

SUMMARY REPORT

MICHIGAN HIGH SCHOOL ATHLETIC ASSOCIATION HEAD INJURY REPORTING SYSTEM

2022-2023 School Year

I. Introduction & Methodology

1.1 Overview

Promotion of student-athlete health and safety is a core value of interscholastic athletics and one of the guiding principles of the Michigan High School Athletic Association in its mission to increase participation and raise the quality of the experience for all involved in school sports in the state of Michigan. Few issues regarding the health of young student-athletes and the safety of school sports have generated as much concern as head trauma and concussions. Although equipment advancements, increases in coaches' education, and safety-oriented changes to practice policies and game rules have made school sports safer than they have ever been, precise data on the frequency and severity of head injuries incurred during interscholastic athletic events is limited. Beginning in the 2015-16 school year, the MHSAA required that all head injuries sustained during MHSAA-sponsored activities be reported to the MHSAA through an online reporting system. The data generated from the MHSAA Head Injury Reporting System will establish a baseline, eventually allowing the MHSAA to determine progress year-to-year in Michigan school sports in this critical area of health and safety.

1.2 Aims

The specific objectives of the MHSAA Head Injury Reporting System are:

- A. Determine the incidence (total number) of head injuries sustained by athletes participating in MHSAA-sponsored activities.
- B. Calculate and compare head injury prevalence rates using head injury report counts and participation data for MHSAA-sponsored activities.
- C. Provide detailed information regarding head injuries sustained during MHSAA-sponsored activities, including athlete demographics, the circumstances of the injury event (date, practice or game, time during practice or game of injury, protective equipment worn, cause of injury event, initial examiner, etc.) as well as subsequent clearance/return to activity after the injury.
- D. Use the collected data to identify any patterns across variables.

1.3 Design

Beginning with the 2015-16 school year, head injury reporting became mandatory for MHSAA member schools. Under the MHSAA Concussion Protocol, **member schools must complete and submit an online report designated by the MHSAA to record and track head injury events when they occur in all levels of all sports during the season in practices and competitions.** The reporting mechanism developed by the MHSAA is identified in this report as the MHSAA Head Injury Reporting System.

Reporting by member schools requires completing two basic online report forms; the first report is completed after the initial head injury event, and the second is completed after the student has received clearance to return to activity after the head injury or the season in which the injury occurred has ended.

Definitions

The MHSAA Concussion Protocol and Head Injury Reporting System defined a head injury as:

An injury that occurred as a result of participation during an in-season practice, scrimmage, or game in one of the 28 sports for which the MHSAA provides a post-season tournament – namely baseball, boys and girls basketball, boys and girls bowling, girls competitive cheer, boys and girls cross country, football (11-player and 8-player), boys and girls golf, girls gymnastics, ice hockey, boys and girls alpine skiing, boys and girls lacrosse, boys and girls soccer, softball, boys and girls swimming & diving, boys and girls tennis, boys and girls track & field, volleyball, and wrestling – **and** – required the athlete be withheld from activity after exhibiting signs, symptoms, or behaviors consistent with a concussion (such as loss of consciousness, headache, dizziness, confusion or balance problems).

The MHSAA Concussion Protocol and Head Injury Reporting System defined clearance as:

Written authorization from an M.D., D.O., Nurse Practitioner, or Physician's Assistant to return to unrestricted activity.

Population

All male and female students in grades 9-12 of MHSAA member schools participating in MHSAA-sponsored activities during the 2022-23 school year.

The MHSAA is an association of approximately 1500 individual public, private and parochial high schools and junior high/middle schools. At the start of the 2022-23 school year, member schools include 750 high schools of various enrollments and resources (187 schools with enrollment of 814 students or above, 188 schools with enrollment between 813-388 students, 187 schools with enrollment between 387-183 students, and 188 schools with enrollment of 182 students or below) and 800+ member junior/middle schools*.

*Junior high/middle school head injury data is not included in this report. Injuries to 6th, 7th, and 8th graders participating on high school teams (allowable under specific circumstances for schools and cooperative programs with fewer than 100 students) were included.

1.4 Data Collection

As MHSAA member schools vary widely with respect to school personnel and resources (not all schools employ an athletic trainer or even a full-time athletic administrator), the MHSAA Head Injury Reporting System was designed for use by athletic trainers, school administrators, and coaches. The system was accessed through login to MHSAA.com. Only users identified within the system as an athletic trainer, school administrator (i.e., athletic director, athletic department secretary, principal, or superintendent), or coach had the ability to access the online system and submit and review reports for the school(s) with which they are associated. The MHSAA Concussion Protocol does not specifically define who at the school must complete and submit the report, nor does it specify a time frame to submit the report after a head injury event – local schools were left to make those decisions and create their own reporting protocol based on their personnel and resources. However, reports were procured by the end of each season.

The MHSAA Head Injury Reporting System process consisted of two parts: 1) an initial head injury report and 2) a subsequent follow-up report. After a head injury event, the school was required to complete and submit an initial head injury report. This initial report was an online form designed to collect general information about the student (i.e., grade, gender, level, sport) and the injury event, including event date, whether the injury

event occurred in practice or game, time of injury event during practice or game, protective equipment worn on the head at the time of the event, cause of the event (i.e., person to person contact, person to object contact, person to ground contact, or unknown), surface type, initial examiner, and removal from play decision.)

After the initial head injury report was submitted, the report was assigned a unique seven-digit ID code and was saved in a report listing. This served as an electronic record of the head injury reports submitted by the school into the system and where the school accessed and completed a follow-up report (details forthcoming). In addition to being saved in the report list, a PDF file of the report containing the ID code was generated and sent via email to the school. No personally identifiable information was included in the report in order to protect student privacy. Schools were instructed to print the PDF copy and record the injured student's name or student ID number to link the report with the specific student so that report could be referenced for completion of the second part of the reporting process: the follow-up report.

The final part of the reporting process required the completion of a follow-up report. The follow-up is a second online report form linked to the initial head injury report designed to collect general information regarding the student's return to activity after the head injury, including the official diagnosis of the head injury event, the date the student was authorized to return to activity, medical examiner authorizing a return to activity, facility in which the student was seen by the authorizing medical examiner, conditions to return, and missed school as a result of the injury event. The follow-up report was to be completed once the student received authorization to return to activity or the season ended.

1.5 Data Management

Initial head injury reports were reviewed by members of the MHSAA staff daily. The school was contacted if a clear reporting error or anomaly was identified during review. As schools were not allowed to edit reports once submitted, all changes or removal of reports were handled by the MHSAA staff.

Follow-up reports were also reviewed on a weekly basis. Schools were contacted approximately three weeks after the reported injury date and then each week in the two to three weeks prior to the end of the season. If the head injury report remained unresolved, reminders were sent to complete the follow-up report once the student received appropriate clearance or the season in which the injury occurred ended.

Head injury reports not diagnosed as concussions, and confirmed as no concussion in the follow-up report were marked and excluded from this report. Head injury reports with no follow-up report completed were included, however.

Schools with no head injury reports for a season (Fall, Winter, and Spring) were required to report this at the conclusion of each season by attesting to this information in the Head Injury Reporting System. Follow-up continued each season with all schools who had not reported concussion or zero concussion until data was received by no less than 99% of MHSAA member high schools.

1.6 Data Analysis

The data contained in this report is largely a summary of the data gather by the MHSAA Head Injury Reporting System by sport.

Head injury prevalence rates were calculated by dividing head injury reports count by participation. For instance:

$$\text{Girls Soccer Head Injury Prevalence Rate} = \frac{\text{\# girls soccer head injury reports}}{\text{girls soccer participation \#}}$$

In order to more easily compare head injury prevalence rates between sports, the head injury prevalence rate was also expressed per 1,000 participants. Head injury prevalence rate per 1,000 participants was found by placing the head injury prevalence ratio (injury reports/participation) on one side of an equation and placing the ratio (X / 1,000 participants) on the other side of the equation and solving algebraically for X. Essentially, the head injury prevalence rate per 1,000 participants for each sport was found by multiplying the head injury prevalence rates by 1,000 and then rounding to the nearest whole number.

II. Overall Head Injury Reports

Table 2.1 Reported Head Injuries by Sport, MHSAA Head Injury Reporting System, 2022-23 School Year

Baseball	Varsity	24	Boys Golf	Varsity	0	Softball	Varsity	71
	Junior Varsity	26		Junior Varsity	1		Junior Varsity	36
	Freshman	8		Freshman	0		Freshman	0
	TOTAL	58		TOTAL	1		TOTAL	107
Boys Basketball	Varsity	82	Girls Golf	Varsity	1	Boys Swimming & Diving	Varsity	7
	Junior Varsity	63		Junior Varsity	0		Junior Varsity	0
	Freshman	40		Freshman	0		Freshman	0
	TOTAL	185		TOTAL	1		TOTAL	7
Girls Basketball	Varsity	141	Girls Gymnastics	Varsity	5	Girls Swimming & Diving	Varsity	24
	Junior Varsity	107		Junior Varsity	0		Junior Varsity	0
	Freshman	25		Freshman	0		Freshman	0
	TOTAL	273		TOTAL	5		TOTAL	24
Boys Bowling	Varsity	1	Ice Hockey	Varsity	56	Boys Tennis	Varsity	2
	Junior Varsity	0		Junior Varsity	10		Junior Varsity	0
	Freshman	0		Freshman	0		Freshman	0
	TOTAL	1		TOTAL	66		TOTAL	2
Girls Bowling	Varsity	0	Boys Lacrosse	Varsity	50	Girls Tennis	Varsity	4
	Junior Varsity	0		Junior Varsity	21		Junior Varsity	1
	Freshman	0		Freshman	0		Freshman	0
	TOTAL	0		TOTAL	71		TOTAL	5
Girls Competitive Cheer	Varsity	112	Girls Lacrosse	Varsity	33	Boys Track & Field	Varsity	7
	Junior Varsity	15		Junior Varsity	11		Junior Varsity	0
	Freshman	0		Freshman	0		Freshman	0
	TOTAL	127		TOTAL	44		TOTAL	7
Boys Cross Country	Varsity	0	Boys Skiing	Varsity	3	Girls Track & Field	Varsity	13
	Junior Varsity	0		Junior Varsity	0		Junior Varsity	0
	Freshman	0		Freshman	0		Freshman	0
	TOTAL	0		TOTAL	3		TOTAL	13
Girls Cross Country	Varsity	3	Girls Skiing	Varsity	4	Volleyball	Varsity	83
	Junior Varsity	0		Junior Varsity	0		Junior Varsity	65
	Freshman	0		Freshman	0		Freshman	24
	TOTAL	3		TOTAL	4		TOTAL	172
11-Player Football	Varsity	562	Boys Soccer	Varsity	112	Wrestling	Varsity	218
	Junior Varsity	464		Junior Varsity	36		Junior Varsity	28
	Freshman	164		Freshman	4		Freshman	0
	TOTAL	1190		TOTAL	152		TOTAL	246
8-Player Football	Varsity	82	Girls Soccer	Varsity	217			
	Junior Varsity	28		Junior Varsity	65			
	Freshman	0		Freshman	4			
	TOTAL	110		TOTAL	286			
						TOTAL REPORTS		3163

Table 2.2 Head Injury Prevalence Rates by Sport, MHSAA Head Injury Reporting System, 2022-23 School Year

SPORT	Boys*				Girls			
	PARTICIPANTS	HEAD INJURY REPORTS	HEAD INJURY REPORT PREVALENCE RATE	HEAD INJURY REPORTS PER THOUSAND PARTICIPANTS	PARTICIPANTS	HEAD INJURY REPORTS	HEAD INJURY REPORT PREVALENCE RATE	HEAD INJURY REPORTS PER THOUSAND PARTICIPANTS
Baseball	16,663	58	0.35%	3	-	-	-	-
Basketball	20,663	185	0.90%	9	13,788	273	1.98%	20
Bowling	4,417	1	0.02%	0	2,826	0	0.00%	0
Competitive Cheer	-	-	-	-	5,942	127	2.14%	21
Cross Country	7,988	0	0.00%	0	6,859	3	0.04%	0
Football - 11-player	32,408	1,190	3.67%	37	-	-	-	-
8-player	2,589	110	4.25%	42	-	-	-	-
Golf	6,916	1	0.01%	0	3,708	1	0.03%	0
Gymnastics	-	-	-	-	562	5	0.89%	9
Ice Hockey	3,129	66	2.11%	21	-	-	-	-
Lacrosse	5,038	71	1.41%	14	3,215	44	1.37%	14
Skiing	926	3	0.32%	3	854	4	0.47%	5
Soccer	13,279	152	1.14%	11	11,863	286	2.41%	24
Softball	-	-	-	-	11,722	107	0.91%	9
Swimming & Diving	4,173	7	0.17%	2	4,931	24	0.49%	5
Tennis	6,015	2	0.03%	0	8,169	5	0.06%	1
Track & Field	23,211	7	0.03%	0	16,470	13	0.08%	1
Volleyball	-	-	-	-	19,270	172	0.89%	9
Wrestling	10,477	246	2.35%	23	-	-	-	-

*Boys participation and head injury data includes both males AND females playing on primarily male teams.

Table 2.3 Head Injuries by Grade - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
7th	1	0.0%	1	0.1%	2	0.1%
8th	2	0.1%	0	0.0%	2	0.1%
9th	605	29.3%	291	26.6%	896	28.3%
10th	562	27.2%	341	31.1%	903	28.5%
11th	481	23.3%	254	23.2%	735	23.2%
12th	416	20.1%	209	19.1%	625	19.8%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.4 Head Injuries by Level of Competition - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Freshman	214	10.4%	55	5.0%	269	8.5%
Junior Varsity	673	32.6%	304	27.7%	977	30.9%
Varsity	1180	57.1%	737	67.2%	1917	60.6%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.5 Head Injuries by Type of Exposure - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Practice	584	28.3%	380	34.7%	964	30.5%
Competition	1483	71.7%	716	65.3%	2199	69.5%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.6 Head Injuries by Time during Practice or Competition of Injury Event - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Start of practice	51	8.7%	43	11.3%	94	9.8%
Middle of practice	307	52.6%	213	56.1%	520	53.9%
End of practice	226	38.7%	124	32.6%	350	36.3%
PRACTICE TOTAL	584	100.0%	380	100.0%	964	100.0%
Start of competition	145	9.8%	89	12.4%	234	10.6%
Middle of competition	744	50.2%	382	53.4%	1126	51.2%
End of competition	594	40.1%	245	34.2%	839	38.2%
COMPETITION TOTAL	1483	100.0%	716	100.0%	2199	100.0%

Table 2.7 Activity Type for All Head Injury Events during Practice – All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
During a drill	415	71.1%	292	76.8%	707	73.3%
During simulated competition-scrimmage	147	25.2%	85	22.4%	232	24.1%
Not specified	22	3.8%	3	0.8%	25	2.6%
TOTAL	584	100.0%	380	100.0%	964	100.0%

Table 2.8 Head Injuries by Cause of Injury Event - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Person to person contact	1268	61.3%	365	33.3%	1633	51.6%
Person to object contact (e.g. wall, equipment)	144	7.0%	379	34.6%	523	16.5%
Person to playing surface contact	445	21.5%	293	26.7%	738	23.3%
Uncertain as to the cause of the event	210	10.2%	59	5.4%	269	8.5%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.9 Head Injuries by Initial Examiner - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Athletic trainer	1347	65.2%	605	55.2%	1952	61.7%
Coach	279	13.5%	266	24.3%	545	17.2%
Sideline emergency personnel	5	0.2%	1	0.1%	6	0.2%
Other appropriate health care professional	46	2.2%	21	1.9%	67	2.1%
DO	7	0.3%	1	0.1%	8	0.3%
MD	38	1.8%	18	1.6%	56	1.8%
PA	4	0.2%	4	0.4%	8	0.3%
NP	12	0.6%	2	0.2%	14	0.4%
Athletic director	7	0.3%	5	0.5%	12	0.4%
Multiple examiners	322	15.6%	173	15.8%	495	15.6%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.10 Athlete Removal from Activity at the Time of Injury Event – All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Removed	1703	82.4%	857	78.2%	2560	80.9%
Not removed*	364	17.6%	239	21.8%	603	19.1%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 2.11 Athletes Reporting Previous Concussion after Head Injury Event – All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Reported at least one previous concussion	364	17.6%	178	16.2%	542	17.1%
No reported previous concussions	1703	82.4%	918	83.8%	2621	82.9%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.12 Most Recent Concussion for Athletes Reporting Previous Concussion after Head Injury Event – All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Within last month	18	4.9%	11	6.2%	29	5.4%
Within one to six months	36	9.9%	30	16.9%	66	12.2%
Within six months to one year	68	18.7%	50	28.1%	118	21.8%
Over one year	242	66.5%	87	48.9%	329	60.7%
TOTAL	364	100.0%	178	100.0%	542	100.0%

Table 2.13 Number of Previous Concussions for Athletes Reporting Previous Concussion after Head Injury Event – All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Diagnosed as a concussion	2045	98.9%	1029	93.9%	3074	97.2%
Not diagnosed as a concussion	0	0.0%	0	0.0%	0	0.0%
Official diagnosis information not available - Follow-up Report not completed	22	1.1%	67	6.1%	89	2.8%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.14 Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Event Occurred - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Received written authorization to return by the end of season	1698	82.1%	872	79.6%	2570	81.3%
Did not receive written authorization to return by the end of season	347	16.8%	157	14.3%	504	15.9%
Follow-up Report not completed	22	1.1%	67	6.1%	89	2.8%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.15 Head Injuries by Medical Examiner Authorizing Return to Activity - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
MD	926	44.8%	442	40.3%	1368	43.3%
DO	372	18.0%	183	16.7%	555	17.5%
PA	176	8.5%	103	9.4%	279	8.8%
NP	224	10.8%	144	13.1%	368	11.6%
Medical examiner data not available*	369	17.9%	224	20.4%	593	18.7%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.16 Head Injuries by Facility where Medical Examiner Authorized Return to Activity - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Hospital	52	2.5%	23	2.1%	75	2.4%
Urgent or Ready Care business	174	8.4%	92	8.4%	266	8.4%
Primary care physician or pediatrician's office	1077	52.1%	598	54.6%	1675	53.0%
Neurologist's office	102	4.9%	60	5.5%	162	5.1%
Team doctor	293	14.2%	99	9.0%	392	12.4%
Medical facility data not available*	369	17.9%	224	20.4%	593	18.7%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.17 Head Injuries by Clearance Return to Activity Conditions - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
Unconditional return	1534	74.2%	794	72.4%	2328	73.6%
Conditions to return	164	7.9%	78	7.1%	242	7.7%
Return to activity data not available*	369	17.9%	224	20.4%	593	18.7%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.18 Head Injuries by Missed School Days after Injury Event Date - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
0 Days	1125	54.4%	517	47.2%	1642	51.9%
1-2 Days	436	21.1%	250	22.8%	686	21.7%
3-6 Days	115	5.6%	84	7.7%	199	6.3%
7-9 Days	11	0.5%	11	1.0%	22	0.7%
10-20 Days	9	0.4%	9	0.8%	18	0.6%
≥21 Days	2	0.1%	1	0.1%	3	0.1%
Missed school data not available*	369	17.9%	224	20.4%	593	18.7%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

Table 2.19 Head Injuries by Time between Injury Event Date and Authorization Date to Return - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2022-23 School Year

	Boys		Girls		Overall	
	n	%	n	%	n	%
1-2 Days	38	1.8%	12	1.1%	50	1.6%
3-5 Days	150	7.3%	66	6.0%	216	6.8%
6-10 Days	514	24.9%	283	25.8%	797	25.2%
11-15 Days	570	27.6%	241	22.0%	811	25.6%
16-20 Days	182	8.8%	105	9.6%	287	9.1%
≥21 Days	218	10.5%	150	13.7%	368	11.6%
Data not available**	395	19.1%	239	21.8%	634	20.0%
TOTAL	2067	100.0%	1096	100.0%	3163	100.0%

89 Missing Follow-up Reports*

504 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

41 Data entry errors**

IV. Boys Basketball Head Injury Reports

Table 4.1 Head Injury Prevalence Rate for Boys Basketball, MHSAA Head Injury Reporting System, 2022-23 School Year

Boys Basketball Participation	20,663
All Reported Boys Basketball Head Injuries	185
Boys Basketball Head Injury Prevalence Rate (reported head injuries/total participants)	0.90%
Boys Basketball Head Injury Prevalence Rate Per Thousand Participants	9

Table 4.2 Boys Basketball Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	82	44.3%
Junior Varsity	63	34.1%
Freshman	40	21.6%
TOTAL	185	100.0%

Table 4.3 Boys Basketball Head Injuries by Gender, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Male	184	99.5%
Female	1	0.5%
TOTAL	185	100.0%

Table 4.4 Boys Basketball Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	54	29.2%
Competition	131	70.8%
TOTAL	185	100.0%

Table 4.5 Boys Basketball Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	4	7.4%
Middle of practice	26	48.1%
End of practice	24	44.4%
PRACTICE TOTAL	54	100.0%
Start of competition	14	10.7%
Middle of competition	72	55.0%
End of competition	45	34.4%
COMPETITION TOTAL	131	100.0%

Table 4.6 Activity Type for Boys Basketball Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	29	53.7%
During simulated competition-scrimmage	25	46.3%
Not specified	0	0.0%
TOTAL	54	100.0%

Table 4.7 Boys Basketball Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	108	58.4%
Person to object contact (e.g. wall, equipment)	13	7.0%
Person to playing surface contact	60	32.4%
Uncertain as to the cause of the event	4	2.2%
TOTAL	185	100.0%

Table 4.8 Person to Playing Surface Contact Boys Basketball Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Wooden gym floor	52	86.7%
Basketball court	8	13.3%
TOTAL	60	100.0%

Table 4.9 Boys Basketball Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	106	57.3%
Coach	42	22.7%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	2	1.1%
DO	1	0.5%
MD	2	1.1%
PA	1	0.5%
NP	1	0.5%
Athletic director	0	0.0%
Multiple examiners	30	16.2%
TOTAL	185	100.0%

Table 4.10 Athlete Removal from Activity at the Time of Injury Event – Boys Basketball Head Injuries, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	164	88.6%
Not removed*	21	11.4%
TOTAL	185	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 4.11 Boys Basketball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	36	19.5%
No reported previous concussions	149	80.5%
TOTAL	185	100.0%

Table 4.12 Most Recent Concussion for Boys Basketball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	4	11.1%
Within one to six months	7	19.4%
Within six months to one year	6	16.7%
Over one year	19	52.8%
TOTAL	36	100.0%

Table 4.13 Number of Previous Concussions for Boys Basketball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	24	66.7%
2 concussions	9	25.0%
3 concussions	1	2.8%
≥4 concussions	1	2.8%
Not specified	1	2.8%
TOTAL	36	100.0%

Table 4.14 Boys Basketball Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	169	91.4%
Did not receive written authorization to return by the end of season	15	8.1%
Follow-up Report not completed	1	0.5%
TOTAL	185	100.0%

Table 4.15 Boys Basketball Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	97	52.4%
DO	32	17.3%
PA	21	11.4%
NP	19	10.3%
Medical examiner data not available*	16	8.6%
TOTAL	185	100.0%

Table 4.16 Boys Basketball Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	8	4.3%
Urgent or Ready Care business	20	10.8%
Primary care physician or pediatrician's office	107	57.8%
Neurologist's office	12	6.5%
Team doctor	22	11.9%
Medical facility data not available*	16	8.6%
TOTAL	185	100.0%

Table 4.17 Boys Basketball Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	156	84.3%
Conditions to return	13	7.0%
Return to activity data not available*	16	8.6%
TOTAL	185	100.0%

Table 4.18 Boys Basketball Head Injuries by Missed School Days After Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	96	51.9%
1-2 Days	53	28.6%
3-6 Days	20	10.8%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	16	8.6%
TOTAL	185	100.0%

Table 4.19 Boys Basketball Head Injuries by Time Between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	4	2.2%
3-5 Days	16	8.6%
6-10 Days	53	28.6%
11-15 Days	56	30.3%
16-20 Days	15	8.1%
≥21 Days	24	13.0%
Data not available**	17	9.2%
TOTAL	185	100.0%

1 Missing Follow-up Reports*

15 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

1 Data entry errors**

V. Girls Basketball Head Injury Reports

Table 5.1 Head Injury Prevalence Rate for Girls Basketball, MHSAA Head Injury Reporting System, 2022-23 School Year

Girls Basketball Participation	13,788
All Reported Girls Basketball Head Injuries	273
Girls Basketball Head Injury Prevalence Rate (reported head injuries/total participants)	1.98%
Girls Basketball Head Injury Prevalence Rate Per Thousand Participants	20

Table 5.2 Girls Basketball Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	141	51.6%
Junior Varsity	107	39.2%
Freshman	25	9.2%
TOTAL	273	100.0%

Table 5.3 Girls Basketball Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	49	17.9%
Competition	224	82.1%
TOTAL	273	100.0%

Table 5.4 Girls Basketball Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	3	6.1%
Middle of practice	28	57.1%
End of practice	18	36.7%
PRACTICE TOTAL	49	100.0%
Start of competition	19	8.5%
Middle of competition	120	53.6%
End of competition	85	37.9%
COMPETITION TOTAL	224	100.0%

Table 5.5 Activity Type for Girls Basketball Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	39	79.6%
During simulated competition-scrimmage	10	20.4%
Not specified	0	0.0%
TOTAL	49	100.0%

Table 5.6 Girls Basketball Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	129	47.3%
Person to object contact (e.g. wall, equipment)	27	9.9%
Person to playing surface contact	103	37.7%
Uncertain as to the cause of the event	14	5.1%
TOTAL	273	100.0%

Table 5.7 Person to Playing Surface Contact Girls Basketball Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Wooden gym floor	44	42.7%
Basketball court	34	33.0%
Gymnasium floor	25	24.3%
TOTAL	103	100.0%

Table 5.8 Girls Basketball Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	163	59.7%
Coach	63	23.1%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	5	1.8%
DO	0	0.0%
MD	3	1.1%
PA	0	0.0%
NP	1	0.4%
Athletic director	2	0.7%
Multiple examiners	36	13.2%
TOTAL	273	100.0%

Table 5.9 Girls Basketball Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	207	75.8%
Not removed*	66	24.2%
TOTAL	273	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 5.10 Girls Basketball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	47	17.2%
No reported previous concussions	226	82.8%
TOTAL	273	100.0%

Table 5.11 Most Recent Concussion for Girls Basketball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	5	10.6%
Within one to six months	11	23.4%
Within six months to one year	15	31.9%
Over one year	16	34.0%
TOTAL	47	100.0%

Table 5.12 Number of Previous Concussions for Girls Basketball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	32	68.1%
2 concussions	9	19.1%
3 concussions	4	8.5%
≥4 concussions	1	2.1%
Not specified	1	2.1%
TOTAL	47	100.0%

Table 5.13 Girls Basketball Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	232	85.0%
Did not receive written authorization to return by the end of season	36	13.2%
Follow-up Report not completed	5	1.8%
TOTAL	273	100.0%

Table 5.14 Girls Basketball Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	117	42.9%
DO	50	18.3%
PA	29	10.6%
NP	36	13.2%
Medical examiner data not available*	41	15.0%
TOTAL	273	100.0%

Table 5.15 Girls Basketball Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	8	2.9%
Urgent or Ready Care business	21	7.7%
Primary care physician or pediatrician's office	167	61.2%
Neurologist's office	13	4.8%
Team doctor	23	8.4%
Medical facility data not available*	41	15.0%
TOTAL	273	100.0%

Table 5.16 Girls Basketball Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	213	78.0%
Conditions to return	19	7.0%
Return to activity data not available*	41	15.0%
TOTAL	273	100.0%

Table 5.17 Girls Basketball Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	152	55.7%
1-2 Days	54	19.8%
3-6 Days	20	7.3%
7-9 Days	2	0.7%
10-20 Days	3	1.1%
≥21 Days	1	0.4%
Missed school data not available*	41	15.0%
TOTAL	273	100.0%

Table 5.18 Girls Basketball Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	5	1.8%
3-5 Days	15	5.5%
6-10 Days	86	31.5%
11-15 Days	53	19.4%
16-20 Days	25	9.2%
≥21 Days	42	15.4%
Data not available**	47	17.2%
TOTAL	273	100.0%

5 Missing Follow-up Reports*

36 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

6 Data entry errors**

VI. Boys Bowling Head Injury Reports

Table 6.1 Head Injury Prevalence Rate for Boys Bowling, MHSAA Head Injury Reporting System, 2022-23 School Year

Boys Bowling Participation	4,417
All Reported Boys Bowling Head Injuries	1
Boys Bowling Head Injury Prevalence Rate (reported head injuries/total participants)	0.02%
Boys Bowling Head Injury Prevalence Rate Per Thousand Participants	0

Table 6.2 Boys Bowling Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	1	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	1	100.0%

Table 6.3 Boys Bowling Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	1	100.0%
Competition	0	0.0%
TOTAL	1	100.0%

Table 6.4 Boys Bowling Head Injuries by Time During Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	1	100.0%
Middle of practice	0	0.0%
End of practice	0	0.0%
PRACTICE TOTAL	1	100.0%
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
COMPETITION TOTAL	0	0.0%

Table 6.5 Activity Type for Boys Bowling Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	1	100.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
TOTAL	1	100.0%

Table 6.6 Boys Bowling Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	1	100.0%
Person to playing surface contact	0	0.0%
Uncertain as to the cause of the event	0	0.0%
TOTAL	1	100.0%

Table 6.7 Person to Playing Surface Contact Boys Bowling Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Wooden floor	0	0.0%
TOTAL	0	0.0%

Table 6.8 Boys Bowling Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	1	100.0%
Coach	0	0.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	0	0.0%
TOTAL	1	100.0%

Table 6.9 Boys Bowling Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	1	100.0%
Not removed*	0	0.0%
TOTAL	1	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 6.10 Boys Bowling Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	1	100.0%
TOTAL	1	100.0%

Table 6.11 Most Recent Concussion for Boys Bowling Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	0	0.0%
TOTAL	0	0.0%

Table 6.12 Number of Previous Concussions for Boys Bowling Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	0	0.0%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	0	0.0%

Table 6.13 Boys Bowling Head Injuries by Athlete Clearance to Return to Activity Before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	1	100.0%
Did not receive written authorization to return by the end of season	0	0.0%
Follow-up Report not completed	0	0.0%
TOTAL	1	100.0%

Table 6.14 Boys Bowling Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	0	0.0%
DO	1	100.0%
PA	0	0.0%
NP	0	0.0%
Medical examiner data not available*	0	0.0%
TOTAL	1	100.0%

Table 6.15 Boys Bowling Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	0	0.0%
Neurologist's office	0	0.0%
Team doctor	1	100.0%
Medical facility data not available*	0	0.0%
TOTAL	1	100.0%

Table 6.16 Boys Bowling Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	1	100.0%
Conditions to return	0	0.0%
Return to activity data not available*	0	0.0%
TOTAL	1	100.0%

Table 6.17 Boys Bowling Head Injuries by Missed School Days After Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	1	100.0%
1-2 Days	0	0.0%
3-6 Days	0	0.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	0	0.0%
TOTAL	1	100.0%

Table 6.18 Boys Bowling Head Injuries by Time Between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	0	0.0%
11-15 Days	0	0.0%
16-20 Days	0	0.0%
≥21 Days	0	0.0%
Data not available**	1	100.0%
TOTAL	1	100.0%

0 Missing Follow-up Reports*

0 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

1 Data entry errors**

VII. Girls Bowling Head Injury Reports

Table 7.1 Head Injury Prevalence Rate for Girls Bowling, MHSAA Head Injury Reporting System, 2022-23 School Year

Girls Bowling Participation	2,684
All Reported Girls Bowling Head Injuries	0
Girls Bowling Head Injury Prevalence Rate (reported head injuries/total participants)	0.00%
Girls Bowling Head Injury Prevalence Rate Per Thousand Participants	0

Table 7.2 Girls Bowling Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	0	0.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	0	0.0%

Table 7.3 Girls Bowling Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	0	0.0%
Competition	0	0.0%
TOTAL	0	0.0%

Table 7.4 Girls Bowling Head Injuries by Time During Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	0	0.0%
Middle of practice	0	0.0%
End of practice	0	0.0%
PRACTICE TOTAL	0	0.0%
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
COMPETITION TOTAL	0	0.0%

Table 7.5 Activity Type for Girls Bowling Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	0	0.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
TOTAL	0	0.0%

Table 7.6 Girls Bowling Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	0	0.0%
Person to playing surface contact	0	0.0%
Uncertain as to the cause of the event	0	0.0%
TOTAL	0	0.0%

Table 7.7 Person to Playing Surface Contact Girls Bowling Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Wooden floor	0	0.0%
TOTAL	0	0.0%

Table 7.8 Girls Bowling Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	0	0.0%
Coach	0	0.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	0	0.0%
TOTAL	0	0.0%

Table 7.9 Girls Bowling Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	0	0.0%
Not removed*	0	0.0%
TOTAL	0	0.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 7.10 Girls Bowling Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	0	0.0%
TOTAL	0	0.0%

Table 7.11 Most Recent Concussion for Girls Bowling Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	0	0.0%
TOTAL	0	0.0%

Table 7.12 Number of Previous Concussions for Girls Bowling Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	0	0.0%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	0	0.0%

Table 7.13 Girls Bowling Head Injuries by Athlete Clearance to Return to Activity Before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	0	0.0%
Did not receive written authorization to return by the end of season	0	0.0%
Follow-up Report not completed	0	0.0%
TOTAL	0	0.0%

Table 7.14 Girls Bowling Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	0	0.0%
DO	0	0.0%
PA	0	0.0%
NP	0	0.0%
Medical examiner data not available*	0	0.0%
TOTAL	0	0.0%

Table 7.15 Girls Bowling Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	0	0.0%
Neurologist's office	0	0.0%
Team doctor	0	0.0%
Medical facility data not available*	0	0.0%
TOTAL	0	0.0%

Table 7.16 Girls Bowling Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	0	0.0%
Conditions to return	0	0.0%
Return to activity data not available*	0	0.0%
TOTAL	0	0.0%

Table 7.17 Girls Bowling Head Injuries by Missed School Days After Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	0	0.0%
1-2 Days	0	0.0%
3-6 Days	0	0.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	0	0.0%
TOTAL	0	0.0%

Table 7.18 Girls Bowling Head Injuries by Time Between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	0	0.0%
11-15 Days	0	0.0%
16-20 Days	0	0.0%
≥21 Days	0	0.0%
Data not available**	0	0.0%
TOTAL	0	0.0%

0 Missing Follow-up Reports*

0 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

VIII. Competitive Cheer Head Injury Reports

Table 8.1 Head Injury Prevalence Rate for Competitive Cheer, MHSAA Head Injury Reporting System, 2022-23 School Year

Competitive Cheer Participation	5,942
All Reported Competitive Cheer Head Injuries	127
Competitive Cheer Head Injury Prevalence Rate (reported head injuries/total participants)	2.14%
Competitive Cheer Head Injury Prevalence Rate Per Thousand Participants	21

Table 8.2 Competitive Cheer Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	112	88.2%
Junior Varsity	15	11.8%
Freshman	0	0.0%
TOTAL	127	100.0%

Table 8.3 Competitive Cheer Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	110	86.6%
Competition	17	13.4%
TOTAL	127	100.0%

Table 8.4 Competitive Cheer Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	11	10.0%
Middle of practice	68	61.8%
End of practice	31	28.2%
PRACTICE TOTAL	110	100.0%
Start of competition	1	5.9%
Middle of competition	9	52.9%
End of competition	7	41.2%
COMPETITION TOTAL	17	100.0%

Table 8.5 Activity Type for Competitive Cheer Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	86	78.2%
During simulated competition-scrimmage	22	20.0%
Not specified	2	1.8%
TOTAL	110	100.0%

Table 8.6 Competitive Cheer Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	78	61.4%
Person to object contact (e.g. wall, equipment)	4	3.1%
Person to playing surface contact	41	32.3%
Uncertain as to the cause of the event	4	3.1%
TOTAL	127	100.0%

Table 8.7 Person to Playing Surface Contact Competitive Cheer Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Cheer mat	39	95.1%
Wooden gym floor	1	2.4%
Wrestling type mat	1	2.4%
TOTAL	41	100.0%

Table 8.8 Competitive Cheer Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	58	45.7%
Coach	39	30.7%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	1	0.8%
PA	1	0.8%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	28	22.0%
TOTAL	127	100.0%

Table 8.9 Competitive Cheer Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	98	77.2%
Not removed*	29	22.8%
TOTAL	127	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 8.10 Competitive Cheer Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	27	21.3%
No reported previous concussions	100	78.7%
TOTAL	127	100.0%

Table 8.11 Most Recent Concussion for Competitive Cheer Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	5	18.5%
Within six months to one year	9	33.3%
Over one year	13	48.1%
TOTAL	27	100.0%

Table 8.12 Number of Previous Concussions for Competitive Cheer Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	17	63.0%
2 concussions	6	22.2%
3 concussions	1	3.7%
≥4 concussions	1	3.7%
Not specified	2	7.4%
TOTAL	27	100.0%

Table 8.13 Competitive Cheer Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	112	88.2%
Did not receive written authorization to return by the end of season	14	11.0%
Follow-up Report not completed	1	0.8%
TOTAL	127	100.0%

Table 8.14 Competitive Cheer Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	57	44.9%
DO	26	20.5%
PA	13	10.2%
NP	16	12.6%
Medical examiner data not available*	15	11.8%
TOTAL	127	100.0%

Table 8.15 Competitive Cheer Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	3	2.4%
Urgent or Ready Care business	12	9.4%
Primary care physician or pediatrician's office	71	55.9%
Neurologist's office	8	6.3%
Team doctor	18	14.2%
Medical facility data not available*	15	11.8%
TOTAL	127	100.0%

Table 8.16 Competitive Cheer Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	98	77.2%
Conditions to return	14	11.0%
Return to activity data not available*	15	11.8%
TOTAL	127	100.0%

Table 8.17 Competitive Cheer Head Injuries by Missed School Days After Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	72	56.7%
1-2 Days	32	25.2%
3-6 Days	8	6.3%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	15	11.8%
TOTAL	127	100.0%

Table 8.18 Competitive Cheer Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	1	0.8%
3-5 Days	7	5.5%
6-10 Days	26	20.5%
11-15 Days	27	21.3%
16-20 Days	17	13.4%
≥21 Days	32	25.2%
Data not available**	17	13.4%
TOTAL	127	100.0%

1 Missing Follow-up Reports*

14 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

2 Data entry errors**

IX. Boys Cross Country Head Injury Reports

Table 9.1 Head Injury Prevalence Rate for Boys Cross Country, MHSAA Head Injury Reporting System, 2022-23 School Year

Boys Cross Country Participation	7,988
All Reported Boys Cross Country Head Injuries	0
Boys Cross Country Head Injury Prevalence Rate (reported head injuries/total participants)	0.00%
Boys Cross Country Head Injury Prevalence Rate Per Thousand Participants	0

Table 9.2 Boys Cross Country Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	0	0.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	0	0.0%

Table 9.3 Boys Cross Country Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	0	0.0%
Competition	0	0.0%
TOTAL	0	0.0%

Table 9.4 Boys Cross Country Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	0	0.0%
Middle of practice	0	0.0%
End of practice	0	0.0%
PRACTICE TOTAL	0	0.0%
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
COMPETITION TOTAL	0	0.0%

Table 9.5 Activity Type for Boys Cross Country Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	0	0.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
TOTAL	0	0.0%

Table 9.6 Boys Cross Country Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	0	0.0%
Person to playing surface contact	0	0.0%
Uncertain as to the cause of the event	0	0.0%
TOTAL	0	0.0%

Table 9.7 Person to Playing Surface Contact Boys Cross Country Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
N/A	0	0.0%
TOTAL	0	0.0%

Table 9.8 Boys Cross Country Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	0	0.0%
Coach	0	0.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	0	0.0%
TOTAL	0	0.0%

Table 9.9 Boys Cross Country Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	0	0.0%
Not removed*	0	0.0%
TOTAL	0	0.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 9.10 Boys Cross Country Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	0	0.0%
TOTAL	0	0.0%

Table 9.11 Most Recent Concussion for Boys Cross Country Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	0	0.0%
TOTAL	0	0.0%

Table 9.12 Number of Previous Concussions for Boys Cross Country Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	0	0.0%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	0	0.0%

Table 9.13 Boys Cross Country Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	0	0.0%
Did not receive written authorization to return by the end of season	0	0.0%
Follow-up Report not completed	0	0.0%
TOTAL	0	0.0%

Table 9.14 Boys Cross Country Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	0	0.0%
DO	0	0.0%
PA	0	0.0%
NP	0	0.0%
Medical examiner data not available*	0	0.0%
TOTAL	0	0.0%

Table 9.15 Boys Cross Country Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	0	0.0%
Neurologist's office	0	0.0%
Team doctor	0	0.0%
Medical facility data not available*	0	0.0%
TOTAL	0	0.0%

Table 9.16 Boys Cross Country Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	0	0.0%
Conditions to return	0	0.0%
Return to activity data not available*	0	0.0%
TOTAL	0	0.0%

Table 9.17 Boys Cross Country Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	0	0.0%
1-2 Days	0	0.0%
3-6 Days	0	0.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	0	0.0%
TOTAL	0	0.0%

Table 9.18 Boys Cross Country Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	0	0.0%
11-15 Days	0	0.3%
16-20 Days	0	0.0%
≥21 Days	0	0.0%
Data not available**	0	0.0%
TOTAL	0	0.0%

0 Missing Follow-up Reports*

0 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

X. Girls Cross Country Head Injury Reports

Table 10.1 Head Injury Prevalence Rate for Girls Cross Country, MHSAA Head Injury Reporting System, 2022-23 School Year

Girls Cross Country Participation	6,859
All Reported Girls Cross Country Head Injuries	3
Girls Cross Country Head Injury Prevalence Rate (reported head injuries/total participants)	0.04%
Girls Cross Country Head Injury Prevalence Rate Per Thousand Participants	0

Table 10.2 Girls Cross Country Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	3	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	3	100.0%

Table 10.3 Girls Cross Country Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	2	66.7%
Competition	1	33.3%
TOTAL	3	100.0%

Table 10.4 Girls Cross Country Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	1	50.0%
Middle of practice	1	50.0%
End of practice	0	0.0%
PRACTICE TOTAL	2	100.0%
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	1	33.3%
COMPETITION TOTAL	1	33.3%

Table 10.5 Activity Type for Girls Cross Country Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	2	100.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
TOTAL	2	100.0%

Table 10.6 Girls Cross Country Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	1	33.3%
Person to playing surface contact	1	33.3%
Uncertain as to the cause of the event	1	33.3%
TOTAL	3	100.0%

Table 10.7 Person to Playing Surface Contact Girls Cross Country Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Natural grass	1	100.0%
TOTAL	1	100.0%

Table 10.8 Girls Cross Country Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	1	33.3%
Coach	1	33.3%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	1	33.3%
TOTAL	3	100.0%

Table 10.9 Girls Cross Country Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	3	100.0%
Not removed*	0	0.0%
TOTAL	3	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 10.10 Girls Cross Country Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	3	100.0%
TOTAL	3	100.0%

Table 10.11 Most Recent Concussion for Girls Cross Country Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	0	0.0%
TOTAL	0	0.0%

Table 10.12 Number of Previous Concussions for Girls Cross Country Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	0	0.0%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	0	0.0%

Table 10.13 Girls Cross Country Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	2	66.7%
Did not receive written authorization to return by the end of season	1	33.3%
Follow-up Report not completed	0	0.0%
TOTAL	3	100.0%

Table 10.14 Girls Cross Country Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	1	33.3%
DO	0	0.0%
PA	0	0.0%
NP	1	33.3%
Medical examiner data not available*	1	33.3%
TOTAL	3	100.0%

Table 10.15 Girls Cross Country Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	1	33.3%
Neurologist's office	1	33.3%
Team doctor	0	0.0%
Medical facility data not available*	1	33.3%
TOTAL	3	100.0%

Table 10.16 Girls Cross Country Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	2	66.7%
Conditions to return	0	0.0%
Return to activity data not available*	1	33.3%
TOTAL	3	100.0%

Table 10.17 Girls Cross Country Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	2	66.7%
1-2 Days	0	0.0%
3-6 Days	0	0.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	1	33.3%
TOTAL	3	100.0%

Table 10.18 Girls Cross Country Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	0	0.0%
11-15 Days	1	33.3%
16-20 Days	0	0.0%
≥21 Days	1	33.3%
Data not available**	1	33.3%
TOTAL	3	100.0%

0 Missing-follow Up Reports*

0 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

1 Data entry errors**

XI. 11-Player Football Head Injury Reports

Table 11.1 Head Injury Prevalence Rate for 11-Player Football, MHSAA Head Injury Reporting System, 2022-23 School Year

11-Player Football Participation	32,408
All Reported 11-Player Football Head Injuries	1,190
11-Player Football Head Injury Prevalence Rate (reported head injuries/total participants)	3.67%
11-Player Football Head Injury Prevalence Rate Per Thousand Participants	37

Table 11.2 11-Player Football Head Injuries by Gender, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Male	1183	99.4%
Female	7	0.6%
TOTAL	1190	100.0%

Table 11.3 11-Player Football Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	562	47.2%
Junior Varsity	464	39.0%
Freshman	164	13.8%
TOTAL	1190	100.0%

Table 11.4 11-Player Football Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	356	29.9%
Competition	834	70.1%
TOTAL	1190	100.0%

Table 11.5 11-Player Football Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	33	9.3%
Middle of practice	187	52.5%
End of practice	136	38.2%
PRACTICE TOTAL	356	100.0%
Start of competition	84	10.1%
Middle of competition	411	49.3%
End of competition	339	40.6%
COMPETITION TOTAL	834	100.0%

Table 11.6 Activity Type for 11-Player Football Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	260	73.0%
During simulated competition-scrimmage	80	22.5%
Not specified	16	4.5%
TOTAL	356	100.0%

Table 11.7 11-Player Football Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	848	71.3%
Person to object contact (e.g. wall, equipment)	9	0.8%
Person to playing surface contact	193	16.2%
Uncertain as to the cause of the event	140	11.8%
TOTAL	1190	100.0%

Table 11.8 Person to Playing Surface Contact 11-Player Football Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Natural grass	63	32.6%
Artificial turf	119	61.7%
Football field	8	4.1%
Ground	1	0.5%
Concrete	1	0.5%
TOTAL	193	100.0%

Table 11.9 11-Player Football Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	829	69.7%
Coach	115	9.7%
Sideline emergency personnel	1	0.1%
Other appropriate health care professional	30	2.5%
DO	2	0.2%
MD	24	2.0%
PA	2	0.2%
NP	6	0.5%
Athletic director	4	0.3%
Multiple examiners	177	14.9%
TOTAL	1190	100.0%

Table 11.10 11-Player Football Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	974	81.8%
Not removed*	216	18.2%
TOTAL	1190	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 11.11 11-Player Football Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	202	17.0%
No reported previous concussions	988	83.0%
TOTAL	1190	100.0%

Table 11.12 Most Recent Concussion for 11-Player Football Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	11	5.4%
Within one to six months	14	6.9%
Within six months to one year	36	17.8%
Over one year	141	69.8%
TOTAL	202	100.0%

Table 11.13 Number of Previous Concussions for 11-Player Football Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	139	68.8%
2 concussions	42	20.8%
3 concussions	11	5.4%
≥4 concussions	2	1.0%
Not specified	8	4.0%
TOTAL	202	100.0%

Table 11.14 11-Player Football Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	949	79.7%
Did not receive written authorization to return by the end of season	241	20.3%
Follow-up Report not completed	0	0.0%
TOTAL	1190	100.0%

Table 11.15 11-Player Football Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	512	43.0%
DO	211	17.7%
PA	102	8.6%
NP	124	10.4%
Medical examiner data not available*	241	20.3%
TOTAL	1190	100.0%

Table 11.16 11-Player Football Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	26	2.2%
Urgent or Ready Care business	98	8.2%
Primary care physician or pediatrician's office	603	50.7%
Neurologist's office	55	4.6%
Team doctor	167	14.0%
Medical facility data not available*	241	20.3%
TOTAL	1190	100.0%

Table 11.17 11-Player Football Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	846	71.1%
Conditions to return	103	8.7%
Return to activity data not available*	241	20.3%
TOTAL	1190	100.0%

Table 11.18 11-Player Football Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	674	56.6%
1-2 Days	216	18.2%
3-6 Days	48	4.0%
7-9 Days	2	0.2%
10-20 Days	7	0.6%
≥21 Days	2	0.2%
Missed school data not available*	241	20.3%
TOTAL	1190	100.0%

Table 11.19 11-Player Football Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	23	1.9%
3-5 Days	86	7.2%
6-10 Days	255	21.4%
11-15 Days	363	30.5%
16-20 Days	105	8.8%
≥21 Days	105	8.8%
Data not available**	253	21.3%
TOTAL	1190	100.0%

0 Missing Follow-up Reports*

241 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

12 Data entry errors**

XII. 8-Player Football Head Injuries Reports

Table 12.1 Head Injury Prevalence Rate for 8-Player Football, MHSAA Head Injury Reporting System, 2022-23 School Year

8-Player Football Participation	2,589
All Reported 8-Player Football Head Injuries	110
8-Player Football Head Injury Prevalence Rate (reported head injuries/total participants)	4.25%
8-Player Football Head Injury Prevalence Rate Per Thousand Participants	42

Table 12.2 8-Player Football Head Injuries by Gender, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Male	109	99.1%
Female	1	0.9%
TOTAL	110	100.0%

Table 12.3 8-Player Football Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	82	74.5%
Junior Varsity	28	25.5%
Freshman	0	0.0%
TOTAL	110	100.0%

Table 12.4 8-Player Football Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	20	18.2%
Competition	90	81.8%
TOTAL	110	100.0%

Table 12.5 8-Player Football Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	1	5.0%
Middle of practice	9	45.0%
End of practice	10	50.0%
PRACTICE TOTAL	20	100.0%
Start of competition	9	10.0%
Middle of competition	46	51.1%
End of competition	35	38.9%
COMPETITION TOTAL	90	100.0%

Table 12.6 Activity Type for 8-Player Football Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	17	85.0%
During simulated competition-scrimmage	2	10.0%
Not specified	1	5.0%
TOTAL	20	100.0%

Table 12.7 8-Player Football Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	81	73.6%
Person to object contact (e.g. wall, equipment)	0	0.0%
Person to playing surface contact	5	4.5%
Uncertain as to the cause of the event	24	21.8%
TOTAL	110	100.0%

Table 12.8 Person to Playing Surface Contact 8-Player Football Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Natural grass	5	100.0%
TOTAL	5	100.0%

Table 12.9 8-Player Football Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	48	43.6%
Coach	31	28.2%
Sideline emergency personnel	2	1.8%
Other appropriate health care professional	4	3.6%
DO	1	0.9%
MD	4	3.6%
PA	0	0.0%
NP	1	0.9%
Athletic director	1	0.9%
Multiple examiners	18	16.4%
TOTAL	110	100.0%

Table 12.10 8-Player Football Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	91	82.7%
Not removed*	19	17.3%
TOTAL	110	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 12.11 8-Player Football Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	23	20.9%
No reported previous concussions	87	79.1%
TOTAL	110	100.0%

Table 12.12 Most Recent Concussion for 8-Player Football Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	1	4.3%
Within one to six months	1	4.3%
Within six months to one year	4	17.4%
Over one year	17	73.9%
TOTAL	23	100.0%

Table 12.13 Number of Previous Concussions for 8-Player Football Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	12	52.2%
2 concussions	8	34.8%
3 concussions	1	4.3%
≥4 concussions	0	0.0%
Not specified	2	8.7%
TOTAL	23	100.0%

Table 12.14 8-Player Football Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	93	84.5%
Did not receive written authorization to return by the end of season	14	12.7%
Follow-up Report not completed	3	2.7%
TOTAL	110	100.0%

Table 12.15 8-Player Football Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	64	58.2%
DO	8	7.3%
PA	6	5.5%
NP	15	13.6%
Medical examiner data not available*	17	15.5%
TOTAL	110	100.0%

Table 12.16 8-Player Football Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	7	6.4%
Urgent or Ready Care business	4	3.6%
Primary care physician or pediatrician's office	66	60.0%
Neurologist's office	3	2.7%
Team doctor	13	11.8%
Medical facility data not available*	17	15.5%
TOTAL	110	100.0%

Table 12.17 8-Player Football Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	80	72.7%
Conditions to return	13	11.8%
Return to activity data not available*	17	15.5%
TOTAL	110	100.0%

Table 12.18 8-Player Football Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	60	54.5%
1-2 Days	22	20.0%
3-6 Days	8	7.3%
7-9 Days	3	2.7%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	17	15.5%
TOTAL	110	100.0%

Table 12.19 8-Player Football Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	2	1.8%
3-5 Days	7	6.4%
6-10 Days	27	24.5%
11-15 Days	30	27.3%
16-20 Days	10	9.1%
≥21 Days	15	13.6%
Data not available**	19	17.3%
TOTAL	110	100.0%

3 Missing Follow-up Reports*

14 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

2 Data entry errors**

XIII. Boys Golf Head Injury Reports

Table 13.1 Head Injury Prevalence Rate for Boys Golf, MHSAA Head Injury Reporting System, 2022-23 School Year

Boys Golf Participation	6,916
All Boys Golf Head Injuries	1
Boys Golf Head Injury Prevalence Rate (reported head injuries/total participants)	0.01%
Boys Golf Head Injury Prevalence Rate Per Thousand Participants	0

Table 13.2 Boys Golf Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	0	0.0%
Junior Varsity	1	100.0%
Freshman	0	0.0%
TOTAL	1	100.0%

Table 13.3 Boys Golf Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	0	0.0%
Competition	1	100.0%
TOTAL	1	100.0%

Table 13.4 Boys Golf Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	0	0.0%
Middle of practice	0	0.0%
End of practice	0	0.0%
PRACTICE TOTAL	0	0.0%
Start of competition	0	100.0%
Middle of competition	1	0.0%
End of competition	0	0.0%
COMPETITION TOTAL	1	100.0%

Table 13.5 Activity Type for Boys Golf Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	0	0.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
TOTAL	0	0.0%

Table 13.6 Boys Golf Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	0	0.0%
Person to playing surface contact	1	100.0%
Uncertain as to the cause of the event	0	0.0%
TOTAL	1	100.0%

Table 13.7 Person to Playing Surface Contact Boys Golf Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Track	1	100.0%
TOTAL	1	100.0%

Table 13.8 Boys Golf Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	1	100.0%
Coach	0	0.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	0	0.0%
TOTAL	1	100.0%

Table 13.9 Boys Golf Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	1	100.0%
Not removed*	0	0.0%
TOTAL	1	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 13.10 Boys Golf Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	1	100.0%
TOTAL	1	100.0%

Table 13.11 Most Recent Concussion for Boys Golf Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	0	0.0%
TOTAL	0	0.0%

Table 13.12 Number of Previous Concussions for Boys Golf Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	0	0.0%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	0	0.0%

Table 13.13 Boys Golf Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	0	0.0%
Did not receive written authorization to return by the end of season	0	0.0%
Follow-up Report not completed	1	100.0%
TOTAL	1	100.0%

Table 13.14 Boys Golf Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	0	0.0%
DO	0	0.0%
PA	0	0.0%
NP	0	0.0%
Medical examiner data not available*	1	100.0%
TOTAL	1	100.0%

Table 13.15 Boys Golf Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	0	0.0%
Neurologist's office	0	0.0%
Team doctor	0	0.0%
Medical facility data not available*	1	100.0%
TOTAL	1	100.0%

Table 13.16 Boys Golf Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	0	0.0%
Conditions to return	0	0.0%
Return to activity data not available*	1	100.0%
TOTAL	1	100.0%

Table 13.17 Boys Golf Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	0	0.0%
1-2 Days	0	0.0%
3-6 Days	0	0.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	1	100.0%
TOTAL	1	100.0%

Table 13.18 Boys Golf Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	0	0.0%
11-15 Days	0	0.0%
16-20 Days	0	0.0%
≥21 Days	0	0.0%
Data not available**	1	100.0%
TOTAL	1	100.0%

1 Missing Follow-up Reports*

0 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

XIV. Girls Golf Head Injury Reports

Table 14.1 Head Injury Prevalence Rate for Girls Golf, MHSAA Head Injury Reporting System, 2022-23 School Year

Girls Golf Participation	3,708
All Reported Girls Golf Head Injuries	1
Girls Golf Head Injury Prevalence Rate (reported head injuries/total participants)	0.03%
Girls Golf Head Injury Prevalence Rate Per Thousand Participants	0

Table 14.2 Girls Golf Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	1	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	1	100.0%

Table 14.3 Girls Golf Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	1	100.0%
Competition	0	0.0%
TOTAL	1	100.0%

Table 14.4 Girls Golf Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	0	0.0%
Middle of practice	0	0.0%
End of practice	1	100.0%
PRACTICE TOTAL	1	100.0%
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
COMPETITION TOTAL	0	0.0%

Table 14.5 Activity Type for Girls Golf Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	1	100.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
TOTAL	1	100.0%

Table 14.6 Girls Golf Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	1	100.0%
Person to playing surface contact	0	0.0%
Uncertain as to the cause of the event	0	0.0%
TOTAL	1	100.0%

Table 14.7 Person to Playing Surface Contact Girls Golf Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
n/a	0	0.0%
TOTAL	0	0.0%

Table 14.8 Girls Golf Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	0	0.0%
Coach	0	0.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	1	100.0%
TOTAL	1	100.0%

Table 14.9 Girls Golf Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	0	0.0%
Not removed*	1	100.0%
TOTAL	1	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 14.10 Girls Golf Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	1	100.0%
No reported previous concussions	0	0.0%
TOTAL	1	100.0%

Table 14.11 Most Recent Concussion for Girls Golf Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	1	100.0%
TOTAL	1	100.0%

Table 14.12 Number of Previous Concussions for Girls Golf Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	1	100.0%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	1	100.0%

Table 14.13 Girls Golf Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	1	100.0%
Did not receive written authorization to return by the end of season	0	0.0%
Follow-up Report not completed	0	0.0%
TOTAL	1	100.0%

Table 14.14 Girls Golf Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	1	100.0%
DO	0	0.0%
PA	0	0.0%
NP	0	0.0%
Medical examiner data not available*	0	0.0%
TOTAL	1	100.0%

Table 14.15 Girls Golf Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	1	100.0%
Neurologist's office	0	0.0%
Team doctor	0	0.0%
Medical facility data not available*	0	0.0%
TOTAL	1	100.0%

Table 14.16 Girls Golf Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	1	100.0%
Conditions to return	0	0.0%
Return to activity data not available*	0	0.0%
TOTAL	1	100.0%

Table 14.17 Girls Golf Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	0	0.0%
1-2 Days	1	100.0%
3-6 Days	0	0.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	0	0.0%
TOTAL	1	100.0%

Table 14.18 Girls Golf Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	0	0.0%
11-15 Days	0	0.0%
16-20 Days	0	0.0%
≥21 Days	1	100.0%
Data not available**	0	0.0%
TOTAL	1	100.0%

0 Missing Follow-up Reports*

0 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

XV. Gymnastics Head Injury Reports

Table 15.1 Head Injury Prevalence Rate for Gymnastics, MHSAA Head Injury Reporting System, 2022-23 School Year

Gymnastics Participation	562
All Reported Gymnastics Head Injuries	5
Gymnastics Head Injury Prevalence Rate (reported head injuries/total participants)	0.89%
Gymnastics Head Injury Prevalence Rate Per Thousand Participants	9

Table 15.2 Gymnastics Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	5	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	5	100.0%

Table 15.3 Gymnastics Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	5	100.0%
Competition	0	0.0%
TOTAL	5	100.0%

Table 15.4 Gymnastics Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	0	0.0%
Middle of practice	4	80.0%
End of practice	1	20.0%
PRACTICE TOTAL	5	100.0%
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
COMPETITION TOTAL	0	0.0%

Table 15.5 Activity Type for Gymnastics Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	5	100.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
TOTAL	5	100.0%

Table 15.6 Gymnastics Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	1	20.0%
Person to playing surface contact	4	80.0%
Uncertain as to the cause of the event	0	0.0%
TOTAL	5	100.0%

Table 15.7 Person to Playing Surface Contact Gymnastics Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Gymnastics floor	4	100.0%
TOTAL	4	100.0%

Table 15.8 Gymnastics Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	4	80.0%
Coach	1	20.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	0	0.0%
TOTAL	5	100.0%

Table 15.9 Gymnastics Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	4	80.0%
Not removed*	1	20.0%
TOTAL	5	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 15.10 Gymnastics Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	1	20.0%
No reported previous concussions	4	80.0%
TOTAL	5	100.0%

Table 15.11 Most Recent Concussion for Gymnastics Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	1	100.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	0	0.0%
TOTAL	1	100.0%

Table 15.12 Number of Previous Concussions for Gymnastics Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	1	100.0%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	1	100.0%

Table 15.13 Gymnastics Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	4	80.0%
Did not receive written authorization to return by the end of season	1	20.0%
Follow-up Report not completed	0	0.0%
TOTAL	5	100.0%

Table 15.14 Gymnastics Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	1	20.0%
DO	3	60.0%
PA	0	0.0%
NP	0	0.0%
Medical examiner data not available*	1	20.0%
TOTAL	5	100.0%

Table 15.15 Gymnastics Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	1	20.0%
Neurologist's office	0	0.0%
Team doctor	3	60.0%
Medical facility data not available*	1	20.0%
TOTAL	5	100.0%

Table 15.16 Gymnastics Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	4	80.0%
Conditions to return	0	0.0%
Return to activity data not available*	1	20.0%
TOTAL	5	100.0%

Table 15.17 Gymnastics Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	2	40.0%
1-2 Days	1	20.0%
3-6 Days	1	20.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	1	20.0%
TOTAL	5	100.0%

Table 15.18 Gymnastics Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	1	20.0%
11-15 Days	0	0.0%
16-20 Days	1	20.0%
≥21 Days	2	40.0%
Data not available**	1	20.0%
TOTAL	5	100.0%

0 Missing Follow-up Reports*

1 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

XVI. Ice Hockey Head Injury Reports

Table 16.1 Head Injury Prevalence Rate for Ice Hockey, MHSAA Head Injury Reporting System, 2022-23 School Year

Ice Hockey Participation	3,129
All Reported Ice Hockey Head Injuries	66
Ice Hockey Head Injury Prevalence Rate (reported head injuries/total participants)	2.11%
Ice Hockey Head Injury Prevalence Rate Per Thousand Participants	21

Table 16.2 Ice Hockey Head Injuries by Gender, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Male	65	98.5%
Female	1	1.5%
TOTAL	66	100.0%

Table 16.3 Ice Hockey Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	56	84.8%
Junior Varsity	10	15.2%
Freshman	0	0.0%
TOTAL	66	100.0%

Table 16.4 Ice Hockey Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	12	18.2%
Competition	54	81.8%
TOTAL	66	100.0%

Table 16.5 Ice Hockey Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	2	16.7%
Middle of practice	5	41.7%
End of practice	5	41.7%
PRACTICE TOTAL	12	100.0%
Start of competition	6	11.1%
Middle of competition	27	50.0%
End of competition	21	38.9%
COMPETITION TOTAL	54	100.0%

Table 16.6 Activity Type for Ice Hockey Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	6	50.0%
During simulated competition-scrimmage	5	41.7%
Not specified	1	8.3%
TOTAL	12	100.0%

Table 16.7 Ice Hockey Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	33	50.0%
Person to object contact (e.g. wall, equipment)	21	31.8%
Person to playing surface contact	8	12.1%
Uncertain as to the cause of the event	4	6.1%
TOTAL	66	100.0%

Table 16.8 Person to Playing Surface Contact Ice Hockey Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Ice	7	100.0%
TOTAL	7	100.0%

Table 16.9 Ice Hockey Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	45	68.2%
Coach	7	10.6%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	2	3.0%
DO	1	1.5%
MD	1	1.5%
PA	0	0.0%
NP	1	1.5%
Athletic director	0	0.0%
Multiple examiners	9	13.6%
TOTAL	66	100.0%

Table 16.10 Ice Hockey Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	58	87.9%
Not removed*	8	12.1%
TOTAL	66	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 16.11 Ice Hockey Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	16	24.2%
No reported previous concussions	50	75.8%
TOTAL	66	100.0%

Table 16.12 Most Recent Concussion for Ice Hockey Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	2	12.5%
Within one to six months	0	0.0%
Within six months to one year	4	25.0%
Over one year	10	62.5%
TOTAL	16	100.0%

Table 16.13 Number of Previous Concussions for Ice Hockey Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	7	43.8%
2 concussions	5	31.3%
3 concussions	3	18.8%
≥4 concussions	1	6.3%
Not specified	0	0.0%
TOTAL	16	100.0%

Table 16.14 Ice Hockey Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	62	93.9%
Did not receive written authorization to return by the end of season	4	6.1%
Follow-up Report not completed	0	0.0%
TOTAL	66	100.0%

Table 16.15 Ice Hockey Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	40	60.6%
DO	14	21.2%
PA	3	4.5%
NP	5	7.6%
Medical examiner data not available*	4	6.1%
TOTAL	66	100.0%

Table 16.16 Ice Hockey Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	1	1.5%
Primary care physician or pediatrician's office	47	71.2%
Neurologist's office	5	7.6%
Team doctor	9	13.6%
Medical facility data not available*	4	6.1%
TOTAL	66	100.0%

Table 16.17 Ice Hockey Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	59	89.4%
Conditions to return	3	4.5%
Return to activity data not available*	4	6.1%
TOTAL	66	100.0%

Table 16.18 Ice Hockey Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	35	53.0%
1-2 Days	18	27.3%
3-6 Days	8	12.1%
7-9 Days	0	0.0%
10-20 Days	1	1.5%
≥21 Days	0	0.0%
Missed school data not available*	4	6.1%
TOTAL	66	100.0%

Table 16.19 Ice Hockey Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	1	1.5%
3-5 Days	7	10.6%
6-10 Days	26	39.4%
11-15 Days	16	24.2%
16-20 Days	5	7.6%
≥21 Days	6	9.1%
Data not available**	5	7.6%
TOTAL	66	100.0%

0 Missing Follow-up Reports*

4 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

1 Data entry errors**

XVIII. Girls Lacrosse Head Injuries

Table 18.1 Head Injury Prevalence Rate for Girls Lacrosse, MHSAA Head Injury Reporting System, 2022-23 School Year

Girls Lacrosse Participation	3,215
All Girls Lacrosse Head Injuries	44
Girls Lacrosse Head Injury Prevalence Rate (reported head injuries/total participants)	1.37%
Girls Lacrosse Head Injury Prevalence Rate Per Thousand Participants	14

Table 18.2 Girls Lacrosse Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	33	75.0%
Junior Varsity	11	25.0%
Freshman	0	0.0%
TOTAL	44	100.0%

Table 18.3 Girls Lacrosse Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	11	25.0%
Competition	33	75.0%
TOTAL	44	100.0%

Table 18.4 Girls Lacrosse Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	2	18.2%
Middle of practice	6	54.5%
End of practice	3	27.3%
PRACTICE TOTAL	11	100.0%
Start of competition	2	6.1%
Middle of competition	17	51.5%
End of competition	14	42.4%
COMPETITION TOTAL	33	100.0%

Table 18.5 Activity Type for Girls Lacrosse Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	9	81.8%
During simulated competition-scrimmage	2	18.2%
Not specified	0	0.0%
TOTAL	11	100.0%

Table 18.6 Girls Lacrosse Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	8	18.2%
Person to object contact (e.g. wall, equipment)	30	68.2%
Person to playing surface contact	4	9.1%
Uncertain as to the cause of the event	2	4.5%
TOTAL	44	100.0%

Table 18.7 Person to Playing Surface Contact Girls Lacrosse Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Artificial turf	4	100.0%
TOTAL	4	0.0%

Table 18.8 Girls Lacrosse Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	27	61.4%
Coach	9	20.5%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	1	2.3%
PA	1	2.3%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	6	13.6%
TOTAL	44	100.0%

Table 18.9 Girls Lacrosse Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	31	70.5%
Not removed*	13	29.5%
TOTAL	44	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 18.10 Girls Lacrosse Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	8	18.2%
No reported previous concussions	36	81.8%
TOTAL	44	100.0%

Table 18.11 Most Recent Concussion for Girls Lacrosse Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	2	25.0%
Within six months to one year	1	12.5%
Over one year	5	62.5%
TOTAL	8	100.0%

Table 18.12 Number of Previous Concussions for Girls Lacrosse Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	6	75.0%
2 concussions	0	0.0%
3 concussions	2	25.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	8	100.0%

Table 18.13 Girls Lacrosse Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	32	72.7%
Did not receive written authorization to return by the end of season	6	13.6%
Follow-up Report not completed	6	13.6%
TOTAL	44	100.0%

Table 18.14 Girls Lacrosse Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	14	31.8%
DO	6	13.6%
PA	6	13.6%
NP	6	13.6%
Medical examiner data not available*	12	27.3%
TOTAL	44	100.0%

Table 18.15 Girls Lacrosse Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	1	2.3%
Urgent or Ready Care business	5	11.4%
Primary care physician or pediatrician's office	18	40.9%
Neurologist's office	4	9.1%
Team doctor	4	9.1%
Medical facility data not available*	12	27.3%
TOTAL	44	100.0%

Table 18.16 Girls Lacrosse Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	29	65.9%
Conditions to return	3	6.8%
Return to activity data not available*	12	27.3%
TOTAL	44	100.0%

Table 18.17 Girls Lacrosse Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	17	38.6%
1-2 Days	11	25.0%
3-6 Days	2	4.5%
7-9 Days	2	4.5%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	12	27.3%
TOTAL	44	100.0%

Table 18.18 Girls Lacrosse Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	13	29.5%
11-15 Days	10	22.7%
16-20 Days	3	6.8%
≥21 Days	4	9.1%
Data not available**	14	31.8%
TOTAL	44	100.0%

6 Missing Follow-up Reports*

6 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

2 Data entry errors**

XX. Girls Skiing Head Injury Reports

Table 20.1 Head Injury Prevalence Rate for Girls Skiing, MHSAA Head Injury Reporting System, 2022-23 School Year

Girls Skiing Participation	854
All Reported Girls Skiing Head Injuries	4
Girls Skiing Head Injury Prevalence Rate (reported head injuries/total participants)	0.47%
Girls Skiing Head Injury Prevalence Rate Per Thousand Participants	5

Table 20.2 Girls Skiing Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	4	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	4	100.0%

Table 20.3 Girls Skiing Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	3	75.0%
Competition	1	25.0%
TOTAL	4	100.0%

Table 20.4 Girls Skiing Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	0	0.0%
Middle of practice	3	100.0%
End of practice	0	0.0%
PRACTICE TOTAL	3	100.0%
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	1	100.0%
COMPETITION TOTAL	1	100.0%

Table 20.5 Activity Type for Girls Skiing Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	2	66.7%
During simulated competition-scrimmage	1	33.3%
Not specified	0	0.0%
TOTAL	3	100.0%

Table 20.6 Girls Skiing Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	1	25.0%
Person to playing surface contact	3	75.0%
Uncertain as to the cause of the event	0	0.0%
TOTAL	4	100.0%

Table 20.7 Person to Playing Surface Contact Girls Skiing Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Snow hill	3	100.0%
TOTAL	3	100.0%

Table 20.8 Girls Skiing Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	0	0.0%
Coach	2	50.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	2	50.0%
TOTAL	4	100.0%

Table 20.9 Girls Skiing Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	3	75.0%
Not removed*	1	25.0%
TOTAL	4	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 20.10 Girls Skiing Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	2	50.0%
No reported previous concussions	2	50.0%
TOTAL	4	100.0%

Table 20.11 Most Recent Concussion for Girls Skiing Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	2	100.0%
TOTAL	2	100.0%

Table 20.12 Number of Previous Concussions for Girls Skiing Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	1	50.0%
2 concussions	1	50.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	2	100.0%

Table 20.13 Girls Skiing Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	3	75.0%
Did not receive written authorization to return by the end of season	1	25.0%
Follow-up Report not completed	0	0.0%
TOTAL	4	100.0%

Table 20.14 Girls Skiing Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	2	50.0%
DO	0	0.0%
PA	1	25.0%
NP	0	0.0%
Medical examiner data not available*	1	25.0%
TOTAL	4	100.0%

Table 20.15 Girls Skiing Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	3	75.0%
Neurologist's office	0	0.0%
Team doctor	0	0.0%
Medical facility data not available*	1	25.0%
TOTAL	4	100.0%

Table 20.16 Girls Skiing Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	3	75.0%
Conditions to return	0	0.0%
Return to activity data not available*	1	25.0%
TOTAL	4	100.0%

Table 20.17 Girls Skiing Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	3	75.0%
1-2 Days	0	0.0%
3-6 Days	0	0.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	1	25.0%
TOTAL	4	100.0%

Table 20.18 Girls Skiing Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	0	0.0%
11-15 Days	2	50.0%
16-20 Days	0	0.0%
≥21 Days	1	25.0%
Data not available**	1	25.0%
TOTAL	4	100.0%

0 Missing Follow-up Reports*

1 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

XXI. Boys Soccer Head Injury Reports

Table 21.1 Head Injury Prevalence Rate for Boys Soccer, MHSAA Head Injury Reporting System, 2022-23 School Year

Boys Soccer Participation	13,279
All Reported Boys Soccer Head Injuries	152
Boys Soccer Head Injury Prevalence Rate (reported head injuries/total participants)	1.14%
Boys Soccer Head Injury Prevalence Rate Per Thousand Participants	11

Table 21.2 Boys Soccer Head Injuries by Gender, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Male	152	100.0%
Female	0	0.0%
TOTAL	152	100.0%

Table 21.3 Boys Soccer Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	112	73.7%
Junior Varsity	36	23.7%
Freshman	4	2.6%
TOTAL	152	100.0%

Table 21.4 Boys Soccer Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	19	12.5%
Competition	133	87.5%
TOTAL	152	100.0%

Table 21.5 Boys Soccer Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	3	15.8%
Middle of practice	7	36.8%
End of practice	9	47.4%
PRACTICE TOTAL	19	100.0%
Start of competition	12	9.0%
Middle of competition	67	50.4%
End of competition	54	40.6%
COMPETITION TOTAL	133	100.0%

Table 21.6 Activity Type for Boys Soccer Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	9	47.4%
During simulated competition-scrimmage	9	47.4%
Not specified	1	5.3%
TOTAL	19	100.0%

Table 21.7 Boys Soccer Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	89	58.6%
Person to object contact (e.g. wall, equipment)	43	28.3%
Person to playing surface contact	11	7.2%
Uncertain as to the cause of the event	9	5.9%
TOTAL	152	100.0%

Table 21.8 Person to Playing Surface Contact Boys Soccer Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Natural grass	6	54.5%
Artificial turf	5	45.5%
TOTAL	11	100.0%

Table 21.9 Boys Soccer Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	95	62.5%
Coach	28	18.4%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	2	1.3%
DO	0	0.0%
MD	4	2.6%
PA	0	0.0%
NP	2	1.3%
Athletic director	0	0.0%
Multiple examiners	21	13.8%
TOTAL	152	100.0%

Table 21.10 Boys Soccer Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	131	86.2%
Not removed*	21	13.8%
TOTAL	152	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 21.11 Boys Soccer Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	21	13.8%
No reported previous concussions	131	86.2%
TOTAL	152	100.0%

Table 21.12 Most Recent Concussion for Boys Soccer Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	2	9.5%
Within six months to one year	5	23.8%
Over one year	14	66.7%
TOTAL	21	100.0%

Table 21.13 Number of Previous Concussions for Boys Soccer Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	14	66.7%
2 concussions	3	14.3%
3 concussions	0	0.0%
≥4 concussions	2	9.5%
Not specified	2	9.5%
TOTAL	21	100.0%

Table 21.14 Boys Soccer Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	125	82.2%
Did not receive written authorization to return by the end of season	27	17.8%
Follow-up Report not completed	0	0.0%
TOTAL	152	100.0%

Table 21.15 Boys Soccer Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	72	47.4%
DO	27	17.8%
PA	15	9.9%
NP	11	7.2%
Medical examiner data not available*	27	17.8%
TOTAL	152	100.0%

Table 21.16 Boys Soccer Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	3	2.0%
Urgent or Ready Care business	21	13.8%
Primary care physician or pediatrician's office	75	49.3%
Neurologist's office	6	3.9%
Team doctor	20	13.2%
Medical facility data not available*	27	17.8%
TOTAL	152	100.0%

Table 21.17 Boys Soccer Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	116	76.3%
Conditions to return	9	5.9%
Return to activity data not available*	27	17.8%
TOTAL	152	100.0%

Table 21.18 Boys Soccer Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	80	52.6%
1-2 Days	40	26.3%
3-6 Days	3	2.0%
7-9 Days	2	1.3%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	27	17.8%
TOTAL	152	100.0%

Table 21.19 Boys Soccer Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	4	2.6%
3-5 Days	9	5.9%
6-10 Days	62	40.8%
11-15 Days	25	16.4%
16-20 Days	7	4.6%
≥21 Days	16	10.5%
Data not available**	29	19.1%
TOTAL	152	100.0%

0 Missing Follow-up Reports*

27 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

2 Data entry errors**

XXII. Girls Soccer Head Injury Reports

Table 22.1 Head Injury Prevalence Rate for Girls Soccer, MHSAA Head Injury Reporting System, 2022-23 School Year

Girls Soccer Participation	11,863
All Girls Soccer Head Injuries	286
Girls Soccer Head Injury Prevalence Rate (reported head injuries/total participants)	2.41%
Girls Soccer Head Injury Prevalence Rate Per Thousand Participants	24

Table 22.2 Girls Soccer Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	217	75.9%
Junior Varsity	65	22.7%
Freshman	4	1.4%
TOTAL	286	100.0%

Table 22.3 Girls Soccer Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	49	17.1%
Competition	237	82.9%
TOTAL	286	100.0%

Table 22.4 Girls Soccer Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	4	8.2%
Middle of practice	27	55.1%
End of practice	18	36.7%
PRACTICE TOTAL	49	100.0%
Start of competition	22	9.3%
Middle of competition	134	56.5%
End of competition	81	34.2%
COMPETITION TOTAL	237	100.0%

Table 22.5 Activity Type for Girls Soccer Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	33	67.3%
During simulated competition-scrimmage	14	28.6%
Not specified	2	4.1%
TOTAL	49	100.0%

Table 22.6 Girls Soccer Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	88	30.8%
Person to object contact (e.g. wall, equipment)	117	40.9%
Person to playing surface contact	61	21.3%
Uncertain as to the cause of the event	20	7.0%
TOTAL	286	100.0%

Table 22.7 Person to Playing Surface Contact Girls Soccer Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Natural grass	28	45.9%
Artificial turf	29	47.5%
Concrete	1	1.6%
Soccer field	1	1.6%
Unknown	2	3.3%
TOTAL	61	100.0%

Table 22.8 Girls Soccer Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	174	60.8%
Coach	50	17.5%
Sideline emergency personnel	1	0.3%
Other appropriate health care professional	9	3.1%
DO	0	0.0%
MD	4	1.4%
PA	1	0.3%
NP	0	0.0%
Athletic director	2	0.7%
Multiple examiners	45	15.7%
TOTAL	286	100.0%

Table 22.9 Girls Soccer Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	234	81.8%
Not removed*	52	18.2%
TOTAL	286	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 22.10 Girls Soccer Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	46	16.1%
No reported previous concussions	240	83.9%
TOTAL	286	100.0%

Table 22.11 Most Recent Concussion for Girls Soccer Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	3	6.5%
Within one to six months	7	15.2%
Within six months to one year	13	28.3%
Over one year	23	50.0%
TOTAL	46	100.0%

Table 22.12 Number of Previous Concussions for Girls Soccer Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	31	67.4%
2 concussions	5	10.9%
3 concussions	4	8.7%
≥4 concussions	4	8.7%
Not specified	2	4.3%
TOTAL	46	100.0%

Table 22.13 Girls Soccer Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	209	73.1%
Did not receive written authorization to return by the end of season	41	14.3%
Follow-up Report not completed	36	12.6%
TOTAL	286	100.0%

Table 22.14 Girls Soccer Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	97	33.9%
DO	46	16.1%
PA	18	6.3%
NP	48	16.8%
Medical examiner data not available*	77	26.9%
TOTAL	286	100.0%

Table 22.15 Girls Soccer Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	4	1.4%
Urgent or Ready Care business	24	8.4%
Primary care physician or pediatrician's office	139	48.6%
Neurologist's office	15	5.2%
Team doctor	27	9.4%
Medical facility data not available*	77	26.9%
TOTAL	286	100.0%

Table 22.16 Girls Soccer Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	193	67.5%
Conditions to return	16	5.6%
Return to activity data not available*	77	26.9%
TOTAL	286	100.0%

Table 22.17 Girls Soccer Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	122	42.7%
1-2 Days	60	21.0%
3-6 Days	21	7.3%
7-9 Days	2	0.7%
10-20 Days	4	1.4%
≥21 Days	0	0.0%
Missed school data not available*	77	26.9%
TOTAL	286	100.0%

Table 22.18 Girls Soccer Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	4	1.4%
3-5 Days	15	5.2%
6-10 Days	59	20.6%
11-15 Days	66	23.1%
16-20 Days	31	10.8%
≥21 Days	32	11.2%
Data not available**	79	27.6%
TOTAL	286	100.0%

36 Missing Follow-up Reports*

41 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

2 Data entry errors**

XXIII. Softball Head Injury Reports

Table 23.1 Head Injury Prevalence Rate for Softball, MHSAA Head Injury Reporting System, 2022-23 School Year

Softball Participation	11,722
All Softball Head Injuries	107
Softball Head Injury Prevalence Rate (reported head injuries/total participants)	0.91%
Softball Head Injury Prevalence Rate Per Thousand Participants	9

Table 23.2 Softball Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	71	66.4%
Junior Varsity	36	33.6%
Freshman	0	0.0%
TOTAL	107	100.0%

Table 23.3 Softball Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	44	41.1%
Competition	63	58.9%
TOTAL	107	100.0%

Table 23.4 Softball Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	8	18.2%
Middle of practice	24	54.5%
End of practice	12	27.3%
PRACTICE TOTAL	44	100.0%
Start of competition	18	28.6%
Middle of competition	31	49.2%
End of competition	14	22.2%
COMPETITION TOTAL	63	100.0%

Table 23.5 Activity Type for Softball Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	39	88.6%
During simulated competition-scrimmage	4	9.1%
Not specified	1	2.3%
TOTAL	44	100.0%

Table 23.6 Softball Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	19	17.8%
Person to object contact (e.g. wall, equipment)	77	72.0%
Person to playing surface contact	10	9.3%
Uncertain as to the cause of the event	1	0.9%
TOTAL	107	100.0%

Table 23.7 Person to Playing Surface Contact Softball Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Natural grass	3	30.0%
Infield dirt	3	30.0%
Softball field	2	20.0%
Artificial turf	1	10.0%
Other	1	10.0%
TOTAL	10	100.0%

Table 23.8 Softball Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	45	42.1%
Coach	39	36.4%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	1	0.9%
DO	0	0.0%
MD	2	1.9%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	20	18.7%
TOTAL	107	100.0%

Table 23.9 Softball Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	83	77.6%
Not removed*	24	22.4%
TOTAL	107	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 23.10 Softball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	11	10.3%
No reported previous concussions	96	89.7%
TOTAL	107	100.0%

Table 23.11 Most Recent Concussion for Softball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	4	36.4%
Within six months to one year	2	18.2%
Over one year	5	45.5%
TOTAL	11	100.0%

Table 23.12 Number of Previous Concussions for Softball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	8	72.7%
2 concussions	2	18.2%
3 concussions	0	0.0%
≥4 concussions	1	9.1%
Not specified	0	0.0%
TOTAL	11	100.0%

Table 23.13 Softball Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	72	67.3%
Did not receive written authorization to return by the end of season	19	17.8%
Follow-up Report not completed	16	15.0%
TOTAL	107	100.0%

Table 23.14 Softball Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	36	33.6%
DO	17	15.9%
PA	12	11.2%
NP	7	6.5%
Medical examiner data not available*	35	32.7%
TOTAL	107	100.0%

Table 23.15 Softball Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	4	3.7%
Urgent or Ready Care business	8	7.5%
Primary care physician or pediatrician's office	47	43.9%
Neurologist's office	9	8.4%
Team doctor	4	3.7%
Medical facility data not available*	35	32.7%
TOTAL	107	100.0%

Table 23.16 Softball Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	64	59.8%
Conditions to return	8	7.5%
Return to activity data not available*	35	32.7%
TOTAL	107	100.0%

Table 23.17 Softball Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	39	36.4%
1-2 Days	19	17.8%
3-6 Days	11	10.3%
7-9 Days	1	0.9%
10-20 Days	2	1.9%
≥21 Days	0	0.0%
Missed school data not available*	35	32.7%
TOTAL	107	100.0%

Table 23.18 Softball Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	2	1.9%
3-5 Days	6	5.6%
6-10 Days	25	23.4%
11-15 Days	29	27.1%
16-20 Days	5	4.7%
≥21 Days	4	3.7%
Data not available**	36	33.6%
TOTAL	107	100.0%

16 Missing Follow-up Reports*

19 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

1 Data entry errors**

**XXIV. Boys Swimming & Diving
Head Injury Reports**

Table 24.1 Head Injury Prevalence Rate for Boys Swimming & Diving, MHSAA Head Injury Reporting System, 2022-23 School Year

Boys Swimming & Diving Participation	4,173
All Reported Boys Swimming & Diving Head Injuries	7
Boys Swimming & Diving Head Injury Prevalence Rate (reported head injuries/total participants)	0.17%
Boys Swimming & Diving Head Injury Prevalence Rate Per Thousand Participants	2

Table 24.2 Boys Swimming & Diving Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	7	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	7	100.0%

Table 24.3 Boys Swimming & Diving Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	7	100.0%
Competition	0	0.0%
TOTAL	7	100.0%

Table 24.4 Boys Swimming & Diving Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	0	0.0%
Middle of practice	4	57.1%
End of practice	3	42.9%
PRACTICE TOTAL	7	100.0%
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
COMPETITION TOTAL	0	0.0%

Table 24.5 Activity Type for Boys Swimming & Diving Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	6	85.7%
During simulated competition-scrimmage	0	0.0%
Not specified	1	14.3%
TOTAL	7	100.0%

Table 24.6 Boys Swimming & Diving Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	1	14.3%
Person to playing surface contact	5	71.4%
Uncertain as to the cause of the event	1	14.3%
TOTAL	7	100.0%

Table 24.7 Person to Playing Surface Contact Boys Swimming & Diving Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Water	4	80.0%
Pool deck	1	20.0%
TOTAL	5	100.0%

Table 24.8 Boys Swimming & Diving Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	3	42.9%
Coach	1	14.3%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	3	42.9%
TOTAL	7	100.0%

Table 24.9 Boys Swimming & Diving Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	5	71.4%
Not removed*	2	28.6%
TOTAL	7	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 24.10 Boys Swimming & Diving Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	2	28.6%
No reported previous concussions	5	71.4%
TOTAL	7	100.0%

Table 24.11 Most Recent Concussion for Boys Swimming & Diving Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	2	100.0%
TOTAL	2	100.0%

Table 24.12 Number of Previous Concussions for Boys Swimming & Diving Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	0	0.0%
2 concussions	1	50.0%
3 concussions	0	0.0%
≥4 concussions	1	50.0%
Not specified	0	0.0%
TOTAL	2	100.0%

Table 24.13 Boys Swimming & Diving Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	6	85.7%
Did not receive written authorization to return by the end of season	1	14.3%
Follow-up Report not completed	0	0.0%
TOTAL	7	100.0%

Table 24.14 Boys Swimming & Diving Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	5	71.4%
DO	0	0.0%
PA	1	14.3%
NP	0	0.0%
Medical examiner data not available*	1	14.3%
TOTAL	7	100.0%

Table 24.15 Boys Swimming & Diving Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	6	85.7%
Neurologist's office	0	0.0%
Team doctor	0	0.0%
Medical facility data not available*	1	14.3%
TOTAL	7	100.0%

Table 24.16 Boys Swimming & Diving Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	6	85.7%
Conditions to return	0	0.0%
Return to activity data not available*	1	14.3%
TOTAL	7	100.0%

Table 24.17 Boys Swimming & Diving Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	4	57.1%
1-2 Days	2	28.6%
3-6 Days	0	0.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	1	14.3%
TOTAL	7	100.0%

Table 24.18 Boys Swimming & Diving Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	2	28.6%
6-10 Days	3	42.9%
11-15 Days	1	14.3%
16-20 Days	0	0.0%
≥21 Days	0	0.0%
Data not available**	1	14.3%
TOTAL	7	100.0%

0 Missing Follow-up Reports*

1 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

**XXV. Girls Swimming & Diving
Head Injury Reports**

Table 25.1 Head Injury Prevalence Rate for Girls Swimming & Diving, MHSAA Head Injury Reporting System, 2022-23 School Year

Girls Swimming & Diving Participation	4,931
All Reported Girls Swimming & Diving Head Injuries	24
Girls Swimming & Diving Head Injury Prevalence Rate (reported head injuries/total participants)	0.49%
Girls Swimming & Diving Head Injury Prevalence Rate Per Thousand Participants	5

Table 25.2 Girls Swimming & Diving Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	24	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	24	100.0%

Table 25.3 Girls Swimming & Diving Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	21	87.5%
Competition	3	12.5%
TOTAL	24	100.0%

Table 25.4 Girls Swimming & Diving Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	2	8.3%
Middle of practice	11	45.8%
End of practice	8	33.3%
PRACTICE TOTAL	21	87.5%
Start of competition	2	66.7%
Middle of competition	0	0.0%
End of competition	1	33.3%
COMPETITION TOTAL	3	100.0%

Table 25.5 Activity Type for Girls Swimming & Diving Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	18	85.7%
During simulated competition-scrimmage	3	14.3%
Not specified	0	0.0%
TOTAL	21	100.0%

Table 25.6 Girls Swimming & Diving Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	2	8.3%
Person to object contact (e.g. wall, equipment)	10	41.7%
Person to playing surface contact	9	37.5%
Uncertain as to the cause of the event	3	12.5%
TOTAL	24	100.0%

Table 25.7 Person to Playing Surface Contact Girls Swimming & Diving Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Water	7	77.8%
Pool wall	1	11.1%
Pool deck	1	11.1%
TOTAL	9	11.1%

Table 25.8 Girls Swimming & Diving Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	17	70.8%
Coach	5	20.8%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	2	8.3%
TOTAL	24	100.0%

Table 25.9 Girls Swimming & Diving Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	19	79.2%
Not removed*	5	20.8%
TOTAL	24	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 25.10 Girls Swimming & Diving Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	3	12.5%
No reported previous concussions	21	87.5%
TOTAL	24	100.0%

Table 25.11 Most Recent Concussion for Girls Swimming & Diving Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	1	33.3%
Within six months to one year	1	33.3%
Over one year	1	33.3%
TOTAL	3	100.0%

Table 25.12 Number of Previous Concussions for Girls Swimming & Diving Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	1	33.3%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	2	66.7%
Not specified	0	0.0%
TOTAL	3	100.0%

Table 25.13 Girls Swimming & Diving Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	21	87.5%
Did not receive written authorization to return by the end of season	3	12.5%
Follow-up Report not completed	0	0.0%
TOTAL	24	100.0%

Table 25.14 Girls Swimming & Diving Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	10	41.7%
DO	6	25.0%
PA	4	16.7%
NP	1	4.2%
Medical examiner data not available*	3	12.5%
TOTAL	24	100.0%

Table 25.15 Girls Swimming & Diving Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	2	8.3%
Primary care physician or pediatrician's office	17	70.8%
Neurologist's office	1	4.2%
Team doctor	1	4.2%
Medical facility data not available*	3	12.5%
TOTAL	24	100.0%

Table 25.16 Girls Swimming & Diving Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	20	83.3%
Conditions to return	1	4.2%
Return to activity data not available*	3	12.5%
TOTAL	24	100.0%

Table 25.17 Girls Swimming & Diving Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	12	50.0%
1-2 Days	7	29.2%
3-6 Days	2	8.3%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	3	12.5%
TOTAL	24	100.0%

Table 25.18 Girls Swimming & Diving Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	7	29.2%
11-15 Days	8	33.3%
16-20 Days	2	8.3%
≥21 Days	3	12.5%
Data not available**	4	16.7%
TOTAL	24	100.0%

0 Missing Follow-up Reports*

3 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

1 Data entry errors**

XXVI. Boys Tennis Head Injury Reports

Table 26.1 Head Injury Prevalence Rate for Boys Tennis, MHSAA Head Injury Reporting System, 2022-23 School Year

Boys Tennis Participation	6,015
All Reported Boys Tennis Head Injuries	2
Boys Tennis Head Injury Prevalence Rate (reported head injuries/total participants)	0.03%
Boys Tennis Head Injury Prevalence Rate Per Thousand Participants	0

Table 26.2 Boys Tennis Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	2	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
TOTAL	2	100.0%

Table 26.3 Boys Tennis Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	1	50.0%
Competition	1	50.0%
TOTAL	2	100.0%

Table 26.4 Boys Tennis Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	0	0.0%
Middle of practice	0	0.0%
End of practice	1	50.0%
PRACTICE TOTAL	1	50.0%
Start of competition	1	100.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
COMPETITION TOTAL	1	100.0%

Table 26.5 Activity Type for Boys Tennis Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	1	100.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
TOTAL	1	100.0%

Table 26.6 Boys Tennis Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	1	50.0%
Person to playing surface contact	1	50.0%
Uncertain as to the cause of the event	0	0.0%
TOTAL	2	100.0%

Table 26.7 Person to Playing Surface Contact Boys Tennis Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Tennis court	0	0.0%
TOTAL	0	0.0%

Table 26.8 Boys Tennis Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	0	0.0%
Coach	0	0.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	2	100.0%
TOTAL	2	100.0%

Table 26.9 Boys Tennis Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	2	100.0%
Not removed*	0	0.0%
TOTAL	2	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 26.10 Boys Tennis Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	2	100.0%
TOTAL	2	100.0%

Table 26.11 Most Recent Concussion for Boys Tennis Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	0	0.0%
TOTAL	0	0.0%

Table 26.12 Number of Previous Concussions for Boys Tennis Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	0	0.0%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	0	0.0%

Table 26.13 Boys Tennis Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	2	100.0%
Did not receive written authorization to return by the end of season	0	0.0%
Follow-up Report not completed	0	0.0%
TOTAL	2	100.0%

Table 26.14 Boys Tennis Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	1	50.0%
DO	0	0.0%
PA	1	50.0%
NP	0	0.0%
Medical examiner data not available*	0	0.0%
TOTAL	2	100.0%

Table 26.15 Boys Tennis Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	1	50.0%
Neurologist's office	0	0.0%
Team doctor	1	50.0%
Medical facility data not available*	0	0.0%
TOTAL	2	100.0%

Table 26.16 Boys Tennis Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	2	100.0%
Conditions to return	0	0.0%
Return to activity data not available*	0	0.0%
TOTAL	2	100.0%

Table 26.17 Boys Tennis Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	1	50.0%
1-2 Days	1	50.0%
3-6 Days	0	0.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	0	0.0%
TOTAL	2	100.0%

Table 26.18 Boys Tennis Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	0	0.0%
11-15 Days	2	100.0%
16-20 Days	0	0.0%
≥21 Days	0	0.0%
Data not available**	0	0.0%
TOTAL	2	100.0%

0 Missing Follow-up Reports*

0 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

XXVII. Girls Tennis Head Injury Reports

Table 27.1 Head Injury Prevalence Rate for Girls Tennis, MHSAA Head Injury Reporting System, 2022-23 School Year

Girls Tennis Participation	8,169
All Girls Tennis Head Injuries	5
Girls Tennis Head Injury Prevalence Rate	0.06%
Girls Tennis Head Injury Prevalence Rate Per Thousand Participants	1

Table 27.2 Girls Tennis Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	4	80.0%
Junior Varsity	1	20.0%
Freshman	0	0.0%
TOTAL	5	100.0%

Table 27.3 Girls Tennis Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	2	40.0%
Competition	3	60.0%
TOTAL	5	100.0%

Table 27.4 Girls Tennis Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	0	0.0%
Middle of practice	2	100.0%
End of practice	0	0.0%
PRACTICE TOTAL	2	100.0%
Start of competition	1	33.3%
Middle of competition	2	66.7%
End of competition	0	0.0%
COMPETITION TOTAL	3	100.0%

Table 27.5 Activity Type for Girls Tennis Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	1	50.0%
During simulated competition-scrimmage	1	50.0%
Not specified	0	0.0%
TOTAL	2	100.0%

Table 27.6 Girls Tennis Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	5	100.0%
Person to playing surface contact	0	0.0%
Uncertain as to the cause of the event	0	0.0%
TOTAL	5	100.0%

Table 27.7 Person to Playing Surface Contact Girls Tennis Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Tennis court	0	0.0%
TOTAL	0	0.0%

Table 27.8 Girls Tennis Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	2	40.0%
Coach	1	20.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	2	40.0%
TOTAL	5	100.0%

Table 27.9 Girls Tennis Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	5	100.0%
Not removed*	0	0.0%
TOTAL	5	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 27.10 Girls Tennis Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	1	20.0%
No reported previous concussions	4	80.0%
TOTAL	5	100.0%

Table 27.11 Most Recent Concussion for Girls Tennis Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	1	100.0%
Within one to six months	0	0.0%
Within six months to one year	0	0.0%
Over one year	0	0.0%
TOTAL	1	100.0%

Table 27.12 Number of Previous Concussions for Girls Tennis Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	1	100.0%
2 concussions	0	0.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	1	100.0%

Table 27.13 Girls Tennis Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	3	60.0%
Did not receive written authorization to return by the end of season	1	20.0%
Follow-up Report not completed	1	20.0%
TOTAL	5	100.0%

Table 27.14 Girls Tennis Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	1	20.0%
DO	1	20.0%
PA	1	20.0%
NP	0	0.0%
Medical examiner data not available*	2	40.0%
TOTAL	5	100.0%

Table 27.15 Girls Tennis Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	3	60.0%
Neurologist's office	0	0.0%
Team doctor	0	0.0%
Medical facility data not available*	2	40.0%
TOTAL	5	100.0%

Table 27.16 Girls Tennis Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	3	60.0%
Conditions to return	0	0.0%
Return to activity data not available*	2	40.0%
TOTAL	5	100.0%

Table 27.17 Girls Tennis Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	0	0.0%
1-2 Days	1	20.0%
3-6 Days	1	20.0%
7-9 Days	1	20.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	2	40.0%
TOTAL	5	100.0%

Table 27.18 Girls Tennis Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	1	20.0%
11-15 Days	2	40.0%
16-20 Days	0	0.0%
≥21 Days	0	0.0%
Data not available**	2	40.0%
TOTAL	5	100.0%

1 Missing Follow-up Reports*

1 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

XXX. Volleyball Head Injury Reports

Table 30.1 Head Injury Prevalence Rate for Volleyball, MHSAA Head Injury Reporting System, 2022-23 School Year

Volleyball Participation	19,270
All Reported Volleyball Head Injuries	172
Volleyball Head Injury Prevalence Rate (reported head injuries/total participants)	0.89%
Volleyball Head Injury Prevalence Rate Per Thousand Participants	9

Table 30.2 Volleyball Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	83	48.3%
Junior Varsity	65	37.8%
Freshman	24	14.0%
TOTAL	172	100.0%

Table 30.3 Volleyball Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	65	37.8%
Competition	107	62.2%
TOTAL	172	100.0%

Table 30.4 Volleyball Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	11	16.9%
Middle of practice	30	46.2%
End of practice	24	36.9%
PRACTICE TOTAL	65	100.0%
Start of competition	21	19.6%
Middle of competition	55	51.4%
End of competition	31	29.0%
COMPETITION TOTAL	107	100.0%

Table 30.5 Activity Type for Volleyball Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	44	67.7%
During simulated competition-scrimmage	21	32.3%
Not specified	0	0.0%
TOTAL	65	100.0%

Table 30.6 Volleyball Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	28	16.3%
Person to object contact (e.g. wall, equipment)	99	57.6%
Person to playing surface contact	35	20.3%
Uncertain as to the cause of the event	10	5.8%
TOTAL	172	100.0%

Table 30.7 Person to Playing Surface Contact Volleyball Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Wooded gym floor	29	82.9%
Other	5	14.3%
TOTAL	35	100.0%

Table 30.8 Volleyball Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	93	54.1%
Coach	43	25.0%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	4	2.3%
DO	1	0.6%
MD	6	3.5%
PA	0	0.0%
NP	1	0.6%
Athletic director	1	0.6%
Multiple examiners	23	13.4%
TOTAL	172	100.0%

Table 30.9 Volleyball Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	135	78.5%
Not removed*	37	21.5%
TOTAL	172	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 30.10 Volleyball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	22	12.8%
No reported previous concussions	150	87.2%
TOTAL	172	100.0%

Table 30.11 Most Recent Concussion for Volleyball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	7	31.8%
Over one year	15	68.2%
TOTAL	22	100.0%

Table 30.12 Number of Previous Concussions for Volleyball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	14	63.6%
2 concussions	7	31.8%
3 concussions	1	4.5%
≥4 concussions	0	0.0%
Not specified	0	0.0%
TOTAL	22	100.0%

Table 30.13 Volleyball Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	146	84.9%
Did not receive written authorization to return by the end of season	26	15.1%
Follow-up Report not completed	0	0.0%
TOTAL	172	100.0%

Table 30.14 Volleyball Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	81	47.1%
DO	25	14.5%
PA	18	10.5%
NP	22	12.8%
Medical examiner data not available*	26	15.1%
TOTAL	172	100.0%

Table 30.15 Volleyball Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	3	1.7%
Urgent or Ready Care business	17	9.9%
Primary care physician or pediatrician's office	103	59.9%
Neurologist's office	6	3.5%
Team doctor	17	9.9%
Medical facility data not available*	26	15.1%
TOTAL	172	100.0%

Table 30.16 Volleyball Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	133	77.3%
Conditions to return	13	7.6%
Return to activity data not available*	26	15.1%
TOTAL	172	100.0%

Table 30.17 Volleyball Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	76	44.2%
1-2 Days	51	29.7%
3-6 Days	16	9.3%
7-9 Days	3	1.7%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	26	15.1%
TOTAL	172	100.0%

Table 30.18 Volleyball Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	0	0.0%
3-5 Days	22	12.8%
6-10 Days	54	31.4%
11-15 Days	35	20.3%
16-20 Days	18	10.5%
≥21 Days	17	9.9%
Data not available**	26	15.1%
TOTAL	172	100.0%

0 Missing Follow-up Reports*

26 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

0 Data entry errors**

XXXI. Wrestling Head Injury Reports

Table 31.1 Head Injury Prevalence Rate for Wrestling, MHSAA Head Injury Reporting System, 2022-23 School Year

Wrestling Participation	10,477
All Reported Wrestling Head Injuries	246
Wrestling Head Injury Prevalence Rate (reported head injuries/total participants)	2.35%
Wrestling Head Injury Prevalence Rate Per Thousand Participants	23

Table 31.2 Wrestling Head Injuries by Gender, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Male	224	91.1%
Female	22	8.9%
TOTAL	246	100.0%

Table 31.3 Wrestling Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Varsity	218	88.6%
Junior Varsity	28	11.4%
Freshman	0	0.0%
TOTAL	246	100.0%

Table 31.4 Wrestling Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Practice	92	37.4%
Competition	154	62.6%
TOTAL	246	100.0%

Table 31.5 Wrestling Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Start of practice	3	3.3%
Middle of practice	57	62.0%
End of practice	32	34.8%
PRACTICE TOTAL	92	100.0%
Start of competition	12	7.8%
Middle of competition	71	46.1%
End of competition	71	46.1%
COMPETITION TOTAL	154	100.0%

Table 31.6 Activity Type for Wrestling Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
During a drill	65	70.7%
During simulated competition-scrimmage	25	27.2%
Not specified	2	2.2%
TOTAL	92	100.0%

Table 31.7 Wrestling Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Person to person contact	67	27.2%
Person to object contact (e.g. wall, equipment)	7	2.8%
Person to playing surface contact	150	61.0%
Uncertain as to the cause of the event	22	8.9%
TOTAL	246	100.0%

Table 31.8 Person to Playing Surface Contact Wrestling Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Wrestling-type mat	150	100.0%
TOTAL	150	100.0%

Table 31.9 Wrestling Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Athletic trainer	145	58.9%
Coach	43	17.5%
Sideline emergency personnel	2	0.8%
Other appropriate health care professional	4	1.6%
DO	0	0.0%
MD	3	1.2%
PA	0	0.0%
NP	1	0.4%
Athletic director	0	0.0%
Multiple examiners	48	19.5%
TOTAL	246	100.0%

Table 31.10 Wrestling Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Removed	184	74.8%
Not removed*	62	25.2%
TOTAL	246	100.0%

*Not indicating the injury was mismanaged at the time of the event; athlete may not have reported injury, symptoms may not have presented until after the event, etc.

Table 31.11 Wrestling Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Reported at least one previous concussion	51	20.7%
No reported previous concussions	195	79.3%
TOTAL	246	100.0%

Table 31.12 Most Recent Concussion for Wrestling Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Within last month	1	2.0%
Within one to six months	10	19.6%
Within six months to one year	9	17.6%
Over one year	31	60.8%
TOTAL	51	100.0%

Table 31.13 Number of Previous Concussions for Wrestling Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1 concussion	35	68.6%
2 concussions	7	13.7%
3 concussions	4	7.8%
≥4 concussions	1	2.0%
Not specified	4	7.8%
TOTAL	51	100.0%

Table 31.14 Wrestling Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Received written authorization to return by the end of season	198	80.5%
Did not receive written authorization to return by the end of season	41	16.7%
Follow-up Report not completed	7	2.8%
TOTAL	246	100.0%

Table 31.15 Wrestling Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
MD	93	37.8%
DO	51	20.7%
PA	14	5.7%
NP	40	16.3%
Medical examiner data not available*	48	19.5%
TOTAL	246	100.0%

Table 31.16 Wrestling Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Hospital	7	2.8%
Urgent or Ready Care business	26	10.6%
Primary care physician or pediatrician's office	117	47.6%
Neurologist's office	10	4.1%
Team doctor	38	15.4%
Medical facility data not available*	48	19.5%
TOTAL	246	100.0%

Table 31.17 Wrestling Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
Unconditional return	179	72.8%
Conditions to return	19	7.7%
Return to activity data not available*	48	19.5%
TOTAL	246	100.0%

Table 31.18 Wrestling Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
0 Days	129	52.4%
1-2 Days	52	21.1%
3-6 Days	13	5.3%
7-9 Days	3	1.2%
10-20 Days	1	0.4%
≥21 Days	0	0.0%
Missed school data not available*	48	19.5%
TOTAL	246	100.0%

Table 31.19 Wrestling Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2022-23 School Year

	n	%
1-2 Days	2	0.8%
3-5 Days	16	6.5%
6-10 Days	50	20.3%
11-15 Days	58	23.6%
16-20 Days	27	11.0%
≥21 Days	43	17.5%
Data not available**	50	20.3%
TOTAL	246	100.0%

7 Missing Follow-up Reports*

41 Did not receive clearance to return to activity before the end of season (thus no follow-up data)*

2 Data entry errors**

XXXII. Year Over Year Comparison

Table 32.1 Head Injury Reports by Sport and Year, MHSAA Head Injury Reporting System, 2022-23 School Year

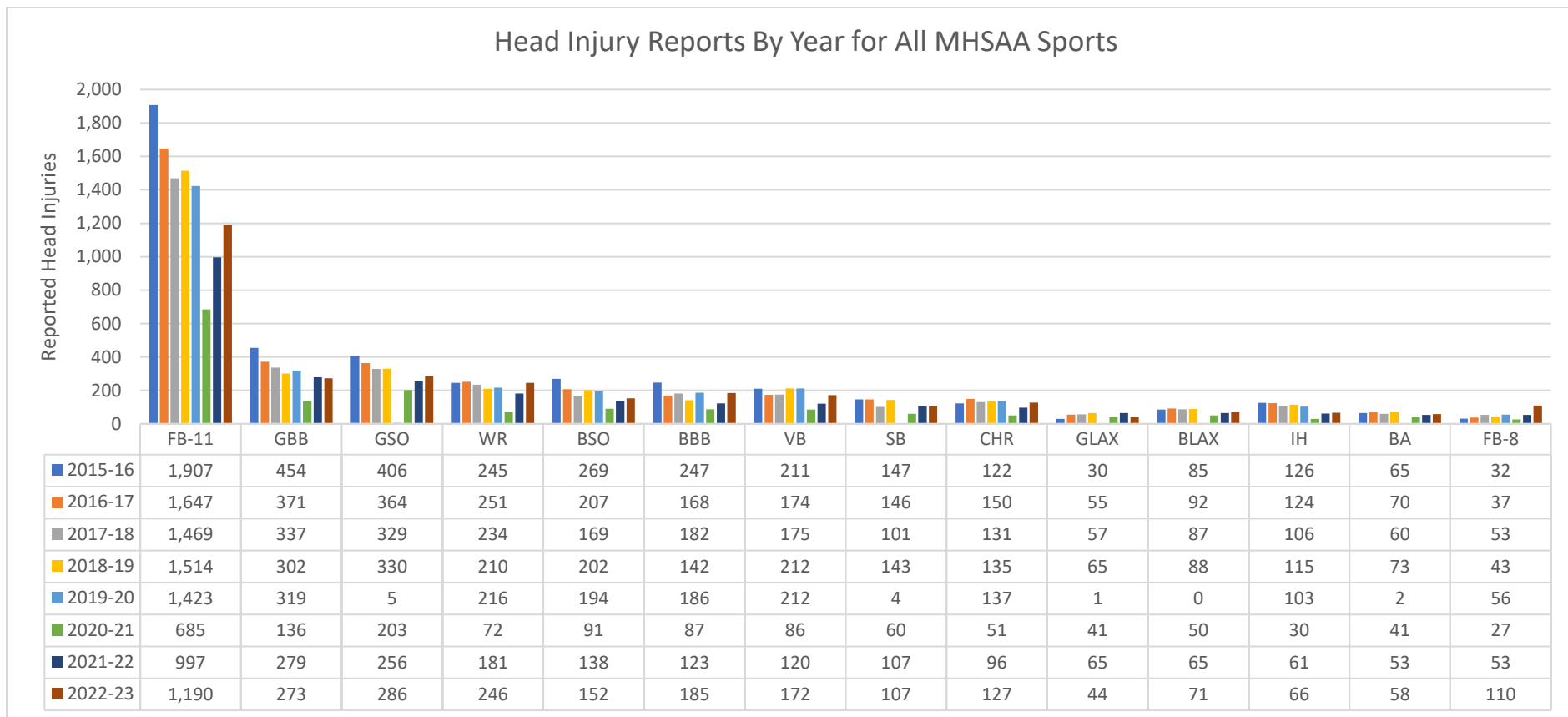
SPORTS	Boys*								Girls							
	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Baseball	65	70	60	73	2	41	53	58	-	-	-	-	-	-	-	-
Basketball	247	168	182	142	186	87	123	185	454	371	337	302	319	136	279	273
Bowling	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
Competitive Cheer	-	-	-	-	-	-	-	-	122	150	131	135	137	51	96	127
Cross Country	4	1	1	3	4	1	3	0	4	6	3	7	2	1	2	3
Football - 11-Player	1,907	1,647	1,469	1,514	1,423	685	997	1,190	-	-	-	-	-	-	-	-
8-Player	32	37	53	43	56	27	53	110	-	-	-	-	-	-	-	-
Golf	1	1	0	2	0	0	1	1	2	1	0	0	2	0	1	1
Gymnastics	-	-	-	-	-	-	-	-	8	8	11	7	7	3	7	5
Ice Hockey	126	124	106	115	103	30	61	66	-	-	-	-	-	-	-	-
Lacrosse	85	92	87	88	0	50	65	71	30	55	57	65	1	41	65	44
Skiing-Alpine	3	3	5	5	4	2	2	3	6	2	1	2	12	3	4	4
Soccer	269	207	169	202	194	91	138	152	406	364	329	330	5	203	256	286
Softball	-	-	-	-	21	-	-	-	147	146	101	143	4	60	107	107
Swimming & Diving	14	11	14	19	1	2	11	7	31	33	25	26	39	15	31	24
Tennis	0	4	3	2	1	0	1	2	6	6	7	8	0	4	2	5
Track & Field	4	11	9	10	1	4	10	7	22	15	11	20	0	10	8	13
Volleyball	-	-	-	-	-	-	-	-	211	174	175	212	212	86	120	172
Wrestling	245	251	234	210	216	72	181	246	-	-	-	-	-	-	-	-

*Boys head injury data includes both males AND females playing on primarily male teams

Winter sports still in tournament play when activity was stopped due to the COVID-19 pandemic during the 2022-23 school year

Spring sports that had begun practice but not competition when activity was stopped due to the COVID-19 pandemic during the 2022-23 school year

Figure 32.1 Head Injury Reports by Sport and Year – Higher Incidence Sports, MHSAA Head Injury Reporting System, 2022-23 School Year



ABBREVIATIONS

Baseball – BA
 Competitive Cheer – CHR
 Boys Golf – BGO
 Girls Lacrosse – GLAX
 Softball – SB
 Boys Track & Field – BTR

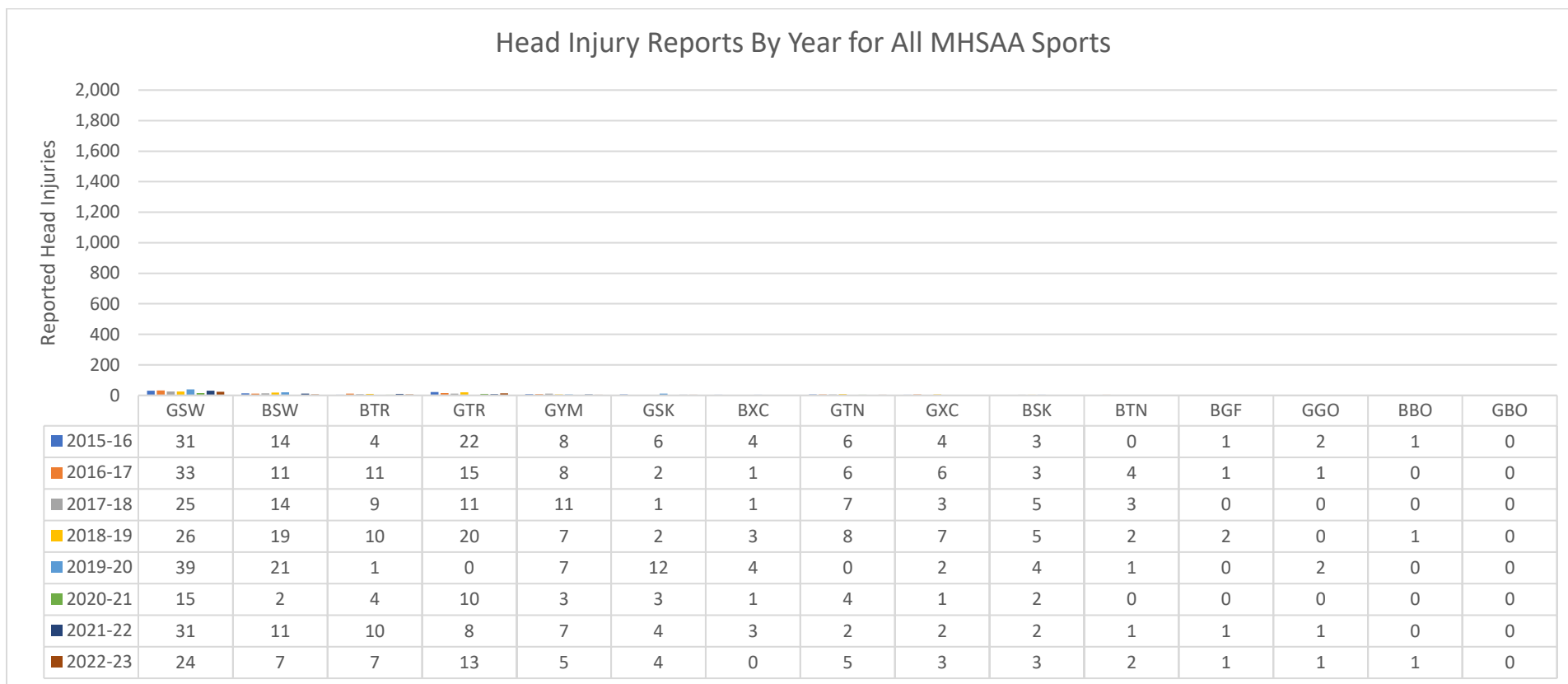
Boys Basketball – BBB
 Boys Cross Country – BXC
 Girls Golf – GGO
 Boys Skiing – BSK
 Boys Swimming & Diving – BSW
 Girls Track & Field – GTR

Girls Basketball – GBB
 Girls Cross Country – GXC
 Gymnastics – GYM
 Girls Skiing – GSK
 Girls Swimming & Diving – GSW
 Volleyball – VB

Boys Bowling – BBO
 Football – 11-Player – FB-11
 Ice Hockey – IH
 Boys Soccer – BSO
 Boys Tennis – BTN
 Wrestling - WR

Girls Bowling – GBO
 Football – 8-Player – FB-8
 Boys Lacrosse – BLAX
 Girls Soccer – GSO
 Girls Tennis - GTN

Figure 32.2 Head Injury Reports by Sport and Year – Lower Incidence Sports, MHSAA Head Injury Reporting System, 2022-23 School Year



ABBREVIATIONS

Baseball – BA
 Competitive Cheer – CHR
 Boys Golf – BGO
 Girls Lacrosse – GLAX
 Softball – SB
 Boys Track & Field – BTR

Boys Basketball – BBB
 Boys Cross Country – BXC
 Girls Golf – GGO
 Boys Skiing – BSK
 Boys Swimming & Diving – BSW
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Girls Basketball – GBB
 Girls Cross Country – GXC
 Gymnastics – GYM
 Girls Skiing – GSK
 Girls Swimming & Diving – GSW
 Volleyball – VB

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 Boys Tennis – BTN
 Wrestling - WR

Girls Bowling – GBO
 Football – 8-Player – FB-8
 Boys Lacrosse – BLAX
 Girls Soccer – GSO
 Girls Tennis - GTN

Table 32.2 Head Injury Reports per 1,000 Participants by Sport and Year, MHSAA Head Injury Reporting System, 2022-23 School Year

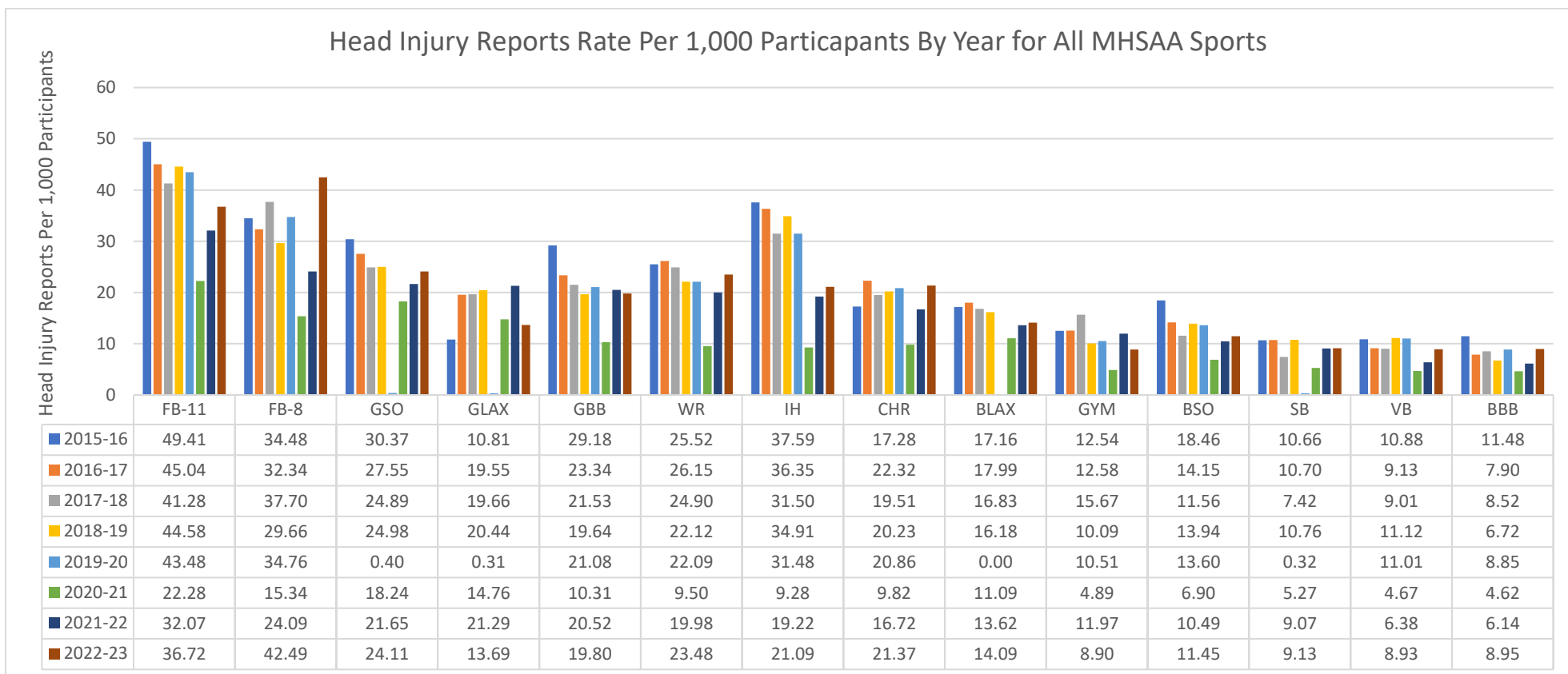
SPORTS	Boys*								Girls							
	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Baseball	3.58	3.89	3.39	4.24	0.12	2.55	3.21	3.48	-	-	-	-	-	-	-	-
Basketball	11.48	7.90	8.52	6.72	8.85	4.62	6.14	8.95	29.18	23.34	21.53	19.64	21.08	10.31	20.52	19.80
Bowling	0.26	0.00	0.00	0.23	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Competitive Cheer	-	-	-	-	-	-	-	-	17.28	22.32	19.51	20.23	20.86	9.82	16.72	21.37
Cross Country	0.43	0.11	0.10	0.31	0.42	0.12	0.37	0.00	0.48	0.71	0.34	0.86	0.25	0.14	0.28	0.44
Football - 11-Player	49.41	45.04	41.28	44.58	43.48	22.28	32.07	36.72	-	-	-	-	-	-	-	-
8-Player	34.48	32.34	37.70	29.66	34.76	15.34	24.09	42.49	-	-	-	-	-	-	-	-
Golf	0.16	0.16	0.00	0.32	0.00	0.00	0.15	0.14	0.58	0.28	0.00	0.00	0.55	0.00	0.26	0.27
Gymnastics	-	-	-	-	-	-	-	-	12.54	12.58	15.67	10.09	10.51	4.89	11.97	8.90
Ice Hockey	37.59	36.35	31.50	34.91	31.48	9.28	19.22	21.09	-	-	-	-	-	-	-	-
Lacrosse	17.16	17.99	16.83	16.18	0.00	11.09	13.62	14.09	10.81	19.55	19.66	20.44	0.31	14.76	21.29	13.69
Skiing-Alpine	4.17	3.58	6.02	5.41	4.35	2.44	2.00	3.24	9.20	2.68	1.30	2.62	15.27	3.86	4.78	4.68
Soccer	18.46	14.15	11.56	13.94	13.60	6.90	10.49	11.45	30.37	27.55	24.89	24.98	0.40	18.24	21.65	24.11
Softball	-	-	-	-	-	-	-	-	10.66	10.70	7.42	10.76	0.32	5.27	9.07	9.13
Swimming & Diving	2.96	2.21	2.75	3.80	4.15	0.49	2.52	1.68	5.76	5.89	4.36	4.49	7.12	2.93	5.99	4.87
Tennis	0.00	0.66	0.49	0.32	0.16	0.00	0.16	0.33	0.69	0.67	0.77	0.86	0.00	0.56	0.25	0.61
Track & Field	0.18	0.47	0.38	0.42	0.05	0.23	0.45	0.30	1.32	0.88	0.64	1.15	0.00	0.78	0.51	0.79
Volleyball	-	-	-	-	-	-	-	-	10.88	9.13	9.01	11.12	11.01	4.67	6.38	8.93
Wrestling	25.52	26.15	24.90	22.12	22.09	9.50	19.98	23.48	-	-	-	-	-	-	-	-

*Boys head injury data includes both males AND females playing on primarily male teams

Winter sports still in tournament play when activity was stopped due to the COVID-19 pandemic during the 2022-23 school year

Spring sports that had begun practice but not competition when activity was stopped due to the COVID-19 pandemic during the 2022-23 school year

Figure 32.3 Head Injury Reports per 1,000 Participants by Sport and Year – Higher Incidence Sports, MHSAA Head Injury Reporting System, 2022-23 School Year



ABBREVIATIONS

Baseball – BA
 Competitive Cheer – CHR
 Boys Golf – BGO
 Girls Lacrosse – GLAX
 Softball – SB
 Boys Track & Field – BTR

Boys Basketball – BBB
 Boys Cross Country – BXC
 Girls Golf – GGO
 Boys Skiing – BSK
 Boys Swimming & Diving – BSW
 Girls Track & Field – GTR

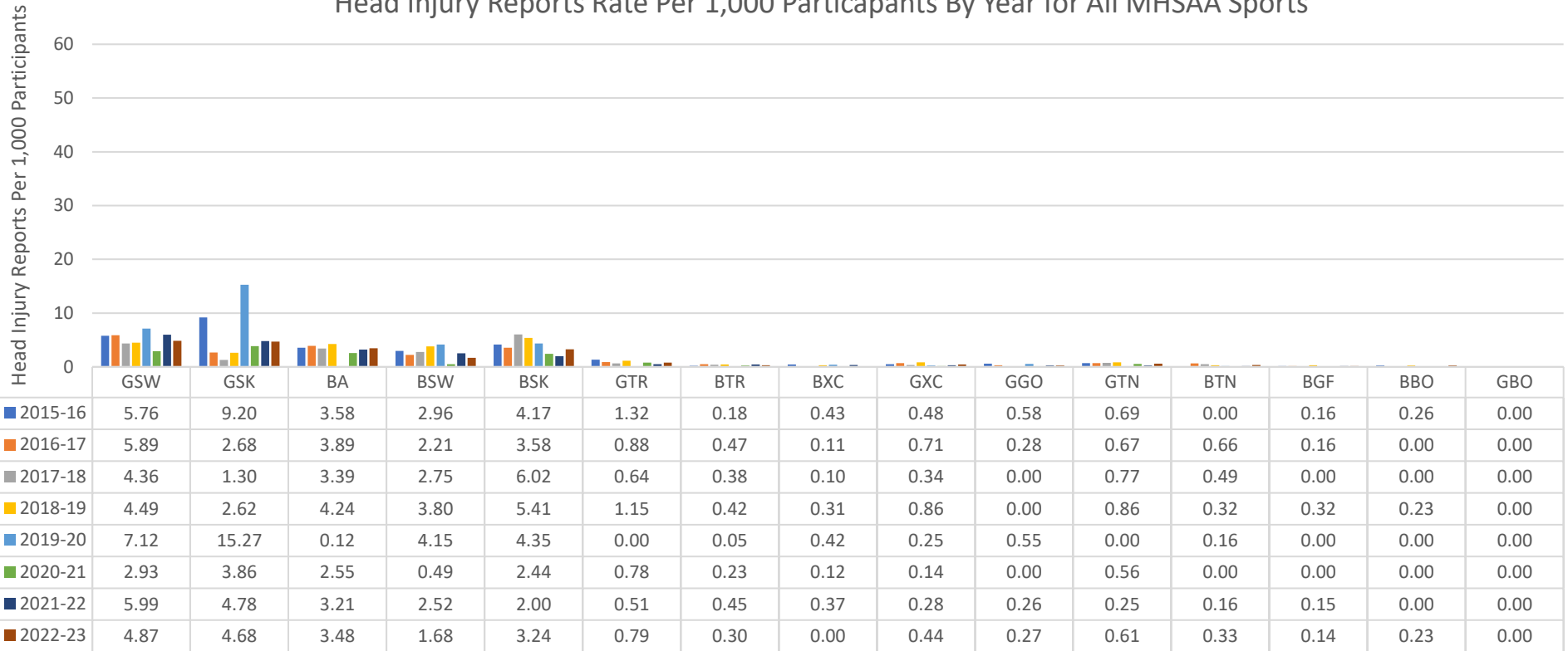
Girls Basketball – GBB
 Girls Cross Country – GXC
 Gymnastics – GYM
 Girls Skiing – GSK
 Girls Swimming & Diving – GSW
 Volleyball – VB

Boys Bowling – BBO
 Football – 11-Player – FB-11
 Ice Hockey – IH
 Boys Soccer – BSO
 Boys Tennis – BTN
 Wrestling - WR

Girls Bowling – GBO
 Football – 8-Player – FB-8
 Boys Lacrosse – BLAX
 Girls Soccer – GSO
 Girls Tennis - GTN

**Figure 32.4 Head Injury Reports per 1,000 Participants by Sport and Year – Lower Incidence Sports,
MHSAA Head Injury Reporting System, 2022-23 School Year**

Head Injury Reports Rate Per 1,000 Participants By Year for All MHSAA Sports



ABBREVIATIONS

Baseball – BA
 Competitive Cheer – CHR
 Boys Golf – BGO
 Girls Lacrosse – GLAX
 Softball – SB
 Boys Track & Field – BTR

Boys Basketball – BBB
 Boys Cross Country – BXC
 Girls Golf – GGO
 Boys Skiing – BSK
 Boys Swimming & Diving – BSW
 Girls Track & Field – GTR

Girls Basketball – GBB
 Girls Cross Country – GXC
 Gymnastics – GYM
 Girls Skiing – GSK
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 Wrestling – WR

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 Boys Lacrosse – BLAX
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 Girls Tennis – GTN

XXXIII. Executive Summary

33.1 Introduction

In May of 2015, the Representative Council of the Michigan High School Athletic Association approved two long-term additions to the history of efforts by MHSAA's member schools to promote and protect participant health.

- Concussion care “gap” insurance was provided by the MHSAA without cost to member schools or students' families, covering practices and competition for all levels of all MHSAA sports, 7th through 12th grades. The coverage was extended to 6th-graders in 2016-17. That coverage continued in 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, and 2022-23 school years. The coverage will continue in 2023-24.
- Concussion reporting was required for all MHSAA member high schools for all head injury events taking place during in-season practices and competitions in all levels of all MHSAA sports. That requirement continues.

The purpose of mandated concussion reporting is not to identify areas of the state or individual schools or teams that are above or below average in terms of the number of concussions reported. The intended purpose is to help identify the significant broad themes and questions that might be researched to help point school-sponsored sports leadership toward policies and procedures that will tend to improve the experience of students in interscholastic athletic programs of Michigan and beyond.

This Executive Summary is based on confirmed Head Injury Reports submitted for MHSAA-supported sports sponsored and conducted at the MHSAA's member high schools during the 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 and 2022-23 school years.

33.2 Ranking

SPORT	PARTICIPANTS	HEAD INJURY REPORTS	HEAD INJURY REPORTS PER THOUSAND PARTICIPANTS	HEAD INJURIES PER THOUSAND PARTICIPANTS RATE RANK OUT OF ALL MHSAA SPORTS
Football – 8-player	2,589	110	42	1
Football – 11-player	32,408	1,190	37	2
Girls Soccer	11,863	286	24	3
Wrestling	10,477	246	23	4
Competitive Cheer	5,942	127	21	5
Ice Hockey	3,129	66	21	6
Girls Basketball	13,788	273	20	7
Boys Lacrosse	5,038	71	14	8
Girls Lacrosse	3,215	44	14	9
Boys Soccer	13,279	152	11	10
Softball	11,722	107	9	11
Boys Basketball	20,663	185	9	12
Volleyball	19,270	172	9	13
Gymnastics	562	5	9	14
Girls Swimming & Diving	4,931	24	5	15
Girls Skiing	854	4	5	16
Baseball	16,663	58	3	17
Boys Skiing	926	3	3	18
Boys Swimming & Diving	4,173	7	2	19
Girls Track & Field	16,470	13	1	20
Girls Tennis	8169	5	1	21
Girls Cross Country	6,859	3	0	22
Boys Tennis	6,015	2	0	23
Boys Track & Field	23,211	7	0	24
Girls Golf	3,708	1	0	25
Boys Bowling	4,417	1	0	26
Boys Golf	6,916	1	0	27
Boys Cross Country	7,988	0	0	28
Girls Bowling	2,826	0	0	28

33.3 Observations of Year #8 (2022-23)

- During the 2022-23 school year, 3,688 suspected concussion reports were entered by MHSAA member schools into the Head Injury Reporting System:
 - 20 reports were duplicates and subsequently deleted
 - 4 reports were not included because of obvious entry errors
 - 154 reports were for injury events that either took place out of season or in a non-MHSAA event (sideline cheerleading, club sport, gym class, car accident, etc.)
 - 233 reported head injuries were not diagnosed as concussions and not included in the 2022-23 Summary Report
 - 114 reports were middle school athletes participating in middle school athletic events – because middle school reporting is voluntary and remains low, middle school data was not included in the 2022-23 Summary Report

With the above deletions and exclusions, **3,163** head injury reports were included in the 2022-23 Summary Report.

- 3,163 total head injury reports are up 18.2% from the 2,677 reports for the 2021-22 school year.
- Head injury reporting rates for 2022-23 are consistent with the rates observed during the 2021-22 school year, with the notable exception of the 8-player football, which increased 75.0% from 24 per 1,000 participants in 2021-22 to 42 per 1,000 participants in 2022-23. The 2022-23 school year was the first time in eight years of collecting data in which 11-player football did not have the highest incident of head injury reports per 1,000 participants.
- 11-player football, 8-player football, girls soccer, ice hockey, wrestling and girls basketball continue to have the highest rate of head injury reports – these six sports have been in the top six with regard to head injury reports per 1,000 participants in every year head injury reporting data has been tracked and not interrupted by the COVID-19 pandemic.
- In sports sponsored under the same or similar playing rules for both genders (i.e., soccer, basketball, and baseball/softball), significantly more concussions continue to be reported for females compared to males at the high school level.

Girls Soccer – 22 per 1,000 (Ranks 3rd)
Boys Soccer – 11 per 1,000 (Ranks 10th)

Girls Basketball – 20 per 1,000 (Ranks 7th)
Boys Basketball – 9 per 1,000 (Ranks 12th)

Softball – 9 per 1,000 (Ranks 11th)
Baseball – 5 per 1,000 (Ranks 16th)

- As in the previous years, over two-thirds of reported concussions occur during competition (69.5%). In nearly all MHSAA-sponsored sports, about two-thirds or more of all reported concussions occur during competition. Competitive cheer continues to be the only sport with a reasonably large sample size of head injury reports in which more concussions were sustained during practice (86.6% in practice; 13.4% in competition).
- Reports per 1,000 participants in both 11-player and 8-player football increased during the 2022 season:

11-Player Football – 49 in 2015; 45 in 2016; 41 in 2017; 45 in 2018; 43 in 2019; 22 in 2020; 32 in 2021; 37 in 2023

8-Player Football – 34 in 2015; 32 in 2016; 38 in 2017; 30 in 2018; 35 in 2019; 15 in 2020; 24 in 2021; 42 in 2022

- Most injured athletes are initially examined by an athletic trainer (61.7%). That proportion is likely higher as 15.6% of athletes were reported as having been initially looked at by multiple examiners. 17.2% were initially examined only by the coach.
- 19.1% of athletes determined to have a concussion were not removed from activity at the time of the injury. This by no means indicates the injury was mismanaged at the time of the event; the athlete may not have reported the injury, symptoms may not have presented until after the event, or any number of different factors may have led to the athlete not being removed at the time of injury. The percentage of athletes later determined to have a concussion but were not removed from activity at the time of the injury has remained consistent over the six years this data has been collected:

16.4% in 2016-17; 16.5% in 2017-18; 18.5% in 2018-19; 18.0% in 2019-20
19.5% in 2020-21; 20.1% in 2021-22; 19.1% in 2022-23

- 91.6% of students sustaining a concussion were out 6 more days prior to receiving clearance to return to full activity during the 2022-23 school year. This compared to 72.2% of concussions caused athletes to be withheld from activity for 6 days or more in 2021-22.
- At the time of this summary, Online Follow-up Reports were not completed for 89 (2.8%) of the 3,163 reports.
- The MHSAA has received 633 Return to Activity and Post-Concussion Consent Forms (20.0% of the 3,163 reported head injuries for which a clearance should have been received). This does not suggest that students are not receiving proper clearance prior to returning to activity as this documentation is likely kept on file locally at the school, but it is not being sent to the MHSAA as indicated in the MHSAA Concussion Protocol. The MHSAA received clearance documentation in 46.0% of suspected head injuries during the 2016-17 school year; 40.5% in 2017-18; 37.9% in 2018-19; 30.3% in 2019-20; 16.2% in 2020-21; 23.1% in 2021-22; 20.0% in 2022-23.
- In the Fall season, 510 schools reported concussions – 208 schools reported 0 concussions for the season – 18 schools did not have any Fall sports – 14 schools did not submit any response.
- In the Winter season, 425 schools reported concussions – 291 schools reported 0 concussions for the season – 17 schools did not have any Winter sports – 17 schools did not submit any response.
- In the Spring season, 312 schools reported concussions – 393 schools reported 0 concussions for the season – 27 schools did not have any Spring sports – 18 schools did not submit any response.

33.4 Emerging Inquires for Year #9 (2023-24)

- A. Head injury reports in 8-player football increased from 24 per 1,000 participants in 2021-22 to 42 per 1,000 participants in 2022-23. This is one of the largest increases from one year to the next observed since data collection began in 2015-16, and annual changes in head injury reporting could be calculated. Additionally, the 2022-23 school year was the first time in which 8-player football had a higher head injury report rate compared to the 11-player game. These changes are remarkable and certainly deserve further investigation and close monitoring in 2023-24.

- B. Following an inquiry from the MHSAA Football Committee and input from the Sports Medicine Advisory Committee, in 2023-24, the MHSAA will begin collecting head injury data on special teams' plays. A question designed to capture data on head injury rates while participating on offense, defense, and special teams will be added to the online concussion report with the goal of determining whether there are disproportionately higher rates of head injuries within the various phases of the game. The question will be designed so that it is applicable not only to football but other MHSAA-sponsored sports and hopefully yield data and insight that can potentially be used to improve coaches' education and inform changes to practice policies and game rules as part of continued efforts to make school sports as safe as possible.

- C. To ensure the quality and usefulness of head injury reporting data, the MHSAA must continue to investigate and discuss procedures that will improve compliance with the MHSAA Concussion Protocol and reporting initiative, especially:
 - 1. Prompt submission of initial reports.
 - 2. Timely submission of follow-up reports.
 - 3. Consistent submission of Return to Activity documentation.

33.5 Next Steps

The 2015-16 school year report raised some initial themes, while the 2016-17 report may have started the identification of trends. The 2017-18, 2018-19, 2019-20, 2021-22, and 2022-23 data have helped to refine our understanding of those trends and also continue to raise new questions.

Understanding questions does not demand that all actions must be delayed. It is not too soon to experiment with more head protection and modified play and practice rules in football, ice hockey, soccer, wrestling, and lacrosse – all of which rank in the top ten sports in terms of number of injuries per thousand participants.

Moreover, efforts must be made to continue to educate players, parents, coaches, and others involved to observe and report the signs and symptoms of concussion that they experience or that they see in others.

The 2023-24 school year will begin with the expectations that, again, nearly 100 percent of MHSAA member high schools will submit initial and follow-up reports of head injuries for every level of every MHSAA sport they sponsor. Furthermore, each MHSAA Sport Committee will examine the 2023-24 concussion data in their sport to assist in the health and risk management of the participants. The MHSAA Sports Medicine Advisory Committee will review the data to furnish additional educational resources and address emerging issues.

Meanwhile, the MHSAA invites colleges, universities, and health care systems in Michigan, as well as the National Federation of State High School Associations, to consider how they may assist in addressing developing issues and any other questions suggested by this data.

Interested representatives of these entities are invited to contact:

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