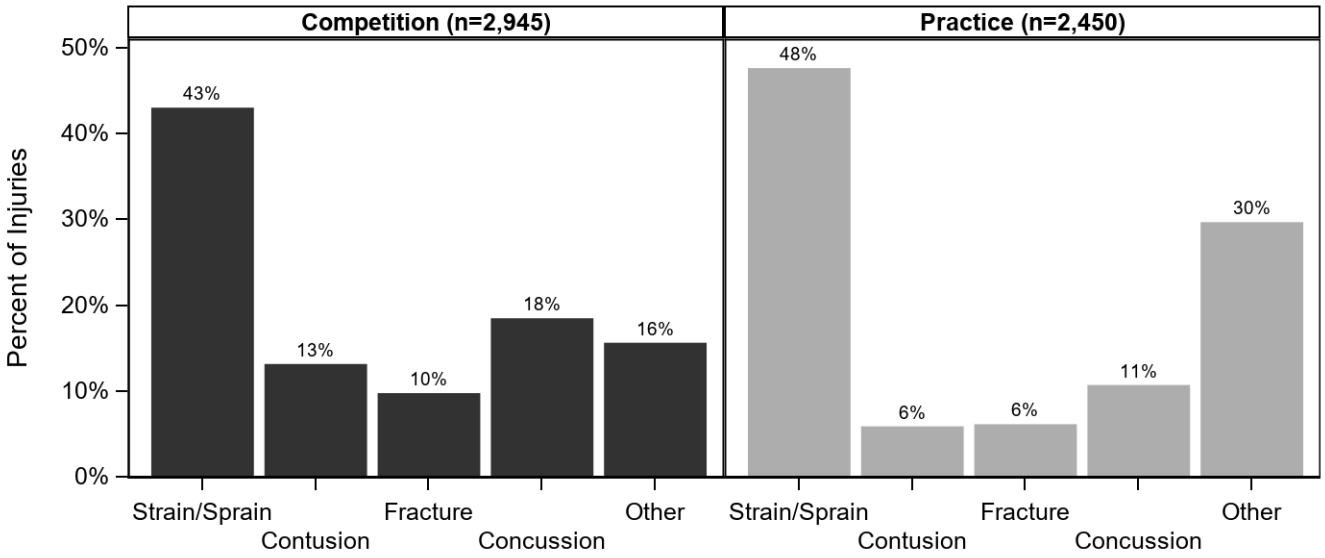
	Male		Female	
Year in School	**n**	**%**	**n**	**%**
Freshman	707	20.8%	451	28.4%
Sophomore	913	26.9%	408	25.7%
Junior	901	26.5%	388	24.4%
Senior	879	25.9%	340	21.4%
Total **	***3,400***	***100.0%***	***1,587***	***100.0%***

Age (years)		
Minimum	13	12
Maximum	19	18
Mean (SD)	15.9 (1.2)	15.7 (1.2)
n	2,966	1,400

BMI		
Minimum	16.0	15.2
Maximum	53.0	42.5
Mean (SD)	24.5 (4.7)	22.2 (3.4)
n	1,969	895

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

Figure 2.1 Injury Diagnosis by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year



* Competition includes cheerleading performance related injuries.

Table 2.4 Body Site of Injury by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	637	21.6%	331	13.5%	968	17.9%
Ankle	532	18.1%	421	17.2%	953	17.7%
Knee	457	15.5%	313	12.8%	770	14.3%
Hip/Thigh/Upper Leg	295	10.0%	374	15.3%	669	12.4%
Hand/Wrist	256	8.7%	197	8.0%	453	8.4%
Shoulder	194	6.6%	153	6.2%	347	6.4%
Lower Leg	131	4.4%	198	8.1%	329	6.1%
Trunk	121	4.1%	142	5.8%	263	4.9%
Foot	95	3.2%	134	5.5%	229	4.2%
Arm/Elbow	108	3.7%	78	3.2%	186	3.4%
Other	71	2.4%	29	1.2%	100	1.9%
Systemic	20	0.7%	53	2.2%	73	1.4%
Neck	29	1.0%	29	1.2%	58	1.1%
Total	***2,946***	***100.0%***	***2,452***	***100.0%***	***5,398***	***100.0%***

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

Table 2.5 Most Commonly Injured Ankle Structures, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Male (n=540)		Female (n=357)		Overall (n=897)	
Ankle Ligament Injuries	**n**	**%**	**n**	**%**	**n**	**%**
Anterior Talofibular Ligament	384	71.1%	261	73.1%	645	71.9%
Calcaneofibular Ligament	159	29.4%	102	28.6%	261	29.1%
Anterior Tibiofibular Ligament	102	18.9%	58	16.2%	160	17.8%
Posterior Talofibular Ligament	42	7.8%	41	11.5%	83	9.3%
Deltoid Ligament	37	6.9%	21	5.9%	58	6.5%
Posterior Tibiofibular Ligament	13	2.4%	6	1.7%	19	2.1%

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

Table 2.6 Most Commonly Injured Knee Structures, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Male (n=501)		Female (n=241)		Overall (n=742)	
Knee Ligament Injuries	**n**	**%**	**n**	**%**	**n**	**%**
Patella and/or Patellar Tendon	149	29.7%	81	33.6%	230	31.0%
Medial Collateral Ligament	123	24.6%	30	12.4%	153	20.6%
Anterior Cruciate Ligament	90	18.0%	54	22.4%	144	19.4%
Torn Cartilage (Meniscus)	64	12.8%	44	18.3%	108	14.6%
Lateral Collateral Ligament	18	3.6%	10	4.1%	28	3.8%
Posterior Cruciate Ligament	7	1.4%	5	2.1%	12	1.6%

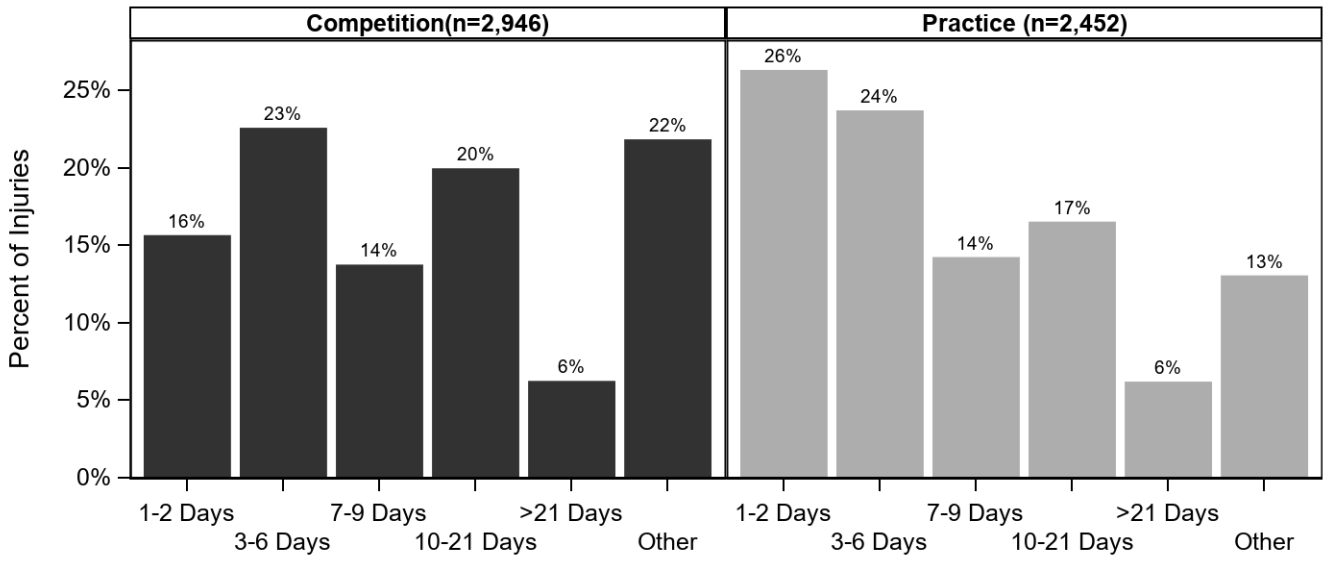
* Multiple ligament responses allowed per injury report. Totals and n's are not always equal due to slight rounding or missing responses.

Table 2.7 Ten Most Common Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition (n=2,945)		Practice (n=2,450)		Overall (n=5,395)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	473	16.1%	383	15.6%	856	15.9%
Head/Face Concussion	544	18.5%	261	10.7%	805	14.9%
Hip/Thigh/Upper Leg Strain/Sprain	199	6.8%	300	12.2%	499	9.2%
Knee Strain/Sprain	243	8.3%	102	4.2%	345	6.4%
Knee Other	131	4.4%	185	7.6%	316	5.9%
Hand/Wrist Fracture	105	3.6%	67	2.7%	172	3.2%
Shoulder Other	96	3.3%	73	3.0%	169	3.1%
Shoulder Strain/Sprain	84	2.9%	74	3.0%	158	2.9%
Hand/Wrist Strain/Sprain	82	2.8%	75	3.1%	157	2.9%
Lower Leg Other	26	0.9%	120	4.9%	146	2.7%

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

Figure 2.2 Time Loss by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year



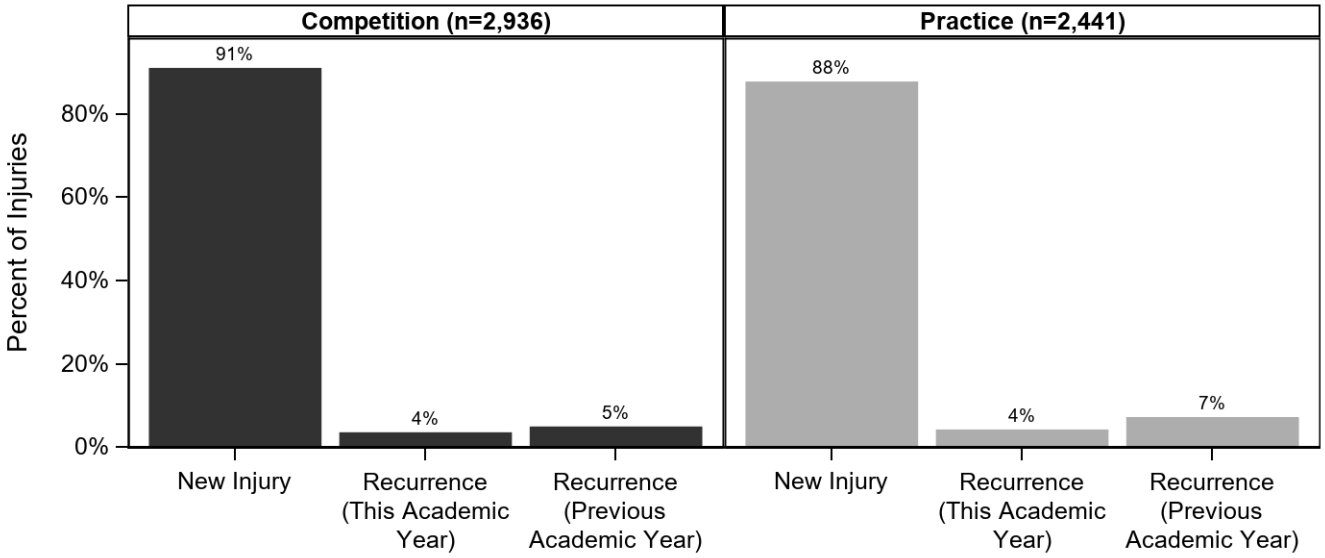
* Other category is made up of medical disqualification for season, medical disqualification for career, athlete chooses not to continue, and season ended before athlete returned to play. Competition includes cheerleading performance related injuries

Table 2.8 Injuries Requiring Surgery by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	232	8.0%	95	3.9%	327	6.1%
Did Not Require Surgery	2,676	92.0%	2,321	96.1%	4,997	93.9%
Total	***2,908***	***100.0%***	***2,416***	***100.0%***	***5,324***	***100.0%***

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

Figure 2.3 New and Recurring Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year



* Competition includes cheerleading performance related injuries.

Table 2.9 Time during Season of Injury, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	984	18.3%
Regular Season	4,057	75.3%
Post Season	312	5.8%
Unknown/Other	34	0.6%
Total	***5,387***	***100.0%***

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

Table 2.10 Practice-Related Variables, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	180	7.5%
Second 1/2 Hour	327	13.7%
1-2 Hours into Practice	1,059	44.4%
>2 Hours into Practice	102	4.3%
Unknown	717	30.1%
Total	***2,385***	***100.0%***

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

Table 2.11 Methods for Injury Evaluation and Assessment, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Injuries Evaluated By:	n=5,398	%
Certified Athletic Trainer	5,070	93.9%
Orthopedic Physician	974	18.0%
Physician/Pediatrician	725	13.4%
Other	95	1.8%
Physician's Assistant	90	1.7%
Nurse Practitioner	67	1.2%
Neurologist/Neuropsychologist	30	0.6%
Chiropractor	29	0.5%
School Nurse	19	0.4%

Assessment Method:	n=5,398	%
Evaluation	5,280	97.8%
X-Ray	1,780	33.0%
MRI	535	9.9%
CT-Scan	94	1.7%
Blood Work/Lab Test	47	0.9%
Other	36	0.7%

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

III. Boys' Football Injury Epidemiology

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Table 3.1 Football Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***1,728***	***475,526***	***3.63***
Competition	1,016	82,584	12.30
Practice	712	392,942	1.81

* All analyses in this report present un-weighted data

Table 3.2 Demographic Characteristics of Injured Football Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	331	20.0%
Sophomore	467	28.2%
Junior	420	25.4%
Senior	438	26.4%
Total	***1,656***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.8 (1.2)
n	1,422

BMI	
Minimum	17.2
Maximum	53.0
Mean (SD)	26.0 (5.2)
n	914

* 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, 2023-24 School Year

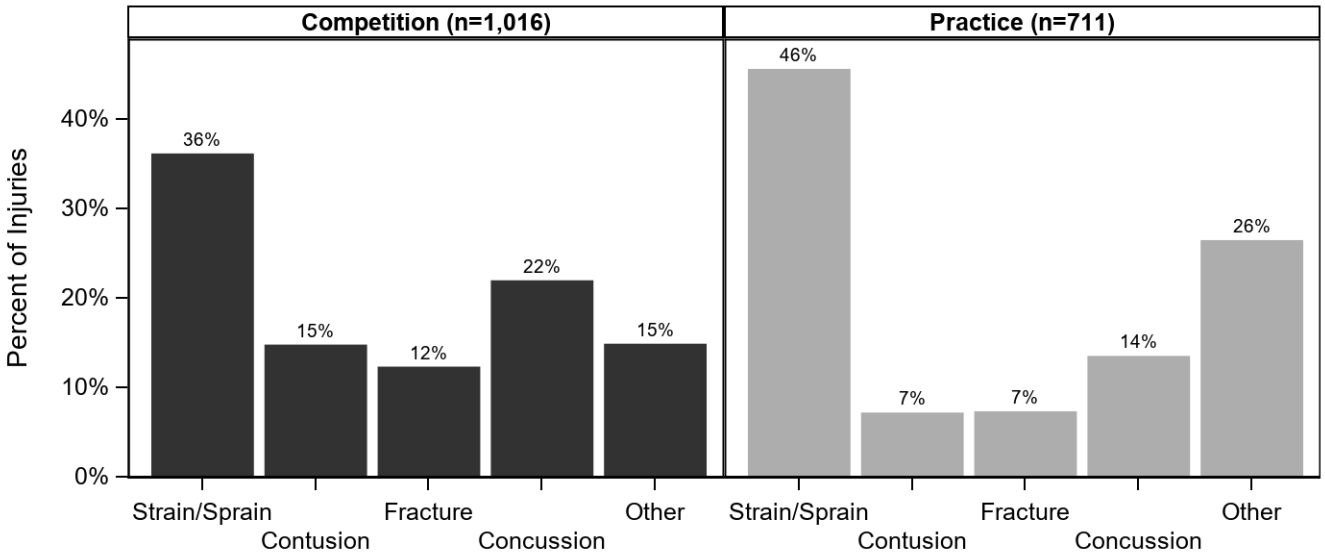


Table 3.3 Body Site of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

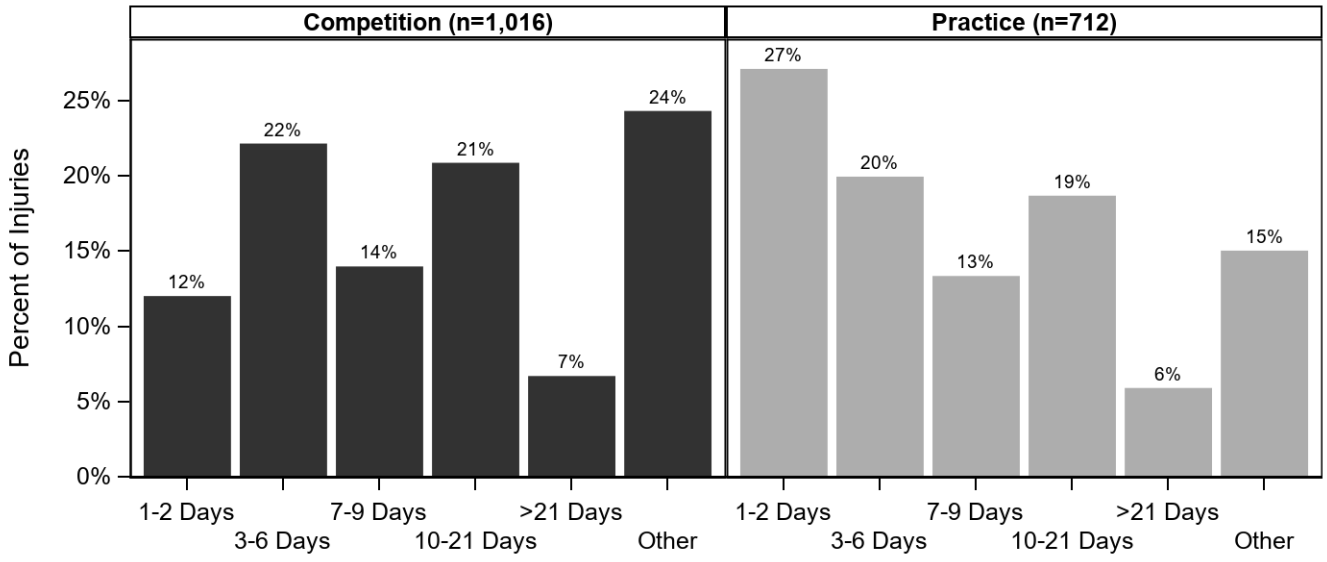
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	230	22.6%	98	13.8%	328	19.0%
Knee	170	16.7%	101	14.2%	271	15.7%
Ankle	128	12.6%	95	13.3%	223	12.9%
Hip/Thigh/Upper Leg	74	7.3%	104	14.6%	178	10.3%
Hand/Wrist	87	8.6%	83	11.7%	170	9.8%
Shoulder	95	9.4%	56	7.9%	151	8.7%
Trunk	50	4.9%	42	5.9%	92	5.3%
Lower Leg	48	4.7%	30	4.2%	78	4.5%
Foot	32	3.1%	40	5.6%	72	4.2%
Arm/Elbow	39	3.8%	24	3.4%	63	3.6%
Other	41	4.0%	15	2.1%	56	3.2%
Neck	16	1.6%	10	1.4%	26	1.5%
Systemic	6	0.6%	14	2.0%	20	1.2%
Total	***1,016***	***100.0%***	***712***	***100.0%***	***1,728***	***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, 2023-24 School Year

	Competition (n=1,016)		Practice (n=711)		Overall (n=1,727)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	223	21.9%	95	13.4%	318	18.4%
Ankle Strain/Sprain	108	10.6%	83	11.7%	191	11.1%
Knee Strain/Sprain	103	10.1%	40	5.6%	143	8.3%
Hip/Thigh/Upper Leg Strain/Sprain	38	3.7%	85	12.0%	123	7.1%
Knee Other	32	3.1%	52	7.3%	84	4.9%
Shoulder Other	53	5.2%	25	3.5%	78	4.5%
Hand/Wrist Fracture	40	3.9%	29	4.1%	69	4.0%
Shoulder Strain/Sprain	33	3.2%	26	3.7%	59	3.4%
Hand/Wrist Strain/Sprain	22	2.2%	26	3.7%	48	2.8%
Knee Contusion	31	3.1%	8	1.1%	39	2.3%

Figure 3.2 Time Loss of Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	108	10.8%	39	5.5%	147	8.6%
Did Not Require Surgery	890	89.2%	664	94.5%	1,554	91.4%
Total	***998***	***100.0%***	***703***	***100.0%***	***1,701***	***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, 2023-24 School Year

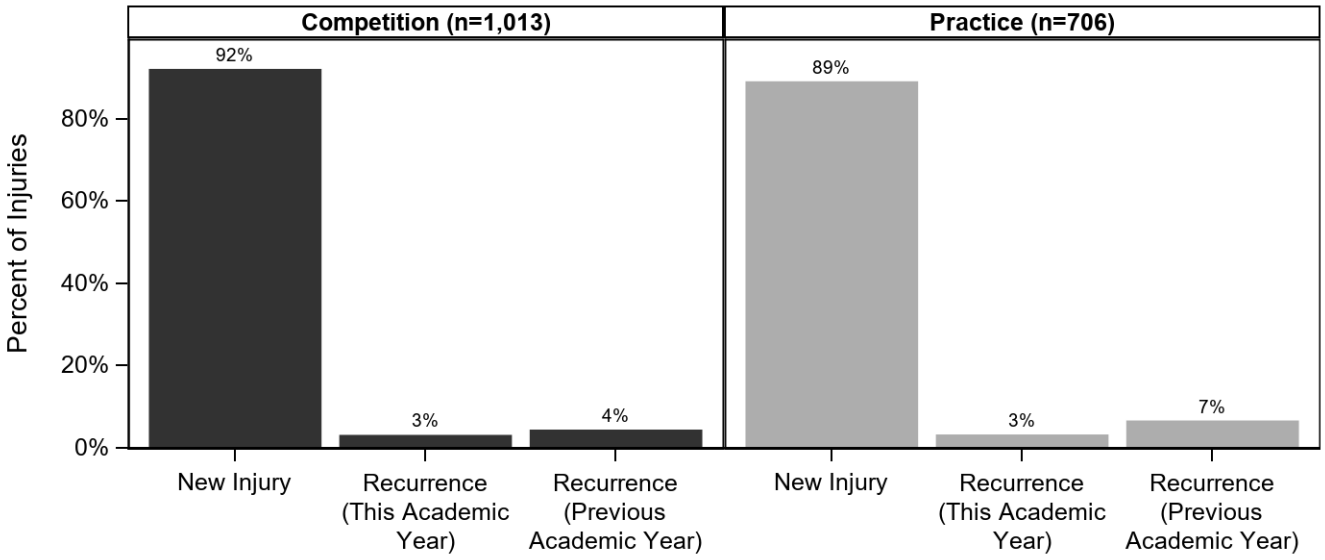


Table 3.6 Time during Season of Football Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	347	20.1%
Regular Season	1,247	72.2%
Post Season	115	6.7%
Unknown/Other	18	1.0%
Total	***1,727***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	12	1.3%
First Quarter	116	12.5%
Second Quarter	263	28.2%
Third Quarter	293	31.5%
Fourth Quarter	242	26.0%
Overtime	5	0.5%
Total	***931***	***100.0%***

Field Location		
End Zone	19	2.0%
Red Zone (20 Yard Line to Goal Line)	147	15.5%
Between the 20 Yard Lines	489	51.5%
Off the Field	6	0.6%
Unknown	289	30.4%
Total	***950***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	52	7.5%
Second 1/2 Hour	98	14.1%
1-2 Hours into Practice	327	47.2%
>2 Hours into Practice	54	7.8%
Unknown	162	23.4%
Total	***693***	***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, 2023-24 School Year

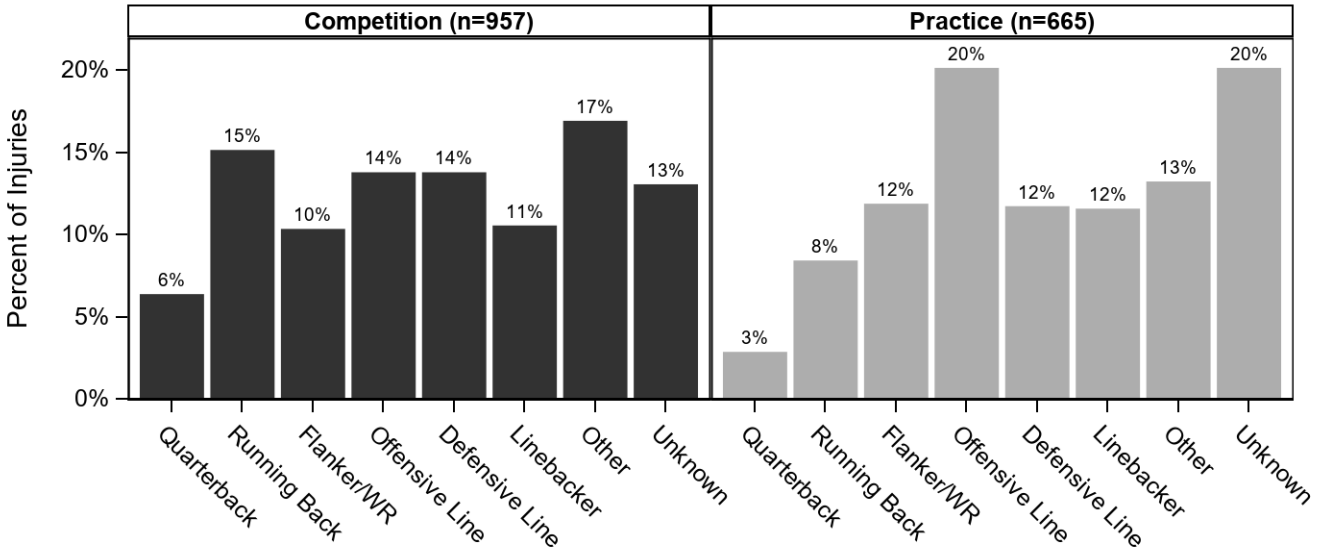


Table 3.9 Activities Leading to Football Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Being Tackled	282	29.1%	72	10.7%	354	21.5%
Tackling	218	22.5%	70	10.4%	288	17.5%
Blocking	137	14.1%	98	14.6%	235	14.3%
Unknown	116	12.0%	103	15.3%	219	13.3%
N/A **	24	2.5%	103	15.3%	127	7.7%
Being Blocked	67	6.9%	40	5.9%	107	6.5%
Other	32	3.3%	75	11.1%	107	6.5%
Rotation Around a Planted Foot/Inversion	39	4.0%	41	6.1%	80	4.9%
Stepped On, Fell On or Kicked	44	4.5%	28	4.2%	72	4.4%
Contact with Ball	5	0.5%	19	2.8%	24	1.5%
Contact with Blocking Sled/Dummy	1	0.1%	15	2.2%	16	1.0%
Uneven Playing Surface	4	0.4%	8	1.2%	12	0.7%
Contact with Seats, Bleacher or Table	1	0.1%	1	0.1%	2	0.1%
Total	***970***	***100.0%***	***673***	***100.0%***	***1,643***	***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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Being Blocked	25	3.8%	22	11.6%	11	6.5%	37	12.5%	12	3.6%
Being Tackled	114	17.3%	65	34.4%	54	31.8%	86	29.2%	35	10.6%
Blocking	99	15.0%	20	10.6%	23	13.5%	45	15.3%	48	14.5%
Contact with Ball	4	0.6%	1	0.5%	9	5.3%	1	0.3%	9	2.7%
Contact with Blocking Sled/Dummy	7	1.1%	0	0.0%	4	2.4%	3	1.0%	2	0.6%
Contact with Seats, Bleacher or Table	0	0.0%	1	0.5%	0	0.0%	0	0.0%	1	0.3%
N/A **	44	6.7%	1	0.5%	2	1.2%	0	0.0%	79	23.9%
Other	68	10.3%	5	2.6%	10	5.9%	4	1.4%	20	6.1%
Rotation Around a Planted Foot/Inversion	67	10.2%	1	0.5%	2	1.2%	0	0.0%	10	3.0%
Stepped On, Fell On or Kicked	34	5.2%	15	7.9%	12	7.1%	3	1.0%	8	2.4%
Tackling	93	14.1%	32	16.9%	25	14.7%	72	24.4%	66	20.0%
Uneven Playing Surface	8	1.2%	2	1.1%	1	0.6%	0	0.0%	1	0.3%
Unknown	95	14.4%	24	12.7%	17	10.0%	44	14.9%	39	11.8%
Total	***658***	***100.0%***	***189***	***100.0%***	***170***	***100.0%***	***295***	***100.0%***	***330***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***419***	***219,722***	***1.91***
Competition	255	66,996	3.81
Practice	164	152,726	1.07

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

Table 4.2 Demographic Characteristics of Injured Boys' Soccer Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	76	18.8%
Sophomore	86	21.3%
Junior	113	28.0%
Senior	129	31.9%
Total	***404***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	16.0 (1.2)
n	372

BMI	
Minimum	16.0
Maximum	35.5
Mean (SD)	22.7 (3.4)
n	240

* 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, 2023-24 School Year

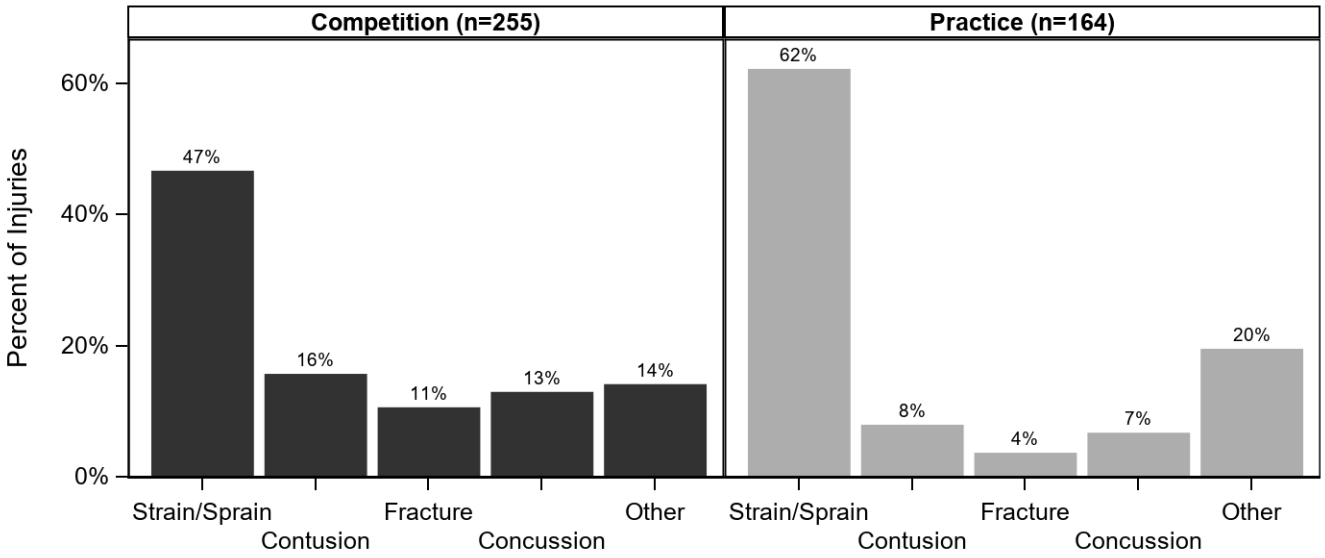


Table 4.3 Body Site of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

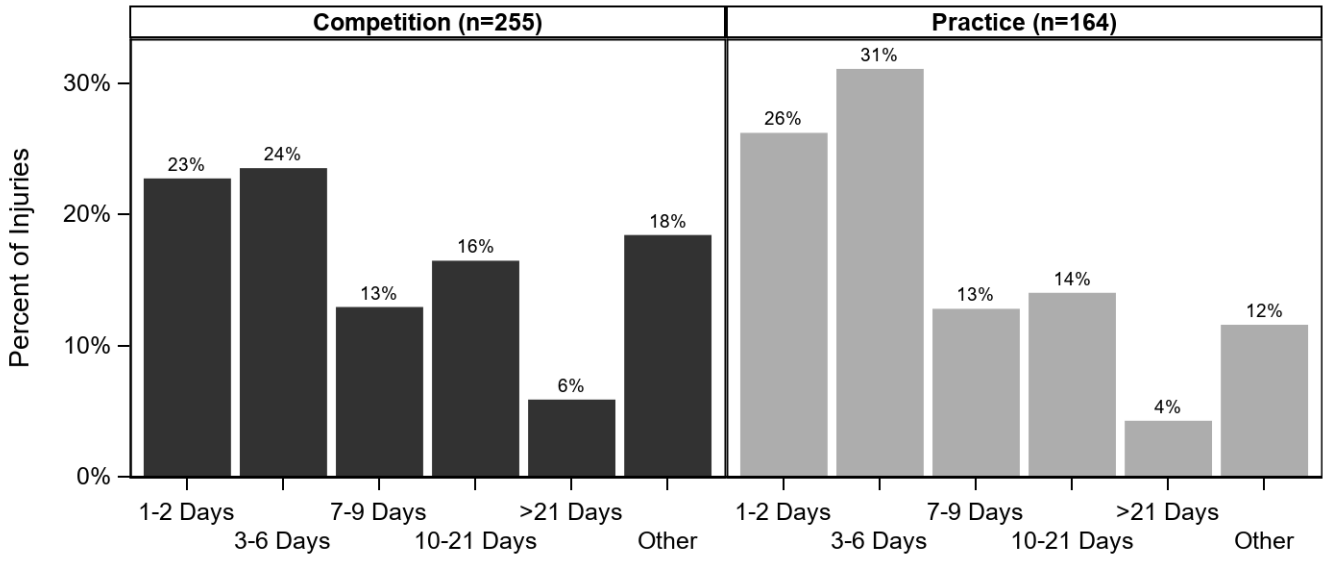
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	52	20.4%	44	26.8%	96	22.9%
Hip/Thigh/Upper Leg	43	16.9%	36	22.0%	79	18.9%
Knee	38	14.9%	30	18.3%	68	16.2%
Head/Face	43	16.9%	12	7.3%	55	13.1%
Foot	19	7.5%	11	6.7%	30	7.2%
Lower Leg	15	5.9%	11	6.7%	26	6.2%
Hand/Wrist	11	4.3%	8	4.9%	19	4.5%
Trunk	8	3.1%	7	4.3%	15	3.6%
Other	8	3.1%	1	0.6%	9	2.1%
Shoulder	7	2.7%	1	0.6%	8	1.9%
Arm/Elbow	7	2.7%	0	0.0%	7	1.7%
Neck	2	0.8%	2	1.2%	4	1.0%
Systemic	2	0.8%	1	0.6%	3	0.7%
Total	***255***	***100.0%***	***164***	***100.0%***	***419***	***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, 2023-24 School Year

	Competition (n=255)		Practice (n=164)		Overall (n=419)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	46	18.0%	38	23.2%	84	20.0%
Hip/Thigh/Upper Leg Strain/Sprain	28	11.0%	32	19.5%	60	14.3%
Head/Face Concussion	33	12.9%	11	6.7%	44	10.5%
Knee Other	15	5.9%	17	10.4%	32	7.6%
Knee Strain/Sprain	17	6.7%	11	6.7%	28	6.7%
Hip/Thigh/Upper Leg Contusion	11	4.3%	2	1.2%	13	3.1%
Foot Contusion	6	2.4%	5	3.0%	11	2.6%
Hand/Wrist Strain/Sprain	4	1.6%	6	3.7%	10	2.4%
Trunk Strain/Sprain	6	2.4%	4	2.4%	10	2.4%
Foot Strain/Sprain	7	2.7%	2	1.2%	9	2.1%

Figure 4.2 Time Loss of Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	15	5.9%	7	4.3%	22	5.3%
Did Not Require Surgery	240	94.1%	155	95.7%	395	94.7%
Total	***255***	***100.0%***	***162***	***100.0%***	***417***	***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, 2023-24 School Year

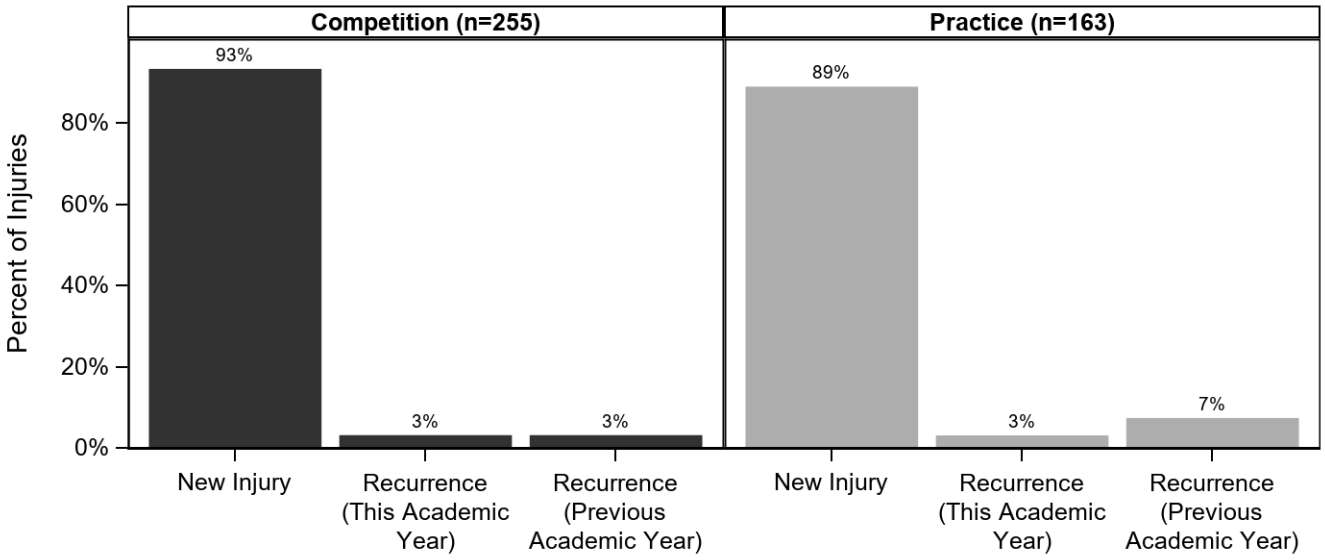


Table 4.6 Time during Season of Boys' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	67	16.0%
Regular Season	326	78.0%
Post Season	24	5.7%
Unknown/Other	1	0.2%
Total	***418***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	8	3.3%
First Half	49	20.4%
Second Half	127	52.9%
Overtime	3	1.3%
Unknown	53	22.1%
Total	***240***	***100.0%***

Field Location		
Goal Box (Defense)	27	11.4%
Goal Box (Offense)	17	7.2%
Side of Goal Box (Defense)	21	8.9%
Side of Goal Box (Offense)	19	8.1%
Top of Goal Box Extended to Center Line (Offense)	44	18.6%
Top of Goal Box Extended to Center Line (Defense)	24	10.2%
Off the Field	2	0.8%
Unknown	82	34.7%
Total	***236***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	9	5.6%
Second 1/2 Hour	20	12.5%
1-2 Hours into Practice	81	50.6%
>2 Hours into Practice	5	3.1%
Unknown	45	28.1%
Total	***160***	***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, 2023-24 School Year

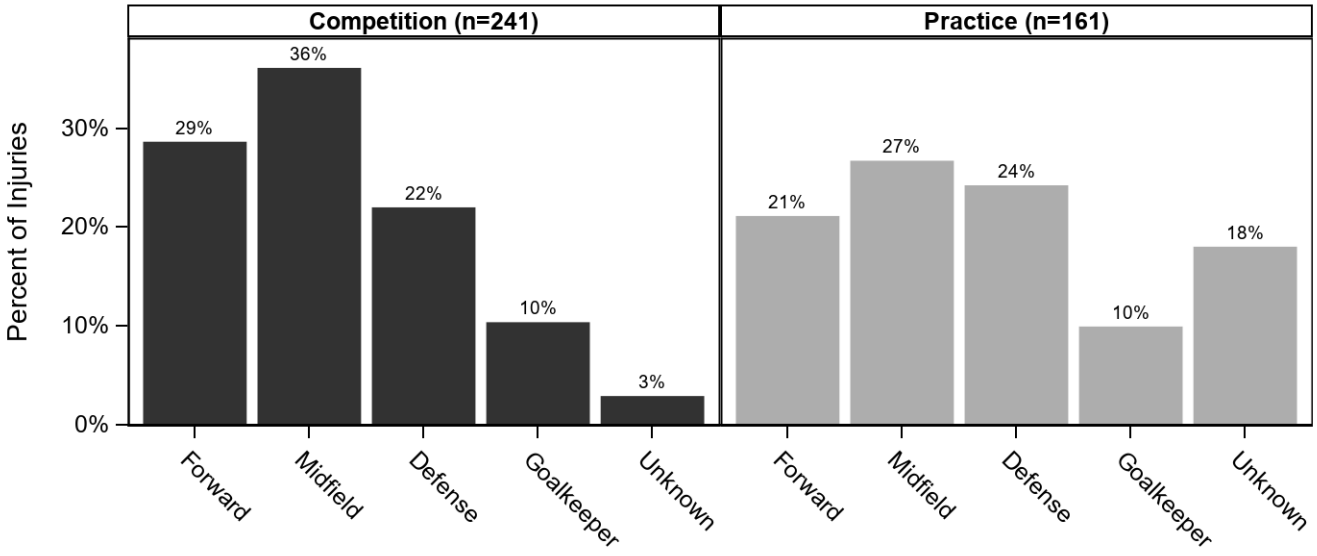


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Table 4.9 Activities Leading to Boys' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	41	16.9%	56	34.6%	97	24.0%
Defending	42	17.4%	17	10.5%	59	14.6%
Unknown	16	6.6%	24	14.8%	40	9.9%
Ball Handling/Dribbling	28	11.6%	8	4.9%	36	8.9%
Chasing Loose Ball	31	12.8%	4	2.5%	35	8.7%
Goaltending	19	7.9%	12	7.4%	31	7.7%
Shooting	13	5.4%	15	9.3%	28	6.9%
Heading Ball	16	6.6%	2	1.2%	18	4.5%
Passing	10	4.1%	5	3.1%	15	3.7%
Receiving Pass	12	5.0%	2	1.2%	14	3.5%
Conditioning	0	0.0%	10	6.2%	10	2.5%
Other	4	1.7%	3	1.9%	7	1.7%
Attempting a Slide Tackle	5	2.1%	1	0.6%	6	1.5%
Receiving a Slide Tackle	3	1.2%	1	0.6%	4	1.0%
Blocking Shot	2	0.8%	2	1.2%	4	1.0%
Total	***242***	***100.0%***	***162***	***100.0%***	***404***	***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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Attempting a Slide Tackle	3	1.4%	0	0.0%	1	3.0%	0	0.0%	2	3.0%
Ball Handling/Dribbling	17	8.1%	10	20.0%	3	9.1%	6	14.0%	0	0.0%
Blocking Shot	3	1.4%	1	2.0%	0	0.0%	0	0.0%	0	0.0%
Chasing Loose Ball	22	10.4%	4	8.0%	5	15.2%	2	4.7%	2	3.0%
Conditioning	7	3.3%	0	0.0%	0	0.0%	0	0.0%	3	4.5%
Defending	30	14.2%	10	20.0%	5	15.2%	6	14.0%	8	11.9%
General Play	55	26.1%	8	16.0%	3	9.1%	5	11.6%	26	38.8%
Goaltending	7	3.3%	6	12.0%	3	9.1%	6	14.0%	9	13.4%
Heading Ball	4	1.9%	1	2.0%	1	3.0%	8	18.6%	4	6.0%
Other	4	1.9%	0	0.0%	0	0.0%	2	4.7%	1	1.5%
Passing	12	5.7%	2	4.0%	1	3.0%	0	0.0%	0	0.0%
Receiving Pass	4	1.9%	2	4.0%	2	6.1%	4	9.3%	2	3.0%
Receiving a Slide Tackle	3	1.4%	0	0.0%	0	0.0%	0	0.0%	1	1.5%
Shooting	18	8.5%	4	8.0%	5	15.2%	0	0.0%	1	1.5%
Unknown	22	10.4%	2	4.0%	4	12.1%	4	9.3%	8	11.9%
Total	***211***	***100.0%***	***50***	***100.0%***	***33***	***100.0%***	***43***	***100.0%***	***67***	***100.0%***

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

V. Girls' Soccer Injury Epidemiology

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Table 5.1 Girls' Soccer Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***480***	***179,428***	***2.68***
Competition	312	55,419	5.63
Practice	168	124,009	1.35

* All analyses in this report present un-weighted data

Table 5.2 Demographic Characteristics of Injured Girls' Soccer Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	137	29.9%
Sophomore	121	26.4%
Junior	115	25.1%
Senior	85	18.6%
Total	***458***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.5 (1.2)
n	401

BMI	
Minimum	15.8
Maximum	32.8
Mean (SD)	22.1 (3.2)
n	225

* 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, 2023-24 School Year

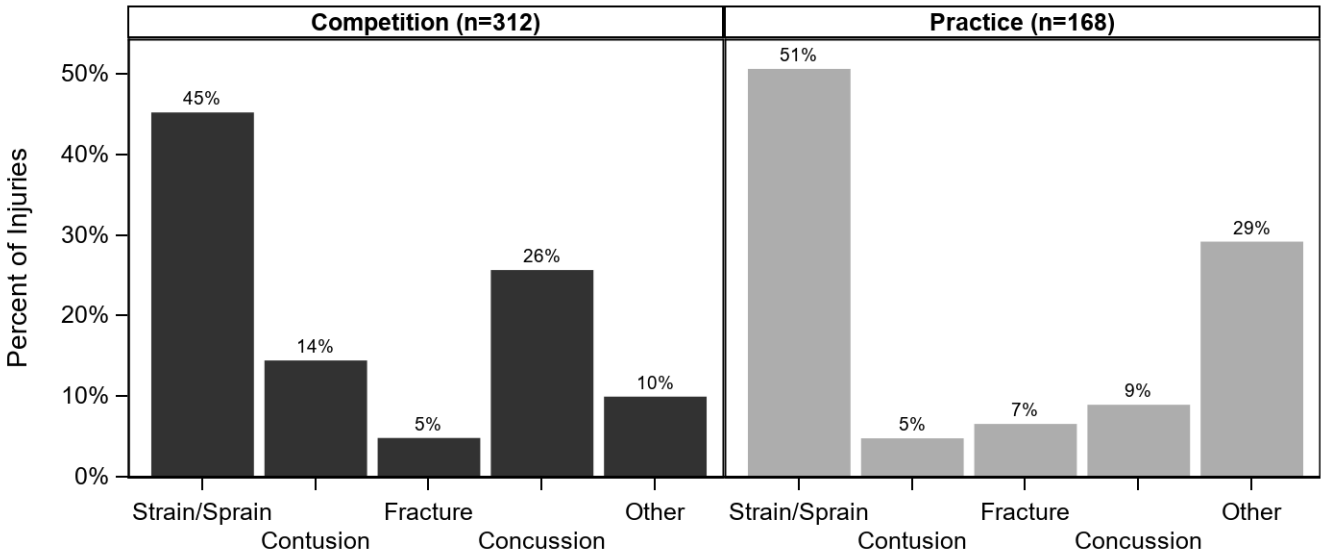


Table 5.3 Body Site of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

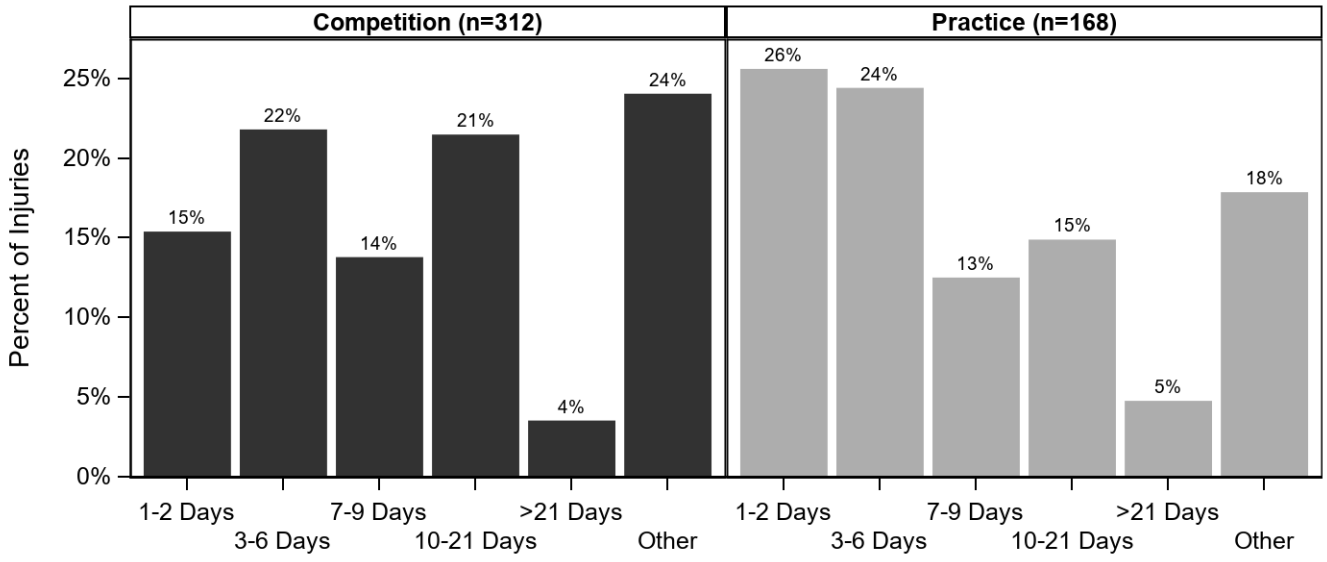
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	90	28.8%	18	10.7%	108	22.5%
Ankle	70	22.4%	35	20.8%	105	21.9%
Knee	60	19.2%	21	12.5%	81	16.9%
Hip/Thigh/Upper Leg	39	12.5%	39	23.2%	78	16.3%
Lower Leg	10	3.2%	16	9.5%	26	5.4%
Foot	12	3.8%	12	7.1%	24	5.0%
Hand/Wrist	13	4.2%	8	4.8%	21	4.4%
Trunk	3	1.0%	9	5.4%	12	2.5%
Systemic	1	0.3%	7	4.2%	8	1.7%
Arm/Elbow	5	1.6%	1	0.6%	6	1.3%
Other	3	1.0%	2	1.2%	5	1.0%
Shoulder	4	1.3%	0	0.0%	4	0.8%
Neck	2	0.6%	0	0.0%	2	0.4%
Total	***312***	***100.0%***	***168***	***100.0%***	***480***	***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, 2023-24 School Year

	Competition (n=312)		Practice (n=168)		Overall (n=480)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	63	20.2%	34	20.2%	97	20.2%
Head/Face Concussion	80	25.6%	15	8.9%	95	19.8%
Hip/Thigh/Upper Leg Strain/Sprain	29	9.3%	33	19.6%	62	12.9%
Knee Strain/Sprain	28	9.0%	6	3.6%	34	7.1%
Knee Other	17	5.4%	12	7.1%	29	6.0%
Knee Contusion	15	4.8%	3	1.8%	18	3.8%
Lower Leg Other	2	0.6%	12	7.1%	14	2.9%
Hand/Wrist Fracture	6	1.9%	5	3.0%	11	2.3%
Foot Strain/Sprain	5	1.6%	4	2.4%	9	1.9%
Hip/Thigh/Upper Leg Other	3	1.0%	6	3.6%	9	1.9%

Figure 5.2 Time Loss of Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	19	6.2%	3	1.8%	22	4.6%
Did Not Require Surgery	289	93.8%	165	98.2%	454	95.4%
Total	***308***	***100.0%***	***168***	***100.0%***	***476***	***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, 2023-24 School Year

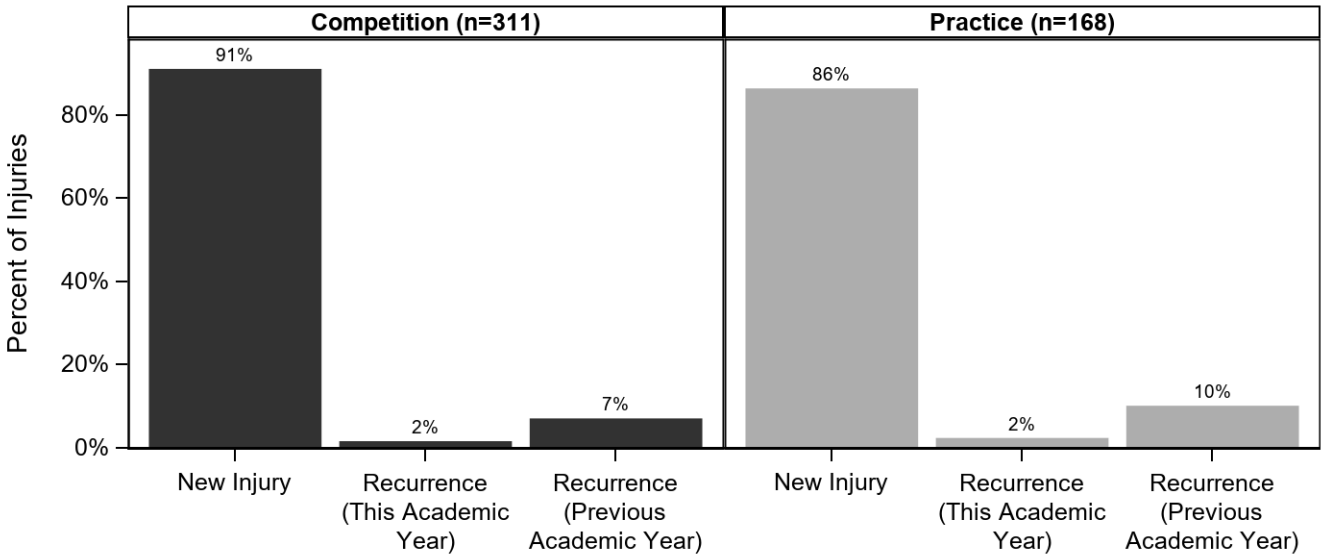


Table 5.6 Time during Season of Girls' Soccer Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	77	16.1%
Regular Season	378	79.1%
Post Season	22	4.6%
Unknown/Other	1	0.2%
Total	***478***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	10	3.4%
First Half	56	19.0%
Second Half	168	57.1%
Unknown	60	20.4%
Total	***294***	***100.0%***

Field Location		
Goal Box (Defense)	32	10.9%
Goal Box (Offense)	20	6.8%
Side of Goal Box (Defense)	15	5.1%
Side of Goal Box (Offense)	26	8.9%
Top of Goal Box Extended to Center Line (Offense)	41	14.0%
Top of Goal Box Extended to Center Line (Defense)	42	14.3%
Off the Field	5	1.7%
Unknown	112	38.2%
Total	***293***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	11	6.6%
Second 1/2 Hour	24	14.5%
1-2 Hours into Practice	55	33.1%
>2 Hours into Practice	4	2.4%
Unknown	72	43.4%
Total	***166***	***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, 2023-24 School Year

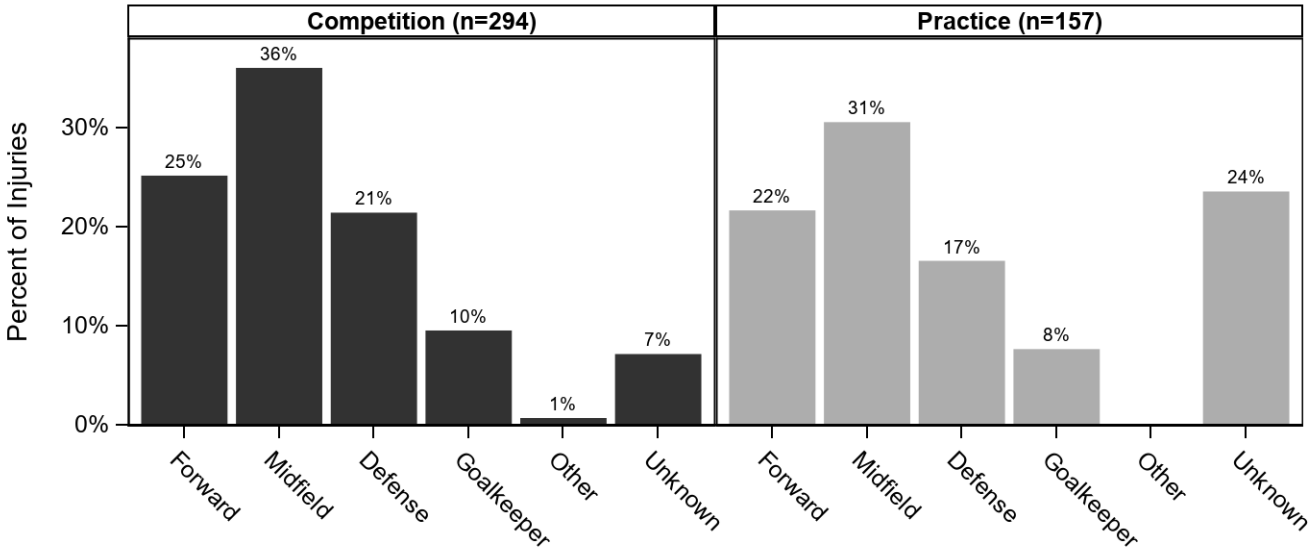


Table 5.9 Activities Leading to Girls' Soccer Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	54	18.2%	57	36.1%	111	24.4%
Unknown	46	15.5%	24	15.2%	70	15.4%
Defending	51	17.2%	13	8.2%	64	14.1%
Chasing Loose Ball	34	11.4%	8	5.1%	42	9.2%
Ball Handling/Dribbling	23	7.7%	8	5.1%	31	6.8%
Goaltending	22	7.4%	8	5.1%	30	6.6%
Heading Ball	24	8.1%	2	1.3%	26	5.7%
Shooting	9	3.0%	8	5.1%	17	3.7%
Conditioning	0	0.0%	17	10.8%	17	3.7%
Other	6	2.0%	6	3.8%	12	2.6%
Receiving Pass	7	2.4%	3	1.9%	10	2.2%
Passing	7	2.4%	3	1.9%	10	2.2%
Blocking Shot	7	2.4%	1	0.6%	8	1.8%
Receiving a Slide Tackle	6	2.0%	0	0.0%	6	1.3%
Attempting a Slide Tackle	1	0.3%	0	0.0%	1	0.2%
Total	***297***	***100.0%***	***158***	***100.0%***	***455***	***100.0%***

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

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Table 5.10 Activity Resulting in Girls' Soccer Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Attempting a Slide Tackle	0	0.0%	1	2.0%	0	0.0%	0	0.0%	0	0.0%
Ball Handling/Dribbling	21	9.7%	3	5.9%	1	3.8%	2	2.2%	4	5.6%
Blocking Shot	6	2.8%	1	2.0%	0	0.0%	1	1.1%	0	0.0%
Chasing Loose Ball	24	11.1%	2	3.9%	5	19.2%	8	8.9%	3	4.2%
Conditioning	9	4.2%	0	0.0%	0	0.0%	0	0.0%	8	11.1%
Defending	24	11.1%	13	25.5%	4	15.4%	18	20.0%	5	6.9%
General Play	54	25.0%	12	23.5%	4	15.4%	7	7.8%	34	47.2%
Goaltending	10	4.6%	5	9.8%	4	15.4%	10	11.1%	1	1.4%
Heading Ball	1	0.5%	1	2.0%	0	0.0%	24	26.7%	0	0.0%
Other	6	2.8%	1	2.0%	0	0.0%	2	2.2%	3	4.2%
Passing	8	3.7%	2	3.9%	0	0.0%	0	0.0%	0	0.0%
Receiving Pass	2	0.9%	4	7.8%	0	0.0%	4	4.4%	0	0.0%
Receiving a Slide Tackle	2	0.9%	2	3.9%	1	3.8%	1	1.1%	0	0.0%
Shooting	13	6.0%	1	2.0%	1	3.8%	0	0.0%	2	2.8%
Unknown	36	16.7%	3	5.9%	6	23.1%	13	14.4%	12	16.7%
Total	***216***	***100.0%***	***51***	***100.0%***	***26***	***100.0%***	***90***	***100.0%***	***72***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***208***	***174,590***	***1.19***
Competition	77	63,339	1.22
Practice	131	111,251	1.18

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

Table 6.2 Demographic Characteristics of Injured Girls' Volleyball Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	65	31.9%
Sophomore	39	19.1%
Junior	48	23.5%
Senior	52	25.5%
Total	***204***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.6 (1.3)
n	179

BMI	
Minimum	15.2
Maximum	33.8
Mean (SD)	21.8 (3.1)
n	111

* 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, 2023-24 School Year

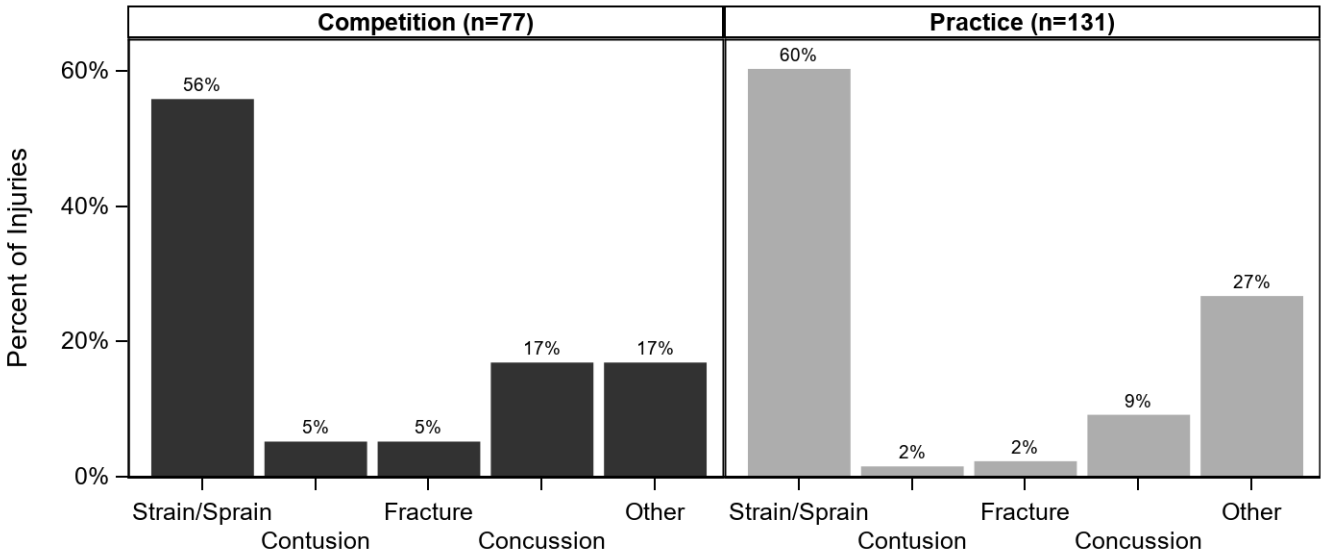


Table 6.3 Body Site of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

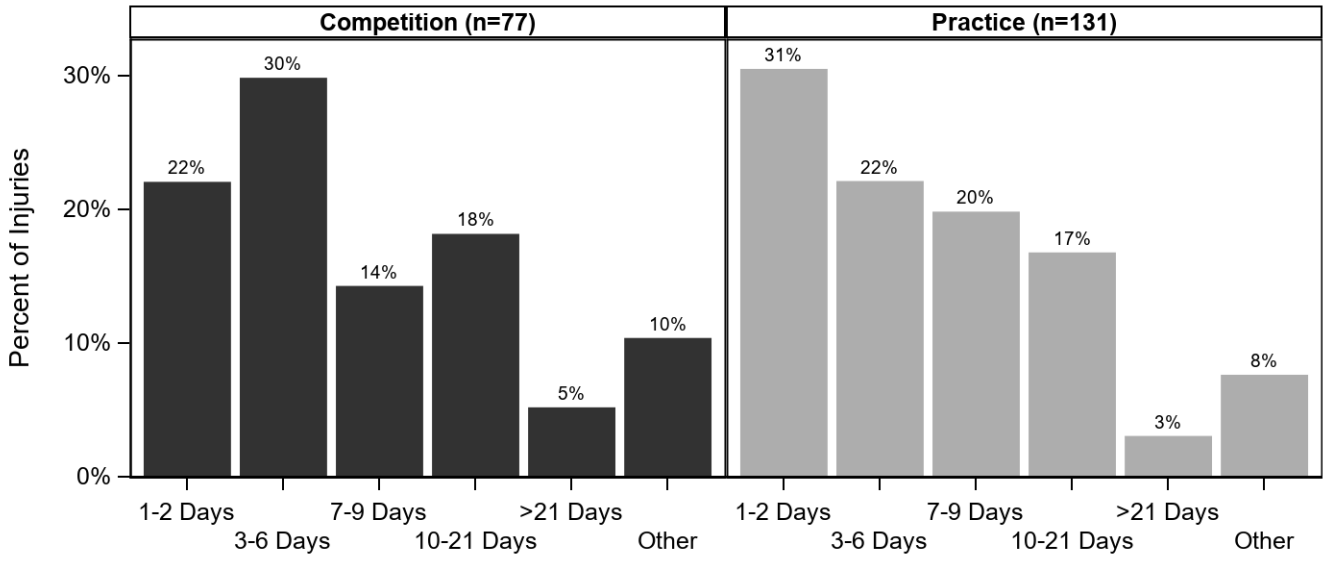
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	33	42.9%	46	35.1%	79	38.0%
Head/Face	15	19.5%	12	9.2%	27	13.0%
Hand/Wrist	11	14.3%	14	10.7%	25	12.0%
Knee	8	10.4%	12	9.2%	20	9.6%
Trunk	3	3.9%	13	9.9%	16	7.7%
Shoulder	1	1.3%	9	6.9%	10	4.8%
Lower Leg	1	1.3%	8	6.1%	9	4.3%
Hip/Thigh/Upper Leg	0	0.0%	8	6.1%	8	3.8%
Arm/Elbow	3	3.9%	4	3.1%	7	3.4%
Foot	2	2.6%	3	2.3%	5	2.4%
Neck	0	0.0%	1	0.8%	1	0.5%
Systemic	0	0.0%	1	0.8%	1	0.5%
Total	***77***	***100.0%***	***131***	***100.0%***	***208***	***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, 2023-24 School Year

	Competition (n=77)		Practice (n=131)		Overall (n=208)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	29	37.7%	42	32.1%	71	34.1%
Head/Face Concussion	13	16.9%	12	9.2%	25	12.0%
Hand/Wrist Strain/Sprain	8	10.4%	8	6.1%	16	7.7%
Knee Other	6	7.8%	10	7.6%	16	7.7%
Trunk Strain/Sprain	1	1.3%	8	6.1%	9	4.3%
Hip/Thigh/Upper Leg Strain/Sprain	0	0.0%	8	6.1%	8	3.8%
Ankle Other	3	3.9%	4	3.1%	7	3.4%
Hand/Wrist Fracture	3	3.9%	3	2.3%	6	2.9%
Trunk Other	1	1.3%	5	3.8%	6	2.9%
Lower Leg Other	1	1.3%	4	3.1%	5	2.4%

Figure 6.2 Time Loss of Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	2	2.7%	2	1.6%	4	2.0%
Did Not Require Surgery	72	97.3%	127	98.4%	199	98.0%
Total	***74***	***100.0%***	***129***	***100.0%***	***203***	***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, 2023-24 School Year

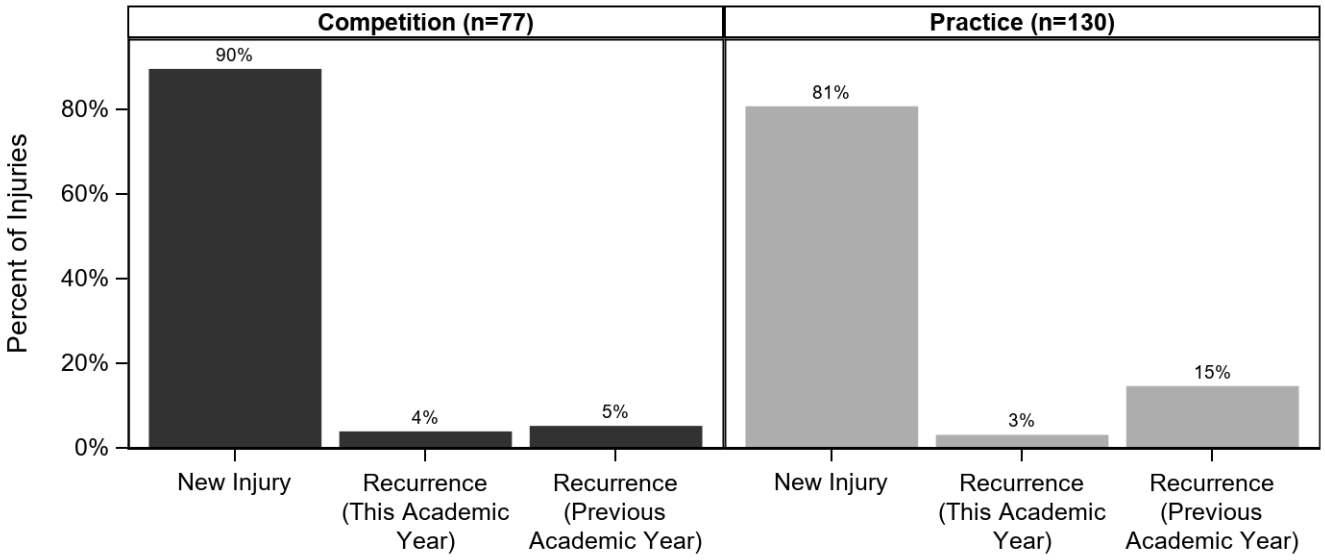


Table 6.6 Time during Season of Girls' Volleyball Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	43	20.7%
Regular Season	157	75.5%
Post Season	7	3.4%
Unknown/Other	1	0.5%
Total	***208***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	13	18.6%
First Set	8	11.4%
Second Set	20	28.6%
Third Set	9	12.9%
Fourth Set	1	1.4%
Unknown	19	27.1%
Total	***70***	***100.0%***

Court Location		
Right Back (Server)	1	1.4%
Right Forward	7	10.0%
Outside Court (Your Side)	2	2.9%
Outside Court (Opponents Side)	1	1.4%
Middle Forward	13	18.6%
Left Forward	5	7.1%
Left Back	6	8.6%
Outside the Playable Area	3	4.3%
At the Net	6	8.6%
Unknown	26	37.1%
Total	***70***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	7	5.5%
Second 1/2 Hour	21	16.4%
1-2 Hours into Practice	52	40.6%
>2 Hours into Practice	4	3.1%
Unknown	44	34.4%
Total	***128***	***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, 2023-24 School Year

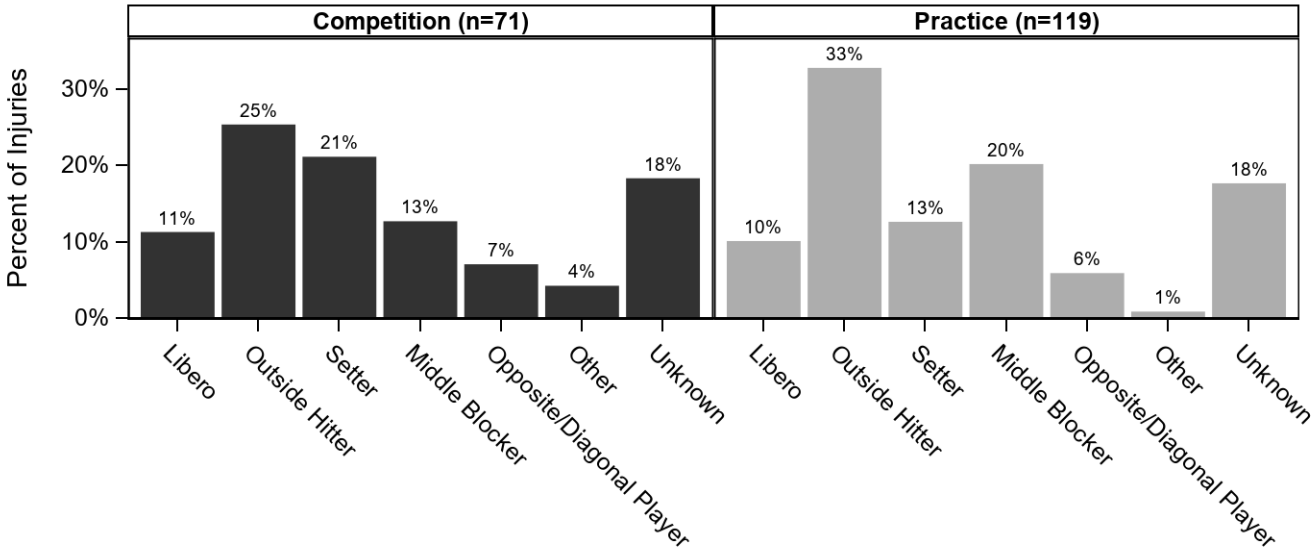


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Table 6.9 Activities Leading to Girls' Volleyball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	15	21.1%	39	32.8%	54	28.4%
Blocking	13	18.3%	28	23.5%	41	21.6%
Unknown	5	7.0%	16	13.4%	21	11.1%
Digging	12	16.9%	7	5.9%	19	10.0%
Spiking	7	9.9%	8	6.7%	15	7.9%
Setting	6	8.5%	5	4.2%	11	5.8%
Passing	6	8.5%	3	2.5%	9	4.7%
Other	6	8.5%	3	2.5%	9	4.7%
Conditioning	0	0.0%	6	5.0%	6	3.2%
Serving	1	1.4%	4	3.4%	5	2.6%
Total	***71***	***100.0%***	***119***	***100.0%***	***190***	***100.0%***

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

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Table 6.10 Activity Resulting in Girls' Volleyball Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Blocking	36	32.4%	1	16.7%	1	14.3%	0	0.0%	3	7.0%
Conditioning	3	2.7%	0	0.0%	0	0.0%	0	0.0%	3	7.0%
Digging	7	6.3%	3	50.0%	0	0.0%	7	30.4%	2	4.7%
General Play	23	20.7%	2	33.3%	2	28.6%	4	17.4%	23	53.5%
Other	2	1.8%	0	0.0%	1	14.3%	5	21.7%	1	2.3%
Passing	6	5.4%	0	0.0%	1	14.3%	2	8.7%	0	0.0%
Serving	0	0.0%	0	0.0%	0	0.0%	3	13.0%	2	4.7%
Setting	10	9.0%	0	0.0%	0	0.0%	0	0.0%	1	2.3%
Spiking	11	9.9%	0	0.0%	0	0.0%	1	4.3%	3	7.0%
Unknown	13	11.7%	0	0.0%	2	28.6%	1	4.3%	5	11.6%
Total	***111***	***100.0%***	***6***	***100.0%***	***7***	***100.0%***	***23***	***100.0%***	***43***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***405***	***232,407***	***1.74***
Competition	206	71,711	2.87
Practice	199	160,696	1.24

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

Table 7.2 Demographic Characteristics of Injured Boys' Basketball Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	92	23.5%
Sophomore	98	25.1%
Junior	112	28.6%
Senior	89	22.8%
Total	***391***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	16.0 (1.2)
n	331

BMI	
Minimum	16.3
Maximum	41.8
Mean (SD)	23.2 (3.8)
n	226

* 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, 2023-24 School Year

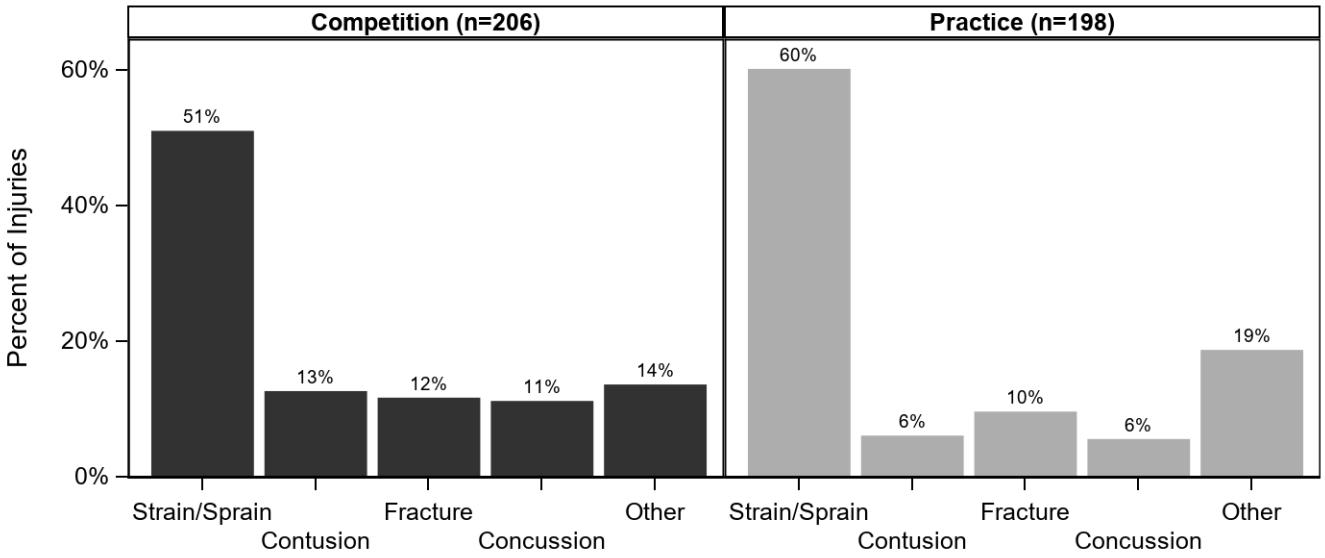


Table 7.3 Body Site of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

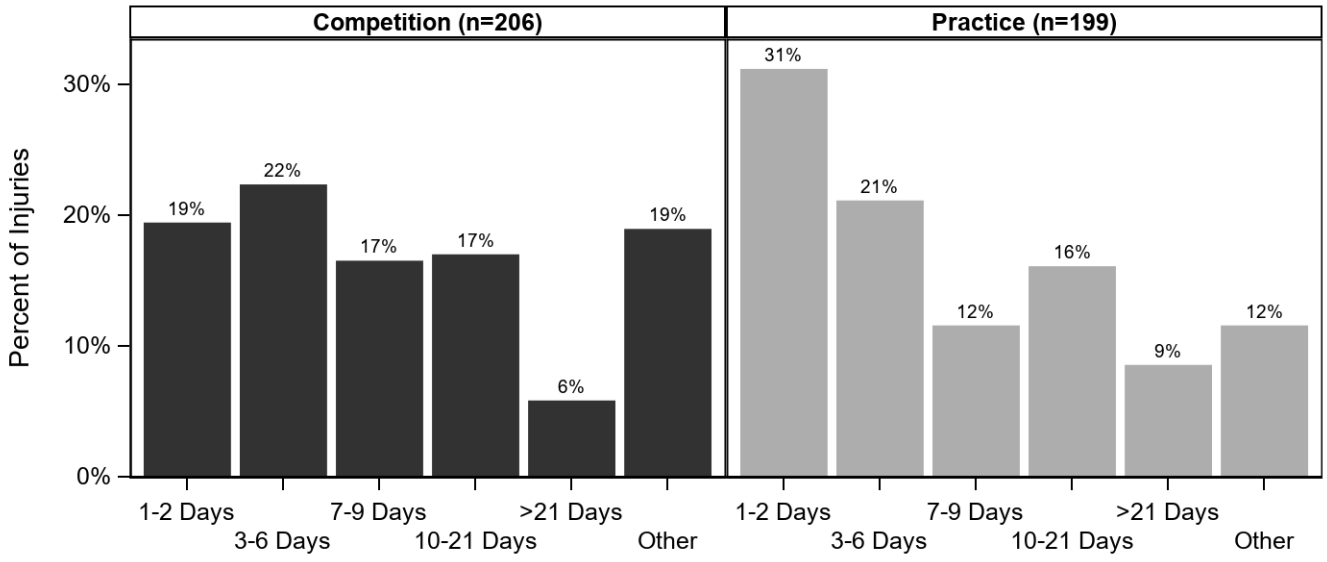
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	71	34.5%	76	38.2%	147	36.3%
Head/Face	40	19.4%	22	11.1%	62	15.3%
Hand/Wrist	24	11.7%	18	9.0%	42	10.4%
Knee	20	9.7%	22	11.1%	42	10.4%
Hip/Thigh/Upper Leg	15	7.3%	19	9.5%	34	8.4%
Trunk	10	4.9%	11	5.5%	21	5.2%
Lower Leg	8	3.9%	10	5.0%	18	4.4%
Foot	5	2.4%	10	5.0%	15	3.7%
Shoulder	10	4.9%	2	1.0%	12	3.0%
Systemic	2	1.0%	5	2.5%	7	1.7%
Arm/Elbow	1	0.5%	3	1.5%	4	1.0%
Neck	0	0.0%	1	0.5%	1	0.2%
Total	***206***	***100.0%***	***199***	***100.0%***	***405***	***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, 2023-24 School Year

	Competition (n=206)		Practice (n=198)		Overall (n=404)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	64	31.1%	74	37.4%	138	34.2%
Head/Face Concussion	23	11.2%	11	5.6%	34	8.4%
Hip/Thigh/Upper Leg Strain/Sprain	6	2.9%	14	7.1%	20	5.0%
Knee Strain/Sprain	11	5.3%	7	3.5%	18	4.5%
Hand/Wrist Strain/Sprain	11	5.3%	6	3.0%	17	4.2%
Knee Other	4	1.9%	11	5.6%	15	3.7%
Hand/Wrist Fracture	9	4.4%	5	2.5%	14	3.5%
Head/Face Other	10	4.9%	4	2.0%	14	3.5%
Hip/Thigh/Upper Leg Contusion	9	4.4%	3	1.5%	12	3.0%
Trunk Strain/Sprain	4	1.9%	7	3.5%	11	2.7%

Figure 7.2 Time Loss of Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	16	7.8%	10	5.2%	26	6.5%
Did Not Require Surgery	188	92.2%	184	94.8%	372	93.5%
Total	***204***	***100.0%***	***194***	***100.0%***	***398***	***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, 2023-24 School Year

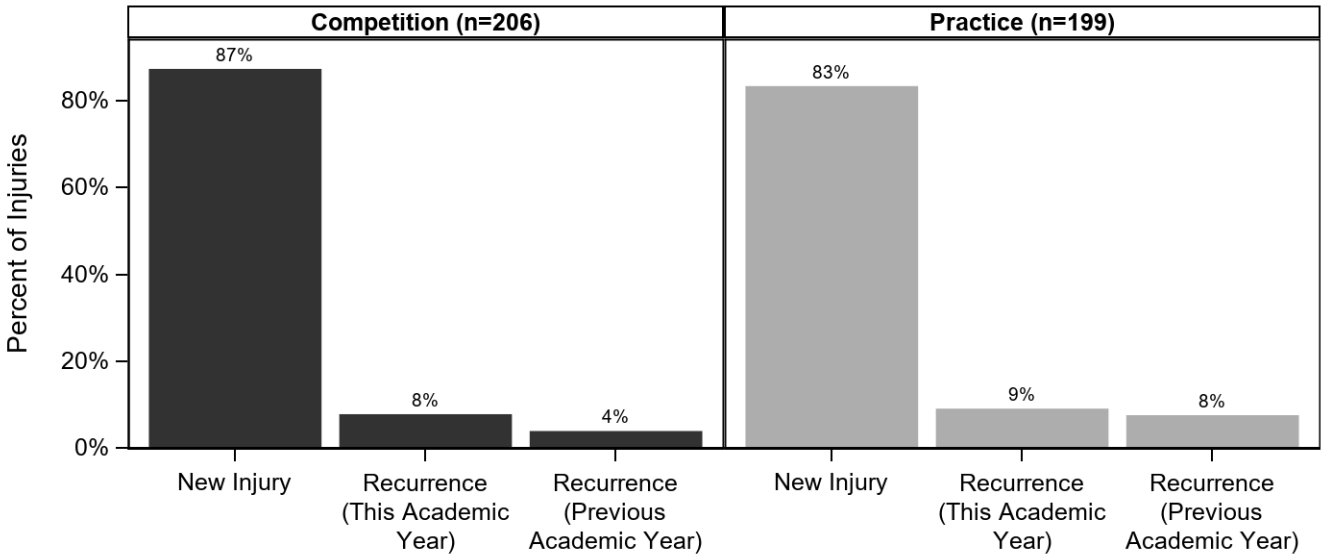


Table 7.6 Time during Season of Boys' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	78	19.3%
Regular Season	302	74.8%
Post Season	17	4.2%
Unknown/Other	7	1.7%
Total	***404***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	2	1.0%
First Quarter	19	9.6%
Second Quarter	49	24.7%
Third Quarter	40	20.2%
Fourth Quarter	48	24.2%
Unknown	40	20.2%
Total	***198***	***100.0%***

Court Location		
Inside Lane (Offense)	37	18.8%
Inside Lane (Defense)	45	22.8%
Between 3 Point Arc and Lane (Offense)	9	4.6%
Between 3 Point Arc and Lane (Defense)	14	7.1%
Outside 3 Point Arc (Offense)	7	3.6%
Outside 3 Point Arc (Defense)	10	5.1%
Out of Bounds	4	2.0%
Off the Court	2	1.0%
Backcourt	4	2.0%
Unknown	65	33.0%
Total	***197***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	22	11.3%
Second 1/2 Hour	30	15.5%
1-2 Hours into Practice	86	44.3%
>2 Hours into Practice	4	2.1%
Unknown	52	26.8%
Total	***194***	***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, 2023-24 School Year

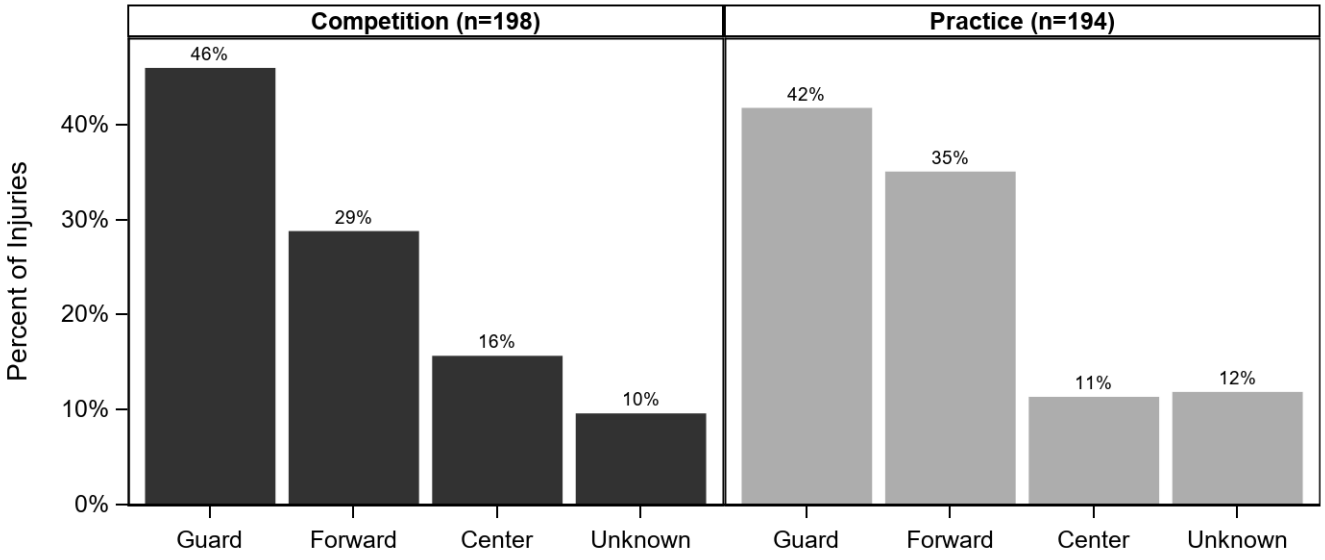


Table 7.9 Activities Leading to Boys' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Rebounding	60	30.2%	37	18.8%	97	24.5%
General Play	25	12.6%	46	23.4%	71	17.9%
Unknown	30	15.1%	36	18.3%	66	16.7%
Defending	33	16.6%	20	10.2%	53	13.4%
Shooting	19	9.5%	19	9.6%	38	9.6%
Chasing Loose Ball	15	7.5%	10	5.1%	25	6.3%
Ball Handling/Dribbling	10	5.0%	4	2.0%	14	3.5%
Conditioning	0	0.0%	13	6.6%	13	3.3%
Other	4	2.0%	3	1.5%	7	1.8%
Receiving Pass	2	1.0%	5	2.5%	7	1.8%
Passing	0	0.0%	3	1.5%	3	0.8%
Screening	1	0.5%	1	0.5%	2	0.5%
Total	***199***	***100.0%***	***197***	***100.0%***	***396***	***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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	8	3.7%	3	8.3%	1	2.3%	1	3.0%	1	1.6%
Chasing Loose Ball	7	3.2%	4	11.1%	5	11.6%	3	9.1%	6	9.4%
Conditioning	9	4.1%	1	2.8%	1	2.3%	0	0.0%	2	3.1%
Defending	28	12.8%	6	16.7%	5	11.6%	4	12.1%	9	14.1%
General Play	37	16.9%	6	16.7%	6	14.0%	5	15.2%	17	26.6%
Other	4	1.8%	1	2.8%	0	0.0%	1	3.0%	1	1.6%
Passing	2	0.9%	0	0.0%	0	0.0%	1	3.0%	0	0.0%
Rebounding	62	28.3%	5	13.9%	11	25.6%	5	15.2%	14	21.9%
Receiving Pass	2	0.9%	0	0.0%	2	4.7%	0	0.0%	3	4.7%
Screening	0	0.0%	0	0.0%	1	2.3%	1	3.0%	0	0.0%
Shooting	21	9.6%	7	19.4%	6	14.0%	1	3.0%	3	4.7%
Unknown	39	17.8%	3	8.3%	5	11.6%	11	33.3%	8	12.5%
Total	***219***	***100.0%***	***36***	***100.0%***	***43***	***100.0%***	***33***	***100.0%***	***64***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***351***	***147,895***	***2.37***
Competition	239	46,422	5.15
Practice	112	101,473	1.10

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

Table 8.2 Demographic Characteristics of Injured Girls' Basketball Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	106	30.8%
Sophomore	81	23.5%
Junior	79	23.0%
Senior	78	22.7%
Total	***344***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.8 (1.2)
n	295

BMI	
Minimum	17.2
Maximum	36.0
Mean (SD)	22.2 (3.3)
n	205

* 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, 2023-24 School Year

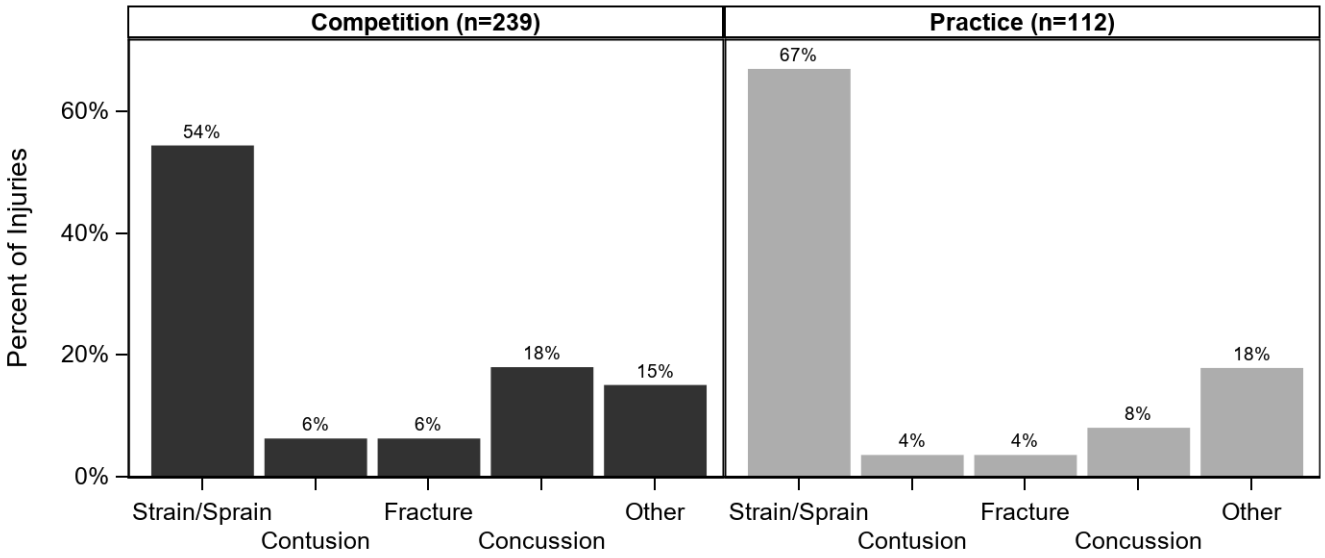


Table 8.3 Body Site of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

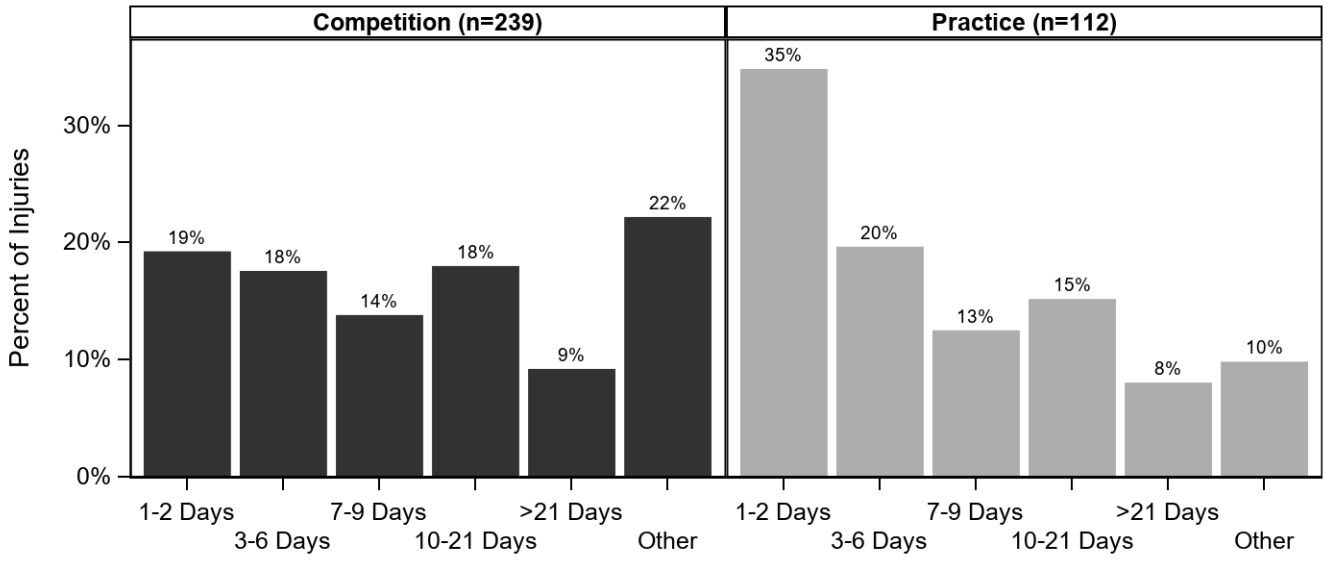
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Ankle	80	33.5%	38	33.9%	118	33.6%
Head/Face	52	21.8%	11	9.8%	63	17.9%
Knee	49	20.5%	12	10.7%	61	17.4%
Hand/Wrist	24	10.0%	10	8.9%	34	9.7%
Hip/Thigh/Upper Leg	8	3.3%	12	10.7%	20	5.7%
Lower Leg	8	3.3%	9	8.0%	17	4.8%
Shoulder	6	2.5%	7	6.3%	13	3.7%
Foot	4	1.7%	6	5.4%	10	2.8%
Arm/Elbow	4	1.7%	2	1.8%	6	1.7%
Trunk	2	0.8%	3	2.7%	5	1.4%
Systemic	1	0.4%	2	1.8%	3	0.9%
Neck	1	0.4%	0	0.0%	1	0.3%
Total	***239***	***100.0%***	***112***	***100.0%***	***351***	***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, 2023-24 School Year

	Competition (n=239)		Practice (n=112)		Overall (n=351)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	77	32.2%	38	33.9%	115	32.8%
Head/Face Concussion	43	18.0%	9	8.0%	52	14.8%
Knee Strain/Sprain	27	11.3%	6	5.4%	33	9.4%
Knee Other	17	7.1%	6	5.4%	23	6.6%
Hand/Wrist Strain/Sprain	15	6.3%	6	5.4%	21	6.0%
Hip/Thigh/Upper Leg Strain/Sprain	4	1.7%	12	10.7%	16	4.6%
Shoulder Other	4	1.7%	5	4.5%	9	2.6%
Foot Strain/Sprain	2	0.8%	5	4.5%	7	2.0%
Hand/Wrist Fracture	5	2.1%	2	1.8%	7	2.0%
Head/Face Other	5	2.1%	1	0.9%	6	1.7%

Figure 8.2 Time Loss of Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	23	9.7%	7	6.4%	30	8.6%
Did Not Require Surgery	214	90.3%	103	93.6%	317	91.4%
Total	***237***	***100.0%***	***110***	***100.0%***	***347***	***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, 2023-24 School Year

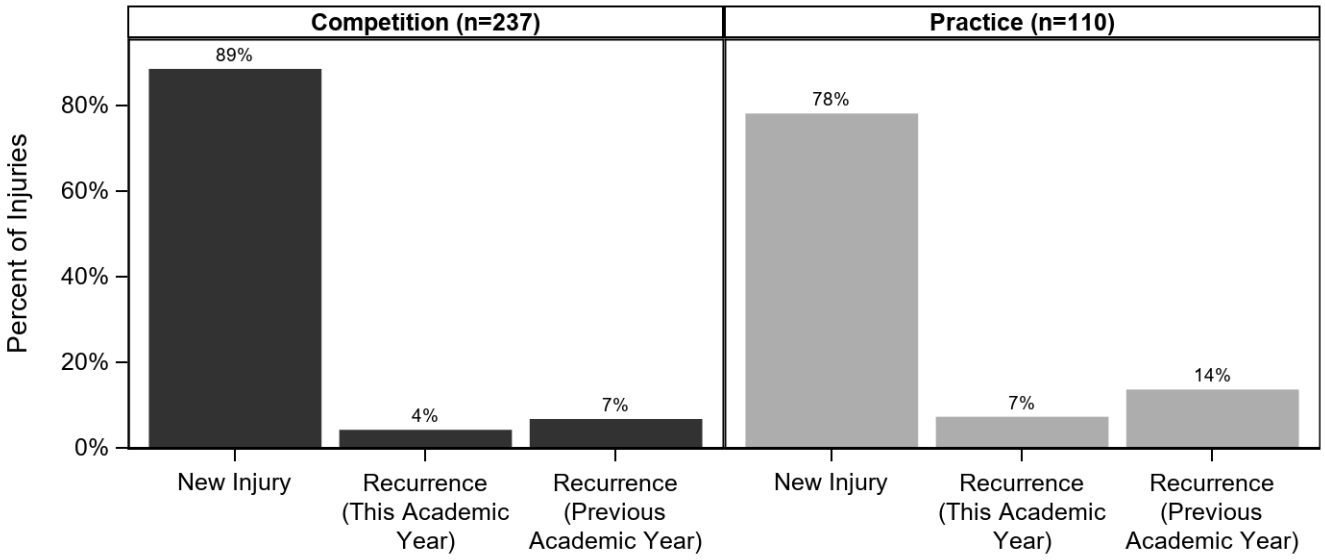


Table 8.6 Time during Season of Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	56	16.0%
Regular Season	278	79.2%
Post Season	16	4.6%
Unknown/Other	1	0.3%
Total	***351***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	2	0.9%
First Quarter	18	7.9%
Second Quarter	53	23.1%
Third Quarter	57	24.9%
Fourth Quarter	52	22.7%
Unknown	47	20.5%
Total	***229***	***100.0%***

Court Location		
Inside Lane (Offense)	42	18.7%
Inside Lane (Defense)	36	16.0%
Between 3 Point Arc and Lane (Offense)	20	8.9%
Between 3 Point Arc and Lane (Defense)	19	8.4%
Outside 3 Point Arc (Offense)	14	6.2%
Outside 3 Point Arc (Defense)	5	2.2%
Out of Bounds	4	1.8%
Off the Court	2	0.9%
Backcourt	11	4.9%
Unknown	72	32.0%
Total	***225***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	11	9.9%
Second 1/2 Hour	20	18.0%
1-2 Hours into Practice	43	38.7%
>2 Hours into Practice	4	3.6%
Unknown	33	29.7%
Total	***111***	***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, 2023-24 School Year

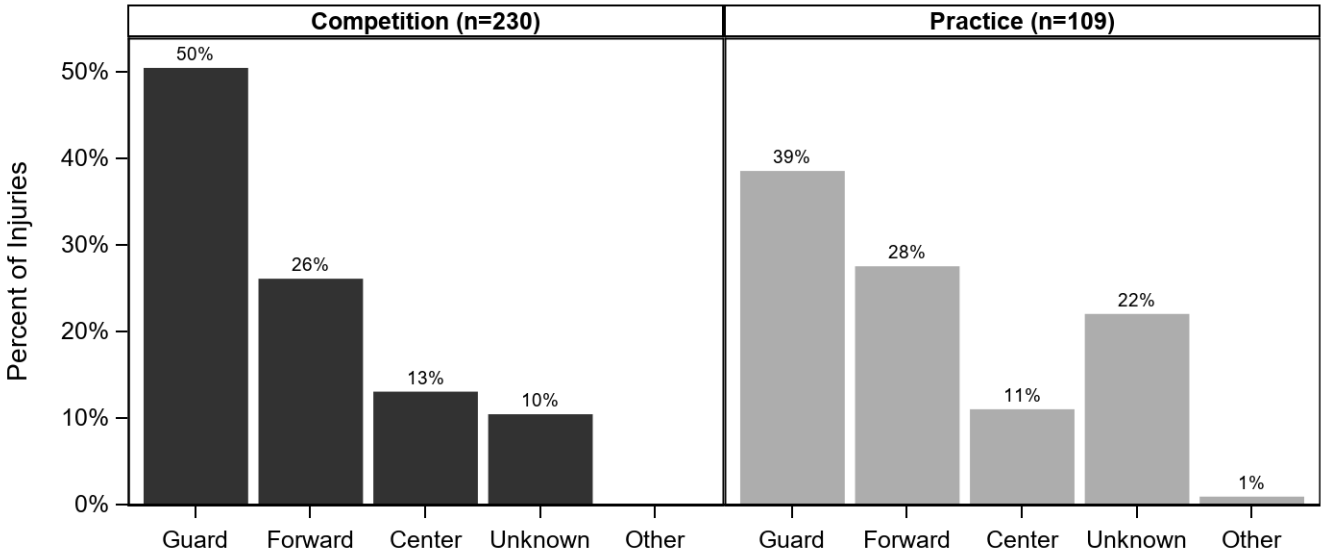


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Table 8.9 Activities Leading to Girls' Basketball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Defending	48	20.9%	14	12.8%	62	18.3%
General Play	32	13.9%	29	26.6%	61	18.0%
Unknown	31	13.5%	25	22.9%	56	16.5%
Rebounding	34	14.8%	16	14.7%	50	14.7%
Chasing Loose Ball	27	11.7%	3	2.8%	30	8.8%
Ball Handling/Dribbling	22	9.6%	3	2.8%	25	7.4%
Shooting	17	7.4%	5	4.6%	22	6.5%
Receiving Pass	12	5.2%	5	4.6%	17	5.0%
Other	5	2.2%	3	2.8%	8	2.4%
Conditioning	0	0.0%	5	4.6%	5	1.5%
Passing	2	0.9%	1	0.9%	3	0.9%
Total	***230***	***100.0%***	***109***	***100.0%***	***339***	***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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	19	9.6%	1	5.3%	0	0.0%	3	6.1%	2	3.6%
Chasing Loose Ball	6	3.0%	1	5.3%	1	5.3%	16	32.7%	6	10.9%
Conditioning	2	1.0%	0	0.0%	0	0.0%	0	0.0%	3	5.5%
Defending	31	15.7%	4	21.1%	6	31.6%	10	20.4%	11	20.0%
General Play	38	19.3%	3	15.8%	4	21.1%	5	10.2%	11	20.0%
Other	5	2.5%	0	0.0%	0	0.0%	1	2.0%	2	3.6%
Passing	2	1.0%	1	5.3%	0	0.0%	0	0.0%	0	0.0%
Rebounding	30	15.2%	3	15.8%	2	10.5%	7	14.3%	8	14.5%
Receiving Pass	12	6.1%	0	0.0%	2	10.5%	1	2.0%	2	3.6%
Shooting	12	6.1%	2	10.5%	2	10.5%	2	4.1%	4	7.3%
Unknown	40	20.3%	4	21.1%	2	10.5%	4	8.2%	6	10.9%
Total	***197***	***100.0%***	***19***	***100.0%***	***19***	***100.0%***	***49***	***100.0%***	***55***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***483***	***191,630***	***2.52***
Competition	205	49,520	4.14
Practice	278	142,110	1.96

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

Table 9.2 Demographic Characteristics of Injured Boys' Wrestling Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	130	27.9%
Sophomore	133	28.5%
Junior	101	21.7%
Senior	102	21.9%
Total	***466***	***100.0%***

Age (years)	
Minimum	13
Maximum	19
Mean (SD)	15.8 (1.2)
n	407

BMI	
Minimum	16.3
Maximum	41.0
Mean (SD)	24.2 (4.5)
n	281

* 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, 2023-24 School Year

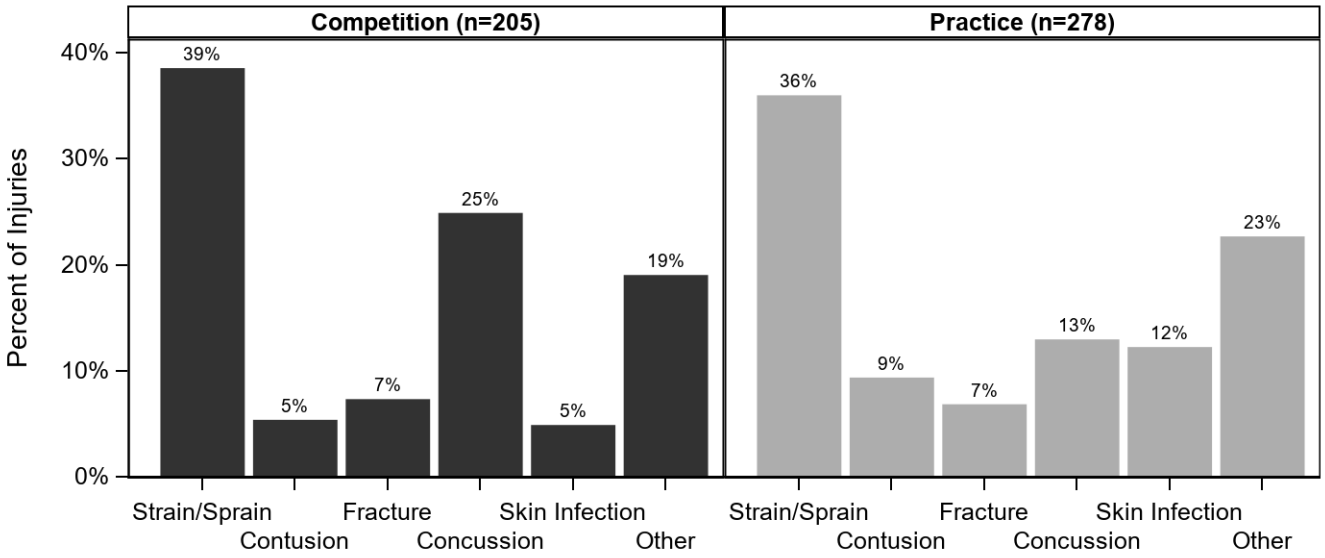


Table 9.3 Body Site of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

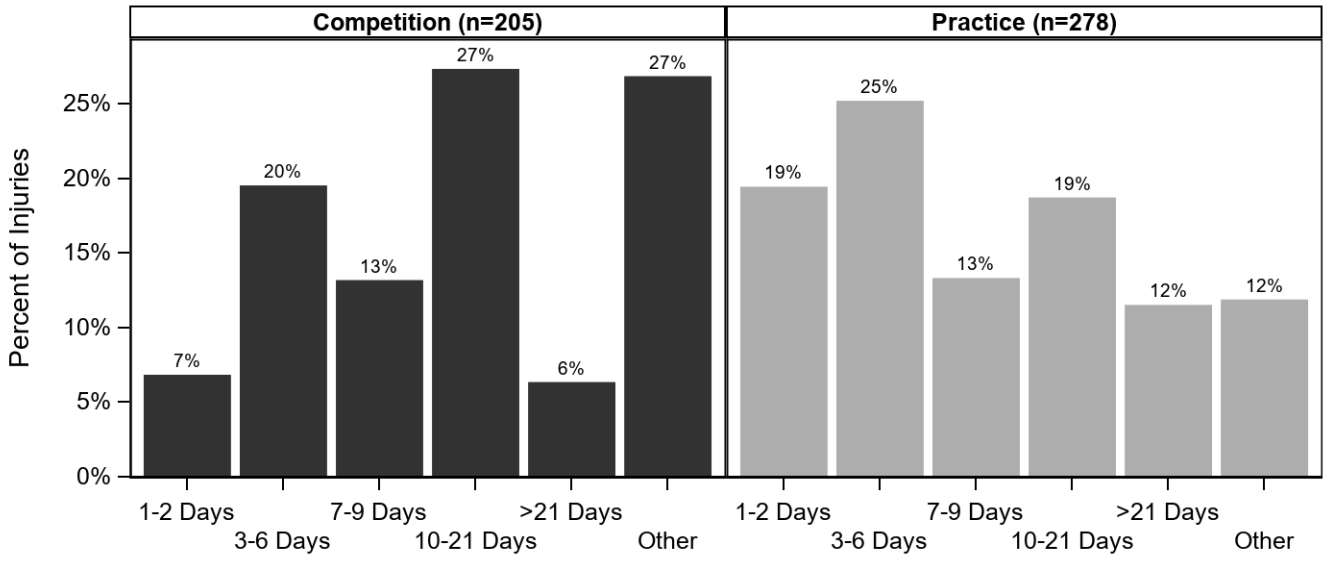
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	62	30.2%	59	21.2%	121	25.1%
Knee	36	17.6%	47	16.9%	83	17.2%
Shoulder	24	11.7%	34	12.2%	58	12.0%
Arm/Elbow	20	9.8%	21	7.6%	41	8.5%
Ankle	15	7.3%	21	7.6%	36	7.5%
Hand/Wrist	9	4.4%	24	8.6%	33	6.8%
Trunk	16	7.8%	16	5.8%	32	6.6%
Lower Leg	6	2.9%	9	3.2%	15	3.1%
Hip/Thigh/Upper Leg	3	1.5%	11	4.0%	14	2.9%
Neck	4	2.0%	10	3.6%	14	2.9%
Systemic	1	0.5%	13	4.7%	14	2.9%
Other	7	3.4%	5	1.8%	12	2.5%
Foot	2	1.0%	8	2.9%	10	2.1%
Total	***205***	***100.0%***	***278***	***100.0%***	***483***	***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, 2023-24 School Year

	Competition (n=205)		Practice (n=278)		Overall (n=483)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	51	24.9%	36	12.9%	87	18.0%
Knee Strain/Sprain	21	10.2%	18	6.5%	39	8.1%
Knee Other	15	7.3%	23	8.3%	38	7.9%
Ankle Strain/Sprain	13	6.3%	20	7.2%	33	6.8%
Shoulder Strain/Sprain	12	5.9%	17	6.1%	29	6.0%
Shoulder Other	12	5.9%	16	5.8%	28	5.8%
Head/Face Other	9	4.4%	18	6.5%	27	5.6%
Trunk Strain/Sprain	9	4.4%	10	3.6%	19	3.9%
Arm/Elbow Other	7	3.4%	11	4.0%	18	3.7%
Hand/Wrist Strain/Sprain	5	2.4%	9	3.2%	14	2.9%

Figure 9.2 Time Loss of Boys' Wrestling Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	17	8.5%	14	5.1%	31	6.5%
Did Not Require Surgery	183	91.5%	261	94.9%	444	93.5%
Total	***200***	***100.0%***	***275***	***100.0%***	***475***	***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, 2023-24 School Year

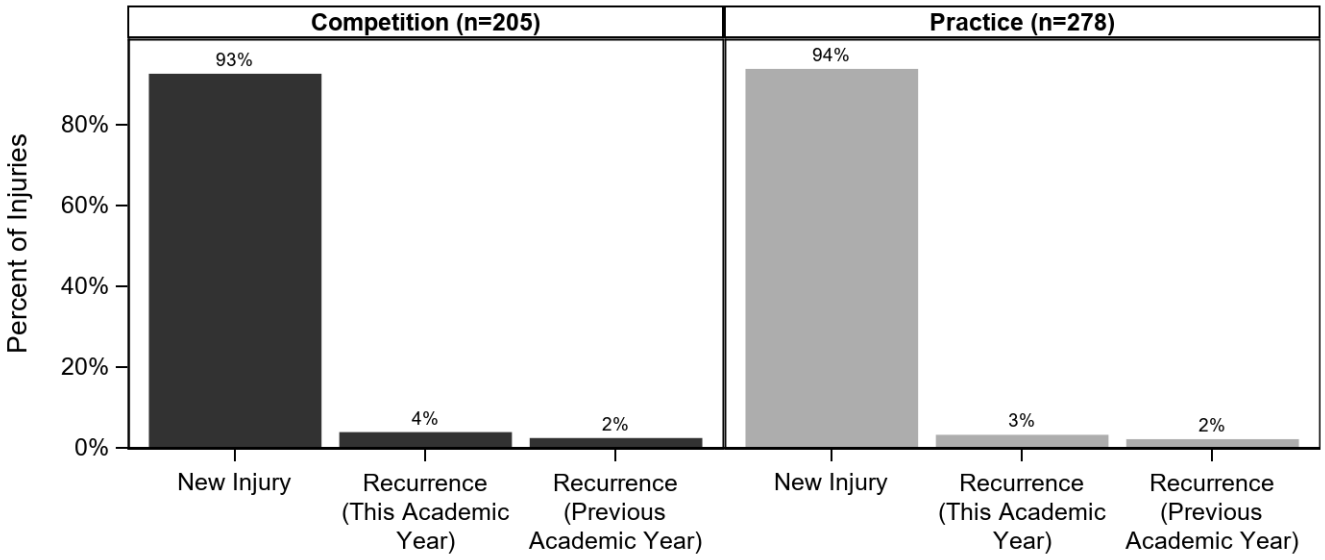


Table 9.6 Time during Season of Boys' Wrestling Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	75	15.6%
Regular Season	369	76.6%
Post Season	33	6.8%
Unknown/Other	5	1.0%
Total	***482***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	2	1.1%
First Period	21	11.2%
Second Period	45	24.1%
Third Period	39	20.9%
Unknown	80	42.8%
Total	***187***	***100.0%***

Mat Location		
Within 28ft Circle	269	60.3%
Out of Bounds	11	2.5%
Off Mat	9	2.0%
Unknown	157	35.2%
Total	***446***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	30	11.3%
Second 1/2 Hour	30	11.3%
1-2 Hours into Practice	123	46.4%
>2 Hours into Practice	8	3.0%
Unknown	74	27.9%
Total	***265***	***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, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Takedown	91	47.4%	81	30.9%	172	37.9%
Unknown	46	24.0%	48	18.3%	94	20.7%
Sparring	14	7.3%	44	16.8%	58	12.8%
N/A **	3	1.6%	37	14.1%	40	8.8%
Conditioning	0	0.0%	23	8.8%	23	5.1%
Fall	8	4.2%	10	3.8%	18	4.0%
Other	6	3.1%	7	2.7%	13	2.9%
Escape	8	4.2%	4	1.5%	12	2.6%
Riding	8	4.2%	4	1.5%	12	2.6%
Near Fall	7	3.6%	2	0.8%	9	2.0%
Reversal	1	0.5%	2	0.8%	3	0.7%
Total	***192***	***100.0%***	***262***	***100.0%***	***454***	***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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	12	7.0%	0	0.0%	1	3.0%	0	0.0%	10	7.8%
Escape	10	5.8%	1	2.8%	0	0.0%	0	0.0%	1	0.8%
Fall	8	4.7%	2	5.6%	2	6.1%	4	4.7%	2	1.6%
N/A **	1	0.6%	0	0.0%	0	0.0%	0	0.0%	39	30.5%
Near Fall	4	2.3%	0	0.0%	0	0.0%	3	3.5%	2	1.6%
Other	3	1.8%	1	2.8%	2	6.1%	3	3.5%	4	3.1%
Reversal	2	1.2%	0	0.0%	0	0.0%	0	0.0%	1	0.8%
Riding	6	3.5%	0	0.0%	1	3.0%	2	2.3%	3	2.3%
Sparring	22	12.9%	8	22.2%	3	9.1%	11	12.8%	14	10.9%
Takedown	70	40.9%	16	44.4%	18	54.5%	37	43.0%	31	24.2%
Unknown	33	19.3%	8	22.2%	6	18.2%	26	30.2%	21	16.4%
Total	***171***	***100.0%***	***36***	***100.0%***	***33***	***100.0%***	***86***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***205***	***186,636***	***1.10***
Competition	120	65,188	1.84
Practice	85	121,448	0.70

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

Table 10.2 Demographic Characteristics of Injured Boys' Baseball Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	35	17.7%
Sophomore	56	28.3%
Junior	55	27.8%
Senior	52	26.3%
Total	***198***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	16.2 (1.2)
n	164

BMI	
Minimum	17.6
Maximum	35.2
Mean (SD)	24.1 (3.4)
n	114

* 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, 2023-24 School Year

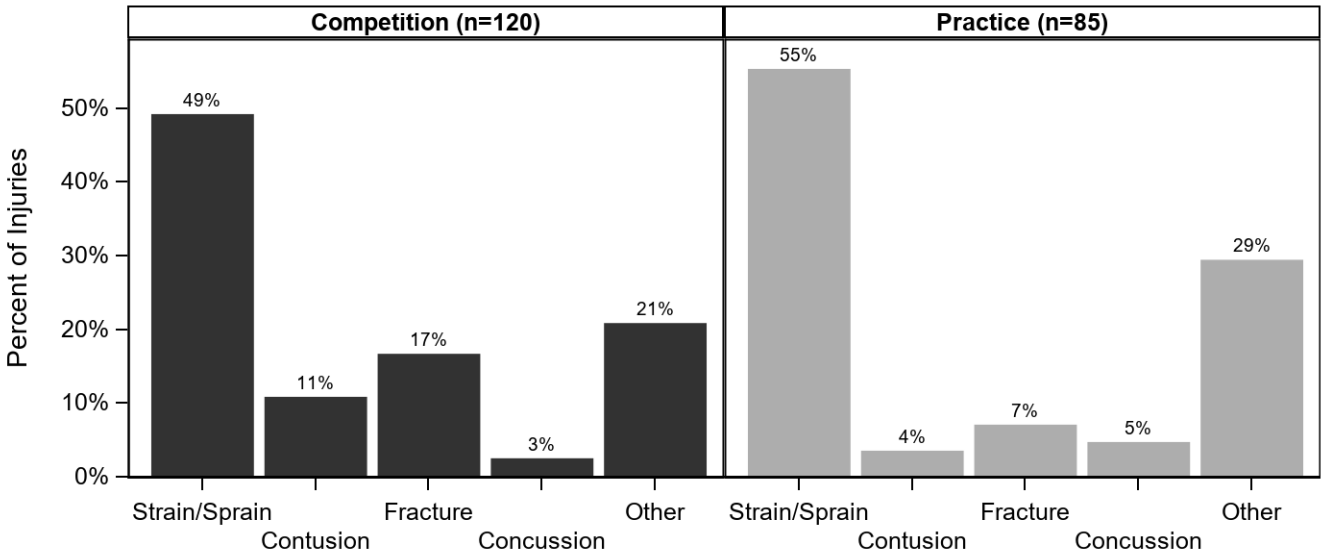


Table 10.3 Body Site of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

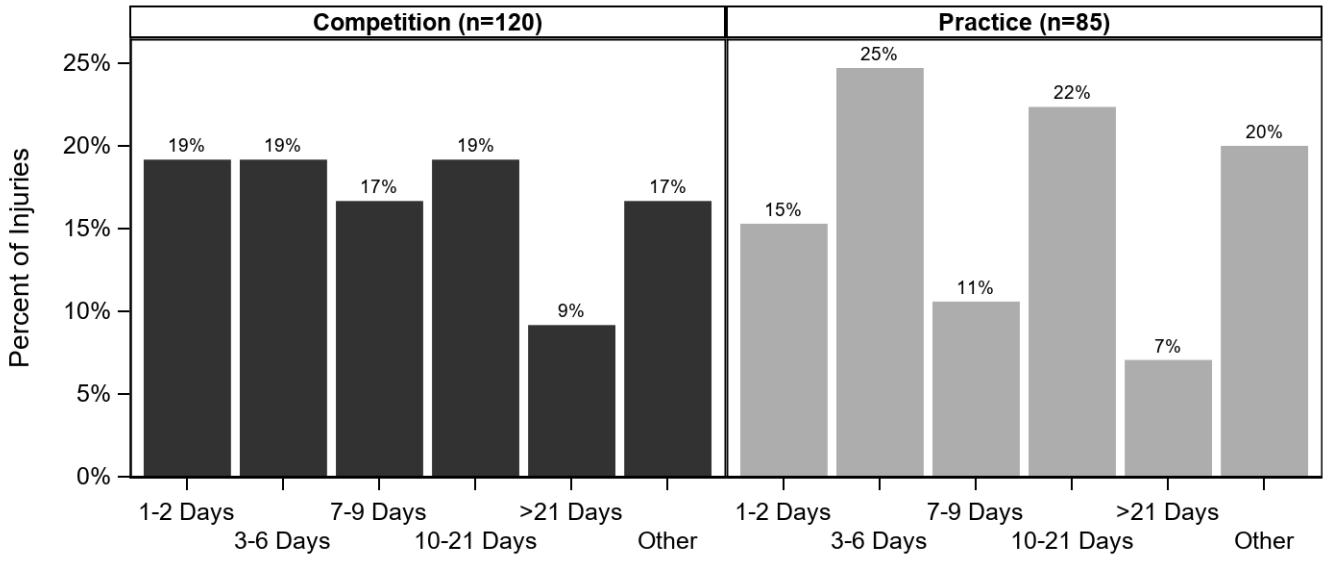
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Shoulder	19	15.8%	20	23.5%	39	19.0%
Hand/Wrist	27	22.5%	11	12.9%	38	18.5%
Hip/Thigh/Upper Leg	15	12.5%	11	12.9%	26	12.7%
Arm/Elbow	11	9.2%	10	11.8%	21	10.2%
Ankle	13	10.8%	7	8.2%	20	9.8%
Head/Face	10	8.3%	6	7.1%	16	7.8%
Trunk	5	4.2%	7	8.2%	12	5.9%
Knee	7	5.8%	3	3.5%	10	4.9%
Lower Leg	5	4.2%	5	5.9%	10	4.9%
Foot	4	3.3%	2	2.4%	6	2.9%
Other	3	2.5%	2	2.4%	5	2.4%
Neck	1	0.8%	1	1.2%	2	1.0%
Total	***120***	***100.0%***	***85***	***100.0%***	***205***	***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, 2023-24 School Year

	Competition (n=120)		Practice (n=85)		Overall (n=205)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	13	10.8%	10	11.8%	23	11.2%
Shoulder Strain/Sprain	11	9.2%	10	11.8%	21	10.2%
Ankle Strain/Sprain	13	10.8%	7	8.2%	20	9.8%
Hand/Wrist Fracture	15	12.5%	4	4.7%	19	9.3%
Shoulder Other	8	6.7%	10	11.8%	18	8.8%
Trunk Strain/Sprain	5	4.2%	6	7.1%	11	5.4%
Arm/Elbow Strain/Sprain	6	5.0%	4	4.7%	10	4.9%
Hand/Wrist Strain/Sprain	5	4.2%	5	5.9%	10	4.9%
Knee Other	5	4.2%	3	3.5%	8	3.9%
Head/Face Concussion	3	2.5%	4	4.7%	7	3.4%

Figure 10.2 Time Loss of Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	2	1.7%	2	2.4%	4	2.0%
Did Not Require Surgery	117	98.3%	81	97.6%	198	98.0%
Total	***119***	***100.0%***	***83***	***100.0%***	***202***	***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, 2023-24 School Year

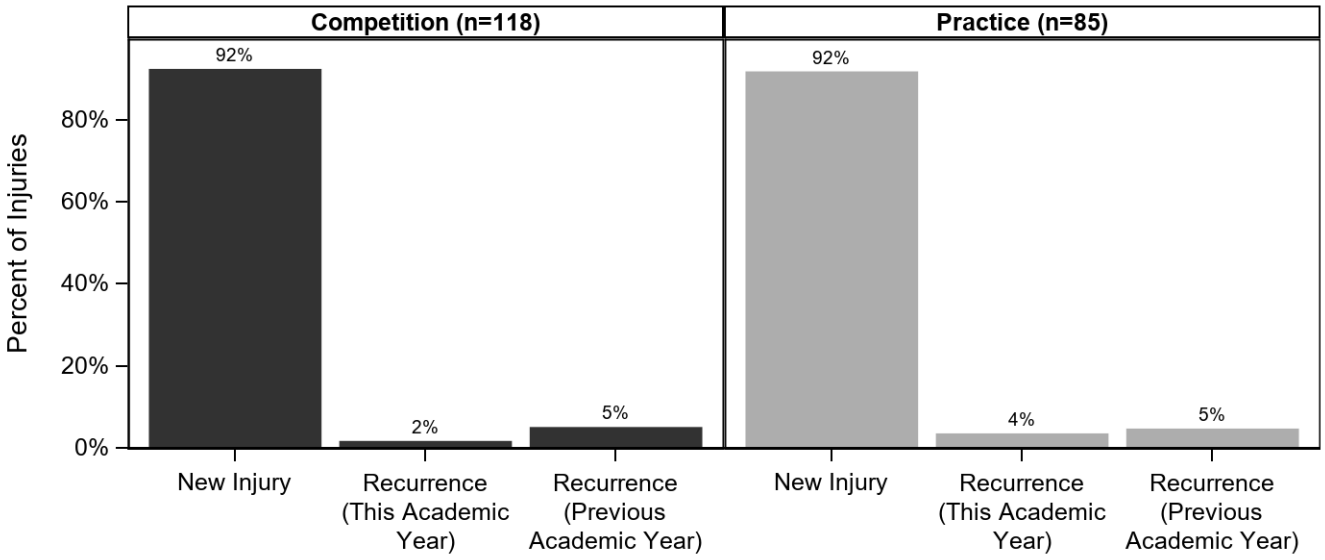


Table 10.6 Time during Season of Boys' Baseball Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	43	21.0%
Regular Season	152	74.1%
Post Season	10	4.9%
Total	***205***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	7	6.2%
First Inning	7	6.2%
Second Inning	9	8.0%
Third Inning	17	15.0%
Fourth Inning	12	10.6%
Fifth Inning	12	10.6%
Sixth Inning	10	8.8%
Seventh Inning	5	4.4%
Extra Inning	1	0.9%
Unknown	33	29.2%
Total	***113***	***100.0%***

Field Location		
Pitchers Mound	18	15.9%
Home Plate	41	36.3%
First Base	13	11.5%
Second Base	13	11.5%
Third Base	8	7.1%
Infield	3	2.7%
Outfield	6	5.3%
Foul Territory	1	0.9%
Other	3	2.7%
Unknown	7	6.2%
Total	***113***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	4	4.8%
Second 1/2 Hour	10	11.9%
1-2 Hours into Practice	35	41.7%
>2 Hours into Practice	1	1.2%
Unknown	34	40.5%
Total	***84***	***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, 2023-24 School Year

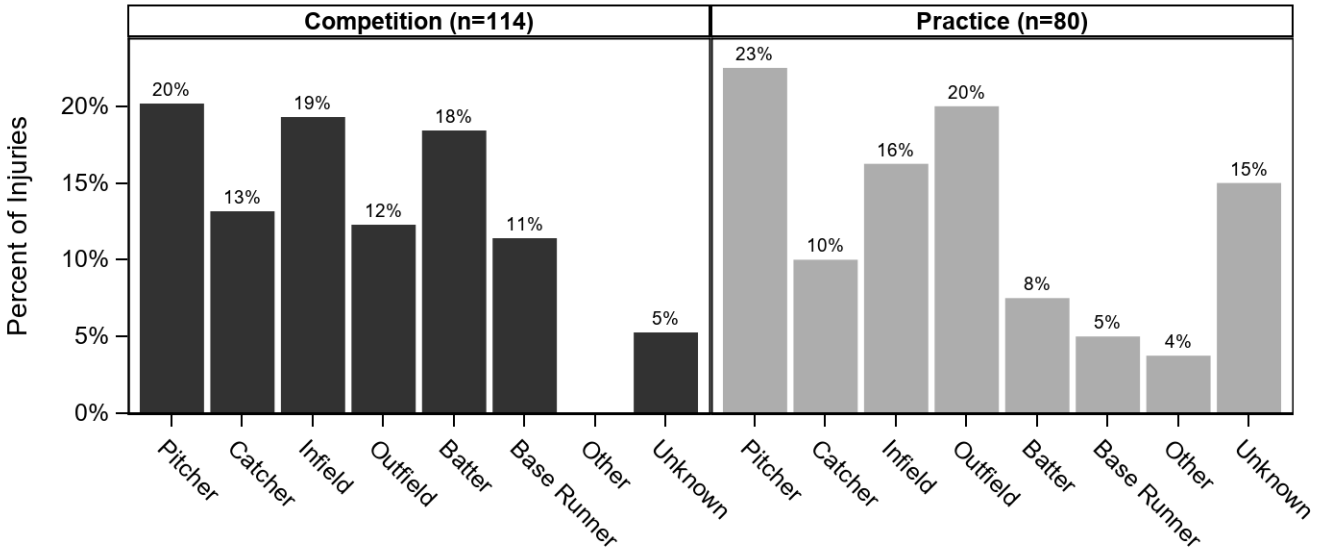


Table 10.9 Activities Leading to Boys' Baseball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Pitching	20	17.4%	16	19.8%	36	18.4%
Batting	23	20.0%	7	8.6%	30	15.3%
Running Bases	21	18.3%	7	8.6%	28	14.3%
Fielding a Batted Ball	10	8.7%	9	11.1%	19	9.7%
Throwing	4	3.5%	14	17.3%	18	9.2%
Sliding	14	12.2%	2	2.5%	16	8.2%
Catching	13	11.3%	3	3.7%	16	8.2%
Conditioning	1	0.9%	7	8.6%	8	4.1%
Fielding a Thrown Ball	5	4.3%	3	3.7%	8	4.1%
Unknown	1	0.9%	7	8.6%	8	4.1%
Other	3	2.6%	2	2.5%	5	2.6%
General Play	0	0.0%	4	4.9%	4	2.0%
Total	***115***	***100.0%***	***81***	***100.0%***	***196***	***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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Batting	6	6.0%	9	56.3%	6	23.1%	1	14.3%	8	17.0%
Catching	7	7.0%	2	12.5%	4	15.4%	2	28.6%	1	2.1%
Conditioning	6	6.0%	0	0.0%	1	3.8%	0	0.0%	1	2.1%
Fielding a Batted Ball	7	7.0%	1	6.3%	4	15.4%	3	42.9%	4	8.5%
Fielding a Thrown Ball	4	4.0%	3	18.8%	0	0.0%	0	0.0%	1	2.1%
General Play	4	4.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other	1	1.0%	0	0.0%	3	11.5%	0	0.0%	1	2.1%
Pitching	27	27.0%	0	0.0%	0	0.0%	0	0.0%	9	19.1%
Running Bases	18	18.0%	1	6.3%	2	7.7%	1	14.3%	6	12.8%
Sliding	4	4.0%	0	0.0%	4	15.4%	0	0.0%	8	17.0%
Throwing	11	11.0%	0	0.0%	1	3.8%	0	0.0%	6	12.8%
Unknown	5	5.0%	0	0.0%	1	3.8%	0	0.0%	2	4.3%
Total	***100***	***100.0%***	***16***	***100.0%***	***26***	***100.0%***	***7***	***100.0%***	***47***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***169***	***119,881***	***1.41***
Competition	95	41,605	2.28
Practice	74	78,276	0.95

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

Table 11.2 Demographic Characteristics of Injured Girls' Softball Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	31	19.0%
Sophomore	49	30.1%
Junior	49	30.1%
Senior	34	20.9%
Total	***163***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	16.0 (1.1)
n	131

BMI	
Minimum	18.2
Maximum	36.6
Mean (SD)	24.0 (4.3)
n	82

* 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, 2023-24 School Year

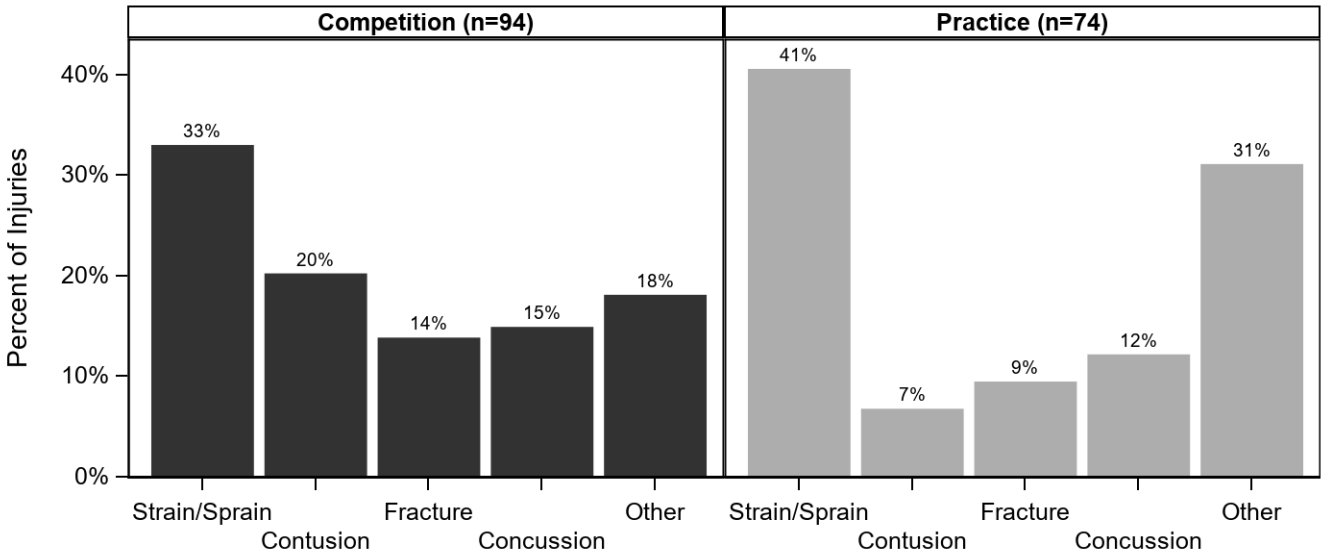


Table 11.3 Body Site of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

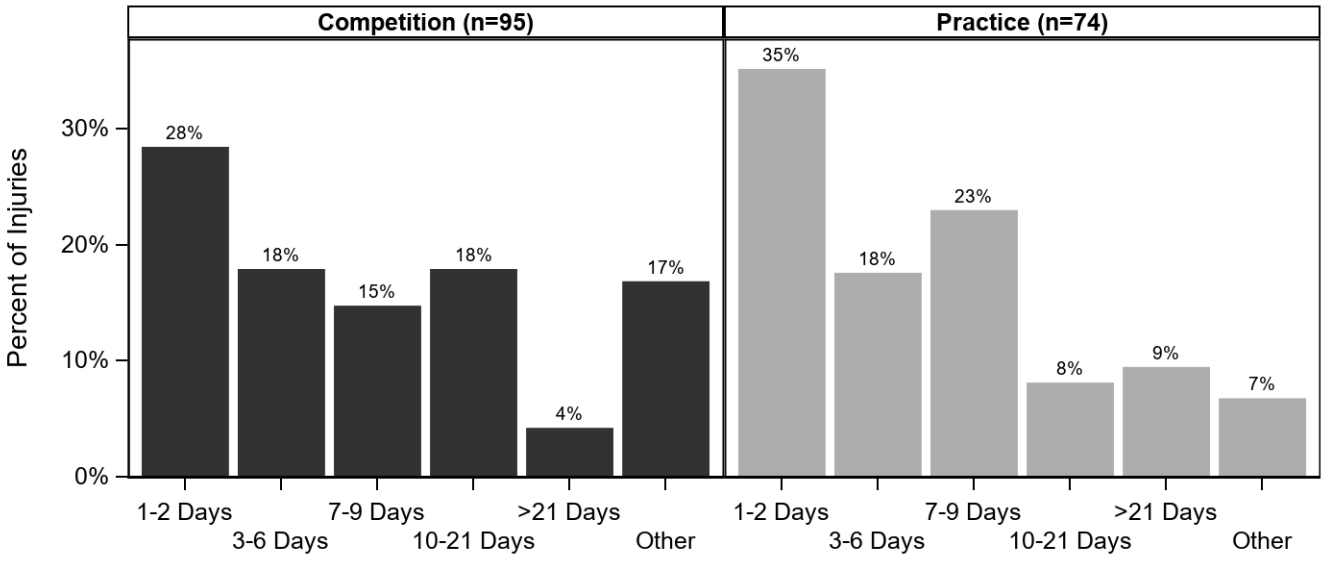
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	19	20.0%	16	21.6%	35	20.7%
Hand/Wrist	18	18.9%	7	9.5%	25	14.8%
Ankle	11	11.6%	10	13.5%	21	12.4%
Shoulder	8	8.4%	11	14.9%	19	11.2%
Knee	10	10.5%	6	8.1%	16	9.5%
Hip/Thigh/Upper Leg	6	6.3%	6	8.1%	12	7.1%
Arm/Elbow	7	7.4%	4	5.4%	11	6.5%
Trunk	6	6.3%	5	6.8%	11	6.5%
Lower Leg	5	5.3%	3	4.1%	8	4.7%
Foot	4	4.2%	3	4.1%	7	4.1%
Systemic	1	1.1%	2	2.7%	3	1.8%
Other	0	0.0%	1	1.4%	1	0.6%
Total	***95***	***100.0%***	***74***	***100.0%***	***169***	***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, 2023-24 School Year

	Competition (n=94)		Practice (n=74)		Overall (n=168)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	14	14.9%	9	12.2%	23	13.7%
Ankle Strain/Sprain	9	9.6%	8	10.8%	17	10.1%
Hip/Thigh/Upper Leg Strain/Sprain	5	5.3%	6	8.1%	11	6.5%
Shoulder Strain/Sprain	4	4.3%	7	9.5%	11	6.5%
Hand/Wrist Fracture	8	8.5%	2	2.7%	10	6.0%
Knee Other	4	4.3%	5	6.8%	9	5.4%
Shoulder Other	3	3.2%	4	5.4%	7	4.2%
Arm/Elbow Strain/Sprain	4	4.3%	2	2.7%	6	3.6%
Hand/Wrist Contusion	6	6.4%	0	0.0%	6	3.6%
Head/Face Contusion	2	2.1%	4	5.4%	6	3.6%

Figure 11.2 Time Loss of Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	7	7.5%	2	2.7%	9	5.4%
Did Not Require Surgery	86	92.5%	71	97.3%	157	94.6%
Total	***93***	***100.0%***	***73***	***100.0%***	***166***	***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, 2023-24 School Year

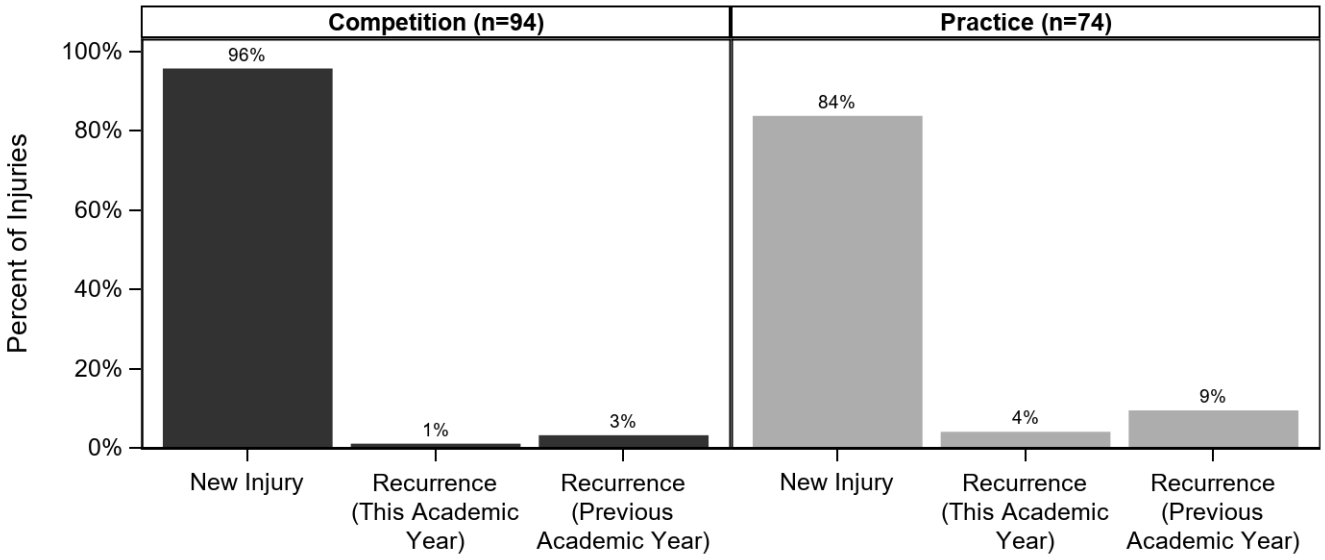


Table 11.6 Time during Season of Girls' Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	47	28.0%
Regular Season	114	67.9%
Post Season	7	4.2%
Total	***168***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	8	9.2%
First Inning	7	8.0%
Second Inning	8	9.2%
Third Inning	6	6.9%
Fourth Inning	12	13.8%
Fifth Inning	9	10.3%
Sixth Inning	4	4.6%
Seventh Inning	1	1.1%
Unknown	32	36.8%
Total	***87***	***100.0%***

Field Location		
Pitchers Mound	14	15.7%
Home Plate	20	22.5%
First Base	10	11.2%
Second Base	5	5.6%
Third Base	8	9.0%
Infield	4	4.5%
Outfield	12	13.5%
Foul Territory	4	4.5%
Other	4	4.5%
Unknown	8	9.0%
Total	***89***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	8	11.1%
Second 1/2 Hour	12	16.7%
1-2 Hours into Practice	31	43.1%
>2 Hours into Practice	2	2.8%
Unknown	19	26.4%
Total	***72***	***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, 2023-24 School Year

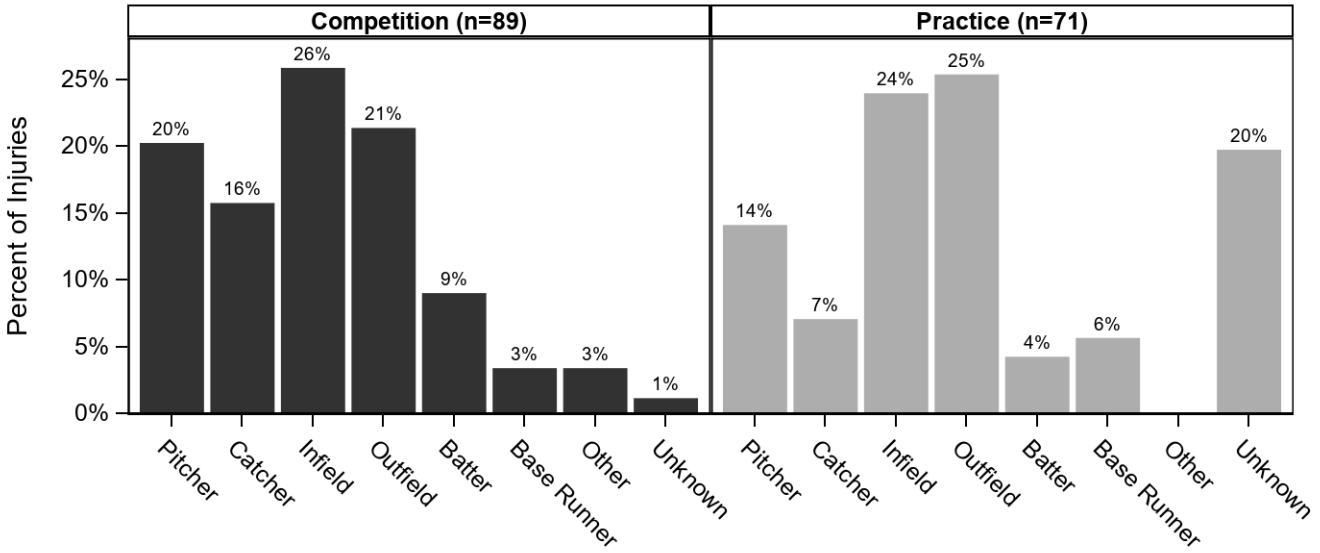


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Table 11.9 Activities Leading to Girls' Softball Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Fielding a Batted Ball	16	17.8%	11	15.5%	27	16.8%
Pitching	14	15.6%	8	11.3%	22	13.7%
Running Bases	14	15.6%	7	9.9%	21	13.0%
Catching	16	17.8%	4	5.6%	20	12.4%
Throwing	3	3.3%	10	14.1%	13	8.1%
Fielding a Thrown Ball	4	4.4%	7	9.9%	11	6.8%
General Play	3	3.3%	8	11.3%	11	6.8%
Batting	6	6.7%	4	5.6%	10	6.2%
Sliding	7	7.8%	1	1.4%	8	5.0%
Unknown	2	2.2%	5	7.0%	7	4.3%
Other	5	5.6%	1	1.4%	6	3.7%
Conditioning	0	0.0%	5	7.0%	5	3.1%
Total	***90***	***100.0%***	***71***	***100.0%***	***161***	***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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Batting	0	0.0%	3	13.0%	2	10.0%	2	9.1%	2	5.3%
Catching	4	7.0%	3	13.0%	6	30.0%	6	27.3%	1	2.6%
Conditioning	3	5.3%	0	0.0%	0	0.0%	0	0.0%	2	5.3%
Fielding a Batted Ball	9	15.8%	6	26.1%	5	25.0%	5	22.7%	2	5.3%
Fielding a Thrown Ball	4	7.0%	0	0.0%	0	0.0%	2	9.1%	5	13.2%
General Play	5	8.8%	1	4.3%	0	0.0%	0	0.0%	5	13.2%
Other	0	0.0%	0	0.0%	1	5.0%	3	13.6%	2	5.3%
Pitching	11	19.3%	4	17.4%	1	5.0%	0	0.0%	6	15.8%
Running Bases	6	10.5%	5	21.7%	2	10.0%	1	4.5%	7	18.4%
Sliding	2	3.5%	0	0.0%	2	10.0%	1	4.5%	3	7.9%
Throwing	10	17.5%	0	0.0%	0	0.0%	1	4.5%	2	5.3%
Unknown	3	5.3%	1	4.3%	1	5.0%	1	4.5%	1	2.6%
Total	***57***	***100.0%***	***23***	***100.0%***	***20***	***100.0%***	***22***	***100.0%***	***38***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***93***	***51,909***	***1.79***
Competition	51	17,621	2.89
Practice	42	34,288	1.22

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

Table 12.2 Demographic Characteristics of Injured Girls' Field Hockey Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	22	24.7%
Sophomore	22	24.7%
Junior	23	25.8%
Senior	22	24.7%
Total	***89***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.7 (1.2)
n	86

BMI	
Minimum	16.6
Maximum	32.5
Mean (SD)	22.0 (2.9)
n	65

* 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, 2023-24 School Year

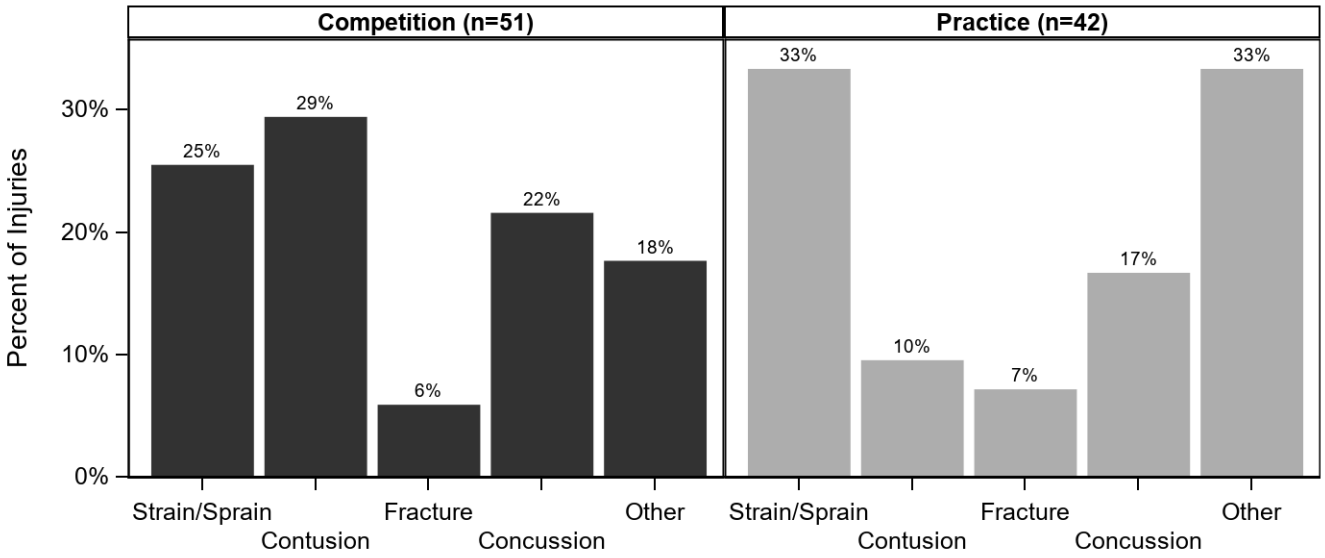


Table 12.3 Body Site of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

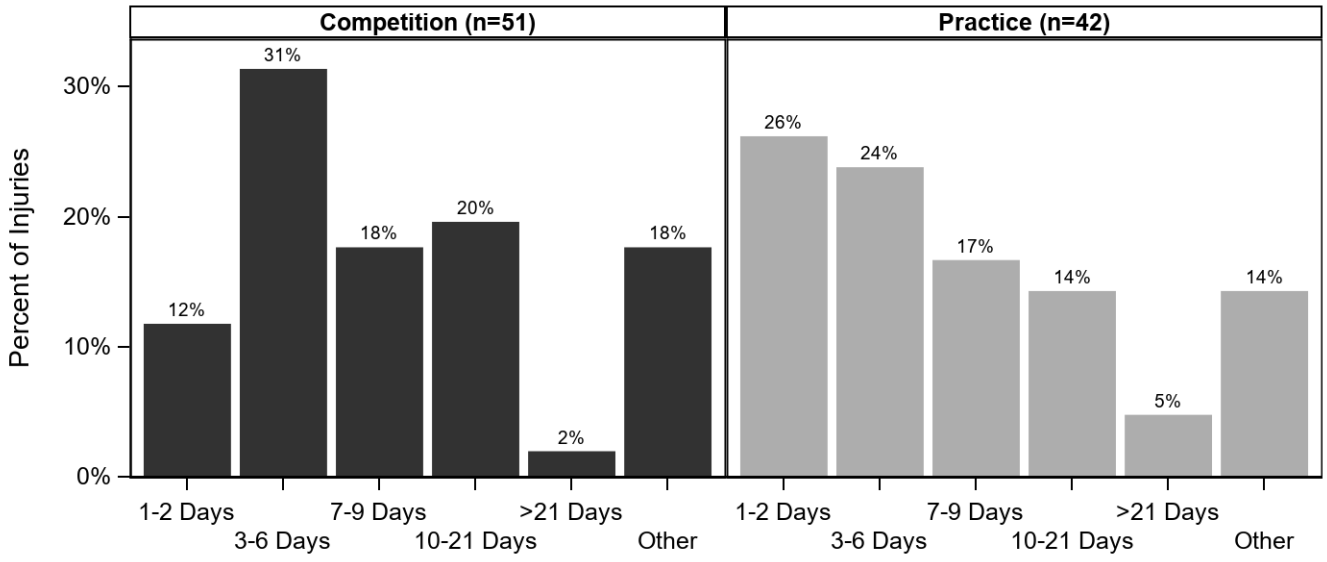
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	19	37.3%	13	31.0%	32	34.4%
Hip/Thigh/Upper Leg	5	9.8%	9	21.4%	14	15.1%
Ankle	8	15.7%	4	9.5%	12	12.9%
Hand/Wrist	9	17.6%	2	4.8%	11	11.8%
Knee	3	5.9%	4	9.5%	7	7.5%
Lower Leg	2	3.9%	3	7.1%	5	5.4%
Trunk	2	3.9%	1	2.4%	3	3.2%
Arm/Elbow	1	2.0%	1	2.4%	2	2.2%
Foot	0	0.0%	2	4.8%	2	2.2%
Shoulder	0	0.0%	2	4.8%	2	2.2%
Systemic	1	2.0%	1	2.4%	2	2.2%
Other	1	2.0%	0	0.0%	1	1.1%
Total	***51***	***100.0%***	***42***	***100.0%***	***93***	***100.0%***

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

Table 12.4 Ten Most Common Girls' Field Hockey Injury Diagnoses by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year

	Competition (n=51)		Practice (n=42)		Overall (n=93)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	11	21.6%	7	16.7%	18	19.4%
Ankle Strain/Sprain	7	13.7%	3	7.1%	10	10.8%
Hip/Thigh/Upper Leg Strain/Sprain	3	5.9%	6	14.3%	9	9.7%
Head/Face Other	5	9.8%	3	7.1%	8	8.6%
Hand/Wrist Contusion	6	11.8%	1	2.4%	7	7.5%
Hip/Thigh/Upper Leg Other	1	2.0%	3	7.1%	4	4.3%
Lower Leg Other	1	2.0%	3	7.1%	4	4.3%
Hand/Wrist Fracture	2	3.9%	1	2.4%	3	3.2%
Head/Face Contusion	2	3.9%	1	2.4%	3	3.2%
Head/Face Fracture	1	2.0%	2	4.8%	3	3.2%

Figure 12.2 Time Loss of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	51	100.0%	40	100.0%	91	100.0%
Total	***51***	***100.0%***	***40***	***100.0%***	***91***	***100.0%***

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

Figure 12.3 History of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year

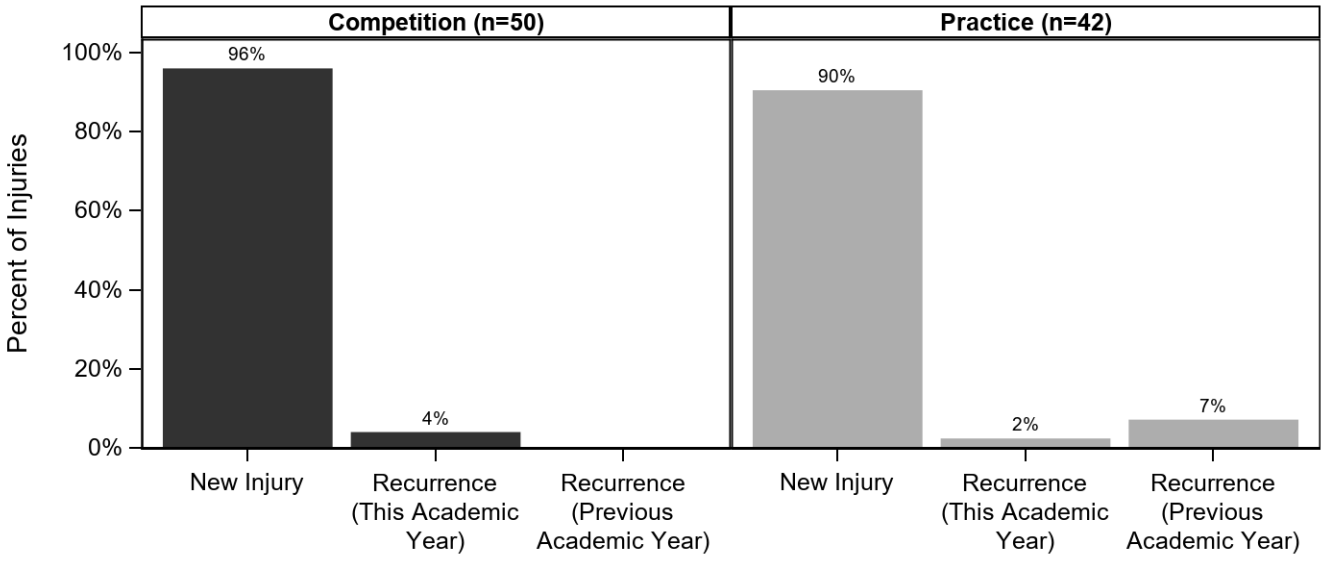


Table 12.6 Time during Season of Girls' Field Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	16	17.4%
Regular Season	71	77.2%
Post Season	5	5.4%
Total	***92***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	3	30.0%
Unknown	7	70.0%
Total	***10***	***100.0%***

Field Location		
Goal Area/Circle	4	8.2%
Within 16-yard Arc	5	10.2%
Within 25-yard Line	6	12.2%
Between 25-yard Line and Center Line	12	24.5%
Sideline	1	2.0%
Other	1	2.0%
Unknown	20	40.8%
Total	***49***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	2	5.0%
Second 1/2 Hour	5	12.5%
1-2 Hours into Practice	18	45.0%
>2 Hours into Practice	4	10.0%
Unknown	11	27.5%
Total	***40***	***100.0%***

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

Figure 12.4 Player Position of Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year

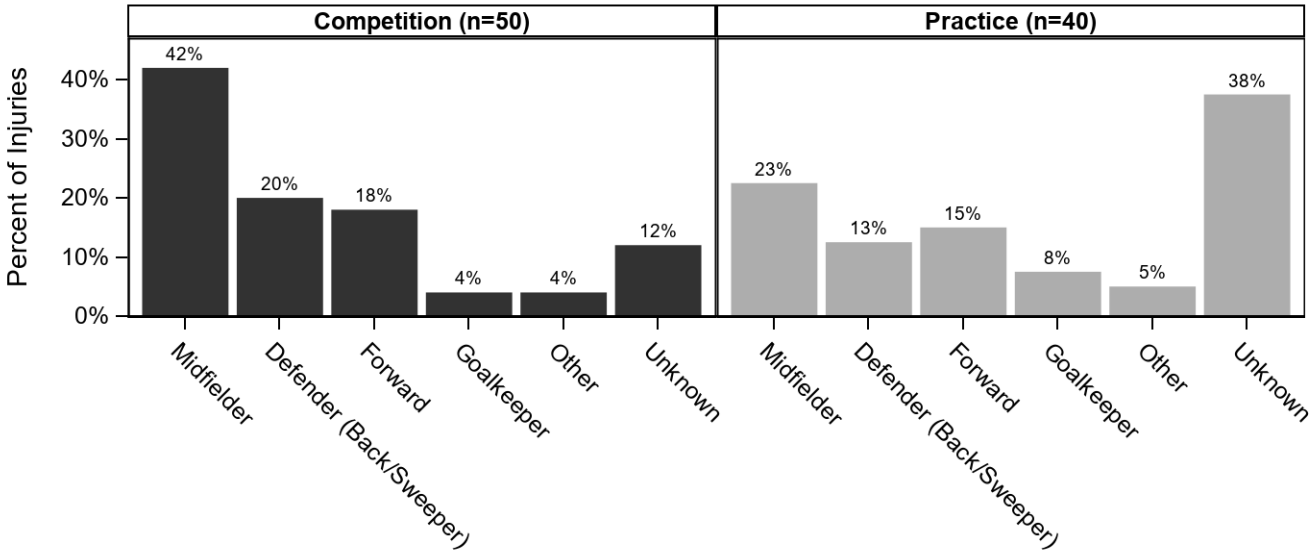


Table 12.9 Activities Leading to Girls' Field Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	14	27.5%	12	30.0%	26	28.6%
Defending	15	29.4%	4	10.0%	19	20.9%
Unknown	6	11.8%	10	25.0%	16	17.6%
Ball Handling/Dribbling	4	7.8%	2	5.0%	6	6.6%
Passing	4	7.8%	1	2.5%	5	5.5%
Chasing a Loose Ball	3	5.9%	2	5.0%	5	5.5%
Goaltending	1	2.0%	3	7.5%	4	4.4%
Other	1	2.0%	2	5.0%	3	3.3%
Conditioning	0	0.0%	3	7.5%	3	3.3%
Shooting	1	2.0%	1	2.5%	2	2.2%
Penalty Corner	1	2.0%	0	0.0%	1	1.1%
Blocking Shot	1	2.0%	0	0.0%	1	1.1%
Total	***51***	***100.0%***	***40***	***100.0%***	***91***	***100.0%***

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

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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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Dribbling	2	7.4%	0	0.0%	0	0.0%	4	23.5%	0	0.0%
Blocking Shot	0	0.0%	1	5.3%	0	0.0%	0	0.0%	0	0.0%
Chasing a Loose Ball	1	3.7%	0	0.0%	0	0.0%	3	17.6%	1	4.3%
Conditioning	2	7.4%	0	0.0%	0	0.0%	0	0.0%	1	4.3%
Defending	1	3.7%	10	52.6%	1	20.0%	3	17.6%	4	17.4%
General Play	11	40.7%	2	10.5%	0	0.0%	2	11.8%	11	47.8%
Goaltending	2	7.4%	1	5.3%	0	0.0%	1	5.9%	0	0.0%
Other	1	3.7%	0	0.0%	0	0.0%	0	0.0%	2	8.7%
Passing	3	11.1%	1	5.3%	0	0.0%	0	0.0%	1	4.3%
Penalty Corner	0	0.0%	0	0.0%	0	0.0%	1	5.9%	0	0.0%
Shooting	0	0.0%	1	5.3%	1	20.0%	0	0.0%	0	0.0%
Unknown	4	14.8%	3	15.8%	3	60.0%	3	17.6%	3	13.0%
Total	***27***	***100.0%***	***19***	***100.0%***	***5***	***100.0%***	***17***	***100.0%***	***23***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***47***	***33,584***	***1.40***
Competition	41	11,680	3.51
Practice	6	21,904	0.27

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

Table 13.2 Demographic Characteristics of Injured Boys' Ice Hockey Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	1	2.1%
Sophomore	17	36.2%
Junior	12	25.5%
Senior	17	36.2%
Total	***47***	***100.0%***

Age (years)	
Minimum	15
Maximum	18
Mean (SD)	16.3 (1.0)
n	43

BMI	
Minimum	19.5
Maximum	41.6
Mean (SD)	24.5 (3.7)
n	37

* 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, 2023-24 School Year

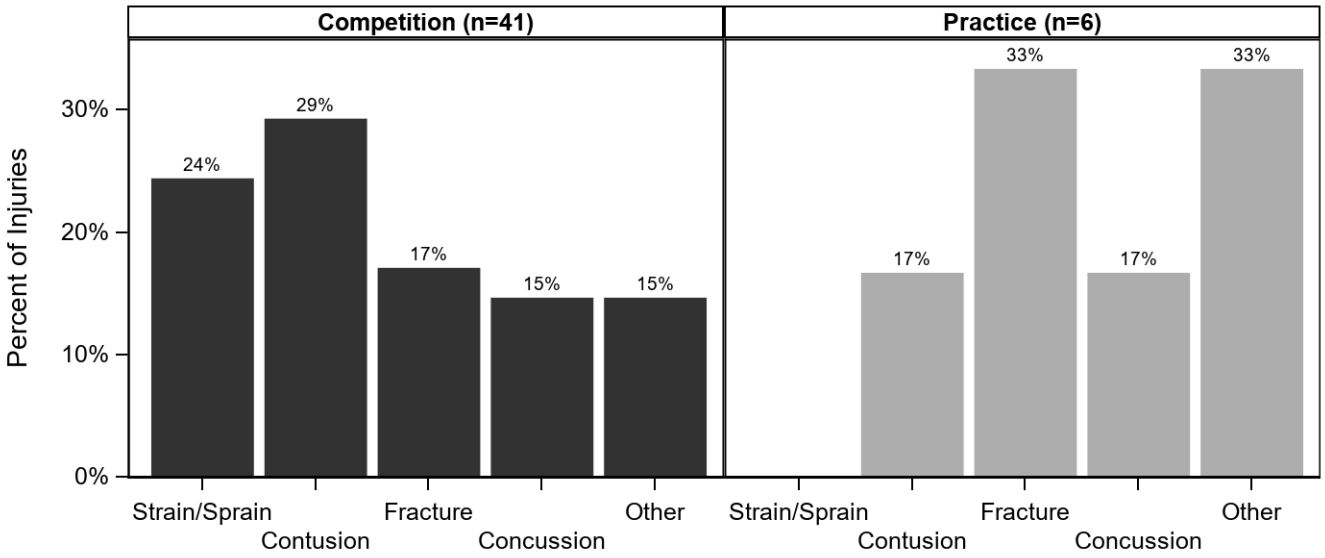


Table 13.3 Body Site of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

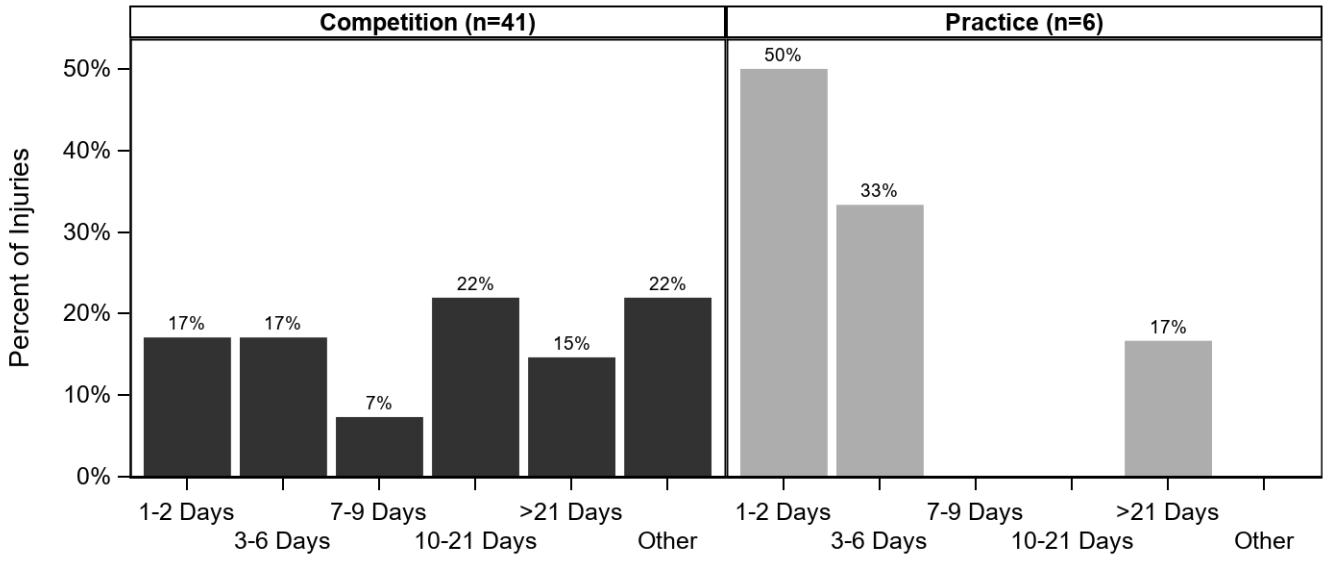
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	8	19.5%	1	16.7%	9	19.1%
Knee	7	17.1%	1	16.7%	8	17.0%
Hand/Wrist	5	12.2%	2	33.3%	7	14.9%
Shoulder	7	17.1%	0	0.0%	7	14.9%
Hip/Thigh/Upper Leg	4	9.8%	1	16.7%	5	10.6%
Lower Leg	2	4.9%	1	16.7%	3	6.4%
Other	3	7.3%	0	0.0%	3	6.4%
Trunk	3	7.3%	0	0.0%	3	6.4%
Ankle	1	2.4%	0	0.0%	1	2.1%
Arm/Elbow	1	2.4%	0	0.0%	1	2.1%
Total	***41***	***100.0%***	***6***	***100.0%***	***47***	***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, 2023-24 School Year

	Competition (n=41)		Practice (n=6)		Overall (n=47)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	6	14.6%	1	16.7%	7	14.9%
Hand/Wrist Fracture	2	4.9%	2	33.3%	4	8.5%
Hip/Thigh/Upper Leg Contusion	3	7.3%	0	0.0%	3	6.4%
Knee Contusion	3	7.3%	0	0.0%	3	6.4%
Shoulder Other	3	7.3%	0	0.0%	3	6.4%
Shoulder Strain/Sprain	3	7.3%	0	0.0%	3	6.4%
Hand/Wrist Contusion	2	4.9%	0	0.0%	2	4.3%
Knee Other	1	2.4%	1	16.7%	2	4.3%
Knee Strain/Sprain	2	4.9%	0	0.0%	2	4.3%
Lower Leg Contusion	1	2.4%	1	16.7%	2	4.3%

Figure 13.2 Time Loss of Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	6	14.6%	0	0.0%	6	12.8%
Did Not Require Surgery	35	85.4%	6	100.0%	41	87.2%
Total	***41***	***100.0%***	***6***	***100.0%***	***47***	***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, 2023-24 School Year

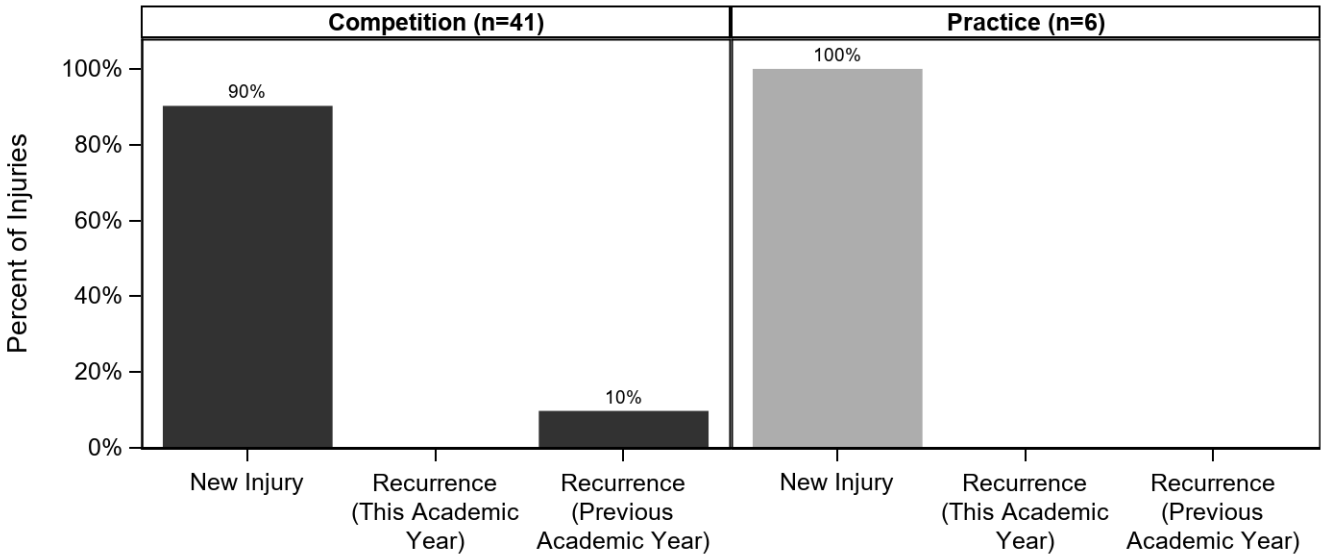


Table 13.6 Time during Season of Boys' Ice Hockey Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	2	4.3%
Regular Season	40	85.1%
Post Season	5	10.6%
Total	***47***	***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, 2023-24 School Year *

Time in Competition	n	%
First Period	3	7.3%
Second Period	14	34.1%
Third Period	20	48.8%
Unknown	4	9.8%
Total	***41***	***100.0%***

Rink Location		
Corner	5	12.2%
Behind Goal	5	12.2%
Goal Area	1	2.4%
Between Goal Line and Blue Line	12	29.3%
Neutral Zone	10	24.4%
Unknown	8	19.5%
Total	***41***	***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, 2023-24 School Year *

Time in Practice	n	%
Second 1/2 Hour	2	33.3%
1-2 Hours into Practice	2	33.3%
Unknown	2	33.3%
Total	***6***	***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, 2023-24 School Year

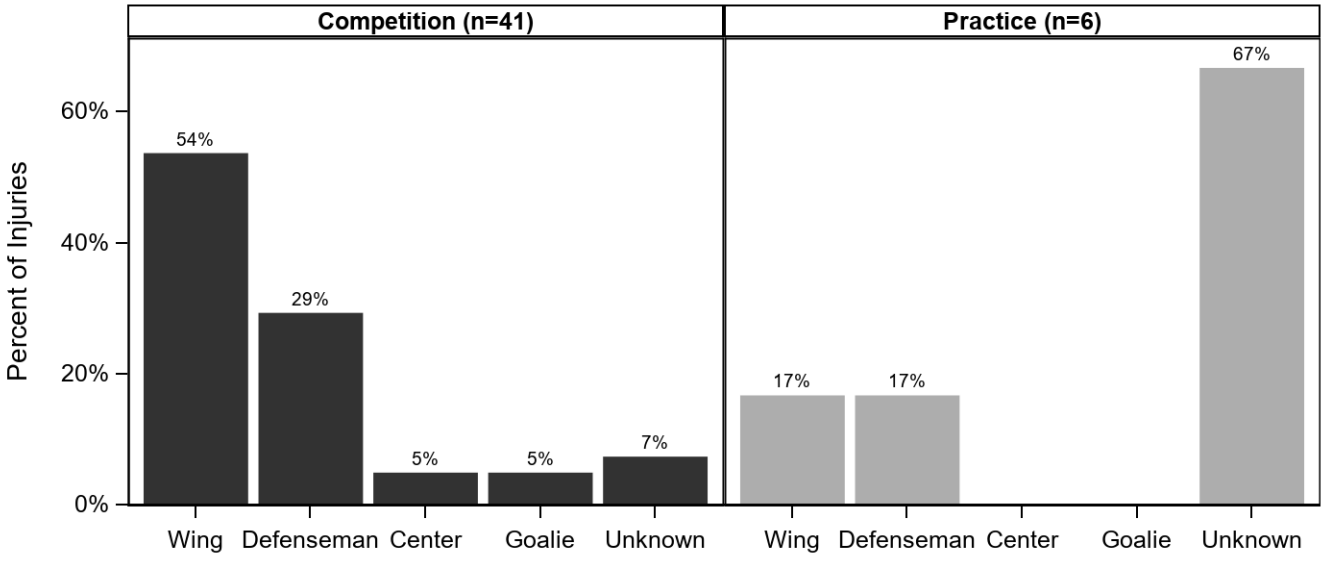


Table 13.9 Activities Leading to Boys' Ice Hockey Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Being Checked	18	45.0%	2	33.3%	20	43.5%
Skating	8	20.0%	0	0.0%	8	17.4%
Checking	7	17.5%	0	0.0%	7	15.2%
Chasing Loose Puck	4	10.0%	0	0.0%	4	8.7%
Unknown	0	0.0%	3	50.0%	3	6.5%
Goaltending	2	5.0%	0	0.0%	2	4.3%
Shooting	0	0.0%	1	16.7%	1	2.2%
Other	1	2.5%	0	0.0%	1	2.2%
Total	***40***	***100.0%***	***6***	***100.0%***	***46***	***100.0%***

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

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Table 13.10 Activity Resulting in Boys' Ice Hockey Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Being Checked	3	30.0%	7	53.8%	5	55.6%	2	28.6%	3	42.9%
Chasing Loose Puck	0	0.0%	1	7.7%	0	0.0%	3	42.9%	0	0.0%
Checking	4	40.0%	1	7.7%	1	11.1%	0	0.0%	1	14.3%
Goaltending	1	10.0%	1	7.7%	0	0.0%	0	0.0%	0	0.0%
Other	0	0.0%	0	0.0%	1	11.1%	0	0.0%	0	0.0%
Shooting	0	0.0%	0	0.0%	1	11.1%	0	0.0%	0	0.0%
Skating	2	20.0%	2	15.4%	1	11.1%	2	28.6%	1	14.3%
Unknown	0	0.0%	1	7.7%	0	0.0%	0	0.0%	2	28.6%
Total	***10***	***100.0%***	***13***	***100.0%***	***9***	***100.0%***	***7***	***100.0%***	***7***	***100.0%***

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

REPORTING INFORMATION ONLINE

XIV. Boys' Lacrosse Injury Epidemiology

Table 14.1 Boys' Lacrosse Injury Rates by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***157***	***74,751***	***2.10***
Competition	110	20,997	5.24
Practice	47	53,754	0.87

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

Table 14.2 Demographic Characteristics of Injured Boys' Lacrosse Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	29	19.6%
Sophomore	33	22.3%
Junior	50	33.8%
Senior	36	24.3%
Total	***148***	***100.0%***

Age (years)	
Minimum	14
Maximum	19
Mean (SD)	16.3 (1.2)
n	136

BMI	
Minimum	17.8
Maximum	39.2
Mean (SD)	23.4 (3.2)
n	115

* 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, 2023-24 School Year

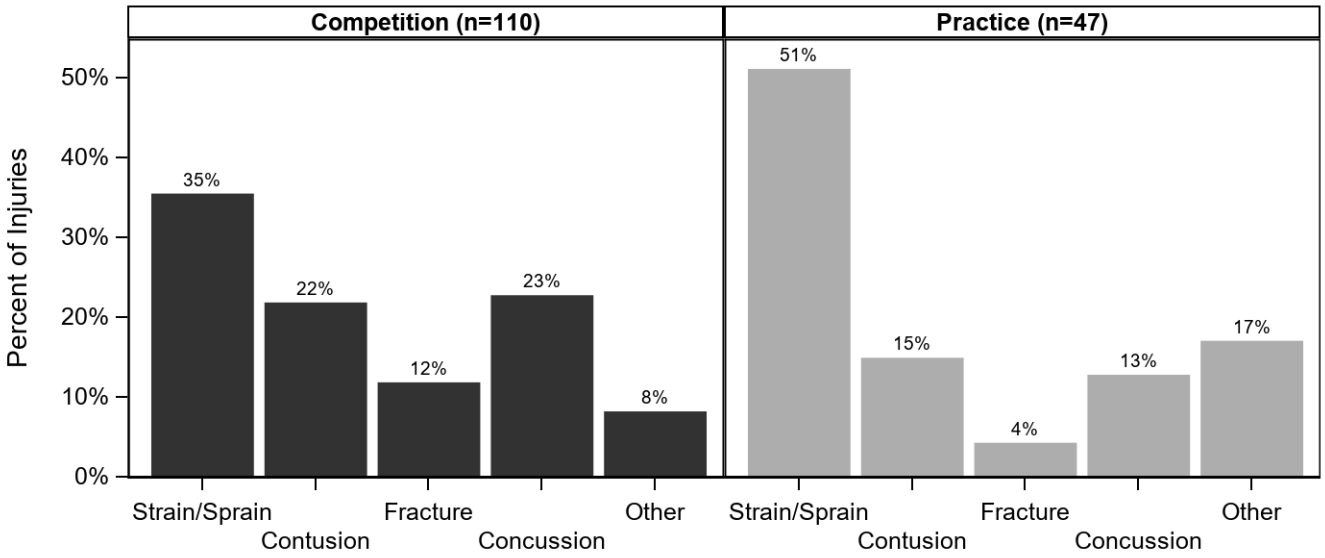


Table 14.3 Body Site of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

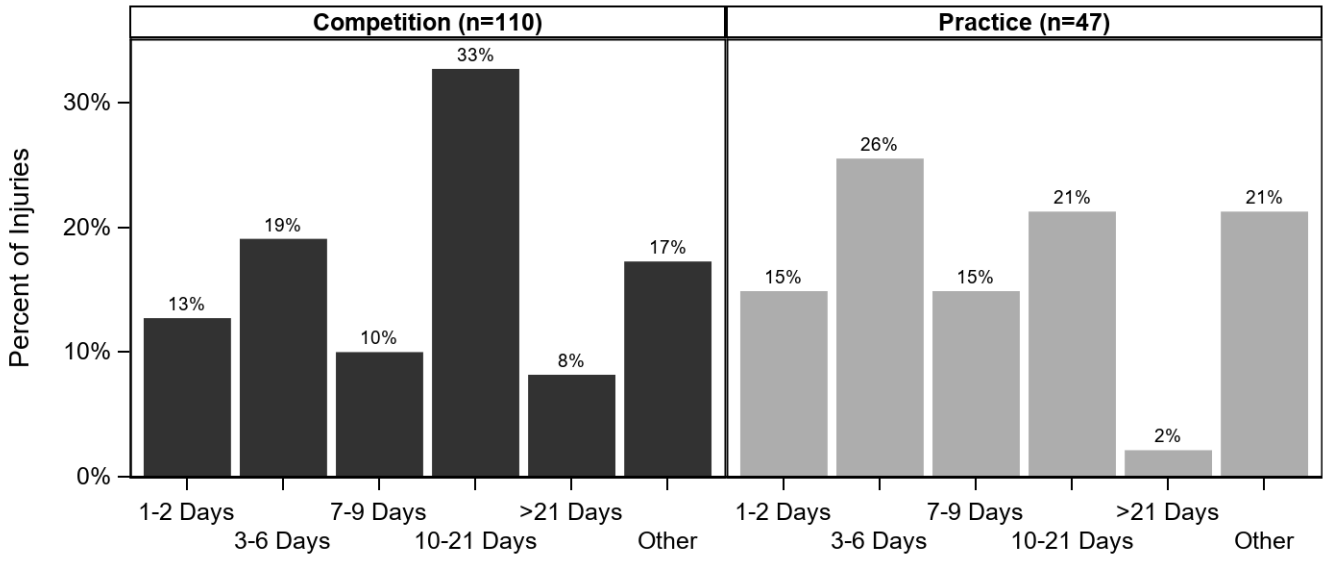
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	27	24.5%	7	14.9%	34	21.7%
Ankle	16	14.5%	7	14.9%	23	14.6%
Knee	17	15.5%	6	12.8%	23	14.6%
Hip/Thigh/Upper Leg	9	8.2%	10	21.3%	19	12.1%
Hand/Wrist	12	10.9%	4	8.5%	16	10.2%
Shoulder	9	8.2%	1	2.1%	10	6.4%
Trunk	6	5.5%	3	6.4%	9	5.7%
Arm/Elbow	6	5.5%	1	2.1%	7	4.5%
Lower Leg	3	2.7%	2	4.3%	5	3.2%
Other	5	4.5%	0	0.0%	5	3.2%
Foot	0	0.0%	3	6.4%	3	1.9%
Neck	0	0.0%	3	6.4%	3	1.9%
Total	***110***	***100.0%***	***47***	***100.0%***	***157***	***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, 2023-24 School Year

	Competition (n=110)		Practice (n=47)		Overall (n=157)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	25	22.7%	6	12.8%	31	19.7%
Ankle Strain/Sprain	15	13.6%	7	14.9%	22	14.0%
Hip/Thigh/Upper Leg Strain/Sprain	5	4.5%	10	21.3%	15	9.6%
Knee Strain/Sprain	11	10.0%	3	6.4%	14	8.9%
Hand/Wrist Fracture	7	6.4%	1	2.1%	8	5.1%
Hand/Wrist Contusion	5	4.5%	1	2.1%	6	3.8%
Knee Other	3	2.7%	3	6.4%	6	3.8%
Shoulder Strain/Sprain	5	4.5%	0	0.0%	5	3.2%
Hip/Thigh/Upper Leg Contusion	4	3.6%	0	0.0%	4	2.5%
Shoulder Other	3	2.7%	1	2.1%	4	2.5%

Figure 14.2 Time Loss of Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	7	6.4%	1	2.2%	8	5.1%
Did Not Require Surgery	103	93.6%	45	97.8%	148	94.9%
Total	***110***	***100.0%***	***46***	***100.0%***	***156***	***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, 2023-24 School Year

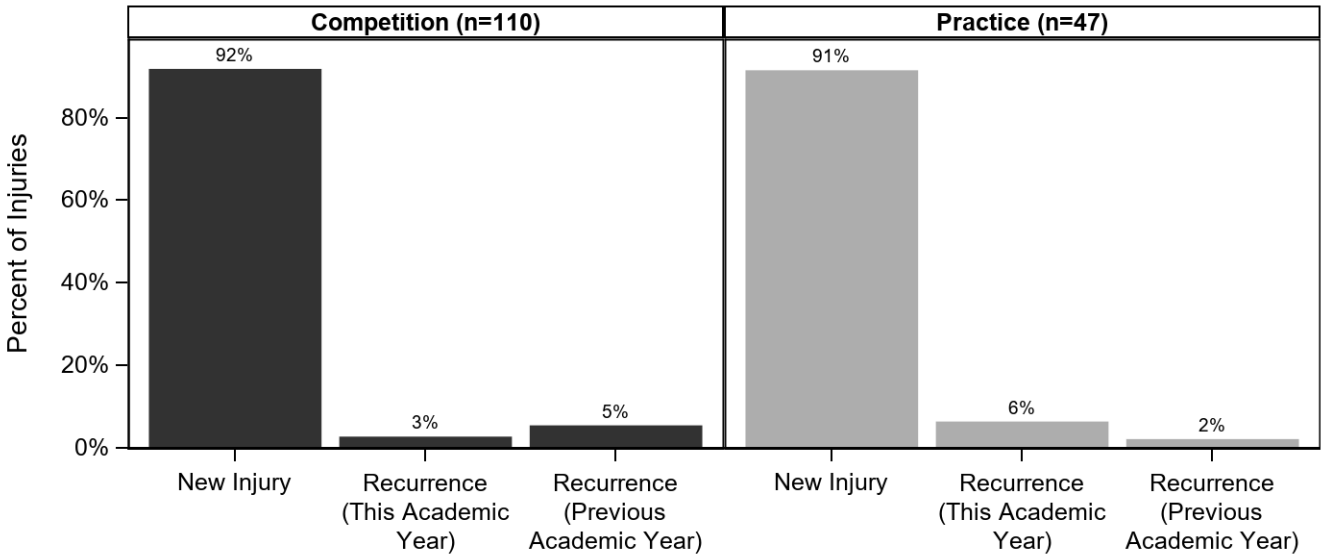


Table 14.6 Time during Season of Boys' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	22	14.1%
Regular Season	126	80.8%
Post Season	8	5.1%
Total	***156***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	1	1.0%
First Quarter	4	3.9%
Second Quarter	20	19.4%
Third Quarter	28	27.2%
Fourth Quarter	25	24.3%
Overtime	1	1.0%
Unknown	24	23.3%
Total	***103***	***100.0%***

Field Location		
Midfield	22	21.6%
Wing Area	10	9.8%
Defensive Area	12	11.8%
Goal Area	19	18.6%
Sideline	5	4.9%
Crease Area	4	3.9%
Unknown	30	29.4%
Total	***102***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	2	4.3%
Second 1/2 Hour	6	13.0%
1-2 Hours into Practice	31	67.4%
Unknown	7	15.2%
Total	***46***	***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, 2023-24 School Year

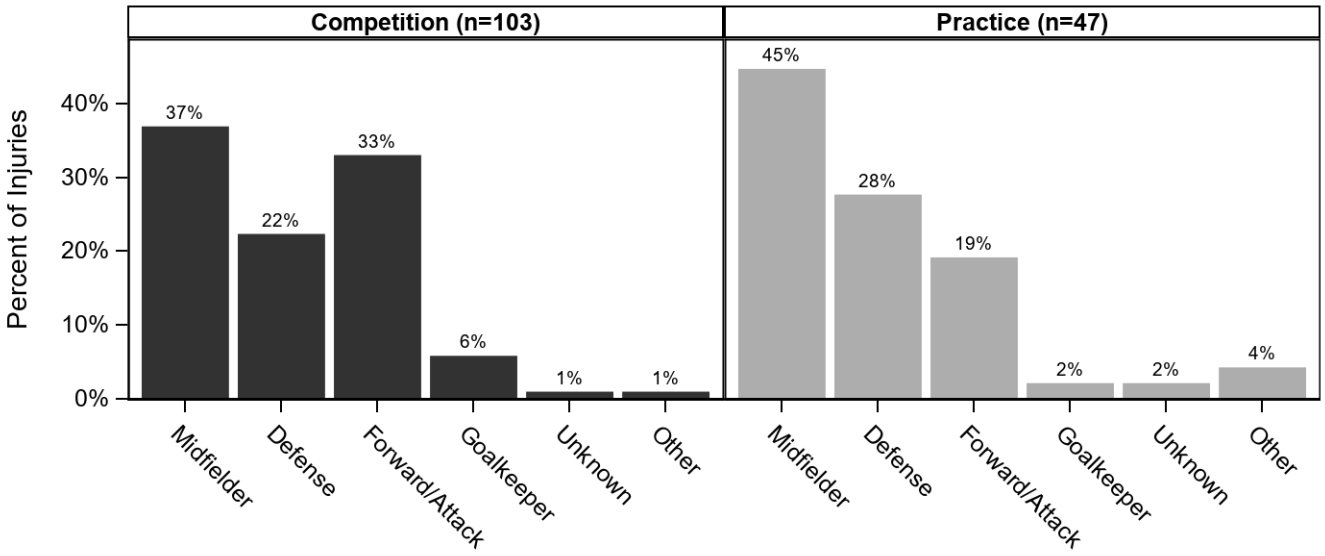


Table 14.9 Activities Leading to Boys' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	15	14.7%	22	46.8%	37	24.8%
Being Body Checked	16	15.7%	4	8.5%	20	13.4%
Defending	8	7.8%	6	12.8%	14	9.4%
Being Cross/Stick Checked	10	9.8%	2	4.3%	12	8.1%
Chasing Loose Ball	10	9.8%	1	2.1%	11	7.4%
Unknown	10	9.8%	0	0.0%	10	6.7%
Goaltending	6	5.9%	1	2.1%	7	4.7%
Cross/Stick Checking	6	5.9%	1	2.1%	7	4.7%
Blocking Shot	3	2.9%	3	6.4%	6	4.0%
Shooting	4	3.9%	2	4.3%	6	4.0%
Ball Handling/Cradling	5	4.9%	0	0.0%	5	3.4%
Face-Off	4	3.9%	0	0.0%	4	2.7%
Body Checking	3	2.9%	0	0.0%	3	2.0%
Other	2	2.0%	0	0.0%	2	1.3%
Receiving Pass	0	0.0%	2	4.3%	2	1.3%
Passing	0	0.0%	2	4.3%	2	1.3%
Conditioning	0	0.0%	1	2.1%	1	0.7%
Total	***102***	***100.0%***	***47***	***100.0%***	***149***	***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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Cradling	3	4.9%	1	3.4%	1	6.7%	0	0.0%	0	0.0%
Being Body Checked	5	8.2%	7	24.1%	1	6.7%	3	10.7%	4	25.0%
Being Cross/Stick Checked	0	0.0%	9	31.0%	1	6.7%	2	7.1%	0	0.0%
Blocking Shot	0	0.0%	2	6.9%	1	6.7%	1	3.6%	2	12.5%
Body Checking	0	0.0%	1	3.4%	2	13.3%	0	0.0%	0	0.0%
Chasing Loose Ball	5	8.2%	0	0.0%	1	6.7%	5	17.9%	0	0.0%
Conditioning	1	1.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Cross/Stick Checking	1	1.6%	3	10.3%	2	13.3%	1	3.6%	0	0.0%
Defending	6	9.8%	2	6.9%	0	0.0%	6	21.4%	0	0.0%
Face-Off	1	1.6%	0	0.0%	1	6.7%	1	3.6%	1	6.3%
General Play	25	41.0%	1	3.4%	2	13.3%	4	14.3%	5	31.3%
Goaltending	4	6.6%	1	3.4%	1	6.7%	1	3.6%	0	0.0%
Other	2	3.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Passing	1	1.6%	0	0.0%	0	0.0%	0	0.0%	1	6.3%
Receiving Pass	1	1.6%	1	3.4%	0	0.0%	0	0.0%	0	0.0%
Shooting	3	4.9%	1	3.4%	0	0.0%	2	7.1%	0	0.0%
Unknown	3	4.9%	0	0.0%	2	13.3%	2	7.1%	3	18.8%
Total	***61***	***100.0%***	***29***	***100.0%***	***15***	***100.0%***	***28***	***100.0%***	***16***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***93***	***55,401***	***1.68***
Competition	48	16,032	2.99
Practice	45	39,369	1.14

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

Table 15.2 Demographic Characteristics of Injured Girls' Lacrosse Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	20	26.0%
Sophomore	24	31.2%
Junior	13	16.9%
Senior	20	26.0%
Total	***77***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.9 (1.4)
n	76

BMI	
Minimum	16.5
Maximum	30.7
Mean (SD)	21.6 (2.9)
n	70

* 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, 2023-24 School Year

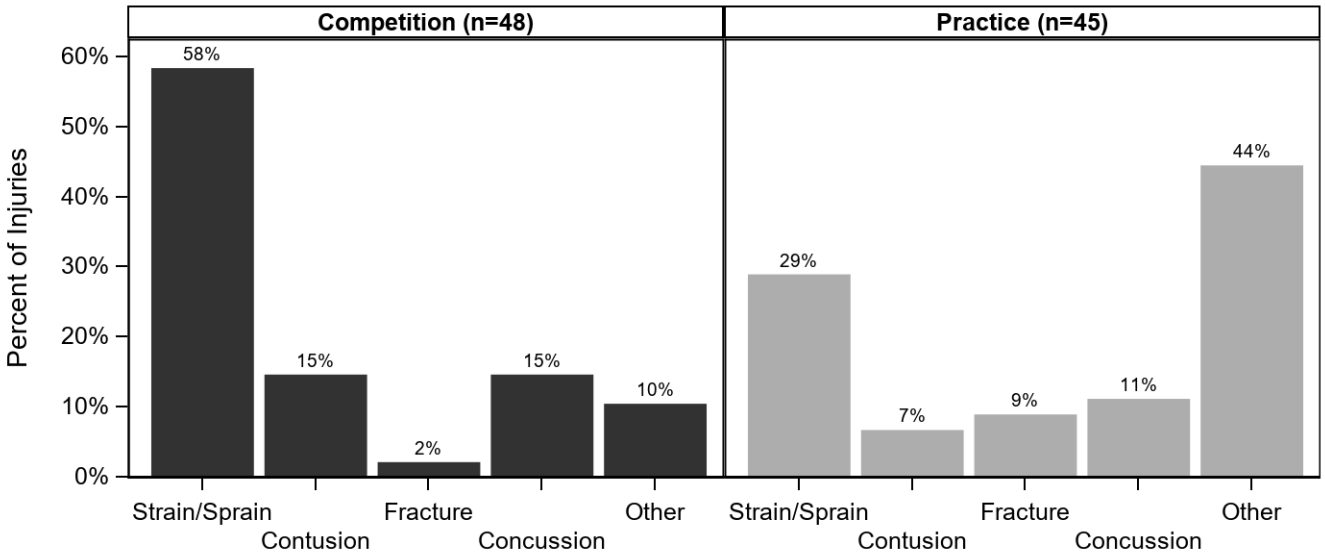


Table 15.3 Body Site of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

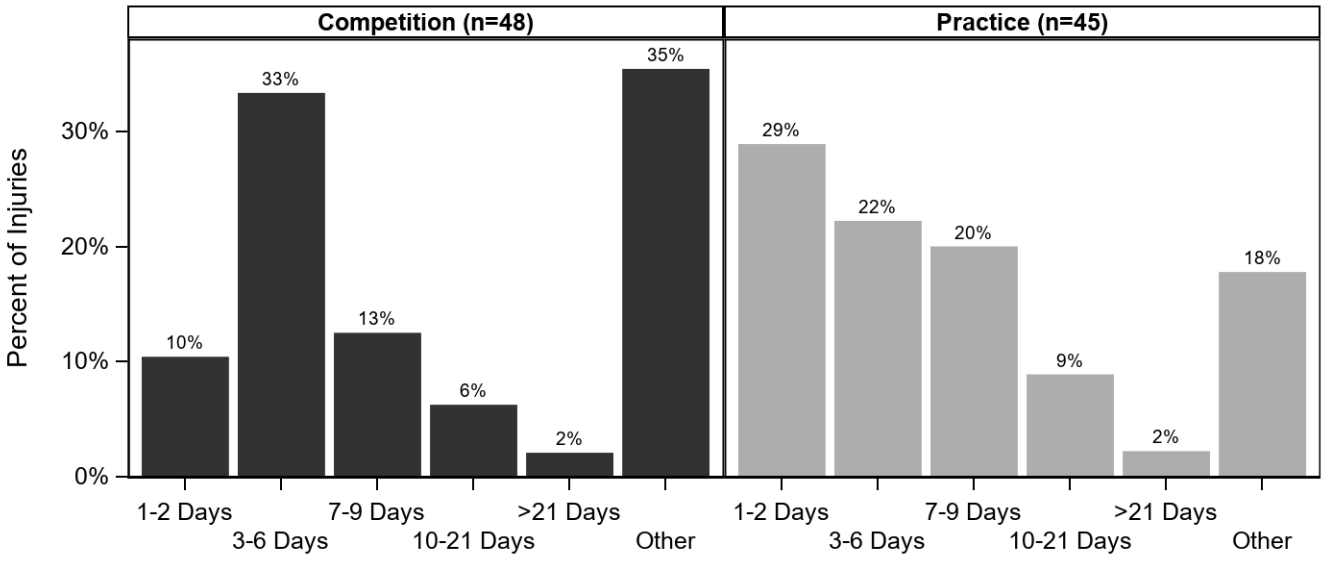
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Knee	16	33.3%	7	15.6%	23	24.7%
Head/Face	9	18.8%	9	20.0%	18	19.4%
Ankle	10	20.8%	6	13.3%	16	17.2%
Lower Leg	4	8.3%	7	15.6%	11	11.8%
Hip/Thigh/Upper Leg	3	6.3%	5	11.1%	8	8.6%
Hand/Wrist	3	6.3%	3	6.7%	6	6.5%
Trunk	2	4.2%	4	8.9%	6	6.5%
Foot	1	2.1%	2	4.4%	3	3.2%
Arm/Elbow	0	0.0%	1	2.2%	1	1.1%
Systemic	0	0.0%	1	2.2%	1	1.1%
Total	***48***	***100.0%***	***45***	***100.0%***	***93***	***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, 2023-24 School Year

	Competition (n=48)		Practice (n=45)		Overall (n=93)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Ankle Strain/Sprain	9	18.8%	4	8.9%	13	14.0%
Knee Strain/Sprain	12	25.0%	1	2.2%	13	14.0%
Head/Face Concussion	7	14.6%	5	11.1%	12	12.9%
Knee Other	3	6.3%	6	13.3%	9	9.7%
Hip/Thigh/Upper Leg Strain/Sprain	3	6.3%	5	11.1%	8	8.6%
Lower Leg Other	2	4.2%	6	13.3%	8	8.6%
Hand/Wrist Contusion	2	4.2%	1	2.2%	3	3.2%
Head/Face Contusion	2	4.2%	1	2.2%	3	3.2%
Lower Leg Strain/Sprain	2	4.2%	1	2.2%	3	3.2%
Trunk Other	0	0.0%	3	6.7%	3	3.2%

Figure 15.2 Time Loss of Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	9	18.8%	0	0.0%	9	9.7%
Did Not Require Surgery	39	81.3%	45	100.0%	84	90.3%
Total	***48***	***100.0%***	***45***	***100.0%***	***93***	***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, 2023-24 School Year

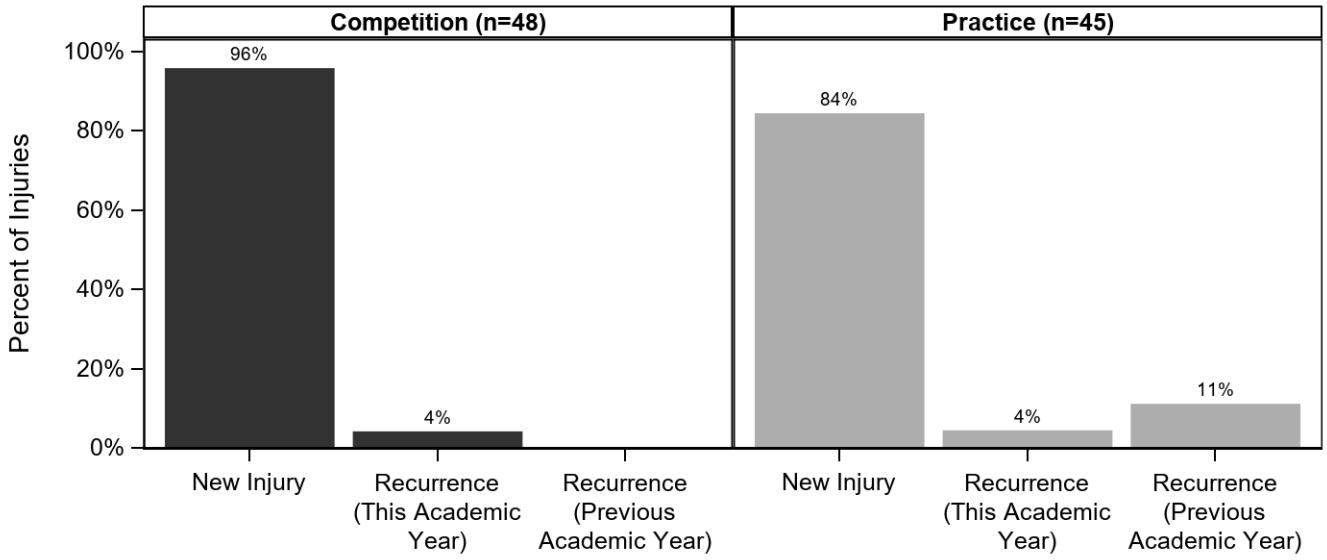


Table 15.6 Time during Season of Girls' Lacrosse Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	6	6.5%
Regular Season	76	81.7%
Post Season	11	11.8%
Total	***93***	***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, 2023-24 School Year *

Time in Competition	n	%
Pre-competition/Warm-Ups	3	7.0%
First Half	8	18.6%
Second Half	20	46.5%
Overtime	1	2.3%
Unknown	11	25.6%
Total	***43***	***100.0%***

Field Location		
Midfield (Between Restraining Lines)	11	26.2%
Critical Scoring Area (including the Fan and Arc)	8	19.0%
Goal Circle	4	9.5%
End Line	1	2.4%
Unknown	18	42.9%
Total	***42***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	2	4.5%
Second 1/2 Hour	3	6.8%
1-2 Hours into Practice	17	38.6%
>2 Hours into Practice	2	4.5%
Unknown	20	45.5%
Total	***44***	***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, 2023-24 School Year

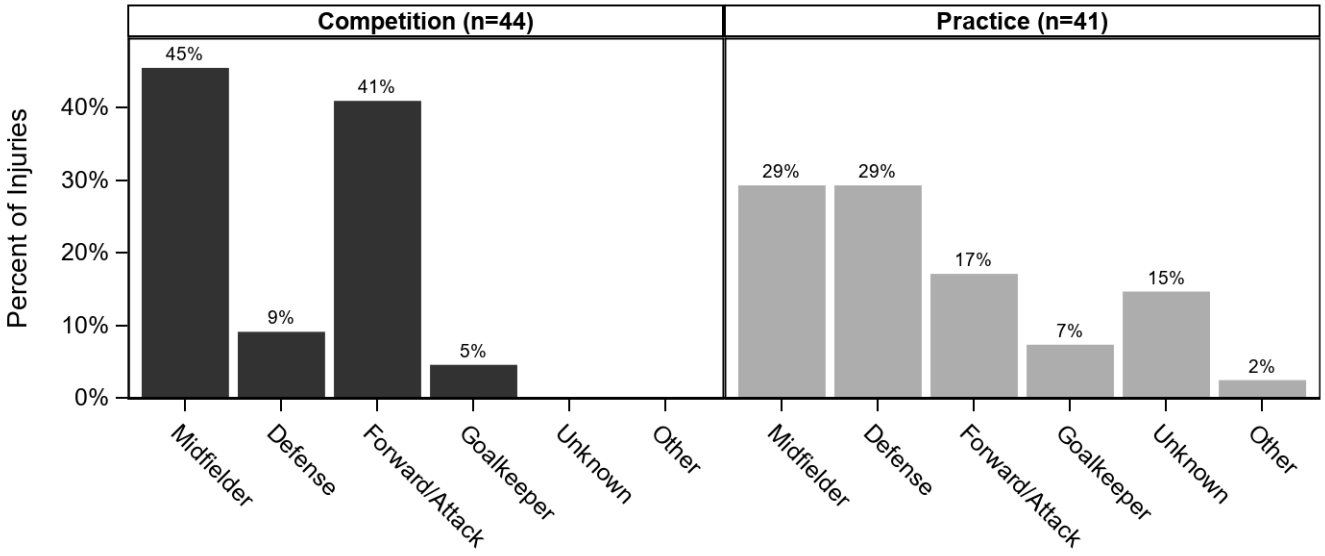


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Table 15.9 Activities Leading to Girls' Lacrosse Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
General Play	11	25.6%	20	48.8%	31	36.9%
Ball Handling/Cradling	7	16.3%	3	7.3%	10	11.9%
Unknown	3	7.0%	5	12.2%	8	9.5%
Shooting	5	11.6%	1	2.4%	6	7.1%
Being Cross/Stick Checked	2	4.7%	3	7.3%	5	6.0%
Defending	4	9.3%	1	2.4%	5	6.0%
Chasing Loose Ball	4	9.3%	0	0.0%	4	4.8%
Goaltending	1	2.3%	3	7.3%	4	4.8%
Passing	1	2.3%	2	4.9%	3	3.6%
Being Body Checked	3	7.0%	0	0.0%	3	3.6%
Cross/Stick Checking	1	2.3%	0	0.0%	1	1.2%
Face-Off	1	2.3%	0	0.0%	1	1.2%
Other	0	0.0%	1	2.4%	1	1.2%
Receiving Pass	0	0.0%	1	2.4%	1	1.2%
Conditioning	0	0.0%	1	2.4%	1	1.2%
Total	***43***	***100.0%***	***41***	***100.0%***	***84***	***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, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Ball Handling/Cradling	7	17.5%	1	11.1%	0	0.0%	1	9.1%	1	5.0%
Being Body Checked	1	2.5%	2	22.2%	0	0.0%	0	0.0%	0	0.0%
Being Cross/Stick Checked	0	0.0%	2	22.2%	0	0.0%	2	18.2%	1	5.0%
Chasing Loose Ball	4	10.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Conditioning	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	5.0%
Cross/Stick Checking	0	0.0%	0	0.0%	0	0.0%	1	9.1%	0	0.0%
Defending	3	7.5%	0	0.0%	0	0.0%	1	9.1%	1	5.0%
Face-Off	1	2.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
General Play	17	42.5%	1	11.1%	1	25.0%	0	0.0%	12	60.0%
Goaltending	1	2.5%	2	22.2%	1	25.0%	0	0.0%	0	0.0%
Other	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	5.0%
Passing	1	2.5%	0	0.0%	1	25.0%	1	9.1%	0	0.0%
Receiving Pass	0	0.0%	0	0.0%	0	0.0%	1	9.1%	0	0.0%
Shooting	3	7.5%	1	11.1%	0	0.0%	0	0.0%	2	10.0%
Unknown	2	5.0%	0	0.0%	1	25.0%	4	36.4%	1	5.0%
Total	***40***	***100.0%***	***9***	***100.0%***	***4***	***100.0%***	***11***	***100.0%***	***20***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***5***	***37,768***	***0.13***
Competition	3	7,328	0.41
Practice	2	30,440	0.07

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

Table 16.2 Demographic Characteristics of Injured Boys' Swimming and Diving Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Sophomore	1	20.0%
Junior	4	80.0%
Total	***5***	***100.0%***

Age (years)	
Minimum	16
Maximum	17
Mean (SD)	16.5 (0.6)
n	4

BMI	
Minimum	17.9
Maximum	22.7
Mean (SD)	20.9 (2.1)
n	4

* 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, 2023-24 School Year

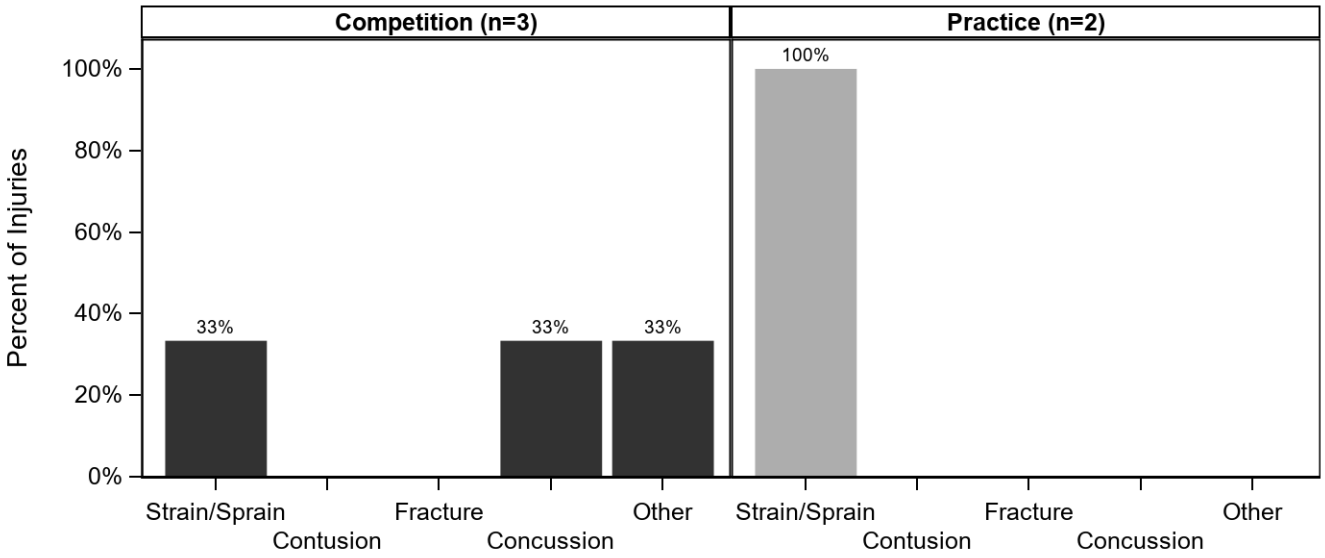


Table 16.3 Body Site of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

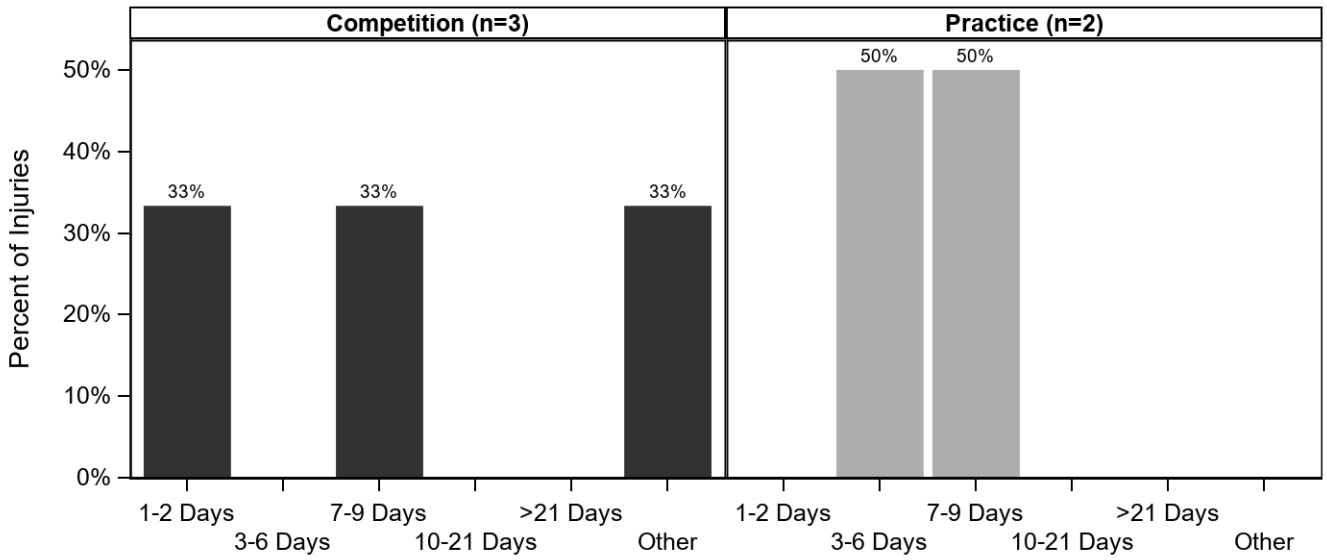
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Trunk	1	33.3%	1	50.0%	2	40.0%
Head/Face	1	33.3%	0	0.0%	1	20.0%
Hip/Thigh/Upper Leg	1	33.3%	0	0.0%	1	20.0%
Neck	0	0.0%	1	50.0%	1	20.0%
Total	***3***	***100.0%***	***2***	***100.0%***	***5***	***100.0%***

* 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, 2023-24 School Year

	Competition (n=3)		Practice (n=2)		Overall (n=5)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	1	33.3%	0	0.0%	1	20.0%
Hip/Thigh/Upper Leg Strain/Sprain	1	33.3%	0	0.0%	1	20.0%
Neck Strain/Sprain	0	0.0%	1	50.0%	1	20.0%
Trunk Other	1	33.3%	0	0.0%	1	20.0%
Trunk Strain/Sprain	0	0.0%	1	50.0%	1	20.0%

Figure 16.2 Time Loss of Boys' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	3	100.0%	2	100.0%	5	100.0%
Total	***3***	***100.0%***	***2***	***100.0%***	***5***	***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, 2023-24 School Year

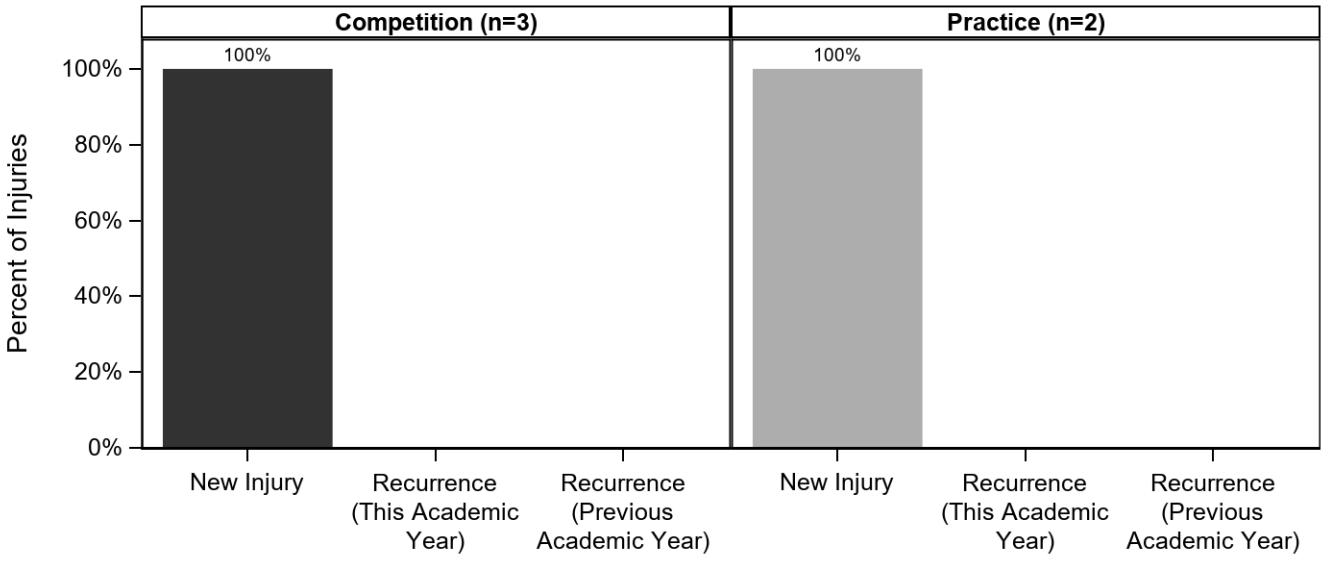


Table 16.6 Time during Season of Boys' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	1	20.0%
Regular Season	3	60.0%
Post Season	1	20.0%
Total	***5***	***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, 2023-24 School Year *

Pool Location		
Starting Platform/Board/Block	1	33.3%
In Pool	1	33.3%
Unknown	1	33.3%
Total	***3***	***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, 2023-24 School Year *

Time in Practice	n	%
1-2 Hours into Practice	2	100.0%
Total	***2***	***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, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Diving Off Board, Platform or Block	2	66.7%	2	100.0%	4	80.0%
Unknown	1	33.3%	0	0.0%	1	20.0%
Total	***3***	***100.0%***	***2***	***100.0%***	***5***	***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, 2023-24 School Year *

	Diagnosis					
	Strain/Sprain		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Diving Off Board, Platform or Block	3	100.0%	1	100.0%	0	0.0%
Unknown	0	0.0%	0	0.0%	1	100.0%
Total	***3***	***100.0%***	***1***	***100.0%***	***1***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***11***	***36,179***	***0.30***
Competition	3	6,857	0.44
Practice	8	29,322	0.27

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

Table 17.2 Demographic Characteristics of Injured Girls' Swimming and Diving Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

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

Age (years)	
Minimum	12
Maximum	17
Mean (SD)	15.2 (1.5)
n	10

BMI	
Minimum	16.8
Maximum	24.9
Mean (SD)	21.2 (2.6)
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 17.1 Diagnosis of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year

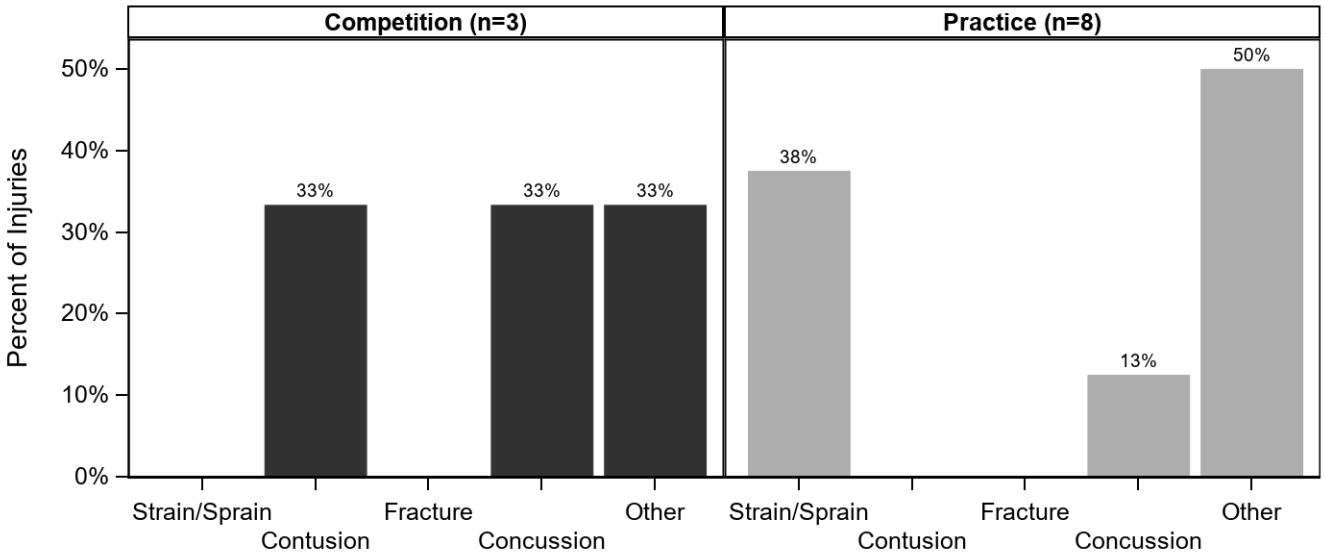


Table 17.3 Body Site of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

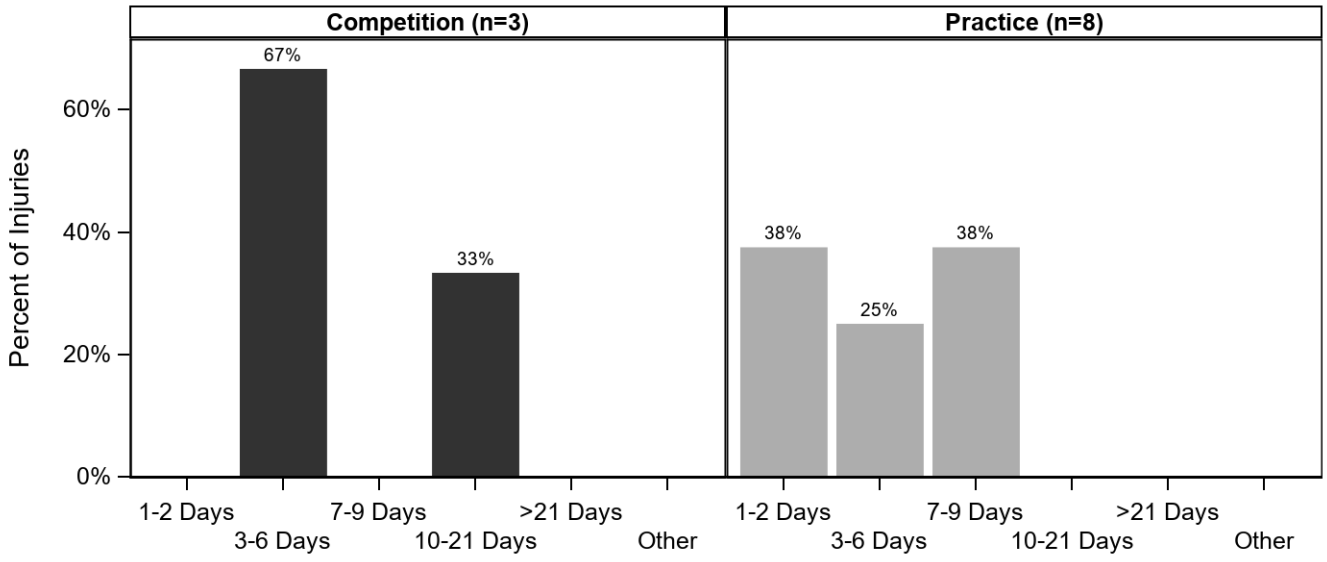
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	1	33.3%	1	12.5%	2	18.2%
Trunk	0	0.0%	2	25.0%	2	18.2%
Ankle	0	0.0%	1	12.5%	1	9.1%
Arm/Elbow	0	0.0%	1	12.5%	1	9.1%
Hip/Thigh/Upper Leg	0	0.0%	1	12.5%	1	9.1%
Knee	1	33.3%	0	0.0%	1	9.1%
Lower Leg	0	0.0%	1	12.5%	1	9.1%
Shoulder	0	0.0%	1	12.5%	1	9.1%
Systemic	1	33.3%	0	0.0%	1	9.1%
Total	***3***	***100.0%***	***8***	***100.0%***	***11***	***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, 2023-24 School Year

	Competition (n=3)		Practice (n=8)		Overall (n=11)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	1	33.3%	1	12.5%	2	18.2%
Ankle Strain/Sprain	0	0.0%	1	12.5%	1	9.1%
Arm/Elbow Other	0	0.0%	1	12.5%	1	9.1%
Hip/Thigh/Upper Leg Strain/Sprain	0	0.0%	1	12.5%	1	9.1%
Knee Contusion	1	33.3%	0	0.0%	1	9.1%
Lower Leg Other	0	0.0%	1	12.5%	1	9.1%
Shoulder Other	0	0.0%	1	12.5%	1	9.1%
Systemic Other	1	33.3%	0	0.0%	1	9.1%
Trunk Other	0	0.0%	1	12.5%	1	9.1%
Trunk Strain/Sprain	0	0.0%	1	12.5%	1	9.1%

Figure 17.2 Time Loss of Girls' Swimming and Diving Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	3	100.0%	7	100.0%	10	100.0%
Total	***3***	***100.0%***	***7***	***100.0%***	***10***	***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, 2023-24 School Year

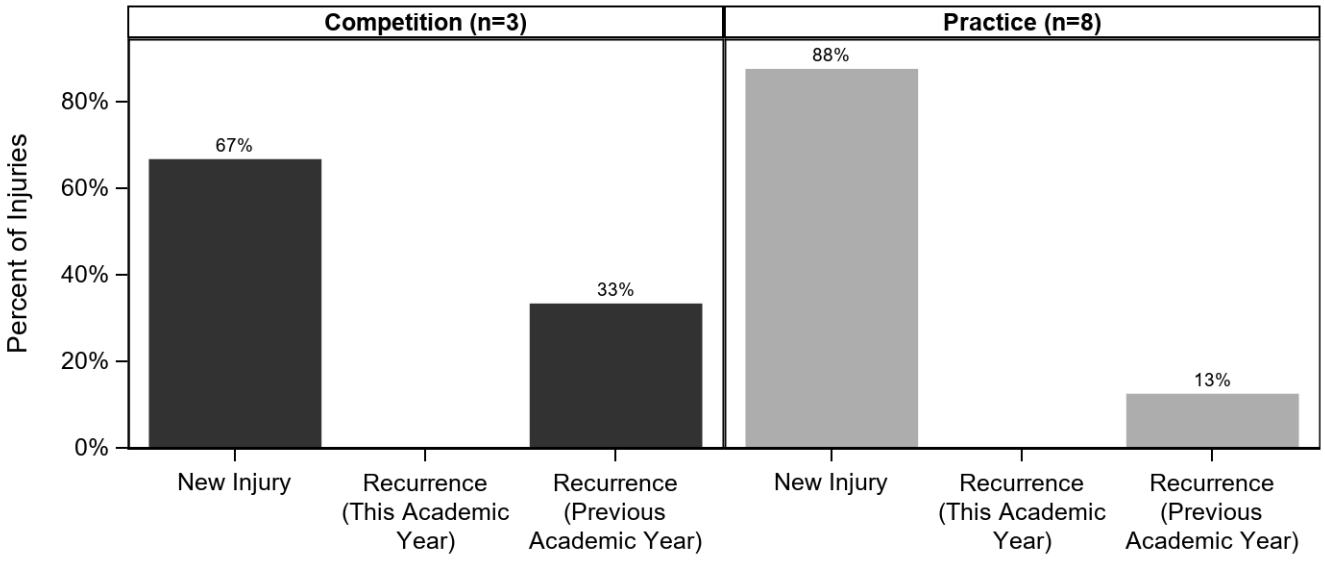


Table 17.6 Time during Season of Girls' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	2	18.2%
Regular Season	9	81.8%
Total	***11***	***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, 2023-24 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, 2023-24 School Year *

Time in Practice	n	%
Second 1/2 Hour	1	12.5%
1-2 Hours into Practice	4	50.0%
Unknown	3	37.5%
Total	***8***	***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, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Swimming	1	33.3%	3	37.5%	4	36.4%
Flip Off Wall	0	0.0%	2	25.0%	2	18.2%
Unknown	0	0.0%	2	25.0%	2	18.2%
Other	1	33.3%	0	0.0%	1	9.1%
Diving Off Board, Platform or Block	0	0.0%	1	12.5%	1	9.1%
Touch Turn Off Wall	1	33.3%	0	0.0%	1	9.1%
Total	***3***	***100.0%***	***8***	***100.0%***	***11***	***100.0%***

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

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Table 17.10 Activity Resulting in Girls' Swimming and Diving Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Diagnosis							
	Strain/Sprain		Contusion		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Diving Off Board, Platform or Block	0	0.0%	0	0.0%	1	50.0%	0	0.0%
Flip Off Wall	2	66.7%	0	0.0%	0	0.0%	0	0.0%
Other	0	0.0%	0	0.0%	0	0.0%	1	20.0%
Swimming	1	33.3%	1	100.0%	0	0.0%	2	40.0%
Touch Turn Off Wall	0	0.0%	0	0.0%	1	50.0%	0	0.0%
Unknown	0	0.0%	0	0.0%	0	0.0%	2	40.0%
Total	***3***	***100.0%***	***1***	***100.0%***	***2***	***100.0%***	***5***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***176***	***135,368***	***1.30***
Competition	80	23,542	3.40
Practice	96	111,826	0.86

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

Table 18.2 Demographic Characteristics of Injured Boys' Track and Field Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	38	22.4%
Sophomore	41	24.1%
Junior	54	31.8%
Senior	37	21.8%
Total	***170***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	16.3 (1.2)
n	150

BMI	
Minimum	17.6
Maximum	38.0
Mean (SD)	23.0 (3.6)
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, 2023-24 School Year

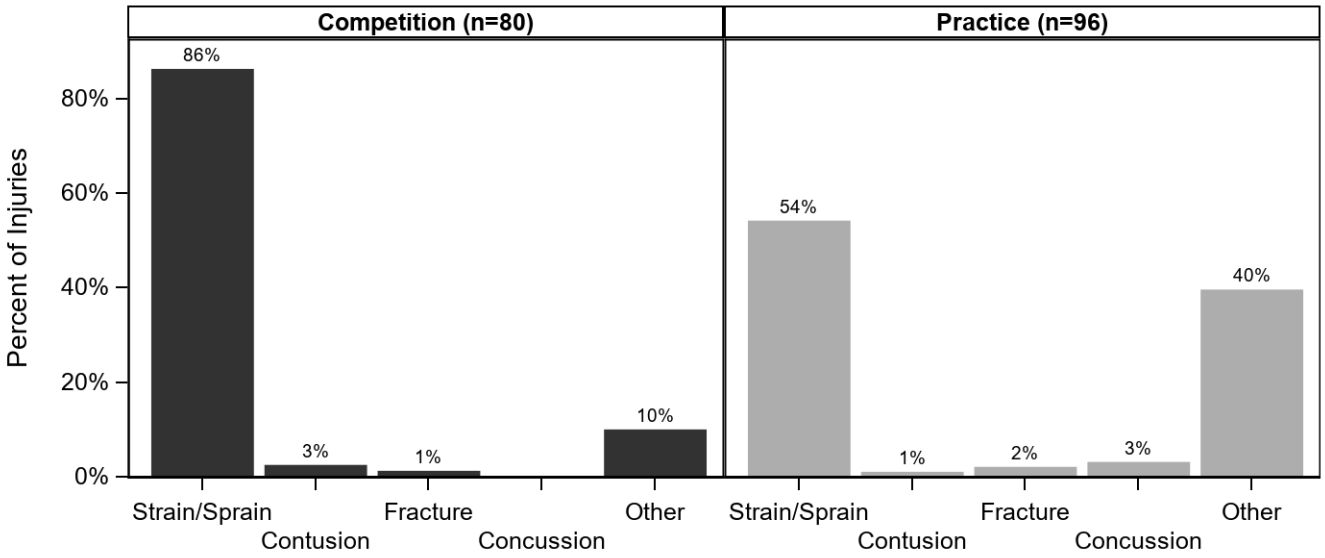


Table 18.3 Body Site of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

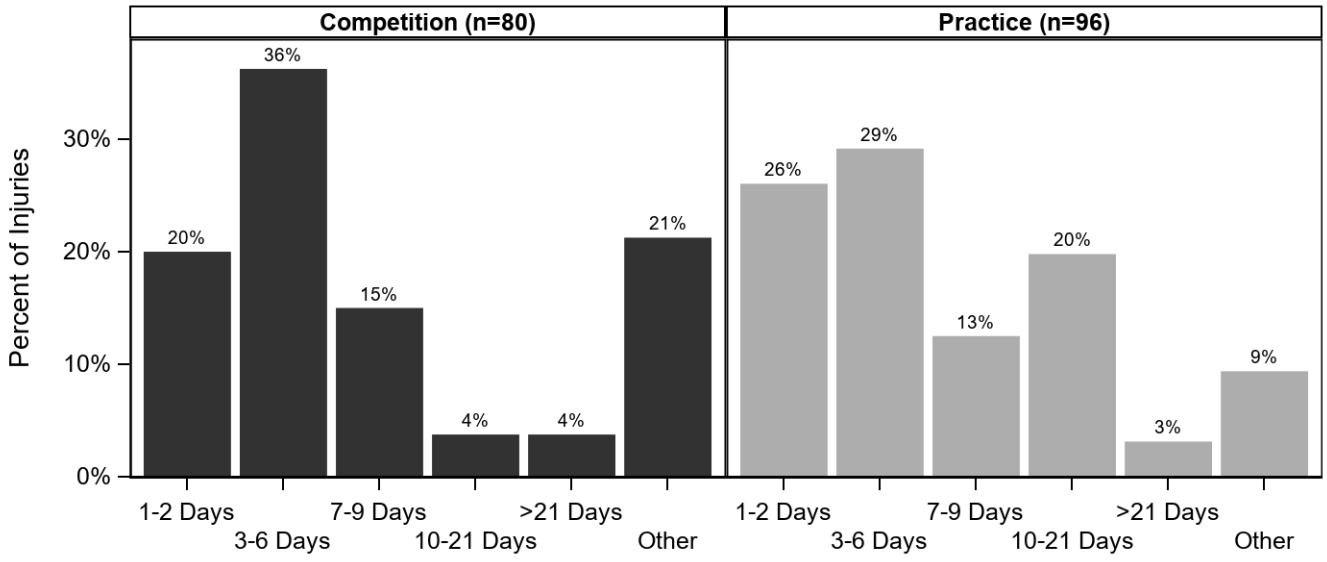
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	53	66.3%	39	40.6%	92	52.3%
Lower Leg	6	7.5%	20	20.8%	26	14.8%
Ankle	9	11.3%	7	7.3%	16	9.1%
Knee	5	6.3%	7	7.3%	12	6.8%
Foot	2	2.5%	9	9.4%	11	6.3%
Trunk	4	5.0%	7	7.3%	11	6.3%
Head/Face	0	0.0%	5	5.2%	5	2.8%
Arm/Elbow	0	0.0%	1	1.0%	1	0.6%
Neck	1	1.3%	0	0.0%	1	0.6%
Systemic	0	0.0%	1	1.0%	1	0.6%
Total	***80***	***100.0%***	***96***	***100.0%***	***176***	***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, 2023-24 School Year

	Competition (n=80)		Practice (n=96)		Overall (n=176)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	49	61.3%	31	32.3%	80	45.5%
Lower Leg Other	2	2.5%	15	15.6%	17	9.7%
Ankle Strain/Sprain	8	10.0%	6	6.3%	14	8.0%
Hip/Thigh/Upper Leg Other	4	5.0%	7	7.3%	11	6.3%
Trunk Strain/Sprain	4	5.0%	6	6.3%	10	5.7%
Lower Leg Strain/Sprain	4	5.0%	4	4.2%	8	4.5%
Knee Other	1	1.3%	6	6.3%	7	4.0%
Foot Other	0	0.0%	5	5.2%	5	2.8%
Foot Strain/Sprain	1	1.3%	4	4.2%	5	2.8%
Knee Strain/Sprain	3	3.8%	1	1.0%	4	2.3%

Figure 18.2 Time Loss of Boys' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	1	1.3%	2	2.1%	3	1.7%
Did Not Require Surgery	78	98.7%	93	97.9%	171	98.3%
Total	***79***	***100.0%***	***95***	***100.0%***	***174***	***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, 2023-24 School Year

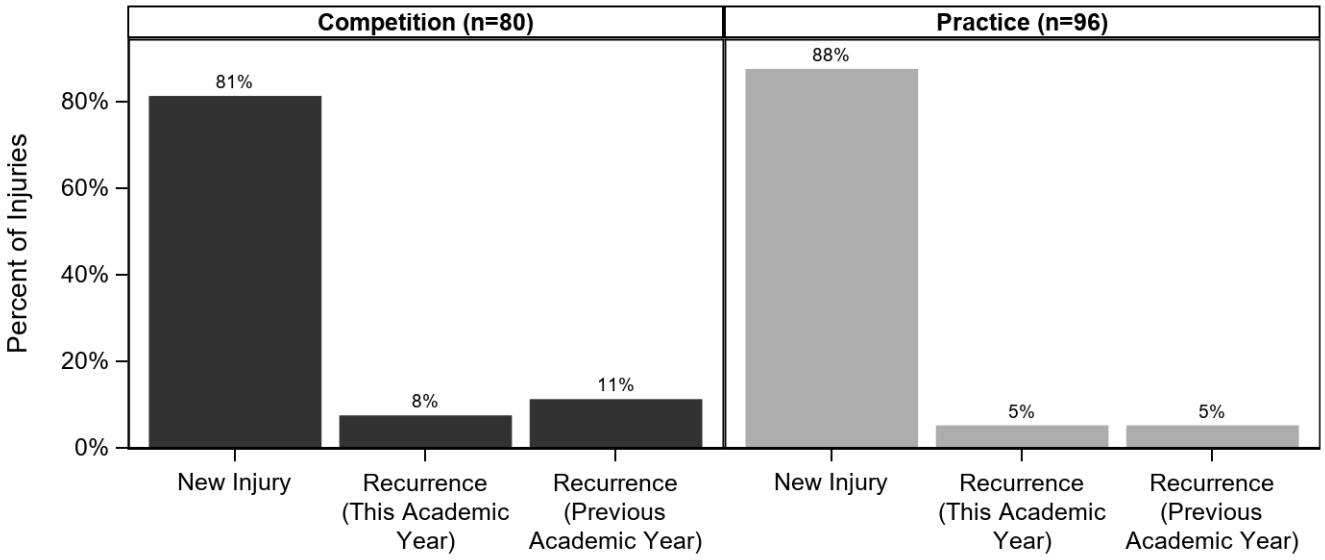


Table 18.6 Time during Season of Boys' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	33	18.8%
Regular Season	127	72.2%
Post Season	16	9.1%
Total	***176***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	5	5.2%
Second 1/2 Hour	13	13.5%
1-2 Hours into Practice	42	43.8%
Unknown	36	37.5%
Total	***96***	***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, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	48	64.9%	56	66.7%	104	65.8%
Jumping/Landing	15	20.3%	9	10.7%	24	15.2%
Throwing	1	1.4%	5	6.0%	6	3.8%
Conditioning	0	0.0%	5	6.0%	5	3.2%
Leaving Block	3	4.1%	1	1.2%	4	2.5%
Unknown	0	0.0%	4	4.8%	4	2.5%
Warming Up	4	5.4%	0	0.0%	4	2.5%
Running Hurdles	0	0.0%	3	3.6%	3	1.9%
Baton Hand Off	2	2.7%	0	0.0%	2	1.3%
Other	1	1.4%	1	1.2%	2	1.3%
Total	***74***	***100.0%***	***84***	***100.0%***	***158***	***100.0%***

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

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Table 18.9 Activity Resulting in Boys' Track and Field Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Baton Hand Off	2	1.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Conditioning	1	0.9%	1	33.3%	0	0.0%	0	0.0%	3	7.7%
Jumping/Landing	21	18.9%	0	0.0%	0	0.0%	2	66.7%	1	2.6%
Leaving Block	4	3.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Other	0	0.0%	1	33.3%	1	50.0%	0	0.0%	0	0.0%
Running	74	66.7%	1	33.3%	0	0.0%	0	0.0%	29	74.4%
Running Hurdles	2	1.8%	0	0.0%	0	0.0%	1	33.3%	0	0.0%
Throwing	4	3.6%	0	0.0%	0	0.0%	0	0.0%	2	5.1%
Unknown	1	0.9%	0	0.0%	1	50.0%	0	0.0%	2	5.1%
Warming Up	2	1.8%	0	0.0%	0	0.0%	0	0.0%	2	5.1%
Total	***111***	***100.0%***	***3***	***100.0%***	***2***	***100.0%***	***3***	***100.0%***	***39***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***151***	***118,513***	***1.27***
Competition	38	20,261	1.88
Practice	113	98,252	1.15

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

Table 19.2 Demographic Characteristics of Injured Girls' Track and Field Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	34	25.0%
Sophomore	41	30.1%
Junior	33	24.3%
Senior	28	20.6%
Total	***136***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.9 (1.2)
n	116

BMI	
Minimum	16.6
Maximum	30.8
Mean (SD)	21.7 (2.7)
n	71

* 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, 2023-24 School Year

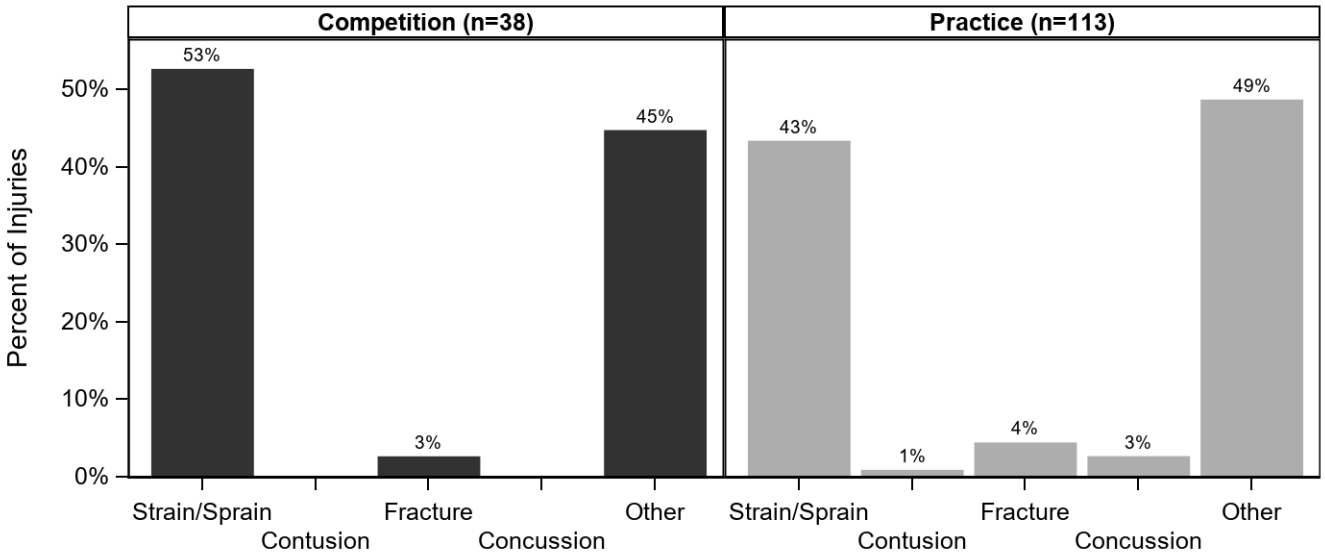


Table 19.3 Body Site of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

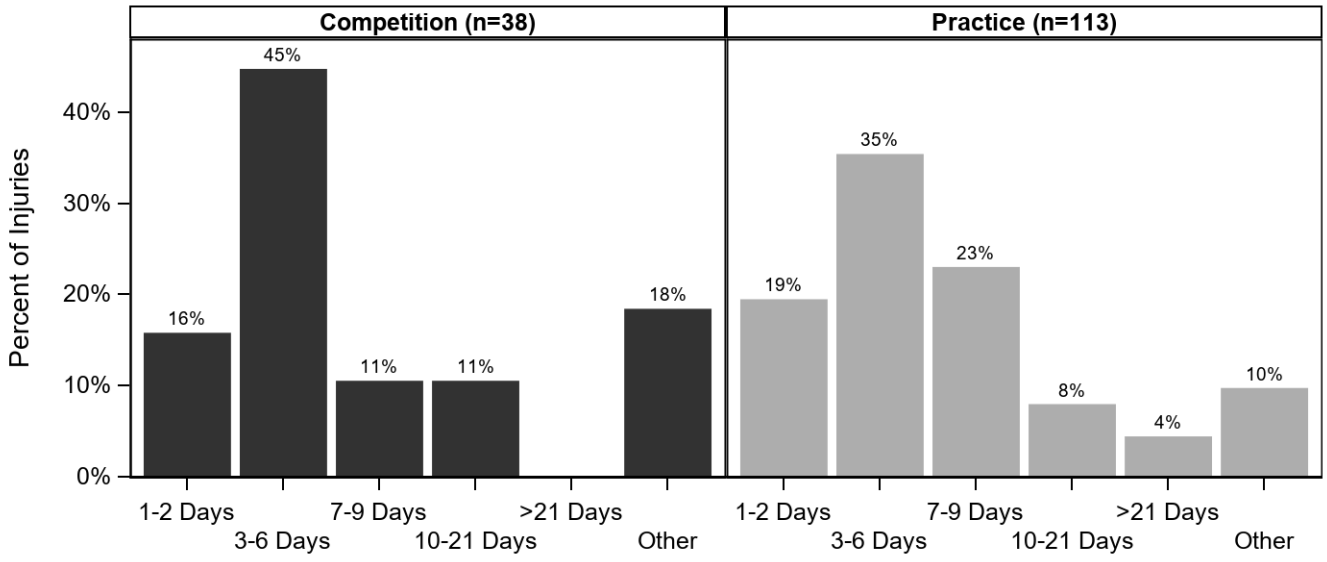
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg	11	28.9%	41	36.3%	52	34.4%
Lower Leg	3	7.9%	33	29.2%	36	23.8%
Knee	6	15.8%	11	9.7%	17	11.3%
Foot	6	15.8%	7	6.2%	13	8.6%
Ankle	6	15.8%	5	4.4%	11	7.3%
Shoulder	4	10.5%	6	5.3%	10	6.6%
Head/Face	0	0.0%	3	2.7%	3	2.0%
Trunk	0	0.0%	3	2.7%	3	2.0%
Arm/Elbow	1	2.6%	1	0.9%	2	1.3%
Other	0	0.0%	2	1.8%	2	1.3%
Systemic	1	2.6%	1	0.9%	2	1.3%
Total	***38***	***100.0%***	***113***	***100.0%***	***151***	***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, 2023-24 School Year

	Competition (n=38)		Practice (n=113)		Overall (n=151)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Hip/Thigh/Upper Leg Strain/Sprain	10	26.3%	30	26.5%	40	26.5%
Lower Leg Other	2	5.3%	26	23.0%	28	18.5%
Hip/Thigh/Upper Leg Other	1	2.6%	11	9.7%	12	7.9%
Knee Other	5	13.2%	7	6.2%	12	7.9%
Foot Other	6	15.8%	4	3.5%	10	6.6%
Ankle Strain/Sprain	5	13.2%	4	3.5%	9	6.0%
Lower Leg Strain/Sprain	1	2.6%	6	5.3%	7	4.6%
Shoulder Strain/Sprain	4	10.5%	2	1.8%	6	4.0%
Shoulder Other	0	0.0%	4	3.5%	4	2.6%
Head/Face Concussion	0	0.0%	3	2.7%	3	2.0%

Figure 19.2 Time Loss of Girls' Track and Field Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	0	0.0%	3	2.7%	3	2.0%
Did Not Require Surgery	38	100.0%	109	97.3%	147	98.0%
Total	***38***	***100.0%***	***112***	***100.0%***	***150***	***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, 2023-24 School Year

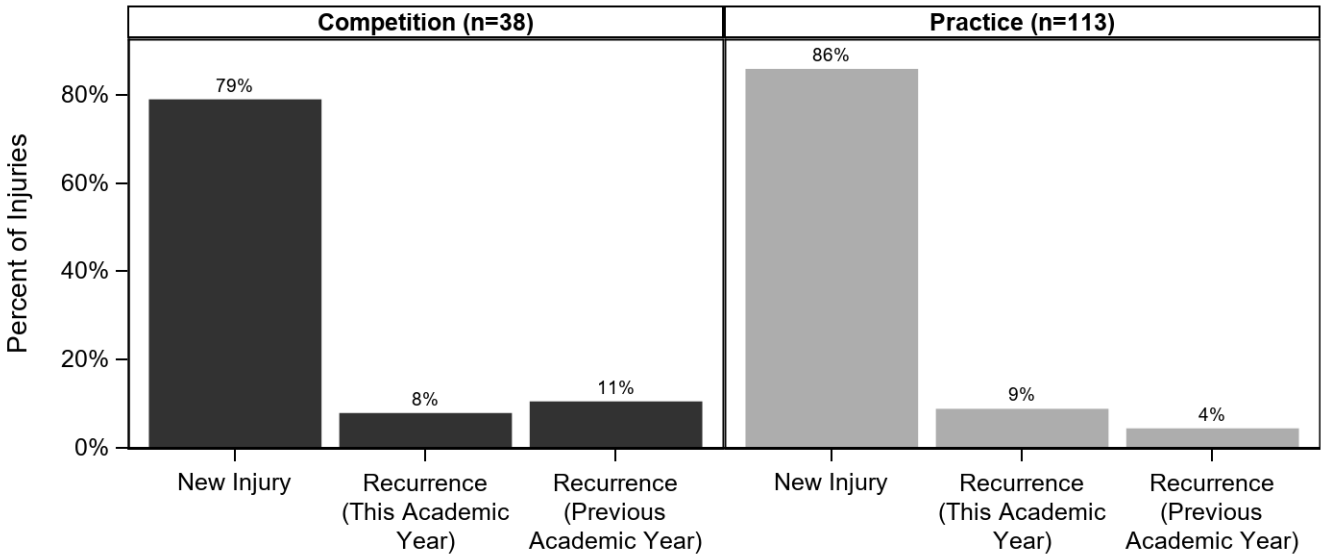


Table 19.6 Time during Season of Girls' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	37	24.7%
Regular Season	106	70.7%
Post Season	7	4.7%
Total	***150***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	8	7.6%
Second 1/2 Hour	17	16.2%
1-2 Hours into Practice	41	39.0%
>2 Hours into Practice	1	1.0%
Unknown	38	36.2%
Total	***105***	***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, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	20	57.1%	63	74.1%	83	69.2%
Throwing	5	14.3%	5	5.9%	10	8.3%
Running Hurdles	2	5.7%	6	7.1%	8	6.7%
Jumping/Landing	5	14.3%	1	1.2%	6	5.0%
Other	2	5.7%	2	2.4%	4	3.3%
Warming Up	0	0.0%	3	3.5%	3	2.5%
Conditioning	0	0.0%	3	3.5%	3	2.5%
Unknown	0	0.0%	2	2.4%	2	1.7%
Baton Hand Off	1	2.9%	0	0.0%	1	0.8%
Total	***35***	***100.0%***	***85***	***100.0%***	***120***	***100.0%***

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

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Table 19.9 Activity Resulting in Girls' Track and Field Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Baton Hand Off	1	1.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Conditioning	1	1.7%	0	0.0%	1	16.7%	1	33.3%	0	0.0%
Jumping/Landing	3	5.2%	0	0.0%	0	0.0%	0	0.0%	3	5.8%
Other	2	3.4%	0	0.0%	1	16.7%	0	0.0%	1	1.9%
Running	39	67.2%	1	100.0%	3	50.0%	1	33.3%	39	75.0%
Running Hurdles	2	3.4%	0	0.0%	1	16.7%	0	0.0%	5	9.6%
Throwing	8	13.8%	0	0.0%	0	0.0%	0	0.0%	2	3.8%
Unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2	3.8%
Warming Up	2	3.4%	0	0.0%	0	0.0%	1	33.3%	0	0.0%
Total	***58***	***100.0%***	***1***	***100.0%***	***6***	***100.0%***	***3***	***100.0%***	***52***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***55***	***61,725***	***0.89***
Competition	12	9,190	1.31
Practice	43	52,535	0.82

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

Table 20.2 Demographic Characteristics of Injured Boys' Cross Country Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	9	18.8%
Sophomore	13	27.1%
Junior	15	31.3%
Senior	11	22.9%
Total	***48***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.7 (1.3)
n	47

BMI	
Minimum	16.5
Maximum	29.0
Mean (SD)	20.4 (2.5)
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 20.1 Diagnosis of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year

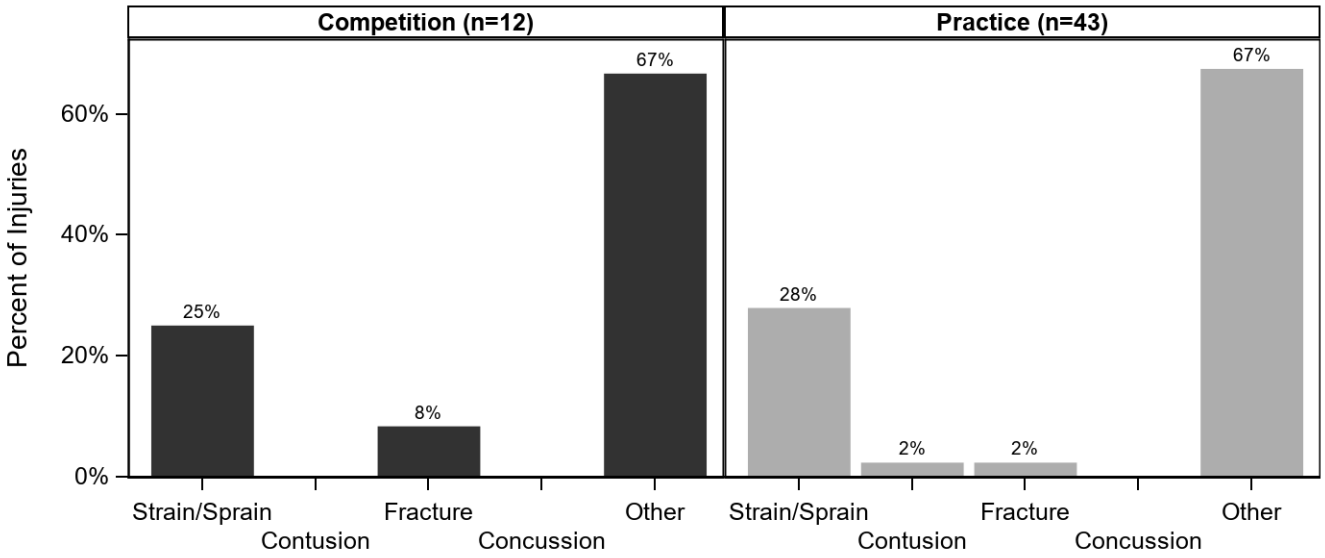


Table 20.3 Body Site of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

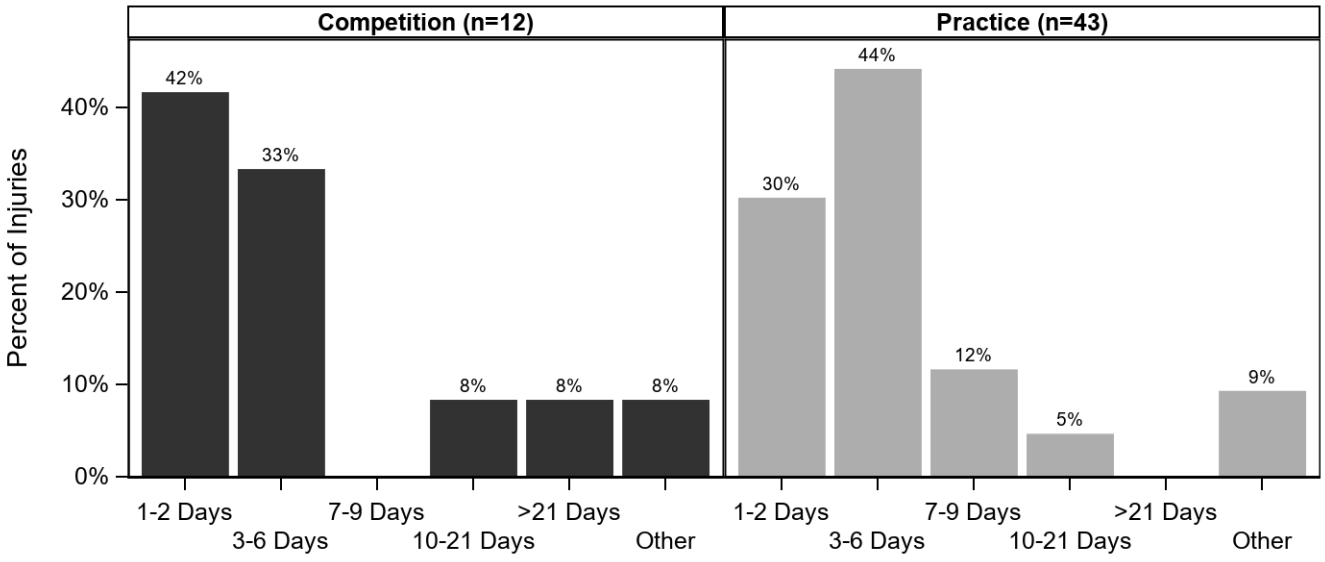
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Knee	2	16.7%	10	23.3%	12	21.8%
Hip/Thigh/Upper Leg	2	16.7%	9	20.9%	11	20.0%
Lower Leg	2	16.7%	9	20.9%	11	20.0%
Ankle	3	25.0%	7	16.3%	10	18.2%
Foot	1	8.3%	7	16.3%	8	14.5%
Head/Face	1	8.3%	0	0.0%	1	1.8%
Systemic	1	8.3%	0	0.0%	1	1.8%
Trunk	0	0.0%	1	2.3%	1	1.8%
Total	***12***	***100.0%***	***43***	***100.0%***	***55***	***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, 2023-24 School Year

	Competition (n=12)		Practice (n=43)		Overall (n=55)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Knee Other	2	16.7%	9	20.9%	11	20.0%
Lower Leg Other	2	16.7%	7	16.3%	9	16.4%
Hip/Thigh/Upper Leg Other	1	8.3%	6	14.0%	7	12.7%
Ankle Strain/Sprain	2	16.7%	4	9.3%	6	10.9%
Ankle Other	1	8.3%	3	7.0%	4	7.3%
Hip/Thigh/Upper Leg Strain/Sprain	1	8.3%	3	7.0%	4	7.3%
Foot Other	0	0.0%	3	7.0%	3	5.5%
Foot Fracture	1	8.3%	1	2.3%	2	3.6%
Foot Strain/Sprain	0	0.0%	2	4.7%	2	3.6%
Lower Leg Strain/Sprain	0	0.0%	2	4.7%	2	3.6%

Figure 20.2 Time Loss of Boys' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Did Not Require Surgery	12	100.0%	41	100.0%	53	100.0%
Total	***12***	***100.0%***	***41***	***100.0%***	***53***	***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, 2023-24 School Year

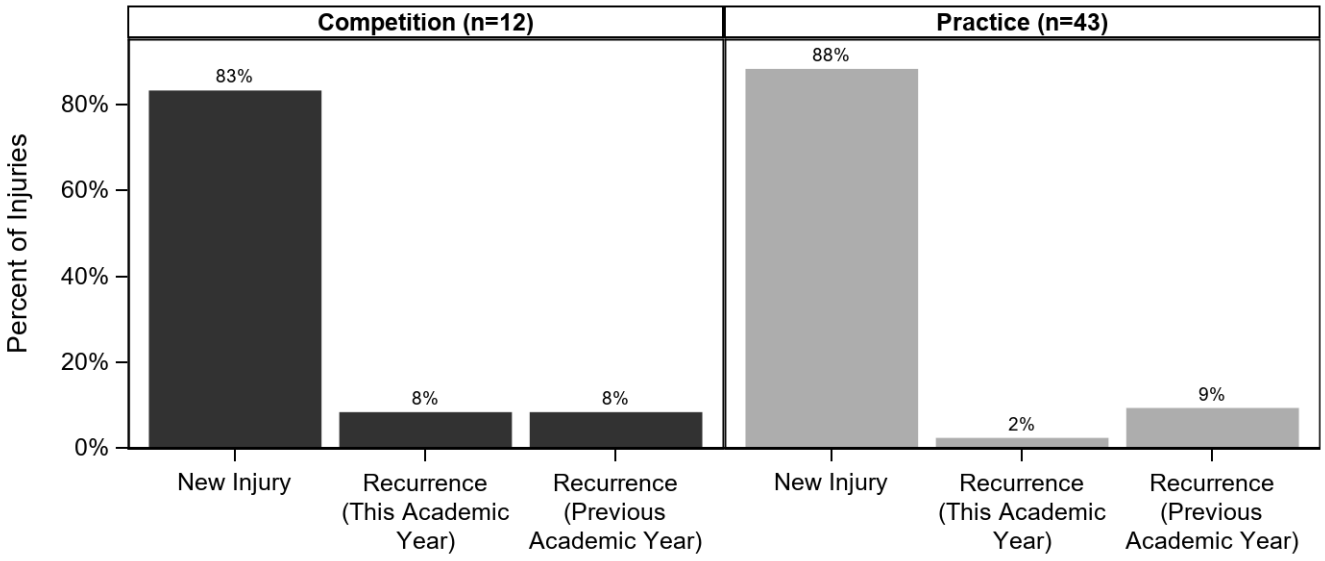


Table 20.6 Time during Season of Boys' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	7	13.0%
Regular Season	44	81.5%
Post Season	3	5.6%
Total	***54***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	1	2.3%
Second 1/2 Hour	4	9.3%
1-2 Hours into Practice	15	34.9%
>2 Hours into Practice	5	11.6%
Unknown	18	41.9%
Total	***43***	***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, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	11	91.7%	21	72.4%	32	78.0%
Conditioning	1	8.3%	3	10.3%	4	9.8%
Unknown	0	0.0%	3	10.3%	3	7.3%
Cooling Down	0	0.0%	2	6.9%	2	4.9%
Total	***12***	***100.0%***	***29***	***100.0%***	***41***	***100.0%***

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

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Table 20.9 Activity Resulting in Boys' Cross Country Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Diagnosis					
	Strain/Sprain		Fracture		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	2	14.3%	0	0.0%	2	7.7%
Cooling Down	1	7.1%	0	0.0%	1	3.8%
Running	11	78.6%	1	100.0%	20	76.9%
Unknown	0	0.0%	0	0.0%	3	11.5%
Total	***14***	***100.0%***	***1***	***100.0%***	***26***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***75***	***48,836***	***1.54***
Competition	16	7,365	2.17
Practice	59	41,471	1.42

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

Table 21.2 Demographic Characteristics of Injured Girls' Cross Country Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	18	29.5%
Sophomore	17	27.9%
Junior	13	21.3%
Senior	13	21.3%
Total	***61***	***100.0%***

Age (years)	
Minimum	14
Maximum	18
Mean (SD)	15.5 (1.2)
n	54

BMI	
Minimum	16.9
Maximum	29.1
Mean (SD)	21.6 (3.6)
n	24

* 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, 2023-24 School Year

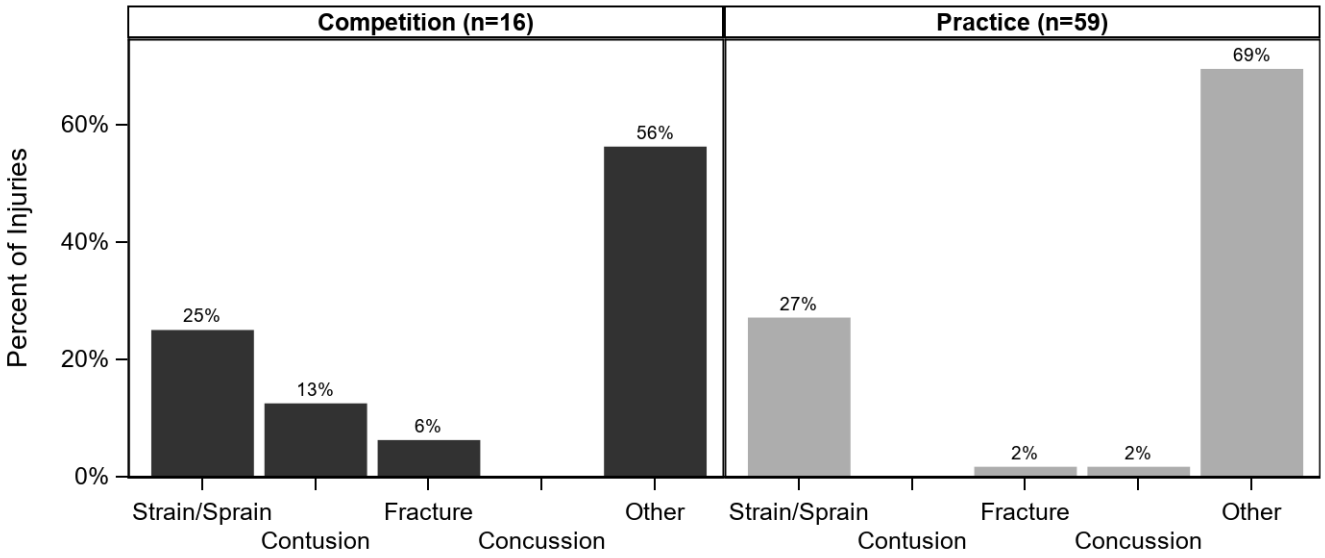


Table 21.3 Body Site of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

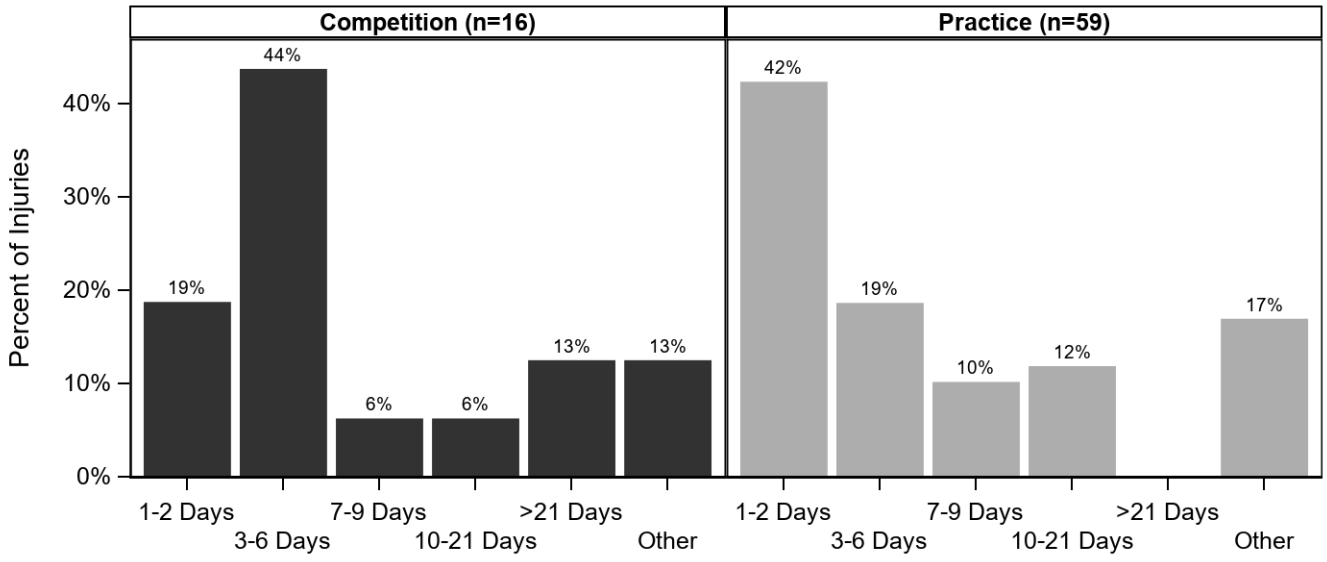
	Competition		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg	3	18.8%	20	33.9%	23	30.7%
Hip/Thigh/Upper Leg	3	18.8%	12	20.3%	15	20.0%
Knee	2	12.5%	9	15.3%	11	14.7%
Ankle	5	31.3%	5	8.5%	10	13.3%
Foot	1	6.3%	6	10.2%	7	9.3%
Systemic	1	6.3%	2	3.4%	3	4.0%
Trunk	0	0.0%	3	5.1%	3	4.0%
Head/Face	0	0.0%	2	3.4%	2	2.7%
Arm/Elbow	1	6.3%	0	0.0%	1	1.3%
Total	***16***	***100.0%***	***59***	***100.0%***	***75***	***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, 2023-24 School Year

	Competition (n=16)		Practice (n=59)		Overall (n=75)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**
Lower Leg Other	3	18.8%	16	27.1%	19	25.3%
Hip/Thigh/Upper Leg Other	2	12.5%	7	11.9%	9	12.0%
Knee Other	1	6.3%	8	13.6%	9	12.0%
Ankle Strain/Sprain	3	18.8%	3	5.1%	6	8.0%
Hip/Thigh/Upper Leg Strain/Sprain	1	6.3%	5	8.5%	6	8.0%
Foot Other	1	6.3%	4	6.8%	5	6.7%
Lower Leg Strain/Sprain	0	0.0%	4	6.8%	4	5.3%
Systemic Other	1	6.3%	2	3.4%	3	4.0%
Ankle Other	0	0.0%	2	3.4%	2	2.7%
Foot Strain/Sprain	0	0.0%	2	3.4%	2	2.7%

Figure 21.2 Time Loss of Girls' Cross Country Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	0	0.0%	1	1.8%	1	1.4%
Did Not Require Surgery	16	100.0%	56	98.2%	72	98.6%
Total	***16***	***100.0%***	***57***	***100.0%***	***73***	***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, 2023-24 School Year

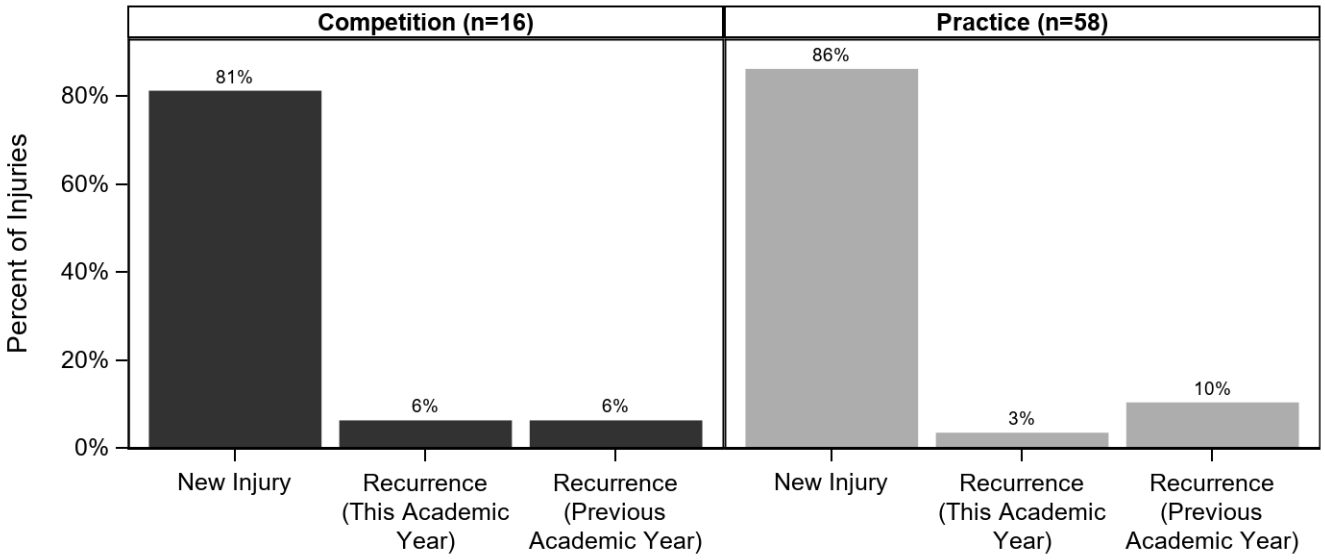


Table 21.6 Time during Season of Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	12	16.0%
Regular Season	60	80.0%
Post Season	3	4.0%
Total	***75***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	3	5.6%
Second 1/2 Hour	6	11.1%
1-2 Hours into Practice	20	37.0%
>2 Hours into Practice	3	5.6%
Unknown	22	40.7%
Total	***54***	***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, 2023-24 School Year *

	Competition		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**
Running	14	87.5%	25	62.5%	39	69.6%
Unknown	0	0.0%	9	22.5%	9	16.1%
Conditioning	0	0.0%	5	12.5%	5	8.9%
Cooling Down	1	6.3%	0	0.0%	1	1.8%
Warming Up	0	0.0%	1	2.5%	1	1.8%
Other	1	6.3%	0	0.0%	1	1.8%
Total	***16***	***100.0%***	***40***	***100.0%***	***56***	***100.0%***

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

Table 21.9 Activity Resulting in Girls' Cross Country Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Conditioning	3	20.0%	0	0.0%	0	0.0%	1	100.0%	1	2.7%
Cooling Down	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	2.7%
Other	1	6.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Running	7	46.7%	2	100.0%	1	100.0%	0	0.0%	29	78.4%
Unknown	3	20.0%	0	0.0%	0	0.0%	0	0.0%	6	16.2%
Warming Up	1	6.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Total	***15***	***100.0%***	***2***	***100.0%***	***1***	***100.0%***	***1***	***100.0%***	***37***	***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, 2023-24 School Year *

	# Injuries	# Exposures	Injury Rate (per 1,000 AEs)
Total	***87***	***82,478***	***1.05***
Competition	8	4,378	1.83
Performance	11	20,440	0.54
Practice	68	57,660	1.18

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

Table 22.2 Demographic Characteristics of Injured Cheerleading Athletes, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Year in School	n	%
Freshman	19	24.1%
Sophomore	21	26.6%
Junior	19	24.1%
Senior	20	25.3%
Total	***79***	***100.0%***

Age (years)	
Minimum	13
Maximum	18
Mean (SD)	15.6 (1.3)
n	73

BMI	
Minimum	16.0
Maximum	37.3
Mean (SD)	21.4 (4.0)
n	45

* 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, 2023-24 School Year

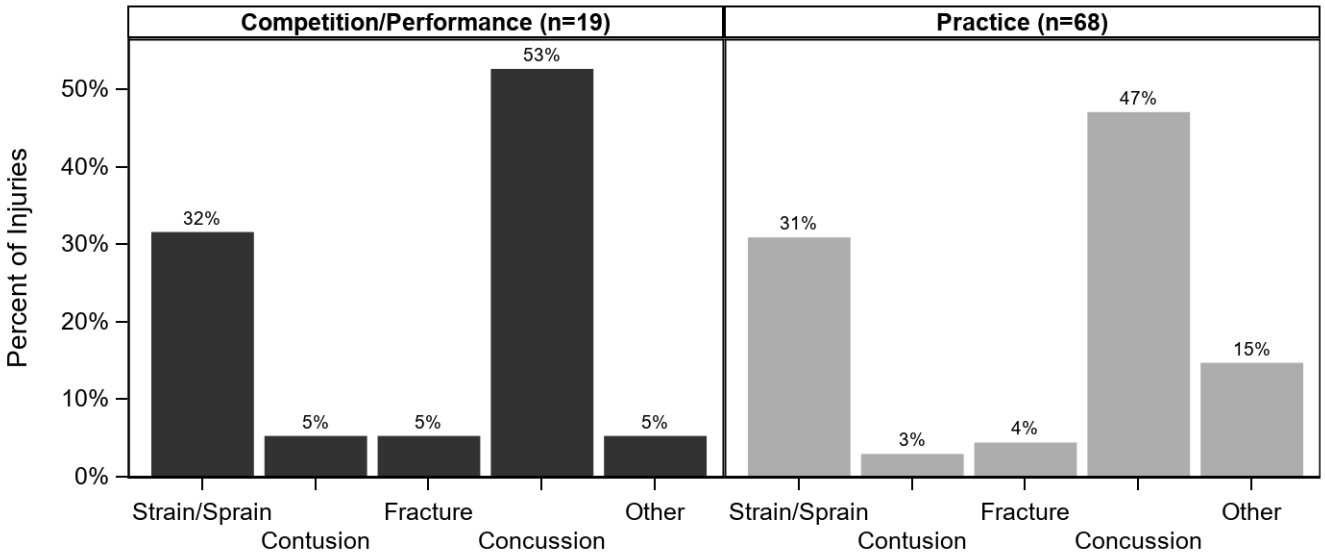


Table 22.3 Body Site of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

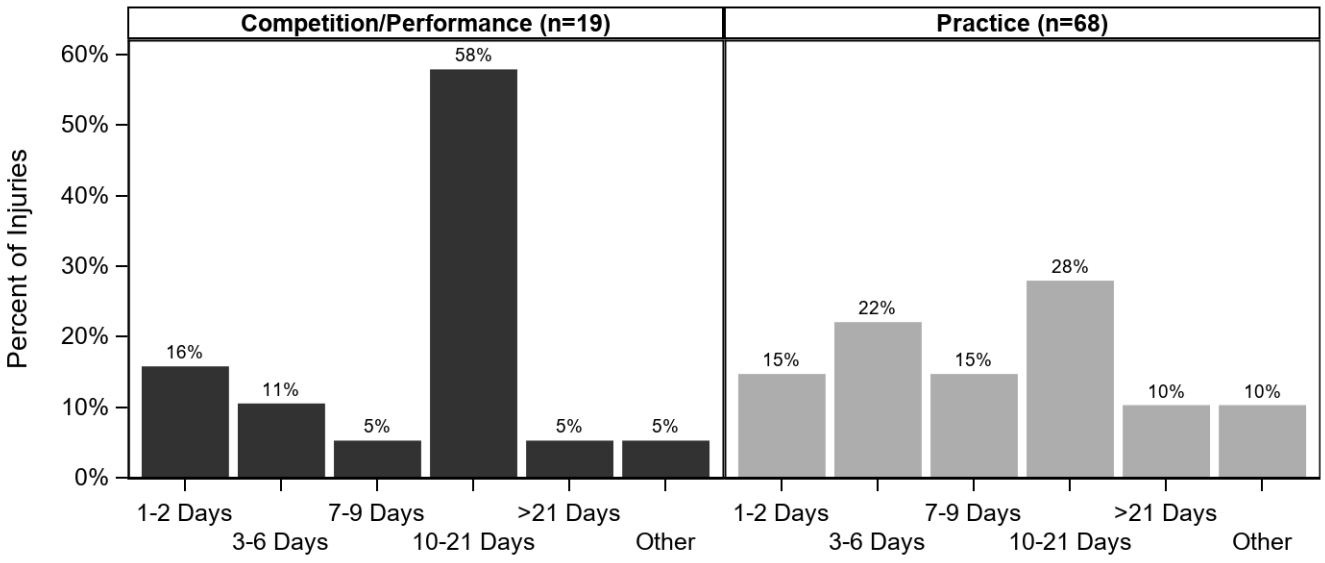
	Competition		Performance		Practice		Overall	
Body Site	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face	5	62.5%	5	45.5%	36	52.9%	46	52.9%
Ankle	0	0.0%	1	9.1%	7	10.3%	8	9.2%
Hand/Wrist	2	25.0%	1	9.1%	3	4.4%	6	6.9%
Arm/Elbow	0	0.0%	1	9.1%	3	4.4%	4	4.6%
Knee	0	0.0%	0	0.0%	4	5.9%	4	4.6%
Trunk	0	0.0%	0	0.0%	4	5.9%	4	4.6%
Foot	0	0.0%	0	0.0%	3	4.4%	3	3.4%
Shoulder	0	0.0%	0	0.0%	3	4.4%	3	3.4%
Systemic	0	0.0%	1	9.1%	2	2.9%	3	3.4%
Hip/Thigh/Upper Leg	1	12.5%	0	0.0%	1	1.5%	2	2.3%
Neck	0	0.0%	2	18.2%	0	0.0%	2	2.3%
Lower Leg	0	0.0%	0	0.0%	1	1.5%	1	1.1%
Other	0	0.0%	0	0.0%	1	1.5%	1	1.1%
Total	***8***	***100.0%***	***11***	***100.0%***	***68***	***100.0%***	***87***	***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, 2023-24 School Year

	Competition (n=8)		Performance (n=11)		Practice (n=68)		Overall (n=87)	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Head/Face Concussion	5	62.5%	5	7.4%	32	47.1%	42	48.3%
Ankle Strain/Sprain	0	0.0%	1	1.5%	7	10.3%	8	9.2%
Hand/Wrist Strain/Sprain	2	25.0%	0	0.0%	2	2.9%	4	4.6%
Trunk Strain/Sprain	0	0.0%	0	0.0%	4	5.9%	4	4.6%
Knee Other	0	0.0%	0	0.0%	3	4.4%	3	3.4%
Shoulder Strain/Sprain	0	0.0%	0	0.0%	3	4.4%	3	3.4%
Systemic Other	0	0.0%	1	1.5%	2	2.9%	3	3.4%
Arm/Elbow Strain/Sprain	0	0.0%	0	0.0%	2	2.9%	2	2.3%
Head/Face Other	0	0.0%	0	0.0%	2	2.9%	2	2.3%
Hip/Thigh/Upper Leg Strain/Sprain	1	12.5%	0	0.0%	1	1.5%	2	2.3%

Figure 22.2 Time Loss of Cheerleading Injuries by Type of Exposure, High School Sports-Related Injury Surveillance Study, US, 2023-24 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, 2023-24 School Year *

	Competition		Performance		Practice		Overall	
Need for Surgery	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Required Surgery	0	0.0%	0	0.0%	2	2.9%	2	2.3%
Did Not Require Surgery	8	100.0%	11	100.0%	66	97.1%	85	97.7%
Total	***8***	***100.0%***	***11***	***100.0%***	***68***	***100.0%***	***87***	***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, 2023-24 School Year

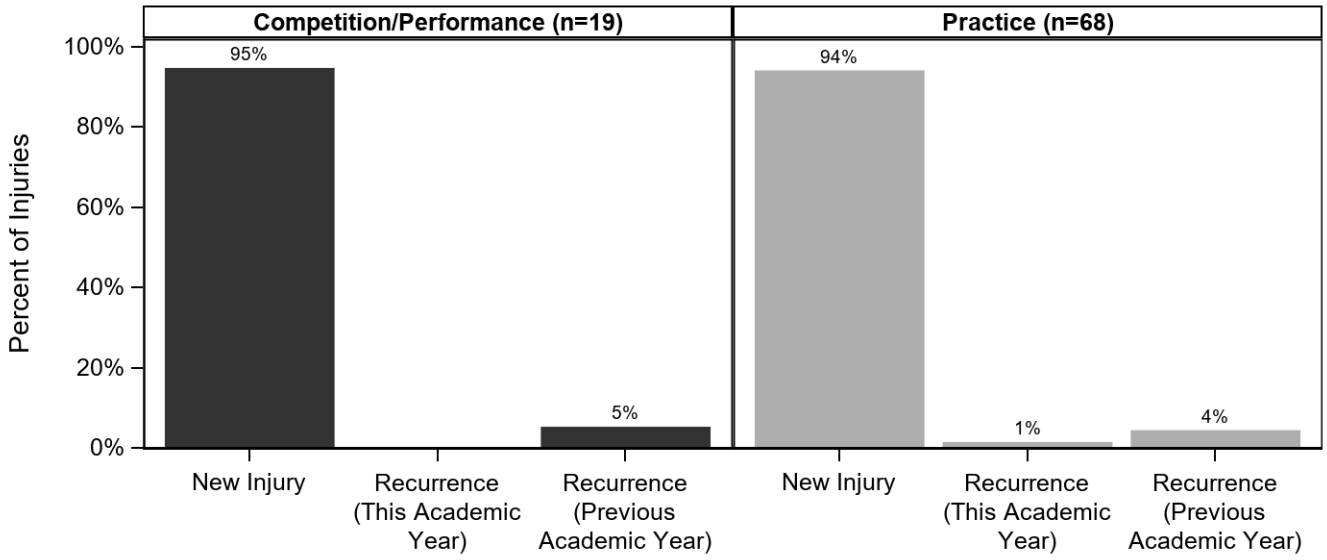


Table 22.6 Time during Season of Cheerleading Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time in Season	n	%
Preseason	13	14.9%
Regular Season	72	82.8%
Post Season	2	2.3%
Total	***87***	***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, 2023-24 School Year *

Time in Practice	n	%
First 1/2 Hour	3	4.4%
Second 1/2 Hour	5	7.4%
1-2 Hours into Practice	34	50.0%
>2 Hours into Practice	1	1.5%
Unknown	25	36.8%
Total	***68***	***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, 2023-24 School Year *

	Competition		Performance		Practice		Overall	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Partner Stunt	1	16.7%	2	20.0%	17	29.3%	20	27.0%
Pyramid	0	0.0%	2	20.0%	11	19.0%	13	17.6%
Toss	2	33.3%	2	20.0%	9	15.5%	13	17.6%
Other	2	33.3%	0	0.0%	7	12.1%	9	12.2%
Unknown	1	16.7%	0	0.0%	7	12.1%	8	10.8%
Moving Tumbling	0	0.0%	2	20.0%	3	5.2%	5	6.8%
Jump	0	0.0%	0	0.0%	3	5.2%	3	4.1%
Warm-Up	0	0.0%	2	20.0%	0	0.0%	2	2.7%
Standing Tumbling	0	0.0%	0	0.0%	1	1.7%	1	1.4%
Total	***6***	***100.0%***	***10***	***100.0%***	***58***	***100.0%***	***74***	***100.0%***

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

REPORTING INFORMATION ONLINE

Table 22.9 Activity Resulting in Cheerleading Injuries by Injury Diagnosis, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

	Diagnosis									
	Strain/Sprain		Contusion		Fracture		Concussion		Other	
Activity	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Jump	3	12.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Moving Tumbling	2	8.3%	1	33.3%	1	25.0%	1	2.8%	0	0.0%
Other	2	8.3%	1	33.3%	0	0.0%	2	5.6%	4	57.1%
Partner Stunt	7	29.2%	0	0.0%	0	0.0%	13	36.1%	0	0.0%
Pyramid	2	8.3%	0	0.0%	1	25.0%	10	27.8%	0	0.0%
Standing Tumbling	1	4.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Toss	4	16.7%	1	33.3%	1	25.0%	7	19.4%	0	0.0%
Unknown	3	12.5%	0	0.0%	0	0.0%	3	8.3%	2	28.6%
Warm-Up	0	0.0%	0	0.0%	1	25.0%	0	0.0%	1	14.3%
Total	***24***	***100.0%***	***3***	***100.0%***	***4***	***100.0%***	***36***	***100.0%***	***7***	***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, 2023-24 School Year

	Boys' Soccer	Girls' Soccer *	RR (95% CI) **
Total	1.91	**2.68**	**1.40 (1.23-1.60)**
Competition	3.81	**5.63**	**1.48 (1.25-1.75)**
Practice	1.07	**1.35**	**1.26 (1.02-1.56)**

* 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.
** 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, 2023-24 School Year *

Body Site	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Head/Face	13.1%	**22.5%**	**1.71 (1.27-2.31)**
Neck	**1.0%**	0.4%	2.29 (0.42-12.49)
Shoulder	**1.9%**	0.8%	2.29 (0.69-7.57)
Trunk	**3.6%**	2.5%	1.43 (0.68-3.03)
Arm/Elbow	**1.7%**	1.3%	1.34 (0.45-3.95)
Hand/Wrist	**4.5%**	4.4%	1.04 (0.56-1.90)
Hip/Thigh/Upper Leg	**18.9%**	16.3%	1.16 (0.87-1.54)
Knee	16.2%	**16.9%**	1.04 (0.77-1.40)
Lower Leg	**6.2%**	5.4%	1.15 (0.68-1.94)
Ankle	**22.9%**	21.9%	1.05 (0.82-1.34)
Foot	**7.2%**	5.0%	1.43 (0.85-2.41)
Other	**2.1%**	1.0%	2.06 (0.70-6.12)
Systemic	0.7%	**1.7%**	2.33 (0.62-8.74)
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, 2023-24 School Year *

Diagnosis	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Strain/Sprain	**52.7%**	47.1%	1.12 (0.98-1.28)
Contusion	**12.6%**	11.0%	1.15 (0.80-1.64)
Fracture	**7.9%**	5.4%	1.45 (0.88-2.39)
Concussion	10.5%	**19.8%**	**1.88 (1.35-2.63)**
Other	16.2%	**16.7%**	1.03 (0.76-1.38)
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, 2023-24 School Year *

Diagnosis	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Ankle Strain/Sprain	20.0%	**20.2%**	1.01 (0.78-1.31)
Head/Face Concussion	10.5%	**19.8%**	**1.88 (1.35-2.63)**
Hip/Thigh/Upper Leg Strain/Sprain	**14.3%**	12.9%	1.11 (0.80-1.54)
Knee Other	**7.6%**	6.0%	1.26 (0.78-2.06)
Knee Strain/Sprain	6.7%	**7.1%**	1.06 (0.65-1.72)

* 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, 2023-24 School Year *

Time Loss	Boys' Soccer	Girls' Soccer	IPR (95% CI)
1-2 Days	**24.1%**	19.0%	1.27 (0.99-1.64)
3-6 Days	**26.5%**	22.7%	1.17 (0.93-1.47)
7-9 Days	12.9%	**13.3%**	1.03 (0.74-1.45)
10-21 Days	15.5%	**19.2%**	1.24 (0.92-1.65)
>21 Days	**5.3%**	4.0%	1.33 (0.73-2.42)
Other	15.8%	**21.9%**	**1.39 (1.05-1.84)**
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, 2023-24 School Year *

Soccer Mechanism	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Contact with Another Player	**24.0%**	21.9%	1.10 (0.86-1.40)
Contact with Ball	11.6%	**16.0%**	1.37 (0.98-1.93)
Contact with Goal	0.2%	**0.9%**	3.54 (0.40-31.65)
N/A **	13.1%	**16.2%**	1.23 (0.89-1.71)
Other	**12.1%**	8.8%	1.39 (0.93-2.06)
Rotation Around a Planted Foot/Inversion	12.4%	**13.3%**	1.08 (0.76-1.53)
Slide Tackle	**6.4%**	2.8%	**2.26 (1.18-4.35)**
Stepped On/Fell On/Kicked	**11.6%**	9.6%	1.21 (0.82-1.78)
Uneven Playing Surface	0.7%	**3.3%**	**4.42 (1.29-15.20)**
Unknown	**7.7%**	7.2%	1.06 (0.66-1.70)
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, 2023-24 School Year *

Soccer Activity	Boys' Soccer	Girls' Soccer	IPR (95% CI)
Attempting a Slide Tackle	**1.5%**	0.2%	6.76 (0.81-56.13)
Ball Handling/Dribbling	**8.9%**	6.8%	1.31 (0.82-2.08)
Blocking Shot	1.0%	**1.8%**	1.78 (0.54-5.87)
Chasing Loose Ball	8.7%	**9.2%**	1.07 (0.69-1.64)
Conditioning	2.5%	**3.7%**	1.51 (0.70-3.26)
Defending	**14.6%**	14.1%	1.04 (0.75-1.44)
General Play	24.0%	**24.4%**	1.02 (0.80-1.29)
Goaltending	**7.7%**	6.6%	1.16 (0.72-1.89)
Heading Ball	4.5%	**5.7%**	1.28 (0.71-2.31)
Other	1.7%	**2.6%**	1.52 (0.60-3.84)
Passing	**3.7%**	2.2%	1.69 (0.77-3.72)
Receiving Pass	**3.5%**	2.2%	1.58 (0.71-3.52)
Receiving a Slide Tackle	1.0%	**1.3%**	1.33 (0.38-4.70)
Shooting	**6.9%**	3.7%	**1.85 (1.03-3.34)**
Unknown	9.9%	**15.4%**	**1.55 (1.08-2.24)**
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, 2023-24 School Year

	Boys' Basketball	Girls' Basketball *	RR (95% CI) **
Total	1.74	**2.37**	**1.36 (1.18-1.57)**
Competition	2.87	**5.15**	**1.79 (1.49-2.16)**
Practice	**1.24**	1.10	1.12 (0.89-1.41)

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

Table 23.9 Comparison of Body Sites of Boys' and Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Body Site	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Head/Face	15.3%	**17.9%**	1.17 (0.85-1.61)
Neck	0.2%	**0.3%**	1.15 (0.07-18.45)
Shoulder	3.0%	**3.7%**	1.25 (0.58-2.70)
Trunk	**5.2%**	1.4%	**3.65 (1.39-9.60)**
Arm/Elbow	1.0%	**1.7%**	1.73 (0.49-6.09)
Hand/Wrist	**10.4%**	9.7%	1.07 (0.70-1.65)
Hip/Thigh/Upper Leg	**8.4%**	5.7%	1.48 (0.87-2.52)
Knee	10.4%	**17.4%**	**1.71 (1.18-2.48)**
Lower Leg	4.4%	**4.8%**	1.09 (0.57-2.08)
Ankle	**36.3%**	33.6%	1.08 (0.89-1.32)
Foot	**3.7%**	2.8%	1.30 (0.59-2.87)
Systemic	**1.7%**	0.9%	2.03 (0.53-7.80)
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, 2023-24 School Year *

Diagnosis	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Strain/Sprain	55.4%	**58.4%**	1.05 (0.93-1.19)
Contusion	**9.4%**	5.4%	**1.74 (1.02-2.96)**
Fracture	**10.6%**	5.4%	**1.97 (1.17-3.31)**
Concussion	8.4%	**14.8%**	**1.76 (1.17-2.65)**
Other	**16.1%**	16.0%	1.01 (0.73-1.40)
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, 2023-24 School Year *

Diagnosis	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Ankle Strain/Sprain	**34.2%**	32.8%	1.04 (0.85-1.28)
Hand/Wrist Strain/Sprain	4.2%	**6.0%**	1.42 (0.76-2.66)
Head/Face Concussion	8.4%	**14.8%**	**1.76 (1.17-2.65)**
Knee Other	3.7%	**6.6%**	1.76 (0.93-3.33)
Knee Strain/Sprain	4.5%	**9.4%**	**2.11 (1.21-3.68)**

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

Table 23.12 Comparison of Time Loss of Boys' and Girls' Basketball Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time Loss	Boys' Basketball	Girls' Basketball	IPR (95% CI)
1-2 Days	**25.2%**	24.2%	1.04 (0.81-1.34)
3-6 Days	**21.7%**	18.2%	1.19 (0.89-1.60)
7-9 Days	**14.1%**	13.4%	1.05 (0.74-1.51)
10-21 Days	16.5%	**17.1%**	1.03 (0.75-1.42)
>21 Days	7.2%	**8.8%**	1.23 (0.76-2.00)
Other	15.3%	**18.2%**	1.21 (0.88-1.66)
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, 2023-24 School Year *

Basketball Mechanism	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Collision with Another Player	**24.9%**	23.6%	1.06 (0.82-1.36)
Contact with Ball	4.0%	**5.5%**	1.37 (0.72-2.63)
Jumping/Landing	**24.9%**	19.5%	1.28 (0.97-1.68)
N/A **	8.8%	**10.2%**	1.16 (0.74-1.81)
Other	**13.4%**	9.6%	1.39 (0.92-2.09)
Rotation Around a Planted Foot/Inversion	9.3%	**12.2%**	1.31 (0.86-2.00)
Stepped On/Fell On/Kicked	9.3%	**10.8%**	1.16 (0.75-1.78)
Unknown	5.3%	**8.5%**	1.60 (0.93-2.75)
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, 2023-24 School Year *

Basketball Activity	Boys' Basketball	Girls' Basketball	IPR (95% CI)
Ball Handling/Dribbling	3.5%	**7.4%**	**2.09 (1.10-3.95)**
Chasing Loose Ball	6.3%	**8.8%**	1.40 (0.84-2.34)
Conditioning	**3.3%**	1.5%	2.23 (0.80-6.19)
Defending	13.4%	**18.3%**	1.37 (0.98-1.92)
General Play	17.9%	**18.0%**	1.00 (0.74-1.37)
Other	1.8%	**2.4%**	1.34 (0.49-3.65)
Passing	0.8%	**0.9%**	1.17 (0.24-5.77)
Rebounding	**24.5%**	14.7%	**1.66 (1.22-2.26)**
Receiving Pass	1.8%	**5.0%**	**2.84 (1.19-6.77)**
Screening	**0.5%**	0.0%	--
Shooting	**9.6%**	6.5%	1.48 (0.89-2.45)
Unknown	**16.7%**	16.5%	1.01 (0.73-1.40)
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, 2023-24 School Year

	Boys' Baseball	Girls' Softball *	RR (95% CI) **
Total	1.10	**1.41**	**1.28 (1.05-1.57)**
Competition	1.84	**2.28**	1.24 (0.95-1.62)
Practice	0.70	**0.95**	1.35 (0.99-1.84)

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

Table 23.16 Comparison of Body Sites of Baseball and Softball Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Body Site	Boys' Baseball	Girls' Softball	IPR (95% CI)
Head/Face	7.8%	**20.7%**	**2.67 (1.53-4.66)**
Neck	**1.0%**	0.0%	--
Shoulder	**19.0%**	11.2%	**1.68 (1.01-2.81)**
Trunk	5.9%	**6.5%**	1.12 (0.50-2.48)
Arm/Elbow	**10.2%**	6.5%	1.56 (0.77-3.16)
Hand/Wrist	**18.5%**	14.8%	1.25 (0.78-1.98)
Hip/Thigh/Upper Leg	**12.7%**	7.1%	1.78 (0.92-3.42)
Knee	4.9%	**9.5%**	1.95 (0.91-4.20)
Lower Leg	**4.9%**	4.7%	1.02 (0.41-2.55)
Ankle	9.8%	**12.4%**	1.28 (0.72-2.29)
Foot	2.9%	**4.1%**	1.22 (0.40-3.73)
Other	**2.4%**	0.6%	4.10 (0.48-35.08)
Systemic	0.0%	**1.8%**	--
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, 2023-24 School Year *

Diagnosis	Boys' Baseball	Girls' Softball	IPR (95% CI)
Strain/Sprain	**51.7%**	36.3%	**1.42 (1.12-1.81)**
Contusion	7.8%	**14.3%**	**1.83 (1.00-3.34)**
Fracture	**12.7%**	11.9%	1.07 (0.62-1.84)
Concussion	3.4%	**13.7%**	**4.01 (1.76-9.15)**
Other	**24.4%**	23.8%	1.02 (0.71-1.47)
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, 2023-24 School Year *

Diagnosis	Boys' Baseball	Girls' Softball	IPR (95% CI)
Ankle Strain/Sprain	9.8%	**10.1%**	1.04 (0.56-1.92)
Hand/Wrist Fracture	**9.3%**	6.0%	1.56 (0.74-3.27)
Head/Face Concussion	3.4%	**13.7%**	**4.01 (1.76-9.15)**
Hip/Thigh/Upper Leg Strain/Sprain	**11.2%**	6.5%	1.71 (0.86-3.42)
Knee Other	3.9%	**5.4%**	1.37 (0.54-3.50)
Shoulder Other	**8.8%**	4.2%	2.11 (0.90-4.94)
Shoulder Strain/Sprain	**10.2%**	6.5%	1.56 (0.77-3.16)
Trunk Strain/Sprain	**5.4%**	3.0%	1.80 (0.64-5.11)

* 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, 2023-24 School Year *

Time Loss	Boys' Baseball	Girls' Softball	IPR (95% CI)
1-2 Days	17.6%	**31.4%**	**1.80 (1.24-2.61)**
3-6 Days	**21.5%**	17.8%	1.24 (0.81-1.90)
7-9 Days	14.1%	**18.3%**	1.30 (0.82-2.08)
10-21 Days	**20.5%**	13.6%	1.50 (0.94-2.39)
>21 Days	**8.3%**	6.5%	1.27 (0.61-2.64)
Other	**18.0%**	12.4%	1.44 (0.88-2.37)
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, 2023-24 School Year *

Baseball Mechanism	Boys' Baseball	Girls' Softball	IPR (95% CI)
Contact with Another Player	**10.3%**	6.3%	1.63 (0.78-3.39)
Contact with Bases	6.2%	**6.3%**	1.02 (0.45-2.32)
Contact with Thrown Ball (Non-Pitch)	3.1%	**12.0%**	**3.89 (1.58-9.54)**
Hit by Batted Ball	4.6%	**11.4%**	**2.46 (1.13-5.33)**
Hit by Pitch	**10.3%**	5.7%	1.81 (0.84-3.88)
N/A **	**18.0%**	14.6%	1.24 (0.76-2.01)
Other	15.5%	**21.5%**	1.39 (0.89-2.17)
Rotation Around a Planted Foot/Inversion	**9.3%**	7.6%	1.22 (0.60-2.47)
Throwing (Not Pitching)	4.6%	**5.7%**	1.23 (0.50-3.03)
Throwing (Pitching)	**12.4%**	3.8%	**3.26 (1.36-7.81)**
Unknown	**5.7%**	5.1%	1.12 (0.46-2.73)
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, 2023-24 School Year *

Baseball Activity	Boys' Baseball	Girls' Softball	IPR (95% CI)
Batting	**15.3%**	6.2%	**2.46 (1.24-4.90)**
Catching	8.2%	**12.4%**	1.52 (0.81-2.85)
Conditioning	**4.1%**	3.1%	1.31 (0.44-3.96)
Fielding a Batted Ball	9.7%	**16.8%**	1.73 (1.00-3.00)
Fielding a Thrown Ball	4.1%	**6.8%**	1.67 (0.69-4.08)
General Play	2.0%	**6.8%**	**3.35 (1.08-10.37)**
Other	2.6%	**3.7%**	1.46 (0.45-4.73)
Pitching	**18.4%**	13.7%	1.34 (0.82-2.19)
Running Bases	**14.3%**	13.0%	1.10 (0.65-1.86)
Sliding	**8.2%**	5.0%	1.64 (0.72-3.76)
Throwing	**9.2%**	8.1%	1.14 (0.57-2.26)
Unknown	4.1%	**4.3%**	1.07 (0.39-2.89)
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 and Diving

Table 23.22 Comparison of Boys' and Girls' Swimming and Diving Injury Rates, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year

	Boys' Swimming and Diving	Girls' Swimming and Diving *	RR (95% CI) **
Total	0.13	**0.30**	2.30 (0.80-6.61)
Competition	0.41	**0.44**	1.07 (0.22-5.30)
Practice	0.07	**0.27**	4.15 (0.88-19.55)

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

Table 23.23 Comparison of Body Sites of Boys' and Girls' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Body Site	Boys' Swimming and Diving	Girls' Swimming and Diving	IPR (95% CI)
Head/Face	**20.0%**	18.2%	1.10 (0.10-12.38)
Neck	**20.0%**	0.0%	--
Shoulder	0.0%	**9.1%**	--
Trunk	**40.0%**	18.2%	2.20 (0.34-14.04)
Arm/Elbow	0.0%	**9.1%**	--
Hip/Thigh/Upper Leg	**20.0%**	9.1%	2.20 (0.12-39.11)
Knee	0.0%	**9.1%**	--
Lower Leg	0.0%	**9.1%**	--
Ankle	0.0%	**9.1%**	--
Systemic	0.0%	**9.1%**	--
Total	***100.0%***	***100.0%***	**--**

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

Table 23.24 Comparison of Diagnoses of Boys' and Girls' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Diagnosis	Boys' Swimming and Diving	Girls' Swimming and Diving	IPR (95% CI)
Strain/Sprain	**60.0%**	27.3%	2.20 (0.57-8.48)
Contusion	0.0%	**9.1%**	--
Concussion	**20.0%**	18.2%	1.10 (0.10-12.38)
Other	20.0%	**45.5%**	2.27 (0.28-18.54)
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 and Diving Injury Diagnoses, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Diagnosis	Boys' Swimming and Diving	Girls' Swimming and Diving	IPR (95% CI)
Ankle Strain/Sprain	0.0%	**9.1%**	--
Arm/Elbow Other	0.0%	**9.1%**	--
Head/Face Concussion	**20.0%**	18.2%	1.10 (0.10-12.38)
Hip/Thigh/Upper Leg Strain/Sprain	**20.0%**	9.1%	2.20 (0.12-39.11)
Knee Contusion	0.0%	**9.1%**	--
Lower Leg Other	0.0%	**9.1%**	--
Neck Strain/Sprain	**20.0%**	0.0%	--
Shoulder Other	0.0%	**9.1%**	--
Systemic Other	0.0%	**9.1%**	--
Trunk Other	**20.0%**	9.1%	2.20 (0.12-39.11)
Trunk Strain/Sprain	**20.0%**	9.1%	2.20 (0.12-39.11)

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

Table 23.26 Comparison of Time Loss of Boys' and Girls' Swimming and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time Loss	Boys' Swimming and Diving	Girls' Swimming and Diving	IPR (95% CI)
1-2 Days	20.0%	**27.3%**	1.36 (0.14-12.91)
3-6 Days	20.0%	**36.4%**	1.82 (0.21-15.70)
7-9 Days	**40.0%**	27.3%	1.47 (0.29-7.42)
10-21 Days	0.0%	**9.1%**	--
Other	**20.0%**	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 and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Swimming Mechanism	Boys' Swimming and Diving	Girls' Swimming and Diving	IPR (95% CI)
Contact with Wall	0.0%	**27.3%**	--
N/A **	20.0%	**45.5%**	2.27 (0.28-18.54)
Other	**80.0%**	18.2%	4.40 (0.99-19.55)
Unknown	0.0%	**9.1%**	--
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 and Diving Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Swimming Activity	Boys' Swimming and Diving	Girls' Swimming and Diving	IPR (95% CI)
Diving Off Board, Platform or Block	**80.0%**	9.1%	**8.80 (1.02-75.99)**
Flip Off Wall	0.0%	**18.2%**	--
Other	0.0%	**9.1%**	--
Swimming	0.0%	**36.4%**	--
Touch Turn Off Wall	0.0%	**9.1%**	--
Unknown	**20.0%**	18.2%	1.10 (0.10-12.38)
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 and Field

Table 23.29 Comparison of Boys' and Girls' Track and Field Injury Rates, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year

	Boys' Track and Field	Girls' Track and Field*	RR (95% CI) **
Total	**1.30**	1.27	1.02 (0.82-1.27)
Competition	**3.40**	1.88	**1.81 (1.23-2.67)**
Practice	0.86	**1.15**	**1.34 (1.02-1.76)**

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

Table 23.30 Comparison of Body Sites of Boys' and Girls' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Body Site	Boys' Track and Field	Girls' Track and Field	IPR (95% CI)
Head/Face	**2.8%**	2.0%	1.43 (0.34-5.93)
Neck	**0.6%**	0.0%	--
Shoulder	0.0%	**6.6%**	--
Trunk	**6.3%**	2.0%	3.15 (0.89-11.14)
Arm/Elbow	0.6%	**1.3%**	2.33 (0.21-25.78)
Hip/Thigh/Upper Leg	**52.3%**	34.4%	**1.52 (1.17-1.97)**
Knee	6.8%	**11.3%**	1.65 (0.81-3.36)
Lower Leg	14.8%	**23.8%**	**1.61 (1.02-2.55)**
Ankle	**9.1%**	7.3%	1.25 (0.60-2.62)
Foot	6.3%	**8.6%**	1.38 (0.63-3.00)
Other	0.0%	**1.3%**	--
Systemic	0.6%	**1.3%**	2.33 (0.21-25.78)
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 and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Diagnosis	Boys' Track and Field	Girls' Track and Field	IPR (95% CI)
Strain/Sprain	**68.8%**	45.7%	**1.50 (1.23-1.84)**
Contusion	**1.7%**	0.7%	2.57 (0.27-24.78)
Fracture	1.7%	**4.0%**	2.33 (0.59-9.23)
Concussion	1.7%	**2.0%**	1.17 (0.24-5.74)
Other	26.1%	**47.7%**	**1.82 (1.35-2.46)**
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 and Field Injury Diagnoses, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Diagnosis	Boys' Track and Field	Girls' Track and Field	IPR (95% CI)
Ankle Strain/Sprain	**8.0%**	6.0%	1.33 (0.59-3.01)
Foot Other	2.8%	**6.6%**	2.33 (0.81-6.71)
Hip/Thigh/Upper Leg Other	6.3%	**7.9%**	1.27 (0.58-2.81)
Hip/Thigh/Upper Leg Strain/Sprain	**45.5%**	26.5%	**1.72 (1.26-2.35)**
Knee Other	4.0%	**7.9%**	2.00 (0.80-4.97)
Lower Leg Other	9.7%	**18.5%**	**1.92 (1.09-3.38)**
Trunk Strain/Sprain	**5.7%**	1.3%	4.29 (0.95-19.43)

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

Table 23.33 Comparison of Time Loss of Boys' and Girls' Track and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time Loss	Boys' Track and Field	Girls' Track and Field	IPR (95% CI)
1-2 Days	**23.3%**	18.5%	1.26 (0.82-1.93)
3-6 Days	32.4%	**37.7%**	1.17 (0.87-1.57)
7-9 Days	13.6%	**19.9%**	1.46 (0.89-2.39)
10-21 Days	**12.5%**	8.6%	1.45 (0.76-2.79)
>21 Days	**3.4%**	3.3%	1.03 (0.32-3.33)
Other	**14.8%**	11.9%	1.24 (0.71-2.18)
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 and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Track Mechanism	Boys' Track and Field	Girls' Track and Field	IPR (95% CI)
Contact with Another Person	**1.3%**	0.8%	1.53 (0.14-16.91)
Contact with Field Equipment	**5.1%**	1.7%	3.06 (0.65-14.27)
Contact with Ground	**10.8%**	7.5%	1.44 (0.66-3.14)
Fall/Trip	3.8%	**5.0%**	1.31 (0.43-3.98)
N/A **	53.5%	**65.0%**	1.21 (1.00-1.48)
Other	**14.0%**	8.3%	1.68 (0.82-3.43)
Rotation Around Planted Foot/Inversion	**6.4%**	2.5%	2.55 (0.71-9.13)
Stepped On/Kicked	0.0%	**0.8%**	--
Uneven Playing Surface	0.6%	**0.8%**	1.31 (0.08-21.06)
Unknown	4.5%	**7.5%**	1.68 (0.64-4.41)
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 and Field Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Track Activity	Boys' Track and Field	Girls' Track and Field	IPR (95% CI)
Baton Hand Off	**1.3%**	0.8%	1.52 (0.14-16.80)
Conditioning	**3.2%**	2.5%	1.27 (0.31-5.24)
Jumping/Landing	**15.2%**	5.0%	**3.04 (1.28-7.24)**
Leaving Block	**2.5%**	0.0%	--
Other	1.3%	**3.3%**	2.63 (0.49-14.29)
Running	65.8%	**69.2%**	1.05 (0.89-1.24)
Running Hurdles	1.9%	**6.7%**	3.51 (0.94-13.06)
Throwing	3.8%	**8.3%**	2.19 (0.82-5.91)
Unknown	**2.5%**	1.7%	1.52 (0.28-8.24)
Warming Up	**2.5%**	2.5%	1.01 (0.23-4.48)
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, 2023-24 School Year

	Boys' Cross Country	Girls' Cross Country *	RR (95% CI) **
Total	0.89	**1.54**	**1.72 (1.22-2.44)**
Competition	1.31	**2.17**	1.66 (0.79-3.52)
Practice	0.82	**1.42**	**1.74 (1.17-2.57)**

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

Table 23.37 Comparison of Body Sites of Boys' and Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Body Site	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Head/Face	1.8%	**2.7%**	1.47 (0.13-16.28)
Trunk	1.8%	**4.0%**	2.20 (0.23-21.21)
Arm/Elbow	0.0%	**1.3%**	--
Hip/Thigh/Upper Leg	20.0%	20.0%	1.00 (0.49-2.02)
Knee	**21.8%**	14.7%	1.49 (0.70-3.15)
Lower Leg	20.0%	**30.7%**	1.53 (0.81-2.90)
Ankle	**18.2%**	13.3%	1.36 (0.60-3.08)
Foot	**14.5%**	9.3%	1.56 (0.59-4.09)
Systemic	1.8%	**4.0%**	2.20 (0.23-21.21)
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, 2023-24 School Year *

Diagnosis	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Strain/Sprain	**27.3%**	26.7%	1.02 (0.57-1.83)
Contusion	1.8%	**2.7%**	1.47 (0.13-16.28)
Fracture	**3.6%**	2.7%	1.36 (0.19-9.63)
Concussion	0.0%	**1.3%**	--
Other	**67.3%**	66.7%	1.01 (0.79-1.29)
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, 2023-24 School Year *

Diagnosis	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Ankle Other	**7.3%**	2.7%	2.73 (0.51-14.69)
Ankle Strain/Sprain	**10.9%**	8.0%	1.36 (0.46-4.06)
Foot Other	5.5%	**6.7%**	1.22 (0.30-4.99)
Hip/Thigh/Upper Leg Other	**12.7%**	12.0%	1.06 (0.42-2.71)
Hip/Thigh/Upper Leg Strain/Sprain	7.3%	**8.0%**	1.10 (0.32-3.77)
Knee Other	**20.0%**	12.0%	1.67 (0.73-3.78)
Lower Leg Other	16.4%	**25.3%**	1.55 (0.75-3.19)
Lower Leg Strain/Sprain	3.6%	**5.3%**	1.47 (0.27-7.90)

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

Table 23.40 Comparison of Time Loss of Boys' and Girls' Cross Country Injuries, High School Sports-Related Injury Surveillance Study, US, 2023-24 School Year *

Time Loss	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
1-2 Days	32.7%	**37.3%**	1.14 (0.70-1.85)
3-6 Days	**41.8%**	24.0%	**1.74 (1.04-2.92)**
7-9 Days	9.1%	**9.3%**	1.03 (0.34-3.11)
10-21 Days	5.5%	**10.7%**	1.96 (0.53-7.16)
>21 Days	1.8%	**2.7%**	1.47 (0.13-16.28)
Other	9.1%	**16.0%**	1.76 (0.65-4.77)
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, 2023-24 School Year *

Cross Country Mechanism	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Contact with Another Person	0.0%	**1.8%**	--
Contact with Ground	9.8%	**10.9%**	1.12 (0.33-3.79)
Fall/Trip	**2.4%**	1.8%	1.34 (0.08-21.89)
N/A **	2.4%	**7.3%**	2.98 (0.33-26.72)
Other	0.0%	**7.3%**	--
Overuse	**65.9%**	54.5%	1.21 (0.87-1.68)
Rotation Around Planted Foot/Inversion	**7.3%**	5.5%	1.34 (0.28-6.49)
Uneven Surface	**12.2%**	7.3%	1.68 (0.47-5.99)
Unknown	0.0%	**3.6%**	--
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, 2023-24 School Year *

Cross Country Activity	Boys' Cross Country	Girls' Cross Country	IPR (95% CI)
Conditioning	**9.8%**	8.9%	1.09 (0.31-3.91)
Cooling Down	**4.9%**	1.8%	2.73 (0.25-30.39)
Other	0.0%	**1.8%**	--
Running	**78.0%**	69.6%	1.12 (0.88-1.43)
Unknown	7.3%	**16.1%**	2.20 (0.62-7.79)
Warming Up	0.0%	**1.8%**	--
Total	***100.0%***	***100.0%***	**--**

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

REPORTING INFORMATION ONLINE

XXIV. Reporter Demographics & Compliance

During the 2023-24 school year, 140 ATs enrolled to participate in the study. ATs were expected to report for every week in which they were enrolled. For example, an AT who joined the study as a replacement school in week 10 was not expected to report for weeks 1-9. Overall,130 enrolled ATs reported an average of 40 study weeks. The majority of ATs (84%) reported for more than 20 weeks of the study. Internal validity checks of a 5% randomly selected sample of the 144 schools participating in the convenience sample during the 2022-23 academic year yielded 92.6% sensitivity, 95.8% specificity, a positive predictive value of 73.5%, and a negative predictive value of 99.0%. Internal validity checks are completed every other year. The next internal validity check will occur using data from the 2024-25 academic year.

Prior to the start of the study, participating ATs were asked to complete a short demographics survey. Over three-quarters (81%) of participating high schools were public schools, with the remainder being private. All ATs except for seven provided services to their athletes five or more days each week. 67% of ATs participating during the 2023-24 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 104 ATs (74.3%). Average reporting time burdens were 21 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 (67%) or somewhat easy (27%) to use (5 and 4 on the Likert scale, respectively), with ATs being either very satisfied (66%) or somewhat satisfied (20%) with the system (5 and 4 on the Likert scale, respectively). Suggestions provided by ATs, such as the addition or clarification of questions or answer choices, will be used to improve the National High School Sports-Related Injury Surveillance Study for the 2024-25 school year.

XXV. SUMMARY

High school sports play an important role in the adoption and maintenance of a physically active lifestyle among millions of US adolescents. Too often, injury prevention in this population is overlooked as sports-related injuries are thought to be unavoidable. In reality, sports-related injuries are largely preventable through the application of evidence-based preventive interventions. Such preventive interventions can include educational campaigns, introduction of new or improved protective equipment, rule changes, other policy changes, etc. The morbidity, mortality, and disability caused by high school sports-related injuries can be reduced through the development and implementation of improved injury diagnosis and treatment modalities as well as through effective prevention strategies. However, surveillance of exposure-based injury rates in a nationally representative sample of high school athletes and subsequent epidemiologic analysis of patterns of injury are needed to drive evidence-based prevention practices.

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

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

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

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