

**SUMMARY REPORT**

**MICHIGAN HIGH SCHOOL ATHLETIC ASSOCIATION  
HEAD INJURY REPORTING SYSTEM**

**2018-2019 School Year**

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# **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 that experience for all involved in school sports in the state of Michigan. Over the past decade, 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 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, and eventually allow 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 are required to 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 required completion of two basic online report forms; the first report completed after the initial head injury event, and the second 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 grades 9-12 of MHSAA member schools participating in MHSAA sponsored activities during the 2018-19 school year.

The MHSAA is an association of approximately 1500 individual public, private and parochial high schools and junior high/middle schools. For the 2018-19 school year, member schools include 747 high schools of various enrollments and resources (186 schools with an enrollment greater than 885 students, 188 schools with an enrollment between 884-398 students, 186 schools with an enrollment between 397-194 students, and 187 schools with an enrollment less than 193 students) and 750+ member junior/middle schools\*.

\*Junior high/middle school head injury data is not part of this report. Injuries to 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> graders participating on high school teams (allowable under specific circumstance 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 athletic trainer, school administrator (i.e. athletic director, athletic department secretary, principal, or superintendent), or coach had the ability to access to the online system, and submit and review reports for the school(s) with which they are associated. The MHSAA Concussion Protocol does not specifically legislate 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) 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 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 on 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 as a means 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 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 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 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 on a daily basis. The school was contacted if a clear reporting error or anomaly was identified during review. As schools were not given the ability 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 for completion of 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, 2018-19 School Year**

Baseball			Boys Golf			Softball		
Varsity	50		Varsity	1		Varsity	81	
Junior Varsity	16		Junior Varsity	1		Junior Varsity	60	
Freshman	7		Freshman	0		Freshman	2	
<b>TOTAL</b>	<b>73</b>		<b>TOTAL</b>	<b>2</b>		<b>TOTAL</b>	<b>143</b>	
Boys Basketball			Girls Golf			Boys Swimming & Diving		
Varsity	72		Varsity	0		Varsity	19	
Junior Varsity	52		Junior Varsity	0		Junior Varsity	0	
Freshman	18		Freshman	0		Freshman	0	
<b>TOTAL</b>	<b>142</b>		<b>TOTAL</b>	<b>0</b>		<b>TOTAL</b>	<b>19</b>	
Girls Basketball			Girls Gymnastics			Girls Swimming & Diving		
Varsity	150		Varsity	7		Varsity	25	
Junior Varsity	116		Junior Varsity	0		Junior Varsity	1	
Freshman	36		Freshman	0		Freshman	0	
<b>TOTAL</b>	<b>302</b>		<b>TOTAL</b>	<b>7</b>		<b>TOTAL</b>	<b>26</b>	
Boys Bowling			Ice Hockey			Boys Tennis		
Varsity	1		Varsity	111		Varsity	2	
Junior Varsity	0		Junior Varsity	4		Junior Varsity	0	
Freshman	0		Freshman	0		Freshman	0	
<b>TOTAL</b>	<b>1</b>		<b>TOTAL</b>	<b>115</b>		<b>TOTAL</b>	<b>2</b>	
Girls Bowling			Boys Lacrosse			Girls Tennis		
Varsity	0		Varsity	67		Varsity	3	
Junior Varsity	0		Junior Varsity	20		Junior Varsity	5	
Freshman	0		Freshman	1		Freshman	0	
<b>TOTAL</b>	<b>0</b>		<b>TOTAL</b>	<b>88</b>		<b>TOTAL</b>	<b>8</b>	
Girls Competitive Cheer			Girls Lacrosse			Boys Track & Field		
Varsity	109		Varsity	45		Varsity	9	
Junior Varsity	24		Junior Varsity	20		Junior Varsity	1	
Freshman	2		Freshman	0		Freshman	0	
<b>TOTAL</b>	<b>135</b>		<b>TOTAL</b>	<b>65</b>		<b>TOTAL</b>	<b>10</b>	
Boys Cross Country			Boys Skiing			Girls Track & Field		
Varsity	3		Varsity	5		Varsity	15	
Junior Varsity	0		Junior Varsity	0		Junior Varsity	5	
Freshman	0		Freshman	0		Freshman	0	
<b>TOTAL</b>	<b>3</b>		<b>TOTAL</b>	<b>5</b>		<b>TOTAL</b>	<b>20</b>	
Girls Cross Country			Girls Skiing			Volleyball		
Varsity	7		Varsity	1		Varsity	95	
Junior Varsity	0		Junior Varsity	1		Junior Varsity	73	
Freshman	0		Freshman	0		Freshman	44	
<b>TOTAL</b>	<b>7</b>		<b>TOTAL</b>	<b>2</b>		<b>TOTAL</b>	<b>212</b>	
11-Player Football			Boys Soccer			Wrestling		
Varsity	761		Varsity	146		Varsity	173	
Junior Varsity	513		Junior Varsity	54		Junior Varsity	36	
Freshman	240		Freshman	2		Freshman	1	
<b>TOTAL</b>	<b>1514</b>		<b>TOTAL</b>	<b>202</b>		<b>TOTAL</b>	<b>210</b>	
8-Player Football			Girls Soccer					
Varsity	31		Varsity	202				
Junior Varsity	12		Junior Varsity	122				
Freshman	0		Freshman	6				
<b>TOTAL</b>	<b>43</b>		<b>TOTAL</b>	<b>330</b>				
						<b>TOTAL</b>		
						<b>REPORTS</b>	<b>3686</b>	

**Table 2.2 Head Injury Prevalence Rates by Sport, MHSAA Head Injury Reporting System, 2018-19 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	17,234	73	0.42%	4	-	-	-	-
Basketball	21,125	142	0.67%	7	15,376	302	1.96%	20
Bowling	4,329	1	0.02%	0	3,093	0	0.00%	0
Competitive Cheer	-	-	-	-	6,672	135	2.02%	20
Cross Country	9,588	3	0.03%	0	8,144	7	0.09%	1
Football - 11-player	33,962	1,514	4.46%	45	-	-	-	-
8-player	1,450	43	2.97%	30	-	-	-	-
Golf	6,284	2	0.03%	0	3,587	0	0.00%	0
Gymnastics	-	-	-	-	694	7	1.01%	10
Ice Hockey	3,294	115	3.49%	35	-	-	-	-
Lacrosse	5,438	88	1.62%	16	3,180	65	2.04%	20
Skiing	924	5	0.54%	5	763	2	0.26%	3
Soccer	14,492	202	1.39%	14	13,209	330	2.50%	25
Softball	-	-	-	-	13,290	143	1.08%	11
Swimming & Diving	5,003	19	0.38%	4	5,794	26	0.45%	4
Tennis	6,261	2	0.03%	0	9,286	8	0.09%	1
Track & Field	23,548	10	0.04%	0	17,406	20	0.11%	1
Volleyball	-	-	-	-	19,072	212	1.11%	11
Wrestling	9,494	210	2.21%	22	-	-	-	-

\*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, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
6th	0	0.0%	0	0.0%	0	0.0%
7th	0	0.0%	0	0.0%	0	0.0%
8th	0	0.0%	1	0.1%	1	0.0%
9th	665	27.7%	406	31.7%	1071	29.1%
10th	600	25.0%	398	31.0%	998	27.1%
11th	573	23.8%	275	21.5%	848	23.0%
12th	566	23.5%	202	15.8%	768	20.8%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**Table 2.4 Head Injuries by Level of Competition - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Freshman	268	11.1%	91	7.1%	359	9.7%
Junior Varsity	698	29.0%	438	34.2%	1136	30.8%
Varsity	1438	59.8%	753	58.7%	2191	59.4%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**Table 2.5 Head Injuries by Type of Exposure - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Practice	792	32.9%	453	35.3%	1245	33.8%
Competition	1612	67.1%	829	64.7%	2441	66.2%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Start of practice	84	10.6%	56	12.4%	140	11.2%
Middle of practice	406	51.3%	234	51.7%	640	51.4%
End of practice	302	38.1%	163	36.0%	465	37.3%
<b>PRACTICE TOTAL</b>	<b>792</b>	<b>100.0%</b>	<b>453</b>	<b>100.0%</b>	<b>1245</b>	<b>100.0%</b>
Start of competition	158	9.8%	99	11.9%	257	10.5%
Middle of competition	801	49.7%	437	52.7%	1238	50.7%
End of competition	653	40.5%	293	35.3%	946	38.8%
<b>COMPETITION TOTAL</b>	<b>1612</b>	<b>100.0%</b>	<b>829</b>	<b>100.0%</b>	<b>2441</b>	<b>100.0%</b>

**Table 2.7 Activity Type for All Head Injury Events during Practice – All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
During a drill	558	70.5%	334	73.7%	892	71.6%
During simulated competition-scrimmage	215	27.1%	98	21.6%	313	25.1%
Not specified	19	2.4%	21	4.6%	40	3.2%
<b>TOTAL</b>	<b>792</b>	<b>100.0%</b>	<b>453</b>	<b>100.0%</b>	<b>1245</b>	<b>100.0%</b>

**Table 2.8 Head Injuries by Cause of Injury Event - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Person to person contact	1474	61.3%	410	32.0%	1884	51.1%
Person to object contact (e.g. wall, equipment)	254	10.6%	454	35.4%	708	19.2%
Person to playing surface contact	409	17.0%	334	26.1%	743	20.2%
Uncertain as to the cause of the event	267	11.1%	84	6.6%	351	9.5%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>



**Table 2.9 Head Injuries by Initial Examiner - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Athletic trainer	1415	58.9%	664	51.8%	2079	56.4%
Coach	378	15.7%	327	25.5%	705	19.1%
Sideline emergency personnel	9	0.4%	1	0.1%	10	0.3%
Other appropriate health care professional	51	2.1%	17	1.3%	68	1.8%
DO	6	0.2%	6	0.5%	12	0.3%
MD	55	2.3%	25	2.0%	80	2.2%
PA	9	0.4%	2	0.2%	11	0.3%
NP	6	0.2%	2	0.2%	8	0.2%
Athletic director	18	0.7%	9	0.7%	27	0.7%
Multiple examiners	457	19.0%	229	17.9%	686	18.6%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**Table 2.10 Athlete Removal from Activity at the Time of Injury Event – All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Removed	1988	82.7%	1017	79.3%	3005	81.5%
Not removed*	416	17.3%	265	20.7%	681	18.5%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Reported at least one previous concussion	451	18.8%	223	17.4%	674	18.3%
No reported previous concussions	1953	81.2%	1059	82.6%	3012	81.7%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Within last month	17	3.8%	8	3.6%	25	3.7%
Within one to six months	51	11.3%	23	10.3%	74	11.0%
Within six months to one year	86	19.1%	56	25.1%	142	21.1%
Over one year	297	65.9%	136	61.0%	433	64.2%
<b>TOTAL</b>	<b>451</b>	<b>100.0%</b>	<b>223</b>	<b>100.0%</b>	<b>674</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
1 concussion	327	72.5%	161	72.2%	488	72.4%
2 concussions	86	19.1%	46	20.6%	132	19.6%
3 concussions	20	4.4%	9	4.0%	29	4.3%
≥4 concussions	12	2.7%	6	2.7%	18	2.7%
Not specified	6	1.3%	1	0.4%	7	1.0%
<b>TOTAL</b>	<b>451</b>	<b>100.0%</b>	<b>223</b>	<b>100.0%</b>	<b>674</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Received written authorization to return by the end of season	1909	79.4%	984	76.8%	2893	78.5%
Did not receive written authorization to return by the end of season	361	15.0%	207	16.1%	568	15.4%
Follow-up Report not completed	134	5.6%	91	7.1%	225	6.1%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**Table 2.15 Head Injuries by Medical Examiner Authorizing Return to Activity - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
MD	1140	47.4%	584	45.6%	1724	46.8%
DO	394	16.4%	197	15.4%	591	16.0%
PA	183	7.6%	94	7.3%	277	7.5%
NP	192	8.0%	109	8.5%	301	8.2%
Medical examiner data not available*	495	20.6%	298	23.2%	793	21.5%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Hospital	72	3.0%	33	2.6%	105	2.8%
Urgent or Ready Care business	137	5.7%	47	3.7%	184	5.0%
Primary care physician or pediatrician's office	1264	52.6%	717	55.9%	1981	53.7%
Neurologist's office	188	7.8%	106	8.3%	294	8.0%
Team doctor	248	10.3%	81	6.3%	329	8.9%
Medical facility data not available*	495	20.6%	298	23.2%	793	21.5%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**Table 2.17 Head Injuries by Clearance Return to Activity Conditions - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
Unconditional return	1642	68.3%	865	67.5%	2507	68.0%
Conditions to return	267	11.1%	119	9.3%	386	10.5%
Return to activity data not available*	495	20.6%	298	23.2%	793	21.5%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**Table 2.18 Head Injuries by Missed School Days after Injury Event Date - All MHSAA High School Sports Included, MHSAA Head Injury Reporting System, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
0 Days	1377	57.3%	566	44.1%	1943	52.7%
1-2 Days	387	16.1%	306	23.9%	693	18.8%
3-6 Days	101	4.2%	82	6.4%	183	5.0%
7-9 Days	16	0.7%	10	0.8%	26	0.7%
10-20 Days	25	1.0%	17	1.3%	42	1.1%
≥21 Days	3	0.1%	3	0.2%	6	0.2%
Missed school data not available*	495	20.6%	298	23.2%	793	21.5%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	Boys		Girls		Overall	
	n	%	n	%	n	%
1-2 Days	38	1.6%	30	2.3%	68	1.8%
3-5 Days	141	5.9%	82	6.4%	223	6.0%
6-10 Days	585	24.3%	296	23.1%	881	23.9%
11-15 Days	601	25.0%	244	19.0%	845	22.9%
16-20 Days	202	8.4%	141	11.0%	343	9.3%
≥21 Days	316	13.1%	181	14.1%	497	13.5%
Data not available**	521	21.7%	308	24.0%	829	22.5%
<b>TOTAL</b>	<b>2404</b>	<b>100.0%</b>	<b>1282</b>	<b>100.0%</b>	<b>3686</b>	<b>100.0%</b>

225 Missing Follow-up Reports\*

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

36 Data entry errors\*\*

### **III. Baseball Head Injury Reports**

**Table 3.1 Head Injury Prevalence Rate for Baseball, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Baseball Participation</b>	<b>17,234</b>
<b>All Baseball Head Injuries</b>	<b>73</b>
<b>Baseball Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.42%</b>
<b>Baseball Head Injury Prevalence Rate Per Thousand Participants</b>	<b>4</b>

**Table 3.2 Baseball Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	50	68.5%
Junior Varsity	16	21.9%
Freshman	7	9.6%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

**Table 3.3 Baseball Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	18	24.7%
Competition	55	75.3%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

**Table 3.4 Baseball Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	3	16.7%
Middle of practice	6	33.3%
End of practice	9	50.0%
<b>PRACTICE TOTAL</b>	<b>18</b>	<b>100.0%</b>
Start of competition	13	23.6%
Middle of competition	24	43.6%
End of competition	18	32.7%
<b>COMPETITION TOTAL</b>	<b>55</b>	<b>100.0%</b>

**Table 3.5 Activity Type for All Baseball Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	14	<b>77.8%</b>
During simulated competition-scrimmage	2	<b>11.1%</b>
Not specified	2	<b>11.1%</b>
<b>TOTAL</b>	<b>18</b>	<b>100.0%</b>

**Table 3.6 Baseball Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	17	23.3%
Person to object contact (e.g. wall, equipment)	49	67.1%
Person to playing surface contact	5	6.8%
Uncertain as to the cause of the event	2	2.7%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

**Table 3.7 Person to Playing Surface Contact Baseball Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Natural grass	4	80.0%
Dirt	1	20.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 3.8 Baseball Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	32	43.8%
Coach	18	24.7%
Sideline emergency personnel	1	1.4%
Other appropriate health care professional	3	4.1%
DO	1	1.4%
MD	1	1.4%
PA	0	0.0%
NP	0	0.0%
Athletic director	1	1.4%
Multiple examiners	16	21.9%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

**Table 3.9 Baseball Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	59	80.8%
Not removed*	14	19.2%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

\*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 3.10 Baseball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Reported at least one previous concussion	14	19.2%
No reported previous concussions	59	80.8%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>



**Table 3.11 Most Recent Concussion for Baseball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	0	0.0%
Within one to six months	1	7.1%
Within six months to one year	4	28.6%
Over one year	9	64.3%
<b>TOTAL</b>	<b>14</b>	<b>100.0%</b>

**Table 3.12 Number of Previous Concussions for Baseball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	10	71.4%
2 concussions	3	21.4%
3 concussions	0	0.0%
≥4 concussions	1	7.1%
Not specified	0	0.0%
<b>TOTAL</b>	<b>14</b>	<b>100.0%</b>

**Table 3.13 Baseball Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	57	78.1%
Did not receive written authorization to return by the end of season	8	11.0%
Follow-up Report not completed	8	11.0%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

**Table 3.14 Baseball Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	38	52.1%
DO	11	15.1%
PA	3	4.1%
NP	5	6.8%
Medical examiner data not available*	16	21.9%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

**Table 3.15 Baseball Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	1	1.4%
Urgent or Ready Care business	6	8.2%
Primary care physician or pediatrician's office	37	50.7%
Neurologist's office	8	11.0%
Team doctor	5	6.8%
Medical facility data not available*	16	21.9%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

**Table 3.16 Baseball Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	52	71.2%
Conditions to return	5	6.8%
Return to activity data not available*	16	21.9%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

**Table 3.17 Baseball Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	38	52.1%
1-2 Days	14	19.2%
3-6 Days	4	5.5%
7-9 Days	1	1.4%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	16	21.9%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

**Table 3.18 Baseball Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	0	0.0%
3-5 Days	4	5.5%
6-10 Days	21	28.8%
11-15 Days	19	26.0%
16-20 Days	6	8.2%
≥21 Days	5	6.8%
Data not available**	18	24.7%
<b>TOTAL</b>	<b>73</b>	<b>100.0%</b>

8 Missing Follow-up Reports\*

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

2 Data entry errors\*\*

## **IV. Boys Basketball Head Injury Reports**

**Table 4.1 Head Injury Prevalence Rate for Boys Basketball, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Boys Basketball Participation</b>	<b>21,125</b>
<b>All Reported Boys Basketball Head Injuries</b>	<b>142</b>
<b>Boys Basketball Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.67%</b>
<b>Boys Basketball Head Injury Prevalence Rate Per Thousand Participants</b>	<b>7</b>

**Table 4.2 Boys Basketball Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	72	50.7%
Junior Varsity	52	36.6%
Freshman	18	12.7%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.3 Boys Basketball Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	48	33.8%
Competition	94	66.2%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.4 Boys Basketball Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	6	12.5%
Middle of practice	23	47.9%
End of practice	19	39.6%
<b>PRACTICE TOTAL</b>	<b>48</b>	<b>100.0%</b>
Start of competition	6	6.4%
Middle of competition	48	51.1%
End of competition	40	42.6%
<b>COMPETITION TOTAL</b>	<b>94</b>	<b>100.0%</b>

**Table 4.5 Activity Type for Boys Basketball Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	24	50.0%
During simulated competition-scrimmage	22	45.8%
Not specified	2	4.2%
<b>TOTAL</b>	<b>48</b>	<b>100.0%</b>

**Table 4.6 Boys Basketball Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	71	50.0%
Person to object contact (e.g. wall, equipment)	16	11.3%
Person to playing surface contact	49	34.5%
Uncertain as to the cause of the event	6	4.2%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.7 Person to Playing Surface Contact Boys Basketball Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Wooden gym floor	40	81.6%
Basketball court	2	4.1%
Indoor tile type floor	1	2.0%
<b>TOTAL</b>	<b>49</b>	<b>100.0%</b>

**Table 4.8 Boys Basketball Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	68	47.9%
Coach	42	29.6%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	4	2.8%
PA	2	1.4%
NP	0	0.0%
Athletic director	3	2.1%
Multiple examiners	23	16.2%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.9 Athlete Removal from Activity at the Time of Injury Event – Boys Basketball Head Injuries, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	126	88.7%
Not removed*	16	11.3%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

\*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 4.10 Boys Basketball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Reported at least one previous concussion	27	19.0%
No reported previous concussions	115	81.0%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.11 Most Recent Concussion for Boys Basketball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	2	7.4%
Within one to six months	10	37.0%
Within six months to one year	1	3.7%
Over one year	14	51.9%
<b>TOTAL</b>	<b>27</b>	<b>100.0%</b>

**Table 4.12 Number of Previous Concussions for Boys Basketball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	20	74.1%
2 concussions	4	14.8%
3 concussions	2	7.4%
≥4 concussions	1	3.7%
Not specified	0	0.0%
<b>TOTAL</b>	<b>27</b>	<b>100.0%</b>



**Table 4.13 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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	109	76.8%
Did not receive written authorization to return by the end of season	20	14.1%
Follow-up Report not completed	13	9.2%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.14 Boys Basketball Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	71	50.0%
DO	16	11.3%
PA	11	7.7%
NP	11	7.7%
Medical examiner data not available*	33	23.2%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.15 Boys Basketball Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	6	4.2%
Urgent or Ready Care business	10	7.0%
Primary care physician or pediatrician's office	73	51.4%
Neurologist's office	8	5.6%
Team doctor	12	8.5%
Medical facility data not available*	33	23.2%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.16 Boys Basketball Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	96	67.6%
Conditions to return	13	9.2%
Return to activity data not available*	33	23.2%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.17 Boys Basketball Head Injuries by Missed School Days After Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	62	43.7%
1-2 Days	31	21.8%
3-6 Days	10	7.0%
7-9 Days	5	3.5%
10-20 Days	1	0.7%
≥21 Days	0	0.0%
Missed school data not available*	33	23.2%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

**Table 4.18 Boys Basketball Head Injuries by Time Between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	1	0.7%
3-5 Days	5	3.5%
6-10 Days	42	29.6%
11-15 Days	20	14.1%
16-20 Days	15	10.6%
≥21 Days	23	16.2%
Data not available**	36	25.4%
<b>TOTAL</b>	<b>142</b>	<b>100.0%</b>

13 Missing Follow-up Reports\*

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

3 Data entry errors\*\*

## **V. Girls Basketball Head Injury Reports**

**Table 5.1 Head Injury Prevalence Rate for Girls Basketball, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Girls Basketball Participation</b>	<b>15,376</b>
<b>All Reported Girls Basketball Head Injuries</b>	<b>302</b>
<b>Girls Basketball Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>1.96%</b>
<b>Girls Basketball Head Injury Prevalence Rate Per Thousand Participants</b>	<b>20</b>

**Table 5.2 Girls Basketball Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	150	49.7%
Junior Varsity	116	38.4%
Freshman	36	11.9%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

**Table 5.3 Girls Basketball Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	66	21.9%
Competition	236	78.1%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

**Table 5.4 Girls Basketball Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	7	10.6%
Middle of practice	35	53.0%
End of practice	24	36.4%
<b>PRACTICE TOTAL</b>	<b>66</b>	<b>100.0%</b>
Start of competition	31	13.1%
Middle of competition	112	47.5%
End of competition	93	39.4%
<b>COMPETITION TOTAL</b>	<b>236</b>	<b>100.0%</b>

**Table 5.5 Activity Type for Girls Basketball Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	35	<b>53.0%</b>
During simulated competition-scrimmage	29	<b>43.9%</b>
Not specified	2	<b>3.0%</b>
<b>TOTAL</b>	<b>66</b>	<b>100.0%</b>

**Table 5.6 Girls Basketball Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	137	45.4%
Person to object contact (e.g. wall, equipment)	38	12.6%
Person to playing surface contact	112	37.1%
Uncertain as to the cause of the event	15	5.0%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

**Table 5.7 Person to Playing Surface Contact Girls Basketball Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Wooden gym floor	86	76.8%
Basketball court	18	16.1%
<b>TOTAL</b>	<b>112</b>	<b>100.0%</b>

**Table 5.8 Girls Basketball Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	159	52.6%
Coach	70	23.2%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	3	1.0%
DO	2	0.7%
MD	3	1.0%
PA	1	0.3%
NP	0	0.0%
Athletic director	4	1.3%
Multiple examiners	60	19.9%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

**Table 5.9 Girls Basketball Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	249	82.5%
Not removed*	53	17.5%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	47	15.6%
No reported previous concussions	255	84.4%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

**Table 5.11 Most Recent Concussion for Girls Basketball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	3	6.4%
Within one to six months	6	12.8%
Within six months to one year	10	21.3%
Over one year	28	59.6%
<b>TOTAL</b>	<b>47</b>	<b>100.0%</b>

**Table 5.12 Number of Previous Concussions for Girls Basketball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	33	70.2%
2 concussions	11	23.4%
3 concussions	2	4.3%
≥4 concussions	1	2.1%
Not specified	0	0.0%
<b>TOTAL</b>	<b>47</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	248	82.1%
Did not receive written authorization to return by the end of season	35	11.6%
Follow-up Report not completed	19	6.3%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

**Table 5.14 Girls Basketball Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	147	48.7%
DO	50	16.6%
PA	22	7.3%
NP	29	9.6%
Medical examiner data not available*	54	17.9%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

**Table 5.15 Girls Basketball Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	12	4.0%
Urgent or Ready Care business	15	5.0%
Primary care physician or pediatrician's office	178	58.9%
Neurologist's office	26	8.6%
Team doctor	17	5.6%
Medical facility data not available*	54	17.9%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>



**Table 5.16 Girls Basketball Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	215	71.2%
Conditions to return	33	10.9%
Return to activity data not available*	54	17.9%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

**Table 5.17 Girls Basketball Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	140	46.4%
1-2 Days	74	24.5%
3-6 Days	24	7.9%
7-9 Days	2	0.7%
10-20 Days	7	2.3%
≥21 Days	1	0.3%
Missed school data not available*	54	17.9%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

**Table 5.18 Girls Basketball Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	6	2.0%
3-5 Days	22	7.3%
6-10 Days	73	24.2%
11-15 Days	57	18.9%
16-20 Days	30	9.9%
≥21 Days	58	19.2%
Data not available**	56	18.5%
<b>TOTAL</b>	<b>302</b>	<b>100.0%</b>

19 Missing Follow-up Reports\*

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

2 Data entry errors\*\*

## **VI. Boys Bowling Head Injury Reports**

**Table 6.1 Head Injury Prevalence Rate for Boys Bowling, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Boys Bowling Participation</b>	<b>4,329</b>
<b>All Reported Boys Bowling Head Injuries</b>	<b>1</b>
<b>Boys Bowling Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.02%</b>
<b>Boys Bowling Head Injury Prevalence Rate Per Thousand Participants</b>	<b>0</b>

**Table 6.2 Boys Bowling Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	1	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 6.3 Boys Bowling Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	1	100.0%
Competition	0	0.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 6.4 Boys Bowling Head Injuries by Time During Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	1	100.0%
Middle of practice	0	0.0%
End of practice	0	0.0%
<b>PRACTICE TOTAL</b>	<b>1</b>	<b>100.0%</b>
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
<b>COMPETITION TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 6.5 Activity Type for Boys Bowling Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 6.6 Boys Bowling Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 6.7 Person to Playing Surface Contact Boys Bowling Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Wooden floor	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 6.8 Boys Bowling Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 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	1	100.0%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	0	0.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 6.9 Boys Bowling Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	1	100.0%
Not removed*	0	0.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

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

**Table 6.11 Most Recent Concussion for Boys Bowling Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 6.12 Number of Previous Concussions for Boys Bowling Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**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, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 6.14 Boys Bowling Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 6.15 Boys Bowling Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 6.16 Boys Bowling Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 6.17 Boys Bowling Head Injuries by Missed School Days After Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 6.18 Boys Bowling Head Injuries by Time Between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

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\*\*



## **VII. Girls Bowling Head Injury Reports**

**Table 7.1 Head Injury Prevalence Rate for Girls Bowling, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Girls Bowling Participation</b>	<b>3,093</b>
<b>All Reported Girls Bowling Head Injuries</b>	<b>0</b>
<b>Girls Bowling Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.00%</b>
<b>Girls Bowling Head Injury Prevalence Rate Per Thousand Participants</b>	<b>0</b>

**Table 7.2 Girls Bowling Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	0	0.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.3 Girls Bowling Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	0	0.0%
Competition	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.4 Girls Bowling Head Injuries by Time During Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	0	0.0%
Middle of practice	0	0.0%
End of practice	0	0.0%
<b>PRACTICE TOTAL</b>	<b>0</b>	<b>0.0%</b>
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
<b>COMPETITION TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.5 Activity Type for Girls Bowling Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	0	0.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.6 Girls Bowling Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.7 Person to Playing Surface Contact Girls Bowling Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Wooden floor	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.8 Girls Bowling Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.9 Girls Bowling Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	0	0.0%
Not removed*	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.11 Most Recent Concussion for Girls Bowling Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.12 Number of Previous Concussions for Girls Bowling Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**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, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.14 Girls Bowling Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.15 Girls Bowling Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.16 Girls Bowling Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	0	0.0%
Conditions to return	0	0.0%
Return to activity data not available*	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.17 Girls Bowling Head Injuries by Missed School Days After Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 7.18 Girls Bowling Head Injuries by Time Between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

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, 2018-19 School Year**

<b>Competitive Cheer Participation</b>	<b>6,672</b>
<b>All Reported Competitive Cheer Head Injuries</b>	<b>135</b>
<b>Competitive Cheer Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>2.02%</b>
<b>Competitive Cheer Head Injury Prevalence Rate Per Thousand Participants</b>	<b>20</b>

**Table 8.2 Competitive Cheer Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	109	80.7%
Junior Varsity	24	17.8%
Freshman	2	1.5%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.3 Competitive Cheer Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	115	85.2%
Competition	20	14.8%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.4 Competitive Cheer Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	14	12.2%
Middle of practice	59	51.3%
End of practice	42	36.5%
<b>PRACTICE TOTAL</b>	<b>115</b>	<b>100.0%</b>
Start of competition	4	20.0%
Middle of competition	9	45.0%
End of competition	7	35.0%
<b>COMPETITION TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 8.5 Activity Type for Competitive Cheer Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	89	77.4%
During simulated competition-scrimmage	23	20.0%
Not specified	3	2.6%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 8.6 Competitive Cheer Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	84	62.2%
Person to object contact (e.g. wall, equipment)	2	1.5%
Person to playing surface contact	44	32.6%
Uncertain as to the cause of the event	5	3.7%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.7 Person to Playing Surface Contact Competitive Cheer Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Cheer mat	18	40.9%
Wrestling-type mat	19	43.2%
Wooden gym floor	2	4.5%
Rubberized gym floor	2	4.5%
Spring floor	1	2.3%
Artificial turf	1	2.3%
Asphalt	1	2.3%
<b>TOTAL</b>	<b>44</b>	<b>97.7%</b>

**Table 8.8 Competitive Cheer Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	57	42.2%
Coach	40	29.6%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	1	0.7%
DO	1	0.7%
MD	5	3.7%
PA	0	0.0%
NP	0	0.0%
Athletic director	1	0.7%
Multiple examiners	30	22.2%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.9 Competitive Cheer Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	112	83.0%
Not removed*	23	17.0%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	28	20.7%
No reported previous concussions	107	79.3%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.11 Most Recent Concussion for Competitive Cheer Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	2	7.1%
Within one to six months	2	7.1%
Within six months to one year	11	39.3%
Over one year	13	46.4%
<b>TOTAL</b>	<b>28</b>	<b>100.0%</b>

**Table 8.12 Number of Previous Concussions for Competitive Cheer Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	23	82.1%
2 concussions	2	7.1%
3 concussions	0	0.0%
≥4 concussions	2	7.1%
Not specified	1	3.6%
<b>TOTAL</b>	<b>28</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	107	79.3%
Did not receive written authorization to return by the end of season	20	14.8%
Follow-up Report not completed	8	5.9%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.14 Competitive Cheer Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	64	47.4%
DO	19	14.1%
PA	13	9.6%
NP	11	8.1%
Medical examiner data not available*	28	20.7%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.15 Competitive Cheer Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	5	3.7%
Primary care physician or pediatrician's office	77	57.0%
Neurologist's office	16	11.9%
Team doctor	9	6.7%
Medical facility data not available*	28	20.7%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.16 Competitive Cheer Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	97	71.9%
Conditions to return	10	7.4%
Return to activity data not available*	28	20.7%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.17 Competitive Cheer Head Injuries by Missed School Days After Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	77	57.0%
1-2 Days	20	14.8%
3-6 Days	8	5.9%
7-9 Days	2	1.5%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	28	20.7%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

**Table 8.18 Competitive Cheer Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	3	2.2%
3-5 Days	12	8.9%
6-10 Days	19	14.1%
11-15 Days	23	17.0%
16-20 Days	21	15.6%
≥21 Days	28	20.7%
Data not available**	29	21.5%
<b>TOTAL</b>	<b>135</b>	<b>100.0%</b>

8 Missing Follow-up Reports\*

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

1 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, 2018-19 School Year**

<b>Boys Cross Country Participation</b>	<b>9,588</b>
<b>All Reported Boys Cross Country Head Injuries</b>	<b>3</b>
<b>Boys Cross Country Head Injury Prevalence Rate (reported head injuries/total participants)</b>	<b>0.03%</b>
<b>Boys Cross Country Head Injury Prevalence Rate Per Thousand Participants</b>	<b>0</b>

**Table 9.2 Boys Cross Country Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	3	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

**Table 9.3 Boys Cross Country Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	3	100.0%
Competition	0	0.0%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>



**Table 9.4 Boys Cross Country Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	1	33.3%
Middle of practice	1	33.3%
End of practice	1	33.3%
<b>PRACTICE TOTAL</b>	<b>3</b>	<b>100.0%</b>
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
<b>COMPETITION TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 9.5 Activity Type for Boys Cross Country Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 9.6 Boys Cross Country Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	2	66.7%
Person to playing surface contact	1	33.3%
Uncertain as to the cause of the event	0	0.0%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

**Table 9.7 Person to Playing Surface Contact Boys Cross Country Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Concrete	1	100.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 9.8 Boys Cross Country Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	1	33.3%
Coach	1	33.3%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	1	33.3%
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%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

**Table 9.9 Boys Cross Country Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	3	100.0%
Not removed*	0	0.0%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

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

**Table 9.11 Most Recent Concussion for Boys Cross Country Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 9.12 Number of Previous Concussions for Boys Cross Country Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**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, 2018-19 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%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

**Table 9.14 Boys Cross Country Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 9.15 Boys Cross Country Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	2	66.7%
Neurologist's office	0	0.0%
Team doctor	0	0.0%
Medical facility data not available*	1	33.3%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

**Table 9.16 Boys Cross Country Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 9.17 Boys Cross Country Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**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, 2018-19 School Year**

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	2	66.7%
11-15 Days	0	0.0%
16-20 Days	0	0.0%
≥21 Days	0	0.0%
Data not available**	1	33.3%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

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\*\*

## **X. Girls Cross Country Head Injury Reports**

**Table 10.1 Head Injury Prevalence Rate for Girls Cross Country, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Girls Cross Country Participation</b>	<b>8,144</b>
<b>All Reported Girls Cross Country Head Injuries</b>	<b>7</b>
<b>Girls Cross Country Head Injury Prevalence Rate (reported head injuries/total participants)</b>	<b>0.09%</b>
<b>Girls Cross Country Head Injury Prevalence Rate Per Thousand Participants</b>	<b>1</b>

**Table 10.2 Girls Cross Country Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	7	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 10.3 Girls Cross Country Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	4	57.1%
Competition	3	42.9%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 10.4 Girls Cross Country Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	2	50.0%
Middle of practice	2	50.0%
End of practice	0	0.0%
<b>PRACTICE TOTAL</b>	<b>4</b>	<b>100.0%</b>
Start of competition	0	0.0%
Middle of competition	1	14.3%
End of competition	2	28.6%
<b>COMPETITION TOTAL</b>	<b>3</b>	<b>42.9%</b>

**Table 10.5 Activity Type for Girls Cross Country Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	2	50.0%
During simulated competition-scrimmage	1	25.0%
Not specified	1	25.0%
<b>TOTAL</b>	<b>4</b>	<b>100.0%</b>

**Table 10.6 Girls Cross Country Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	2	28.6%
Person to playing surface contact	4	57.1%
Uncertain as to the cause of the event	1	14.3%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>



**Table 10.7 Person to Playing Surface Contact Girls Cross Country Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Natural grass	3	75.0%
Wooden gym floor	1	25.0%
<b>TOTAL</b>	<b>4</b>	<b>100.0%</b>

**Table 10.8 Girls Cross Country Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	0	0.0%
Coach	5	71.4%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	1	14.3%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	1	14.3%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 10.9 Girls Cross Country Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	5	71.4%
Not removed*	2	28.6%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	7	100.0%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 10.11 Most Recent Concussion for Girls Cross Country Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 10.12 Number of Previous Concussions for Girls Cross Country Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**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, 2018-19 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%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 10.14 Girls Cross Country Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	4	57.1%
DO	0	0.0%
PA	1	14.3%
NP	1	14.3%
Medical examiner data not available*	1	14.3%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 10.15 Girls Cross Country Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 10.16 Girls Cross Country Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 10.17 Girls Cross Country Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**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, 2018-19 School Year**

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

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, 2018-19 School Year**

<b>11-Player Football Participation</b>	<b>33,962</b>
<b>All Reported 11-Player Football Head Injuries</b>	<b>1,514</b>
<b>11-Player Football Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>4.46%</b>
<b>11-Player Football Head Injury Prevalence Rate Per Thousand Participants</b>	<b>45</b>

**Table 11.2 11-Player Football Head Injuries by Gender, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Male	1504	99.3%
Female	10	0.7%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.3 11-Player Football Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	761	50.3%
Junior Varsity	513	33.9%
Freshman	240	15.9%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.4 11-Player Football Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	545	36.0%
Competition	969	64.0%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.5 11-Player Football Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	62	11.4%
Middle of practice	283	51.9%
End of practice	200	36.7%
<b>PRACTICE TOTAL</b>	<b>545</b>	<b>100.0%</b>
Start of competition	94	9.7%
Middle of competition	455	47.0%
End of competition	420	43.3%
<b>COMPETITION TOTAL</b>	<b>969</b>	<b>100.0%</b>

**Table 11.6 Activity Type for 11-Player Football Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	394	<b>72.3%</b>
During simulated competition-scrimmage	140	<b>25.7%</b>
Not specified	11	<b>2.0%</b>
<b>TOTAL</b>	<b>545</b>	<b>100.0%</b>

**Table 11.7 11-Player Football Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	1097	72.5%
Person to object contact (e.g. wall, equipment)	43	2.8%
Person to playing surface contact	183	12.1%
Uncertain as to the cause of the event	191	12.6%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.8 Person to Playing Surface Contact 11-Player Football Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Natural grass	863	57.0%
Artificial turf	553	36.5%
Football field	58	3.8%
Wooden gym floor	8	0.5%
Unknown/indiscernible surface data	32	2.1%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.9 11-Player Football Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	964	63.7%
Coach	176	11.6%
Sideline emergency personnel	4	0.3%
Other appropriate health care professional	32	2.1%
DO	2	0.1%
MD	31	2.0%
PA	7	0.5%
NP	4	0.3%
Athletic director	8	0.5%
Multiple examiners	286	18.9%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.10 11-Player Football Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	1246	82.3%
Not removed*	268	17.7%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	293	19.4%
No reported previous concussions	1221	80.6%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.12 Most Recent Concussion for 11-Player Football Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	10	3.4%
Within one to six months	25	8.5%
Within six months to one year	54	18.4%
Over one year	204	69.6%
<b>TOTAL</b>	<b>293</b>	<b>100.0%</b>

**Table 11.13 Number of Previous Concussions for 11-Player Football Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	222	75.8%
2 concussions	52	17.7%
3 concussions	9	3.1%
≥4 concussions	6	2.0%
Not specified	4	1.4%
<b>TOTAL</b>	<b>293</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	1186	78.3%
Did not receive written authorization to return by the end of season	256	16.9%
Follow-up Report not completed	72	4.8%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.15 11-Player Football Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	685	45.2%
DO	263	17.4%
PA	122	8.1%
NP	116	7.7%
Medical examiner data not available*	328	21.7%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.16 11-Player Football Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	46	3.0%
Urgent or Ready Care business	88	5.8%
Primary care physician or pediatrician's office	754	49.8%
Neurologist's office	120	7.9%
Team doctor	178	11.8%
Medical facility data not available*	328	21.7%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.17 11-Player Football Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	997	65.9%
Conditions to return	189	12.5%
Return to activity data not available*	328	21.7%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**Table 11.18 11-Player Football Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	902	59.6%
1-2 Days	205	13.5%
3-6 Days	59	3.9%
7-9 Days	6	0.4%
10-20 Days	14	0.9%
≥21 Days	0	0.0%
Missed school data not available*	328	21.7%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
1-2 Days	26	1.7%
3-5 Days	87	5.7%
6-10 Days	324	21.4%
11-15 Days	415	27.4%
16-20 Days	121	8.0%
≥21 Days	196	12.9%
Data not available**	345	22.8%
<b>TOTAL</b>	<b>1514</b>	<b>100.0%</b>

72 Missing Follow-up Reports\*

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

17 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, 2018-19 School Year**

<b>8-Player Football Participation</b>	<b>1,450</b>
<b>All Reported 8-Player Football Head Injuries</b>	<b>43</b>
<b>8-Player Football Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>2.97%</b>
<b>8-Player Football Head Injury Prevalence Rate Per Thousand Participants</b>	<b>30</b>

**Table 12.2 8-Player Football Head Injuries by Gender, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Male	42	97.7%
Female	1	2.3%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.3 8-Player Football Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	31	72.1%
Junior Varsity	12	27.9%
Freshman	0	0.0%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.4 8-Player Football Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	8	18.6%
Competition	35	81.4%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.5 8-Player Football Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	0	0.0%
Middle of practice	4	50.0%
End of practice	4	50.0%
<b>PRACTICE TOTAL</b>	<b>8</b>	<b>100.0%</b>
Start of competition	7	20.0%
Middle of competition	13	37.1%
End of competition	15	42.9%
<b>COMPETITION TOTAL</b>	<b>35</b>	<b>100.0%</b>

**Table 12.6 Activity Type for 8-Player Football Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	5	62.5%
During simulated competition-scrimmage	3	37.5%
Not specified	0	0.0%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 12.7 8-Player Football Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	27	62.8%
Person to object contact (e.g. wall, equipment)	0	0.0%
Person to playing surface contact	6	14.0%
Uncertain as to the cause of the event	10	23.3%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.8 Person to Playing Surface Contact 8-Player Football Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Natural grass	5	83.3%
Artificial turf	1	16.7%
<b>TOTAL</b>	<b>6</b>	<b>100.0%</b>

**Table 12.9 8-Player Football Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	3	7.0%
Coach	19	44.2%
Sideline emergency personnel	1	2.3%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	1	2.3%
PA	0	0.0%
NP	2	4.7%
Athletic director	1	2.3%
Multiple examiners	16	37.2%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.10 8-Player Football Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	39	90.7%
Not removed*	4	9.3%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	3	7.0%
No reported previous concussions	40	93.0%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.12 Most Recent Concussion for 8-Player Football Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	0	0.0%
Within one to six months	0	0.0%
Within six months to one year	1	33.3%
Over one year	2	66.7%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

**Table 12.13 Number of Previous Concussions for 8-Player Football Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	1	33.3%
2 concussions	2	66.7%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>



**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	29	67.4%
Did not receive written authorization to return by the end of season	5	11.6%
Follow-up Report not completed	9	20.9%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.15 8-Player Football Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	15	34.9%
DO	5	11.6%
PA	3	7.0%
NP	6	14.0%
Medical examiner data not available*	14	32.6%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.16 8-Player Football Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	2	4.7%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	26	60.5%
Neurologist's office	0	0.0%
Team doctor	1	2.3%
Medical facility data not available*	14	32.6%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.17 8-Player Football Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	24	55.8%
Conditions to return	5	11.6%
Return to activity data not available*	14	32.6%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 12.18 8-Player Football Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	19	44.2%
1-2 Days	4	9.3%
3-6 Days	2	4.7%
7-9 Days	0	0.0%
10-20 Days	3	7.0%
≥21 Days	1	2.3%
Missed school data not available*	14	32.6%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
1-2 Days	1	2.3%
3-5 Days	0	0.0%
6-10 Days	12	27.9%
11-15 Days	6	14.0%
16-20 Days	5	11.6%
≥21 Days	5	11.6%
Data not available**	14	32.6%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

9 Missing Follow-up Reports\*

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

0 Data entry errors\*\*

## **XIII. Boys Golf Head Injury Reports**

**Table 13.1 Head Injury Prevalence Rate for Boys Golf, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Boys Golf Participation</b>	<b>6,284</b>
<b>All Boys Golf Head Injuries</b>	<b>2</b>
<b>Boys Golf Head Injury Prevalence Rate (reported head injuries/total participants)</b>	<b>0.03%</b>
<b>Boys Golf Head Injury Prevalence Rate Per Thousand Participants</b>	<b>0</b>

**Table 13.2 Boys Golf Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	1	50.0%
Junior Varsity	1	50.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 13.3 Boys Golf Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	2	100.0%
Competition	0	0.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 13.4 Boys Golf Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	0	0.0%
Middle of practice	2	100.0%
End of practice	0	0.0%
<b>PRACTICE TOTAL</b>	<b>2</b>	<b>100.0%</b>
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
<b>COMPETITION TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 13.5 Activity Type for Boys Golf Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 13.6 Boys Golf Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	2	100.0%
Person to playing surface contact	0	0.0%
Uncertain as to the cause of the event	0	0.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 13.7 Person to Playing Surface Contact Boys Golf Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
n/a	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 13.8 Boys Golf Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	0	0.0%
Coach	1	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	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 13.9 Boys Golf Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	2	100.0%
Not removed*	0	0.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	2	100.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 13.11 Most Recent Concussion for Boys Golf Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 13.12 Number of Previous Concussions for Boys Golf Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	1	50.0%
Did not receive written authorization to return by the end of season	1	50.0%
Follow-up Report not completed	0	0.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 13.14 Boys Golf Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	1	50.0%
DO	0	0.0%
PA	0	0.0%
NP	0	0.0%
Medical examiner data not available*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 13.15 Boys Golf Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 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	0	0.0%
Medical facility data not available*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>



**Table 13.16 Boys Golf Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	1	50.0%
Conditions to return	0	0.0%
Return to activity data not available*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 13.17 Boys Golf Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	0	0.0%
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*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 13.18 Boys Golf Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 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	50.0%
16-20 Days	0	0.0%
≥21 Days	0	0.0%
Data not available**	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

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\*\*

## **XIV. Girls Golf Head Injury Reports**

**Table 14.1 Head Injury Prevalence Rate for Girls Golf, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Girls Golf Participation</b>	<b>3,587</b>
<b>All Reported Girls Golf Head Injuries</b>	<b>0</b>
<b>Girls Golf Head Injury Prevalence Rate (reported head injuries/total participants)</b>	<b>0.00%</b>
<b>Girls Golf Head Injury Prevalence Rate Per Thousand Participants</b>	<b>0</b>

**Table 14.2 Girls Golf Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	0	0.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.3 Girls Golf Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	0	0.0%
Competition	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.4 Girls Golf Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	0	0.0%
Middle of practice	0	0.0%
End of practice	0	0.0%
<b>PRACTICE TOTAL</b>	<b>0</b>	<b>0.0%</b>
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
<b>COMPETITION TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.5 Activity Type for Girls Golf Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	0	<b>0.0%</b>
During simulated competition-scrimmage	0	<b>0.0%</b>
Not specified	0	<b>0.0%</b>
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.6 Girls Golf Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>0.0%</b>

**Table 14.7 Person to Playing Surface Contact Girls Golf Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Natural grass	0	0.0%
Unknown	0	0.0%
Other	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.8 Girls Golf Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.9 Girls Golf Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	0	0.0%
Not removed*	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.11 Most Recent Concussion for Girls Golf Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.12 Number of Previous Concussions for Girls Golf Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**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, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.14 Girls Golf Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.15 Girls Golf Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.16 Girls Golf Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	0	0.0%
Conditions to return	0	0.0%
Return to activity data not available*	0	0.0%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.17 Girls Golf Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 14.18 Girls Golf Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

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, 2018-19 School Year**

<b>Gymnastics Participation</b>	<b>694</b>
<b>All Reported Gymnastics Head Injuries</b>	<b>7</b>
<b>Gymnastics Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>1.01%</b>
<b>Gymnastics Head Injury Prevalence Rate Per Thousand Participants</b>	<b>10</b>

**Table 15.2 Gymnastics Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	7	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.3 Gymnastics Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	3	42.9%
Competition	4	57.1%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.4 Gymnastics Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	0	0.0%
Middle of practice	1	33.3%
End of practice	2	66.7%
<b>PRACTICE TOTAL</b>	<b>3</b>	<b>100.0%</b>
Start of competition	0	0.0%
Middle of competition	2	50.0%
End of competition	2	50.0%
<b>COMPETITION TOTAL</b>	<b>4</b>	<b>100.0%</b>

**Table 15.5 Activity Type for Gymnastics Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	3	100.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

**Table 15.6 Gymnastics Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 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	7	100.0%
Uncertain as to the cause of the event	0	0.0%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.7 Person to Playing Surface Contact Gymnastics Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Wrestling-type mat	4	57.1%
Gymnastics mat	1	14.3%
Gymnastics flooring	1	14.3%
Rubberized gym floor	1	14.3%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.8 Gymnastics Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	3	42.9%
Coach	4	57.1%
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%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.9 Gymnastics Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	5	71.4%
Not removed*	2	28.6%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	1	14.3%
No reported previous concussions	6	85.7%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.11 Most Recent Concussion for Gymnastics Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 15.12 Number of Previous Concussions for Gymnastics Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	0	0.0%
2 concussions	0	0.0%
3 concussions	1	100.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	7	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%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.14 Gymnastics Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	4	57.1%
DO	2	28.6%
PA	0	0.0%
NP	1	14.3%
Medical examiner data not available*	0	0.0%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.15 Gymnastics Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	1	14.3%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	4	57.1%
Neurologist's office	2	28.6%
Team doctor	0	0.0%
Medical facility data not available*	0	0.0%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.16 Gymnastics Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	5	71.4%
Conditions to return	2	28.6%
Return to activity data not available*	0	0.0%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.17 Gymnastics Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	3	42.9%
1-2 Days	1	14.3%
3-6 Days	2	28.6%
7-9 Days	1	14.3%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	0	0.0%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 15.18 Gymnastics Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	2	28.6%
11-15 Days	0	0.0%
16-20 Days	0	0.0%
≥21 Days	5	71.4%
Data not available**	0	0.0%
<b>TOTAL</b>	<b>7</b>	<b>100.0%</b>

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\*\*

## **XVI. Ice Hockey Head Injury Reports**



**Table 16.1 Head Injury Prevalence Rate for Ice Hockey, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Ice Hockey Participation</b>	<b>3,294</b>
<b>All Reported Ice Hockey Head Injuries</b>	<b>115</b>
<b>Ice Hockey Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>3.49%</b>
<b>Ice Hockey Head Injury Prevalence Rate Per Thousand Participants</b>	<b>35</b>

**Table 16.2 Ice Hockey Head Injuries by Gender, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Male	115	100.0%
Female	0	0.0%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.3 Ice Hockey Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	111	96.5%
Junior Varsity	4	3.5%
Freshman	0	0.0%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.4 Ice Hockey Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	13	11.3%
Competition	102	88.7%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.5 Ice Hockey Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	0	0.0%
Middle of practice	6	46.2%
End of practice	7	53.8%
<b>PRACTICE TOTAL</b>	<b>13</b>	<b>100.0%</b>
Start of competition	10	9.8%
Middle of competition	63	61.8%
End of competition	29	28.4%
<b>COMPETITION TOTAL</b>	<b>102</b>	<b>100.0%</b>

**Table 16.6 Activity Type for Ice Hockey Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	7	53.8%
During simulated competition-scrimmage	6	46.2%
Not specified	0	0.0%
<b>TOTAL</b>	<b>13</b>	<b>100.0%</b>

**Table 16.7 Ice Hockey Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	58	50.4%
Person to object contact (e.g. wall, equipment)	33	28.7%
Person to playing surface contact	12	10.4%
Uncertain as to the cause of the event	12	10.4%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.8 Person to Playing Surface Contact Ice Hockey Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Ice	11	100.0%
<b>TOTAL</b>	<b>11</b>	<b>100.0%</b>

**Table 16.9 Ice Hockey Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	74	64.3%
Coach	16	13.9%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	3	2.6%
DO	1	0.9%
MD	2	1.7%
PA	0	0.0%
NP	0	0.0%
Athletic director	1	0.9%
Multiple examiners	18	15.7%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.10 Ice Hockey Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	94	81.7%
Not removed*	21	18.3%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	26	22.6%
No reported previous concussions	89	77.4%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.12 Most Recent Concussion for Ice Hockey Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	1	3.8%
Within one to six months	7	26.9%
Within six months to one year	5	19.2%
Over one year	13	50.0%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**Table 16.13 Number of Previous Concussions for Ice Hockey Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	18	69.2%
2 concussions	4	15.4%
3 concussions	2	7.7%
≥4 concussions	2	7.7%
Not specified	0	0.0%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	100	87.0%
Did not receive written authorization to return by the end of season	12	10.4%
Follow-up Report not completed	3	2.6%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.15 Ice Hockey Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	63	54.8%
DO	21	18.3%
PA	5	4.3%
NP	11	9.6%
Medical examiner data not available*	15	13.0%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.16 Ice Hockey Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	6	5.2%
Urgent or Ready Care business	5	4.3%
Primary care physician or pediatrician's office	70	60.9%
Neurologist's office	9	7.8%
Team doctor	10	8.7%
Medical facility data not available*	15	13.0%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.17 Ice Hockey Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	93	80.9%
Conditions to return	7	6.1%
Return to activity data not available*	15	13.0%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.18 Ice Hockey Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	69	60.0%
1-2 Days	24	20.9%
3-6 Days	5	4.3%
7-9 Days	0	0.0%
10-20 Days	2	1.7%
≥21 Days	0	0.0%
Missed school data not available*	15	13.0%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

**Table 16.19 Ice Hockey Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	1	0.9%
3-5 Days	6	5.2%
6-10 Days	31	27.0%
11-15 Days	22	19.1%
16-20 Days	18	15.7%
≥21 Days	22	19.1%
Data not available**	15	13.0%
<b>TOTAL</b>	<b>115</b>	<b>100.0%</b>

3 Missing Follow-up Reports\*

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

0 Data entry errors\*\*

# **XVII. Boys Lacrosse Head Injury Reports**

**Table 17.1 Head Injury Prevalence Rate for Boys Lacrosse, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Boys Lacrosse Participation</b>	<b>5,438</b>
<b>All Boys Lacrosse Head Injuries</b>	<b>88</b>
<b>Boys Lacrosse Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>1.62%</b>
<b>Boys Lacrosse Head Injury Prevalence Rate Per Thousand Participants</b>	<b>16</b>

**Table 17.2 Boys Lacrosse Head Injuries by Gender, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Male	88	100.0%
Female	0	0.0%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.3 Boys Lacrosse Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	67	76.1%
Junior Varsity	20	22.7%
Freshman	1	1.1%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.4 Boys Lacrosse Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	16	18.2%
Competition	72	81.8%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>



**Table 17.5 Boys Lacrosse Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	0	0.0%
Middle of practice	7	43.8%
End of practice	9	56.3%
<b>PRACTICE TOTAL</b>	<b>16</b>	<b>100.0%</b>
Start of competition	3	4.2%
Middle of competition	42	58.3%
End of competition	27	37.5%
<b>COMPETITION TOTAL</b>	<b>72</b>	<b>100.0%</b>

**Table 17.6 Activity Type for Boys Lacrosse Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	11	<b>68.8%</b>
During simulated competition-scrimmage	5	<b>31.3%</b>
Not specified	0	<b>0.0%</b>
<b>TOTAL</b>	<b>16</b>	<b>100.0%</b>

**Table 17.7 Boys Lacrosse Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	49	55.7%
Person to object contact (e.g. wall, equipment)	19	21.6%
Person to playing surface contact	5	5.7%
Uncertain as to the cause of the event	15	17.0%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.8 Person to Playing Surface Contact Boys Lacrosse Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Artificial turf	3	60.0%
Natural grass	2	40.0%
<b>TOTAL</b>	<b>5</b>	<b>40.0%</b>

**Table 17.9 Boys Lacrosse Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	49	55.7%
Coach	13	14.8%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	5	5.7%
DO	0	0.0%
MD	4	4.5%
PA	0	0.0%
NP	0	0.0%
Athletic director	2	2.3%
Multiple examiners	15	17.0%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.10 Boys Lacrosse Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	65	73.9%
Not removed*	23	26.1%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

\*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 17.11 Boys Lacrosse Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Reported at least one previous concussion	27	30.7%
No reported previous concussions	61	69.3%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.12 Most Recent Concussion for Boys Lacrosse Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	1	3.7%
Within one to six months	2	7.4%
Within six months to one year	10	37.0%
Over one year	14	51.9%
<b>TOTAL</b>	<b>27</b>	<b>100.0%</b>

**Table 17.13 Number of Previous Concussions for Boys Lacrosse Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	18	66.7%
2 concussions	7	25.9%
3 concussions	2	7.4%
≥4 concussions	0	0.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>27</b>	<b>100.0%</b>

**Table 17.14 Boys 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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	69	78.4%
Did not receive written authorization to return by the end of season	15	17.0%
Follow-up Report not completed	4	4.5%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.15 Boys Lacrosse Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	45	51.1%
DO	13	14.8%
PA	6	6.8%
NP	5	5.7%
Medical examiner data not available*	19	21.6%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.16 Boys Lacrosse Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	5	5.7%
Primary care physician or pediatrician's office	50	56.8%
Neurologist's office	10	11.4%
Team doctor	4	4.5%
Medical facility data not available*	19	21.6%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.17 Boys Lacrosse Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	61	69.3%
Conditions to return	8	9.1%
Return to activity data not available*	19	21.6%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.18 Boys Lacrosse Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	42	47.7%
1-2 Days	22	25.0%
3-6 Days	4	4.5%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	1	1.1%
Missed school data not available*	19	21.6%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 17.19 Boys Lacrosse Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	4	4.5%
3-5 Days	5	5.7%
6-10 Days	20	22.7%
11-15 Days	25	28.4%
16-20 Days	7	8.0%
≥21 Days	8	9.1%
Data not available**	19	21.6%
<b>TOTAL</b>	<b>88</b>	<b>100.0%</b>

4 Missing Follow-up Reports\*

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

0 Data entry errors\*\*

## **XVIII. Girls Lacrosse Head Injuries**

**Table 18.1 Head Injury Prevalence Rate for Girls Lacrosse, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Girls Lacrosse Participation</b>	<b>3,180</b>
<b>All Girls Lacrosse Head Injuries</b>	<b>65</b>
<b>Girls Lacrosse Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>2.04%</b>
<b>Girls Lacrosse Head Injury Prevalence Rate Per Thousand Participants</b>	<b>20</b>

**Table 18.2 Girls Lacrosse Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	45	69.2%
Junior Varsity	20	30.8%
Freshman	0	0.0%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

**Table 18.3 Girls Lacrosse Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	18	27.7%
Competition	47	72.3%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

**Table 18.4 Girls Lacrosse Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	3	16.7%
Middle of practice	6	33.3%
End of practice	9	50.0%
<b>PRACTICE TOTAL</b>	<b>18</b>	<b>100.0%</b>
Start of competition	4	8.5%
Middle of competition	28	59.6%
End of competition	15	31.9%
<b>COMPETITION TOTAL</b>	<b>47</b>	<b>100.0%</b>

**Table 18.5 Activity Type for Girls Lacrosse Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	17	94.4%
During simulated competition-scrimmage	1	5.6%
Not specified	0	0.0%
<b>TOTAL</b>	<b>18</b>	<b>100.0%</b>

**Table 18.6 Girls Lacrosse Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	10	15.4%
Person to object contact (e.g. wall, equipment)	43	66.2%
Person to playing surface contact	6	9.2%
Uncertain as to the cause of the event	6	9.2%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>



**Table 18.7 Person to Playing Surface Contact Girls Lacrosse Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Artificial turf	5	83.3%
Natural grass	0	0.0%
Indoor tile type floor	1	16.7%
<b>TOTAL</b>	<b>6</b>	<b>16.7%</b>

**Table 18.8 Girls Lacrosse Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	38	58.5%
Coach	12	18.5%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	0	0.0%
DO	1	1.5%
MD	0	0.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	14	21.5%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

**Table 18.9 Girls Lacrosse Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	46	70.8%
Not removed*	19	29.2%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	12	18.5%
No reported previous concussions	53	81.5%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

**Table 18.11 Most Recent Concussion for Girls Lacrosse Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	1	8.3%
Within one to six months	1	8.3%
Within six months to one year	4	33.3%
Over one year	6	50.0%
<b>TOTAL</b>	<b>12</b>	<b>100.0%</b>

**Table 18.12 Number of Previous Concussions for Girls Lacrosse Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	9	75.0%
2 concussions	2	16.7%
3 concussions	1	8.3%
≥4 concussions	0	0.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>12</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	39	60.0%
Did not receive written authorization to return by the end of season	23	35.4%
Follow-up Report not completed	3	4.6%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

**Table 18.14 Girls Lacrosse Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	26	40.0%
DO	6	9.2%
PA	3	4.6%
NP	4	6.2%
Medical examiner data not available*	26	40.0%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

**Table 18.15 Girls Lacrosse Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	1	1.5%
Primary care physician or pediatrician's office	27	41.5%
Neurologist's office	5	7.7%
Team doctor	6	9.2%
Medical facility data not available*	26	40.0%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

**Table 18.16 Girls Lacrosse Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	38	58.5%
Conditions to return	1	1.5%
Return to activity data not available*	26	40.0%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

**Table 18.17 Girls Lacrosse Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	22	33.8%
1-2 Days	13	20.0%
3-6 Days	4	6.2%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	26	40.0%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

**Table 18.18 Girls Lacrosse Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	2	3.1%
3-5 Days	1	1.5%
6-10 Days	11	16.9%
11-15 Days	13	20.0%
16-20 Days	4	6.2%
≥21 Days	7	10.8%
Data not available**	27	41.5%
<b>TOTAL</b>	<b>65</b>	<b>100.0%</b>

3 Missing Follow-up Reports\*

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

1 Data entry errors\*\*

## **XIX. Boys Skiing Head Injury Reports**

**Table 19.1 Head Injury Prevalence Rate for Boys Skiing, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Boys Skiing Participation</b>	<b>924</b>
<b>All Reported Boys Skiing Head Injuries</b>	<b>5</b>
<b>Boys Skiing Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.54%</b>
<b>Boys Skiing Head Injury Prevalence Rate Per Thousand Participants</b>	<b>5</b>

**Table 19.2 Boys Skiing Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	5	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.3 Boys Skiing Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	5	100.0%
Competition	0	0.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.4 Boys Skiing Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	1	20.0%
Middle of practice	1	20.0%
End of practice	3	60.0%
<b>PRACTICE TOTAL</b>	<b>5</b>	<b>100.0%</b>
Start of competition	0	0.0%
Middle of competition	0	0.0%
End of competition	0	0.0%
<b>COMPETITION TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 19.5 Activity Type for Boys Skiing Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	4	<b>80.0%</b>
During simulated competition-scrimmage	0	<b>0.0%</b>
Not specified	1	<b>20.0%</b>
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.6 Boys Skiing Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.7 Person to Playing Surface Contact Boys Skiing Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Snow/ice covered ground	4	100.0%
<b>TOTAL</b>	<b>4</b>	<b>100.0%</b>

**Table 19.8 Boys Skiing Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	0	0.0%
Coach	2	40.0%
Sideline emergency personnel	2	40.0%
Other appropriate health care professional	0	0.0%
DO	0	0.0%
MD	1	20.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	0	0.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.9 Boys Skiing Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	5	100.0%
Not removed*	0	0.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

\*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 19.10 Boys Skiing Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	5	100.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.11 Most Recent Concussion for Boys Skiing Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 19.12 Number of Previous Concussions for Boys Skiing Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**Table 19.13 Boys 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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	5	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%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.14 Boys Skiing Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	5	100.0%
DO	0	0.0%
PA	0	0.0%
NP	0	0.0%
Medical examiner data not available*	0	0.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.15 Boys Skiing Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	4	80.0%
Neurologist's office	0	0.0%
Team doctor	1	20.0%
Medical facility data not available*	0	0.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.16 Boys Skiing Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	5	100.0%
Conditions to return	0	0.0%
Return to activity data not available*	0	0.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.17 Boys Skiing Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	3	60.0%
1-2 Days	2	40.0%
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%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 19.18 Boys Skiing Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	4	80.0%
11-15 Days	0	0.0%
16-20 Days	0	0.0%
≥21 Days	1	20.0%
Data not available**	0	0.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

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\*\*

## **XX. Girls Skiing Head Injury Reports**

**Table 20.1 Head Injury Prevalence Rate for Girls Skiing, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Girls Skiing Participation</b>	<b>763</b>
<b>All Reported Girls Skiing Head Injuries</b>	<b>2</b>
<b>Girls Skiing Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.26%</b>
<b>Girls Skiing Head Injury Prevalence Rate Per Thousand Participants</b>	<b>3</b>

**Table 20.2 Girls Skiing Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	1	50.0%
Junior Varsity	1	50.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.3 Girls Skiing Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	1	50.0%
Competition	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.4 Girls Skiing Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	0	0.0%
Middle of practice	0	0.0%
End of practice	1	100.0%
<b>PRACTICE TOTAL</b>	<b>1</b>	<b>100.0%</b>
Start of competition	0	0.0%
Middle of competition	1	100.0%
End of competition	0	0.0%
<b>COMPETITION TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 20.5 Activity Type for Girls Skiing Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 20.6 Girls Skiing Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 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	50.0%
Uncertain as to the cause of the event	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.7 Person to Playing Surface Contact Girls Skiing Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Natural grass	1	100.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 20.8 Girls Skiing Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	0	0.0%
Coach	2	100.0%
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%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.9 Girls Skiing Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	2	100.0%
Not removed*	0	0.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	1	50.0%
No reported previous concussions	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.11 Most Recent Concussion for Girls Skiing Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 20.12 Number of Previous Concussions for Girls Skiing Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>



**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	1	50.0%
Did not receive written authorization to return by the end of season	0	0.0%
Follow-up Report not completed	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.14 Girls Skiing Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	0	0.0%
DO	0	0.0%
PA	0	0.0%
NP	1	50.0%
Medical examiner data not available*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.15 Girls Skiing Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 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	0	0.0%
Medical facility data not available*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.16 Girls Skiing Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	1	50.0%
Conditions to return	0	0.0%
Return to activity data not available*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.17 Girls Skiing Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	0	0.0%
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*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 20.18 Girls Skiing Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

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\*\*

## **XXI. Boys Soccer Head Injury Reports**

**Table 21.1 Head Injury Prevalence Rate for Boys Soccer, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Boys Soccer Participation</b>	<b>14,492</b>
<b>All Reported Boys Soccer Head Injuries</b>	<b>202</b>
<b>Boys Soccer Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>1.39%</b>
<b>Boys Soccer Head Injury Prevalence Rate Per Thousand Participants</b>	<b>14</b>

**Table 21.2 Boys Soccer Head Injuries by Gender, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Male	201	99.5%
Female	1	0.5%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.3 Boys Soccer Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	146	72.3%
Junior Varsity	54	26.7%
Freshman	2	1.0%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.4 Boys Soccer Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	20	9.9%
Competition	182	90.1%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.5 Boys Soccer Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	3	15.0%
Middle of practice	6	30.0%
End of practice	11	55.0%
<b>PRACTICE TOTAL</b>	<b>20</b>	<b>100.0%</b>
Start of competition	12	6.6%
Middle of competition	102	56.0%
End of competition	68	37.4%
<b>COMPETITION TOTAL</b>	<b>182</b>	<b>100.0%</b>

**Table 21.6 Activity Type for Boys Soccer Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	13	65.0%
During simulated competition-scrimmage	7	35.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 21.7 Boys Soccer Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	92	45.5%
Person to object contact (e.g. wall, equipment)	72	35.6%
Person to playing surface contact	24	11.9%
Uncertain as to the cause of the event	14	6.9%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.8 Person to Playing Surface Contact Boys Soccer Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Natural grass	12	50.0%
Artificial turf	10	41.7%
Soccer field	2	8.3%
<b>TOTAL</b>	<b>24</b>	<b>100.0%</b>

**Table 21.9 Boys Soccer Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	122	60.4%
Coach	39	19.3%
Sideline emergency personnel	1	0.5%
Other appropriate health care professional	3	1.5%
DO	0	0.0%
MD	4	2.0%
PA	0	0.0%
NP	0	0.0%
Athletic director	1	0.5%
Multiple examiners	32	15.8%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.10 Boys Soccer Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	170	84.2%
Not removed*	32	15.8%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	28	13.9%
No reported previous concussions	174	86.1%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.12 Most Recent Concussion for Boys Soccer Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	2	7.1%
Within one to six months	1	3.6%
Within six months to one year	2	7.1%
Over one year	23	82.1%
<b>TOTAL</b>	<b>28</b>	<b>100.0%</b>

**Table 21.13 Number of Previous Concussions for Boys Soccer Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	18	64.3%
2 concussions	6	21.4%
3 concussions	2	7.1%
≥4 concussions	0	0.0%
Not specified	2	7.1%
<b>TOTAL</b>	<b>28</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	176	87.1%
Did not receive written authorization to return by the end of season	15	7.4%
Follow-up Report not completed	11	5.4%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.15 Boys Soccer Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	112	55.4%
DO	32	15.8%
PA	11	5.4%
NP	21	10.4%
Medical examiner data not available*	26	12.9%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.16 Boys Soccer Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	6	3.0%
Urgent or Ready Care business	14	6.9%
Primary care physician or pediatrician's office	113	55.9%
Neurologist's office	21	10.4%
Team doctor	22	10.9%
Medical facility data not available*	26	12.9%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>



**Table 21.17 Boys Soccer Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	154	76.2%
Conditions to return	22	10.9%
Return to activity data not available*	26	12.9%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.18 Boys Soccer Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	121	59.9%
1-2 Days	45	22.3%
3-6 Days	5	2.5%
7-9 Days	2	1.0%
10-20 Days	3	1.5%
≥21 Days	0	0.0%
Missed school data not available*	26	12.9%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

**Table 21.19 Boys Soccer Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	3	1.5%
3-5 Days	17	8.4%
6-10 Days	73	36.1%
11-15 Days	53	26.2%
16-20 Days	14	6.9%
≥21 Days	14	6.9%
Data not available**	28	13.9%
<b>TOTAL</b>	<b>202</b>	<b>100.0%</b>

11 Missing Follow-up Reports\*

15 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, 2018-19 School Year**

<b>Girls Soccer Participation</b>	<b>13,209</b>
<b>All Girls Soccer Head Injuries</b>	<b>330</b>
<b>Girls Soccer Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>2.50%</b>
<b>Girls Soccer Head Injury Prevalence Rate Per Thousand Participants</b>	<b>25</b>

**Table 22.2 Girls Soccer Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	202	61.2%
Junior Varsity	122	37.0%
Freshman	6	1.8%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.3 Girls Soccer Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	45	13.6%
Competition	285	86.4%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.4 Girls Soccer Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	1	2.2%
Middle of practice	24	53.3%
End of practice	20	44.4%
<b>PRACTICE TOTAL</b>	<b>45</b>	<b>100.0%</b>
Start of competition	28	9.8%
Middle of competition	156	54.7%
End of competition	101	35.4%
<b>COMPETITION TOTAL</b>	<b>285</b>	<b>100.0%</b>

**Table 22.5 Activity Type for Girls Soccer Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	24	53.3%
During simulated competition-scrimmage	20	44.4%
Not specified	1	2.2%
<b>TOTAL</b>	<b>45</b>	<b>100.0%</b>

**Table 22.6 Girls Soccer Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	93	28.2%
Person to object contact (e.g. wall, equipment)	136	41.2%
Person to playing surface contact	68	20.6%
Uncertain as to the cause of the event	33	10.0%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.7 Person to Playing Surface Contact Girls Soccer Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Natural grass	43	63.2%
Artificial turf	20	29.4%
Wooden gym floor	3	4.4%
Court	1	1.5%
Unknown	1	1.5%
<b>TOTAL</b>	<b>68</b>	<b>100.0%</b>

**Table 22.8 Girls Soccer Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	215	65.2%
Coach	64	19.4%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	7	2.1%
DO	0	0.0%
MD	7	2.1%
PA	0	0.0%
NP	1	0.3%
Athletic director	2	0.6%
Multiple examiners	34	10.3%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.9 Girls Soccer Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	249	75.5%
Not removed*	81	24.5%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	74	22.4%
No reported previous concussions	256	77.6%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.11 Most Recent Concussion for Girls Soccer Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	2	2.8%
Within one to six months	6	8.3%
Within six months to one year	21	29.2%
Over one year	43	59.7%
<b>TOTAL</b>	<b>72</b>	<b>100.0%</b>

**Table 22.12 Number of Previous Concussions for Girls Soccer Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	53	73.6%
2 concussions	18	25.0%
3 concussions	0	0.0%
≥4 concussions	1	1.4%
Not specified	0	0.0%
<b>TOTAL</b>	<b>72</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	245	74.2%
Did not receive written authorization to return by the end of season	55	16.7%
Follow-up Report not completed	30	9.1%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.14 Girls Soccer Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	147	44.5%
DO	46	13.9%
PA	27	8.2%
NP	25	7.6%
Medical examiner data not available*	85	25.8%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.15 Girls Soccer Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	8	2.4%
Urgent or Ready Care business	13	3.9%
Primary care physician or pediatrician's office	183	55.5%
Neurologist's office	21	6.4%
Team doctor	20	6.1%
Medical facility data not available*	85	25.8%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.16 Girls Soccer Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	219	66.4%
Conditions to return	26	7.9%
Return to activity data not available*	85	25.8%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.17 Girls Soccer Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	125	37.9%
1-2 Days	97	29.4%
3-6 Days	18	5.5%
7-9 Days	3	0.9%
10-20 Days	2	0.6%
≥21 Days	0	0.0%
Missed school data not available*	85	25.8%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

**Table 22.18 Girls Soccer Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	5	1.5%
3-5 Days	21	6.4%
6-10 Days	77	23.3%
11-15 Days	70	21.2%
16-20 Days	32	9.7%
≥21 Days	38	11.5%
Data not available**	87	26.4%
<b>TOTAL</b>	<b>330</b>	<b>100.0%</b>

30 Missing Follow-up Reports\*

55 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, 2018-19 School Year**

<b>Softball Participation</b>	<b>13,290</b>
<b>All Softball Head Injuries</b>	<b>143</b>
<b>Softball Head Injury Prevalence Rate</b>	<b>1.08%</b>
<b>Softball Head Injury Prevalence Rate Per Thousand Participants</b>	<b>11</b>

**Table 23.2 Softball Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	81	56.6%
Junior Varsity	60	42.0%
Freshman	2	1.4%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.3 Softball Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	55	38.5%
Competition	88	61.5%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.4 Softball Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	12	21.8%
Middle of practice	31	56.4%
End of practice	12	21.8%
<b>PRACTICE TOTAL</b>	<b>55</b>	<b>100.0%</b>
Start of competition	12	13.6%
Middle of competition	50	56.8%
End of competition	26	29.5%
<b>COMPETITION TOTAL</b>	<b>88</b>	<b>100.0%</b>

**Table 23.5 Activity Type for Softball Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	48	<b>87.3%</b>
During simulated competition-scrimmage	5	<b>9.1%</b>
Not specified	2	<b>3.6%</b>
<b>TOTAL</b>	<b>55</b>	<b>100.0%</b>

**Table 23.6 Softball Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	26	18.2%
Person to object contact (e.g. wall, equipment)	95	66.4%
Person to playing surface contact	17	11.9%
Uncertain as to the cause of the event	5	3.5%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.7 Person to Playing Surface Contact Softball Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Natural grass	7	41.2%
Infield dirt	6	35.3%
Softball field	2	11.8%
Wooden gym floor	1	5.9%
Other	1	5.9%
<b>TOTAL</b>	<b>17</b>	<b>100.0%</b>

**Table 23.8 Softball Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	58	40.6%
Coach	46	32.2%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	2	1.4%
DO	0	0.0%
MD	3	2.1%
PA	1	0.7%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	33	23.1%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.9 Softball Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	111	77.6%
Not removed*	32	22.4%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	23	16.1%
No reported previous concussions	120	83.9%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.11 Most Recent Concussion for Softball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	0	0.0%
Within one to six months	3	13.0%
Within six months to one year	4	17.4%
Over one year	16	69.6%
<b>TOTAL</b>	<b>23</b>	<b>100.0%</b>

**Table 23.12 Number of Previous Concussions for Softball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	18	78.3%
2 concussions	4	17.4%
3 concussions	0	0.0%
≥4 concussions	1	4.3%
Not specified	0	0.0%
<b>TOTAL</b>	<b>23</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	107	74.8%
Did not receive written authorization to return by the end of season	23	16.1%
Follow-up Report not completed	13	9.1%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.14 Softball Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	66	46.2%
DO	27	18.9%
PA	5	3.5%
NP	9	6.3%
Medical examiner data not available*	36	25.2%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.15 Softball Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	2	1.4%
Urgent or Ready Care business	5	3.5%
Primary care physician or pediatrician's office	83	58.0%
Neurologist's office	11	7.7%
Team doctor	6	4.2%
Medical facility data not available*	36	25.2%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.16 Softball Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	94	65.7%
Conditions to return	13	9.1%
Return to activity data not available*	36	25.2%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.17 Softball Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	52	36.4%
1-2 Days	41	28.7%
3-6 Days	11	7.7%
7-9 Days	0	0.0%
10-20 Days	3	2.1%
≥21 Days	0	0.0%
Missed school data not available*	36	25.2%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

**Table 23.18 Softball Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	5	3.5%
3-5 Days	7	4.9%
6-10 Days	34	23.8%
11-15 Days	30	21.0%
16-20 Days	13	9.1%
≥21 Days	16	11.2%
Data not available**	38	26.6%
<b>TOTAL</b>	<b>143</b>	<b>100.0%</b>

13 Missing Follow-up Reports\*

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

2 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, 2018-19 School Year**

<b>Boys Swimming &amp; Diving Participation</b>	<b>5,003</b>
<b>All Reported Boys Swimming &amp; Diving Head Injuries</b>	<b>19</b>
<b>Boys Swimming &amp; Diving Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.38%</b>
<b>Boys Swimming &amp; Diving Head Injury Prevalence Rate Per Thousand Participants</b>	<b>4</b>

**Table 24.2 Boys Swimming & Diving Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	19	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**Table 24.3 Boys Swimming & Diving Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	14	73.7%
Competition	5	26.3%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**Table 24.4 Boys Swimming & Diving Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	3	21.4%
Middle of practice	8	57.1%
End of practice	3	21.4%
<b>PRACTICE TOTAL</b>	<b>14</b>	<b>100.0%</b>
Start of competition	1	20.0%
Middle of competition	1	20.0%
End of competition	3	60.0%
<b>COMPETITION TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 24.5 Activity Type for Boys Swimming & Diving Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	12	<b>85.7%</b>
During simulated competition-scrimmage	1	<b>7.1%</b>
Not specified	1	<b>7.1%</b>
<b>TOTAL</b>	<b>14</b>	<b>100.0%</b>

**Table 24.6 Boys Swimming & Diving Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	4	21.1%
Person to object contact (e.g. wall, equipment)	9	47.4%
Person to playing surface contact	5	26.3%
Uncertain as to the cause of the event	1	5.3%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**Table 24.7 Person to Playing Surface Contact Boys Swimming & Diving Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Water	3	100.0%
<b>TOTAL</b>	<b>3</b>	<b>100.0%</b>

**Table 24.8 Boys Swimming & Diving Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	6	31.6%
Coach	6	31.6%
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	7	36.8%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**Table 24.9 Boys Swimming & Diving Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	17	89.5%
Not removed*	2	10.5%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	1	5.3%
No reported previous concussions	18	94.7%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**Table 24.11 Most Recent Concussion for Boys Swimming & Diving Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 24.12 Number of Previous Concussions for Boys Swimming & Diving Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	15	78.9%
Did not receive written authorization to return by the end of season	2	10.5%
Follow-up Report not completed	2	10.5%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**Table 24.14 Boys Swimming & Diving Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	9	47.4%
DO	3	15.8%
PA	2	10.5%
NP	1	5.3%
Medical examiner data not available*	4	21.1%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**Table 24.15 Boys Swimming & Diving Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	1	5.3%
Primary care physician or pediatrician's office	12	63.2%
Neurologist's office	0	0.0%
Team doctor	2	10.5%
Medical facility data not available*	4	21.1%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**Table 24.16 Boys Swimming & Diving Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	14	73.7%
Conditions to return	1	5.3%
Return to activity data not available*	4	21.1%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**Table 24.17 Boys Swimming & Diving Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	9	47.4%
1-2 Days	4	21.1%
3-6 Days	2	10.5%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	4	21.1%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
1-2 Days	1	5.3%
3-5 Days	2	10.5%
6-10 Days	2	10.5%
11-15 Days	4	21.1%
16-20 Days	2	10.5%
≥21 Days	4	21.1%
Data not available**	4	21.1%
<b>TOTAL</b>	<b>19</b>	<b>100.0%</b>

2 Missing Follow-up Reports\*

2 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, 2018-19 School Year**

<b>Girls Swimming &amp; Diving Participation</b>	<b>5,794</b>
<b>All Reported Girls Swimming &amp; Diving Head Injuries</b>	<b>26</b>
<b>Girls Swimming &amp; Diving Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.45%</b>
<b>Girls Swimming &amp; Diving Head Injury Prevalence Rate Per Thousand Participants</b>	<b>4</b>

**Table 25.2 Girls Swimming & Diving Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	25	96.2%
Junior Varsity	1	3.8%
Freshman	0	0.0%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**Table 25.3 Girls Swimming & Diving Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	18	69.2%
Competition	8	30.8%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>



**Table 25.4 Girls Swimming & Diving Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	2	7.7%
Middle of practice	11	42.3%
End of practice	5	19.2%
<b>PRACTICE TOTAL</b>	<b>18</b>	<b>69.2%</b>
Start of competition	2	25.0%
Middle of competition	2	25.0%
End of competition	4	50.0%
<b>COMPETITION TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 25.5 Activity Type for Girls Swimming & Diving Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	15	<b>83.3%</b>
During simulated competition-scrimmage	1	<b>5.6%</b>
Not specified	2	<b>11.1%</b>
<b>TOTAL</b>	<b>18</b>	<b>100.0%</b>

**Table 25.6 Girls Swimming & Diving Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	10	38.5%
Person to object contact (e.g. wall, equipment)	7	26.9%
Person to playing surface contact	9	34.6%
Uncertain as to the cause of the event	0	0.0%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**Table 25.7 Person to Playing Surface Contact Girls Swimming & Diving Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Water	7	77.8%
Pool	1	11.1%
Indoor tile type floor	1	11.1%
<b>TOTAL</b>	<b>9</b>	<b>22.2%</b>

**Table 25.8 Girls Swimming & Diving Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	11	42.3%
Coach	9	34.6%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	1	3.8%
DO	0	0.0%
MD	2	7.7%
PA	0	0.0%
NP	0	0.0%
Athletic director	0	0.0%
Multiple examiners	3	11.5%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**Table 25.9 Girls Swimming & Diving Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	22	84.6%
Not removed*	4	15.4%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	1	3.8%
No reported previous concussions	25	96.2%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**Table 25.11 Most Recent Concussion for Girls Swimming & Diving Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 25.12 Number of Previous Concussions for Girls Swimming & Diving Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	18	69.2%
Did not receive written authorization to return by the end of season	5	19.2%
Follow-up Report not completed	3	11.5%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**Table 25.14 Girls Swimming & Diving Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	10	38.5%
DO	7	26.9%
PA	0	0.0%
NP	1	3.8%
Medical examiner data not available*	8	30.8%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**Table 25.15 Girls Swimming & Diving Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	1	3.8%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	10	38.5%
Neurologist's office	4	15.4%
Team doctor	3	11.5%
Medical facility data not available*	8	30.8%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**Table 25.16 Girls Swimming & Diving Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	15	57.7%
Conditions to return	3	11.5%
Return to activity data not available*	8	30.8%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**Table 25.17 Girls Swimming & Diving Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	9	34.6%
1-2 Days	6	23.1%
3-6 Days	2	7.7%
7-9 Days	0	0.0%
10-20 Days	1	3.8%
≥21 Days	0	0.0%
Missed school data not available*	8	30.8%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
1-2 Days	1	3.8%
3-5 Days	0	0.0%
6-10 Days	5	19.2%
11-15 Days	7	26.9%
16-20 Days	0	0.0%
≥21 Days	5	19.2%
Data not available**	8	30.8%
<b>TOTAL</b>	<b>26</b>	<b>100.0%</b>

3 Missing Follow-up Reports\*

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

0 Data entry errors\*\*

## **XXVI. Boys Tennis Head Injury Reports**

**Table 26.1 Head Injury Prevalence Rate for Boys Tennis, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Boys Tennis Participation</b>	<b>6,261</b>
<b>All Reported Boys Tennis Head Injuries</b>	<b>2</b>
<b>Boys Tennis Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.03%</b>
<b>Boys Tennis Head Injury Prevalence Rate Per Thousand Participants</b>	<b>0</b>

**Table 26.2 Boys Tennis Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	2	100.0%
Junior Varsity	0	0.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 26.3 Boys Tennis Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	1	50.0%
Competition	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 26.4 Boys Tennis Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	0	0.0%
Middle of practice	0	0.0%
End of practice	1	50.0%
<b>PRACTICE TOTAL</b>	<b>1</b>	<b>50.0%</b>
Start of competition	0	0.0%
Middle of competition	1	100.0%
End of competition	0	0.0%
<b>COMPETITION TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 26.5 Activity Type for Boys Tennis Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 26.6 Boys Tennis Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>



**Table 26.7 Person to Playing Surface Contact Boys Tennis Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Tennis court	1	100.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 26.8 Boys Tennis Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 26.9 Boys Tennis Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	1	50.0%
Not removed*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	0	0.0%
No reported previous concussions	2	100.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 26.11 Most Recent Concussion for Boys Tennis Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>0.0%</b>

**Table 26.12 Number of Previous Concussions for Boys Tennis Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>0</b>	<b>0.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	1	50.0%
Did not receive written authorization to return by the end of season	1	50.0%
Follow-up Report not completed	0	0.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 26.14 Boys Tennis Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	1	50.0%
DO	0	0.0%
PA	0	0.0%
NP	0	0.0%
Medical examiner data not available*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 26.15 Boys Tennis Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	1	50.0%
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	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 26.16 Boys Tennis Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	1	50.0%
Conditions to return	0	0.0%
Return to activity data not available*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 26.17 Boys Tennis Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	0	0.0%
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*	1	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 26.18 Boys Tennis Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	0	0.0%
3-5 Days	1	50.0%
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	50.0%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

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\*\*

## **XXVII. Girls Tennis Head Injury Reports**

**Table 27.1 Head Injury Prevalence Rate for Girls Tennis, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Girls Tennis Participation</b>	<b>9,286</b>
<b>All Girls Tennis Head Injuries</b>	<b>8</b>
<b>Girls Tennis Head Injury Prevalence Rate</b>	<b>0.09%</b>
<b>Girls Tennis Head Injury Prevalence Rate Per Thousand Participants</b>	<b>1</b>

**Table 27.2 Girls Tennis Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	3	37.5%
Junior Varsity	5	62.5%
Freshman	0	0.0%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.3 Girls Tennis Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	5	62.5%
Competition	3	37.5%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.4 Girls Tennis Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	1	20.0%
Middle of practice	3	60.0%
End of practice	1	20.0%
<b>PRACTICE TOTAL</b>	<b>5</b>	<b>100.0%</b>
Start of competition	2	66.7%
Middle of competition	0	0.0%
End of competition	1	33.3%
<b>COMPETITION TOTAL</b>	<b>3</b>	<b>100.0%</b>

**Table 27.5 Activity Type for Girls Tennis Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	4	80.0%
During simulated competition-scrimmage	1	20.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 27.6 Girls Tennis Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	1	12.5%
Person to object contact (e.g. wall, equipment)	5	62.5%
Person to playing surface contact	1	12.5%
Uncertain as to the cause of the event	1	12.5%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.7 Person to Playing Surface Contact Girls Tennis Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Tennis court	1	100.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 27.8 Girls Tennis Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	5	62.5%
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	3	37.5%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.9 Girls Tennis Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	7	87.5%
Not removed*	1	12.5%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	1	12.5%
No reported previous concussions	7	87.5%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.11 Most Recent Concussion for Girls Tennis Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 27.12 Number of Previous Concussions for Girls Tennis Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	4	50.0%
Did not receive written authorization to return by the end of season	2	25.0%
Follow-up Report not completed	2	25.0%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.14 Girls Tennis Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	1	12.5%
DO	2	25.0%
PA	0	0.0%
NP	1	12.5%
Medical examiner data not available*	4	50.0%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.15 Girls Tennis Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	2	25.0%
Neurologist's office	1	12.5%
Team doctor	1	12.5%
Medical facility data not available*	4	50.0%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.16 Girls Tennis Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	4	50.0%
Conditions to return	0	0.0%
Return to activity data not available*	4	50.0%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.17 Girls Tennis Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	3	37.5%
1-2 Days	1	12.5%
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*	4	50.0%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 27.18 Girls Tennis Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	1	12.5%
3-5 Days	0	0.0%
6-10 Days	2	25.0%
11-15 Days	0	0.0%
16-20 Days	0	0.0%
≥21 Days	1	12.5%
Data not available**	4	50.0%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

2 Missing Follow-up Reports\*

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

0 Data entry errors\*\*

**XXVIII. Boys Track & Field  
Head Injury Reports**

**Table 28.1 Head Injury Prevalence Rate for Boys Track & Field, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Boys Track and Field Participation</b>	<b>23,548</b>
<b>All Boys Track and Field Head Injuries</b>	<b>10</b>
<b>Boys Track and Field Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.04%</b>
<b>Boys Track and Field Head Injury Prevalence Rate Per Thousand Participants</b>	<b>0</b>

**Table 28.2 Boys Track & Field Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	9	90.0%
Junior Varsity	1	10.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.3 Boys Track & Field Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	8	80.0%
Competition	2	20.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.4 Boys Track & Field Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	1	12.5%
Middle of practice	4	50.0%
End of practice	3	37.5%
<b>PRACTICE TOTAL</b>	<b>8</b>	<b>100.0%</b>
Start of competition	1	50.0%
Middle of competition	0	0.0%
End of competition	1	50.0%
<b>COMPETITION TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 28.5 Activity Type for Boys Track & Field Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	8	100.0%
During simulated competition-scrimmage	0	0.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>8</b>	<b>100.0%</b>

**Table 28.6 Boys Track & Field Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	1	10.0%
Person to object contact (e.g. wall, equipment)	4	40.0%
Person to playing surface contact	5	50.0%
Uncertain as to the cause of the event	0	0.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.7 Person to Playing Surface Contact Boys Track & Field Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Track	2	40.0%
Pole vault runway/pit	2	40.0%
Sand pit	1	20.0%
<b>TOTAL</b>	<b>5</b>	<b>100.0%</b>

**Table 28.8 Boys Track & Field Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	8	80.0%
Coach	1	10.0%
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	10.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.9 Boys Track & Field Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	10	100.0%
Not removed*	0	0.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

\*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 28.10 Boys Track & Field Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Reported at least one previous concussion	2	20.0%
No reported previous concussions	8	80.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.11 Most Recent Concussion for Boys Track & Field Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 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%
<b>TOTAL</b>	<b>2</b>	<b>100.0%</b>

**Table 28.12 Number of Previous Concussions for Boys Track & Field Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

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



**Table 28.13 Boys Track & Field Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	9	90.0%
Did not receive written authorization to return by the end of season	1	10.0%
Follow-up Report not completed	0	0.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.14 Boys Track & Field Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	4	40.0%
DO	1	10.0%
PA	1	10.0%
NP	3	30.0%
Medical examiner data not available*	1	10.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.15 Boys Track & Field Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	0	0.0%
Urgent or Ready Care business	2	20.0%
Primary care physician or pediatrician's office	7	70.0%
Neurologist's office	0	0.0%
Team doctor	0	0.0%
Medical facility data not available*	1	10.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.16 Boys Track & Field Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	8	80.0%
Conditions to return	1	10.0%
Return to activity data not available*	1	10.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.17 Boys Track & Field Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	9	90.0%
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	10.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

**Table 28.18 Boys Track & Field Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	1	10.0%
3-5 Days	0	0.0%
6-10 Days	6	60.0%
11-15 Days	0	0.0%
16-20 Days	1	10.0%
≥21 Days	1	10.0%
Data not available**	1	10.0%
<b>TOTAL</b>	<b>10</b>	<b>100.0%</b>

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\*\*

**XXIX. Girls Track & Field  
Head Injury Reports**

**Table 29.1 Head Injury Prevalence Rate for Girls Track & Field, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Girls Track and Field Participation</b>	<b>17,406</b>
<b>All Girls Track and Field Head Injuries</b>	<b>20</b>
<b>Girls Track and Field Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>0.11%</b>
<b>Girls Track and Field Head Injury Prevalence Rate Per Thousand Participants</b>	<b>1</b>

**Table 29.2 Girls Track & Field Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	15	75.0%
Junior Varsity	5	25.0%
Freshman	0	0.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 29.3 Girls Track & Field Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	13	65.0%
Competition	7	35.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 29.4 Girls Track & Field Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	1	7.7%
Middle of practice	8	61.5%
End of practice	4	30.8%
<b>PRACTICE TOTAL</b>	<b>13</b>	<b>100.0%</b>
Start of competition	3	42.9%
Middle of competition	4	57.1%
End of competition	0	0.0%
<b>COMPETITION TOTAL</b>	<b>7</b>	<b>100.0%</b>

**Table 29.5 Activity Type for Girls Track & Field Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	11	<b>84.6%</b>
During simulated competition-scrimmage	2	<b>15.4%</b>
Not specified	0	<b>0.0%</b>
<b>TOTAL</b>	<b>13</b>	<b>100.0%</b>

**Table 29.6 Girls Track & Field Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	0	0.0%
Person to object contact (e.g. wall, equipment)	10	50.0%
Person to playing surface contact	9	45.0%
Uncertain as to the cause of the event	1	5.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 29.7 Person to Playing Surface Contact Girls Track & Field Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Track	7	77.8%
Artificial turf	2	22.2%
<b>TOTAL</b>	<b>9</b>	<b>100.0%</b>

**Table 29.8 Girls Track & Field Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	8	40.0%
Coach	2	10.0%
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	1	5.0%
Athletic director	1	5.0%
Multiple examiners	8	40.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 29.9 Girls Track & Field Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	18	90.0%
Not removed*	2	10.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

\*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 29.10 Girls Track & Field Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Reported at least one previous concussion	1	5.0%
No reported previous concussions	19	95.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 29.11 Most Recent Concussion for Girls Track & Field Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

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

**Table 29.12 Number of Previous Concussions for Girls Track & Field Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	0	0.0%
2 concussions	1	100.0%
3 concussions	0	0.0%
≥4 concussions	0	0.0%
Not specified	0	0.0%
<b>TOTAL</b>	<b>1</b>	<b>100.0%</b>

**Table 29.13 Girls Track & Field Head Injuries by Athlete Clearance to Return to Activity before the End of Season in which the Injury Occurred, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	15	75.0%
Did not receive written authorization to return by the end of season	3	15.0%
Follow-up Report not completed	2	10.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 29.14 Girls Track & Field Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	11	55.0%
DO	3	15.0%
PA	0	0.0%
NP	1	5.0%
Medical examiner data not available*	5	25.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 29.15 Girls Track & Field Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	1	5.0%
Urgent or Ready Care business	0	0.0%
Primary care physician or pediatrician's office	13	65.0%
Neurologist's office	1	5.0%
Team doctor	0	0.0%
Medical facility data not available*	5	25.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>



**Table 29.16 Girls Track & Field Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	11	55.0%
Conditions to return	4	20.0%
Return to activity data not available*	5	25.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 29.17 Girls Track & Field Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	8	40.0%
1-2 Days	4	20.0%
3-6 Days	3	15.0%
7-9 Days	0	0.0%
10-20 Days	0	0.0%
≥21 Days	0	0.0%
Missed school data not available*	5	25.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

**Table 29.18 Girls Track & Field Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	0	0.0%
3-5 Days	0	0.0%
6-10 Days	5	25.0%
11-15 Days	6	30.0%
16-20 Days	3	15.0%
≥21 Days	1	5.0%
Data not available**	5	25.0%
<b>TOTAL</b>	<b>20</b>	<b>100.0%</b>

2 Missing Follow-up Reports\*

3 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, 2018-19 School Year**

Volleyball Participation	19,072
All Reported Volleyball Head Injuries	212
Volleyball Head Injury Prevalence Rate (reported head injuries/total participants)	1.11%
Volleyball Head Injury Prevalence Rate Per Thousand Participants	11

**Table 30.2 Volleyball Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	95	44.8%
Junior Varsity	73	34.4%
Freshman	44	20.8%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.3 Volleyball Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	98	46.2%
Competition	114	53.8%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.4 Volleyball Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	10	10.2%
Middle of practice	51	52.0%
End of practice	37	37.8%
<b>PRACTICE TOTAL</b>	<b>98</b>	<b>100.0%</b>
Start of competition	12	10.5%
Middle of competition	62	54.4%
End of competition	40	35.1%
<b>COMPETITION TOTAL</b>	<b>114</b>	<b>100.0%</b>

**Table 30.5 Activity Type for Volleyball Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	76	<b>77.6%</b>
During simulated competition-scrimmage	13	<b>13.3%</b>
Not specified	9	<b>9.2%</b>
<b>TOTAL</b>	<b>98</b>	<b>100.0%</b>

**Table 30.6 Volleyball Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	39	18.4%
Person to object contact (e.g. wall, equipment)	114	53.8%
Person to playing surface contact	43	20.3%
Uncertain as to the cause of the event	16	7.5%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.7 Person to Playing Surface Contact Volleyball Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Wooded gym floor	41	95.3%
Volleyball court	2	4.7%
<b>TOTAL</b>	<b>43</b>	<b>100.0%</b>

**Table 30.8 Volleyball Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	99	46.7%
Coach	68	32.1%
Sideline emergency personnel	1	0.5%
Other appropriate health care professional	3	1.4%
DO	2	0.9%
MD	3	1.4%
PA	0	0.0%
NP	0	0.0%
Athletic director	1	0.5%
Multiple examiners	35	16.5%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.9 Volleyball Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	173	81.6%
Not removed*	39	18.4%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	32	15.1%
No reported previous concussions	180	84.9%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.11 Most Recent Concussion for Volleyball Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	0	0.0%
Within one to six months	3	9.4%
Within six months to one year	6	18.8%
Over one year	23	71.9%
<b>TOTAL</b>	<b>32</b>	<b>100.0%</b>

**Table 30.12 Number of Previous Concussions for Volleyball Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	19	59.4%
2 concussions	7	21.9%
3 concussions	5	15.6%
≥4 concussions	1	3.1%
Not specified	0	0.0%
<b>TOTAL</b>	<b>32</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	172	81.1%
Did not receive written authorization to return by the end of season	30	14.2%
Follow-up Report not completed	10	4.7%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.14 Volleyball Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	98	46.2%
DO	32	15.1%
PA	21	9.9%
NP	21	9.9%
Medical examiner data not available*	40	18.9%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.15 Volleyball Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	8	3.8%
Urgent or Ready Care business	7	3.3%
Primary care physician or pediatrician's office	120	56.6%
Neurologist's office	19	9.0%
Team doctor	18	8.5%
Medical facility data not available*	40	18.9%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.16 Volleyball Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	147	69.3%
Conditions to return	25	11.8%
Return to activity data not available*	40	18.9%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.17 Volleyball Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	116	54.7%
1-2 Days	40	18.9%
3-6 Days	9	4.2%
7-9 Days	1	0.5%
10-20 Days	4	1.9%
≥21 Days	2	0.9%
Missed school data not available*	40	18.9%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

**Table 30.18 Volleyball Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	6	2.8%
3-5 Days	18	8.5%
6-10 Days	61	28.8%
11-15 Days	33	15.6%
16-20 Days	34	16.0%
≥21 Days	18	8.5%
Data not available**	42	19.8%
<b>TOTAL</b>	<b>212</b>	<b>100.0%</b>

10 Missing Follow-up Reports\*

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

2 Data entry errors\*\*



## **XXXI. Wrestling Head Injury Reports**

**Table 31.1 Head Injury Prevalence Rate for Wrestling, MHSAA Head Injury Reporting System, 2018-19 School Year**

<b>Wrestling Participation</b>	<b>9,494</b>
<b>All Reported Wrestling Head Injuries</b>	<b>210</b>
<b>Wrestling Head Injury Prevalence Rate</b> (reported head injuries/total participants)	<b>2.21%</b>
<b>Wrestling Head Injury Prevalence Rate Per Thousand Participants</b>	<b>22</b>

**Table 31.2 Wrestling Head Injuries by Gender, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Male	198	94.3%
Female	12	5.7%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.3 Wrestling Head Injuries by Level of Competition, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Varsity	173	82.4%
Junior Varsity	36	17.1%
Freshman	1	0.5%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.4 Wrestling Head Injuries by Type of Exposure, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Practice	102	48.6%
Competition	108	51.4%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.5 Wrestling Head Injuries by Time during Practice or Competition of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Start of practice	6	5.9%
Middle of practice	58	56.9%
End of practice	38	37.3%
<b>PRACTICE TOTAL</b>	<b>102</b>	<b>100.0%</b>
Start of competition	12	11.1%
Middle of competition	62	57.4%
End of competition	34	31.5%
<b>COMPETITION TOTAL</b>	<b>108</b>	<b>100.0%</b>

**Table 31.6 Activity Type for Wrestling Head Injury Events during Practice, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
During a drill	69	67.6%
During simulated competition-scrimmage	31	30.4%
Not specified	2	2.0%
<b>TOTAL</b>	<b>102</b>	<b>100.0%</b>

**Table 31.7 Wrestling Head Injuries by Cause of Injury, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Person to person contact	68	32.4%
Person to object contact (e.g. wall, equipment)	4	1.9%
Person to playing surface contact	122	58.1%
Uncertain as to the cause of the event	16	7.6%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.8 Person to Playing Surface Contact Wrestling Head Injuries by Surface Type, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Wrestling-type mat	120	98.4%
Indoor tile type floor	1	0.8%
Rubber weight room floor	1	0.8%
<b>TOTAL</b>	<b>122</b>	<b>100.0%</b>

**Table 31.9 Wrestling Head Injuries by Initial Examiner, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Athletic trainer	99	47.1%
Coach	49	23.3%
Sideline emergency personnel	0	0.0%
Other appropriate health care professional	4	1.9%
DO	0	0.0%
MD	8	3.8%
PA	0	0.0%
NP	0	0.0%
Athletic director	1	0.5%
Multiple examiners	49	23.3%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.10 Wrestling Athlete Removal from Activity at the Time of Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Removed	168	80.0%
Not removed*	42	20.0%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

\*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, 2018-19 School Year**

	n	%
Reported at least one previous concussion	34	16.2%
No reported previous concussions	176	83.8%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.12 Most Recent Concussion for Wrestling Athletes Reporting Previous Concussions after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Within last month	1	2.9%
Within one to six months	6	17.6%
Within six months to one year	9	26.5%
Over one year	18	52.9%
<b>TOTAL</b>	<b>34</b>	<b>100.0%</b>

**Table 31.13 Number of Previous Concussions for Wrestling Athletes Reporting Previous Concussion after Head Injury Event, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1 concussion	21	61.8%
2 concussions	9	26.5%
3 concussions	3	8.8%
≥4 concussions	1	2.9%
Not specified	0	0.0%
<b>TOTAL</b>	<b>34</b>	<b>100.0%</b>

**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, 2018-19 School Year**

	n	%
Received written authorization to return by the end of season	164	78.1%
Did not receive written authorization to return by the end of season	32	15.2%
Follow-up Report not completed	14	6.7%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.15 Wrestling Head Injuries by Medical Examiner Authorizing Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
MD	96	45.7%
DO	31	14.8%
PA	20	9.5%
NP	17	8.1%
Medical examiner data not available*	46	21.9%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.16 Wrestling Head Injuries by Facility where Medical Examiner Authorized Return to Activity, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Hospital	4	1.9%
Urgent or Ready Care business	7	3.3%
Primary care physician or pediatrician's office	127	60.5%
Neurologist's office	12	5.7%
Team doctor	14	6.7%
Medical facility data not available*	46	21.9%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.17 Wrestling Head Injuries by Clearance to Return to Activity Conditions, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
Unconditional return	147	70.0%
Conditions to return	17	8.1%
Return to activity data not available*	46	21.9%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.18 Wrestling Head Injuries by Missed School Days after Injury Event Date, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
0 Days	108	51.4%
1-2 Days	40	19.0%
3-6 Days	11	5.2%
7-9 Days	2	1.0%
10-20 Days	2	1.0%
≥21 Days	1	0.5%
Missed school data not available*	46	21.9%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

**Table 31.19 Wrestling Head Injuries by Time between Head Injury Event Date and Authorization Date to Return, MHSAA Head Injury Reporting System, 2018-19 School Year**

	n	%
1-2 Days	1	0.5%
3-5 Days	14	6.7%
6-10 Days	51	24.3%
11-15 Days	40	19.0%
16-20 Days	15	7.1%
≥21 Days	41	19.5%
Data not available**	48	22.9%
<b>TOTAL</b>	<b>210</b>	<b>100.0%</b>

14 Missing Follow-up Reports\*

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

2 Data entry errors\*\*

## **XXXII. Four Year Comparison**

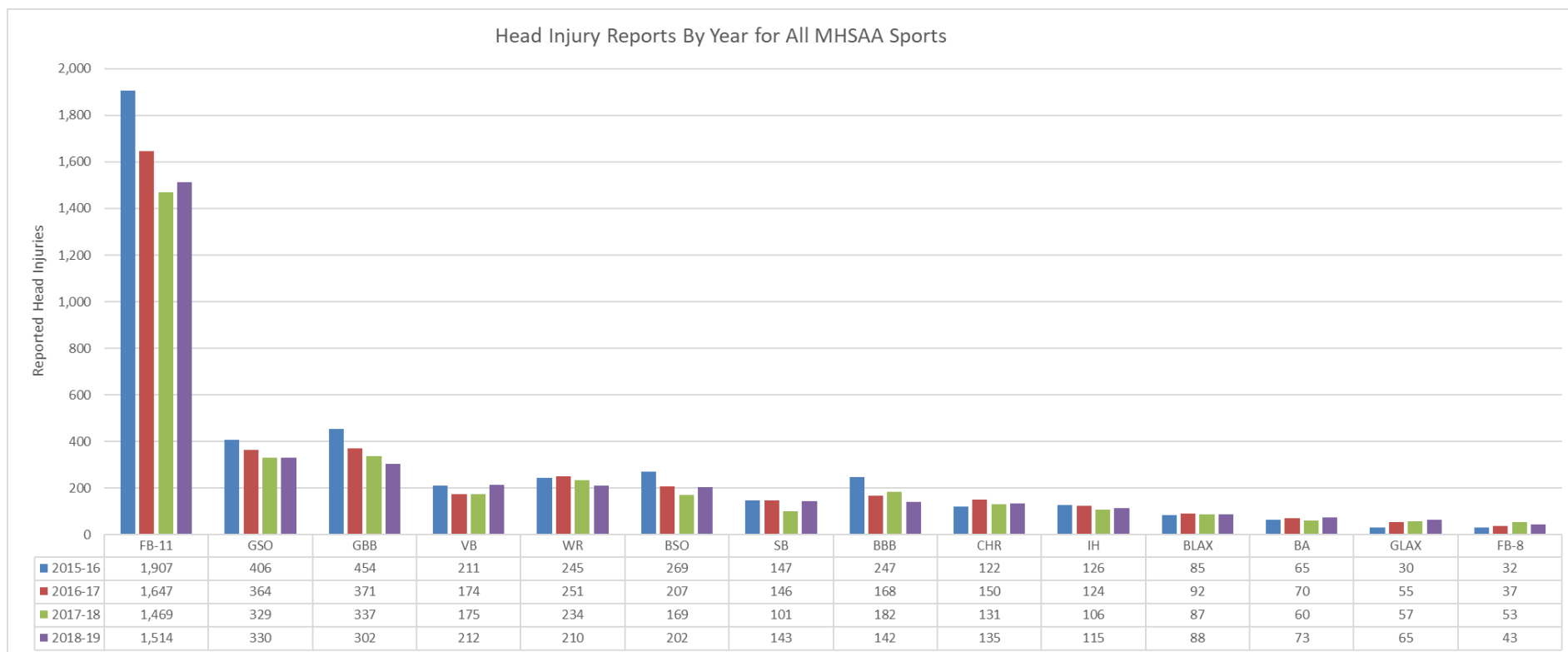


**Table 32.1 Head Injury Reports by Sport and Year, MHSAA Head Injury Reporting System, 2018-19 School Year**

SPORTS	Boys*				Girls			
	2015-16	2016-17	2017-18	2018-19	2015-16	2016-17	2017-18	2018-19
Baseball	65	70	60	73	-	-	-	-
Basketball	247	168	182	142	454	371	337	302
Bowling	1	0	0	1	0	0	0	0
Competitive Cheer	-	-	-	-	122	150	131	135
Cross Country	4	1	1	3	4	6	3	7
Football - 11-Player	1,907	1,647	1,469	1,514	-	-	-	-
8-Player	32	37	53	43	-	-	-	-
Golf	1	1	0	2	2	1	0	0
Gymnastics	-	-	-	-	8	8	11	7
Ice Hockey	126	124	106	115	-	-	-	-
Lacrosse	85	92	87	88	30	55	57	65
Skiing-Alpine	3	3	5	5	6	2	1	2
Soccer	269	207	169	202	406	364	329	330
Softball	-	-	-	-	147	146	101	143
Swimming & Diving	14	11	14	19	31	33	25	26
Tennis	0	4	3	2	6	6	7	8
Track & Field	4	11	9	10	22	15	11	20
Volleyball	-	-	-	-	211	174	175	212
Wrestling	245	251	234	210	-	-	-	-

\*Boys head injury data includes both males AND females playing on primarily male teams

**Figure 32.1 Head Injury Reports by Sport and Year – Higher Incidence Sports, MHSAA Head Injury Reporting System, 2018-19 School Year**



**ABBREVIATIONS**

Baseball – BA  
 Competitive Cheer – CHR  
 Boys Golf – BGO  
 Girls Lacrosse – GLAX  
 Softball – SB  
 Boys Track & Field – BTR

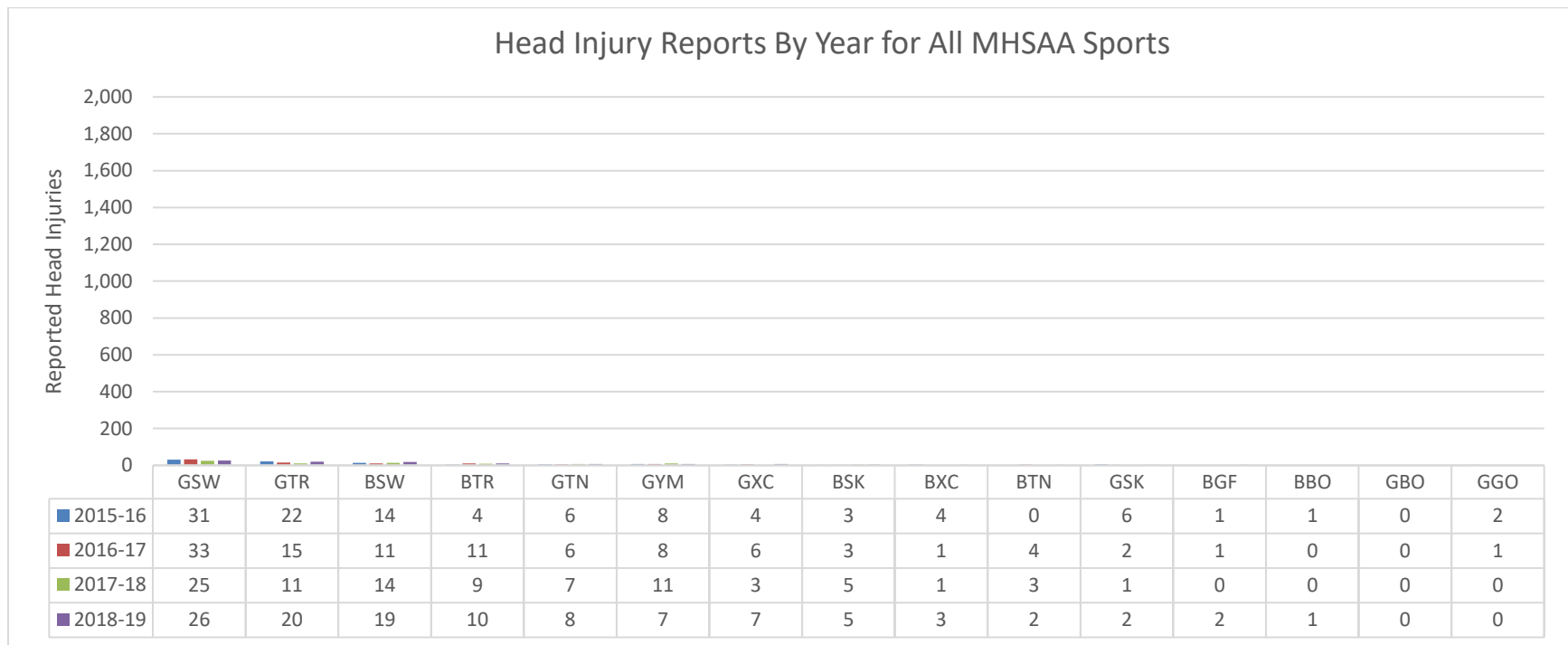
Boys Basketball – BBB  
 Boys Cross Country – BXC  
 Girls Golf – GGO  
 Boys Skiing – BSK  
 Boys Swimming & Diving – BSW  
 Girls Track & Field – GTR

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, 2018-19 School Year**



**ABBREVIATIONS**

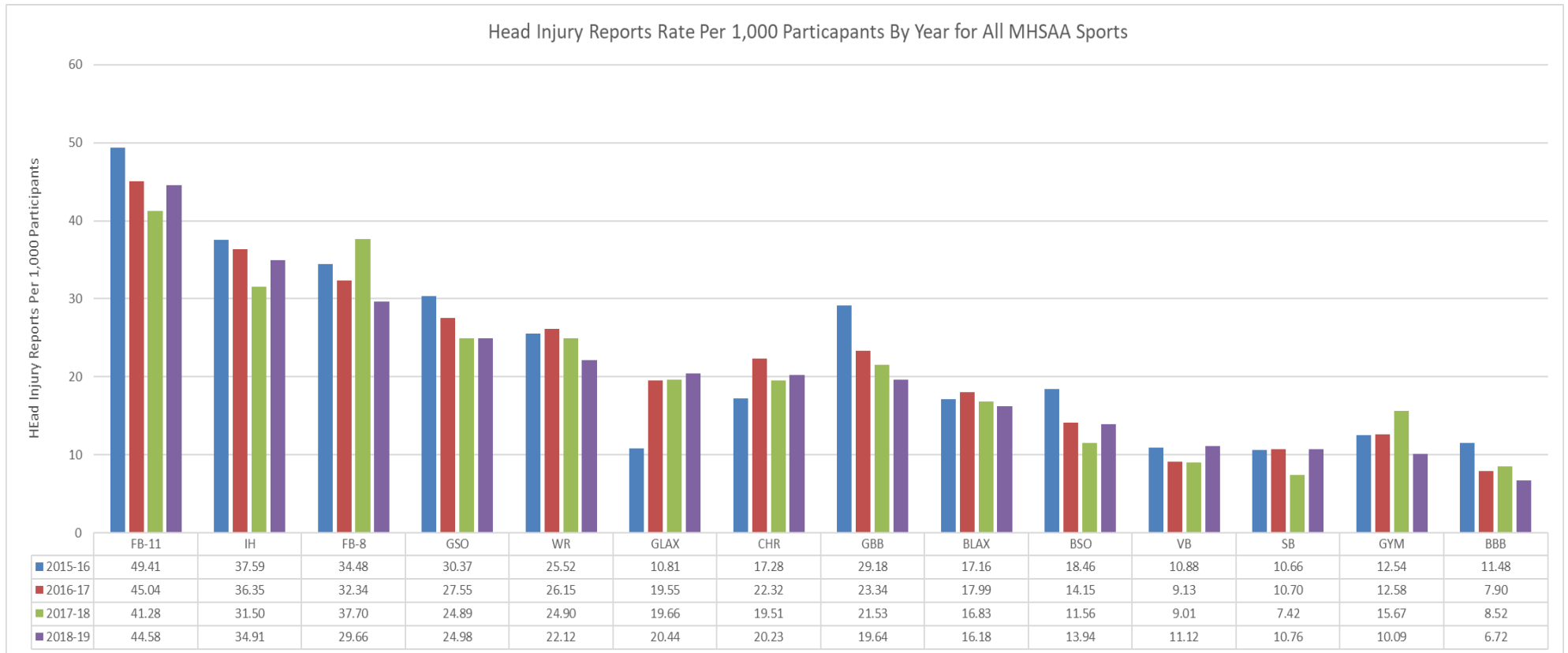
- |                          |                              |                               |                              |                            |
|--------------------------|------------------------------|-------------------------------|------------------------------|----------------------------|
| Baseball – BA            | Boys Basketball – BBB        | Girls Basketball – GBB        | Boys Bowling – BBO           | Girls Bowling – GBO        |
| Competitive Cheer – CHR  | Boys Cross Country – BXC     | Girls Cross Country – GXC     | Football – 11-Player – FB-11 | Football – 8-Player – FB-8 |
| Boys Golf – BGO          | Girls Golf – GGO             | Gymnastics – GYM              | Ice Hockey – IH              | Boys Lacrosse – BLAX       |
| Girls Lacrosse – GLAX    | Boys Skiing – BSK            | Girls Skiing – GSK            | Boys Soccer – BSO            | Girls Soccer – GSO         |
| Softball – SB            | Boys Swimming & Diving – BSW | Girls Swimming & Diving – GSW | Boys Tennis – BTN            | Girls Tennis – GTN         |
| Boys Track & Field – BTR | Girls Track & Field – GTR    | Volleyball – VB               | Wrestling – WR               |                            |

**Table 32.2 Head Injury Reports per 1,000 Participants by Sport and Year,  
MHSAA Head Injury Reporting System, 2018-19 School Year**

SPORTS	Boys*				Girls			
	2015-16	2016-17	2017-18	2018-19	2015-16	2016-17	2017-18	2018-19
Baseball	3.58	3.89	3.39	4.24	-	-	-	-
Basketball	11.48	7.90	8.52	6.72	29.18	23.34	21.53	19.64
Bowling	0.26	0.00	0.00	0.23	0.00	0.00	0.00	0.00
Competitive Cheer	-	-	-	-	17.28	22.32	19.51	20.23
Cross Country	0.43	0.11	0.10	0.31	0.48	0.71	0.34	0.86
Football - 11-Player	49.41	45.04	41.28	44.58	-	-	-	-
8-Player	34.48	32.34	37.70	29.66	-	-	-	-
Golf	0.16	0.16	0.00	0.32	0.58	0.28	0.00	0.00
Gymnastics	-	-	-	-	12.54	12.58	15.67	10.09
Ice Hockey	37.59	36.35	31.50	34.91	-	-	-	-
Lacrosse	17.16	17.99	16.83	16.18	10.81	19.55	19.66	20.44
Skiing-Alpine	4.17	3.58	6.02	5.41	9.20	2.68	1.30	2.62
Soccer	18.46	14.15	11.56	13.94	30.37	27.55	24.89	24.98
Softball	-	-	-	-	10.66	10.70	7.42	10.76
Swimming & Diving	2.96	2.21	2.75	3.80	5.76	5.89	4.36	4.49
Tennis	0.00	0.66	0.49	0.32	0.69	0.67	0.77	0.86
Track & Field	0.18	0.47	0.38	0.42	1.32	0.88	0.64	1.15
Volleyball	-	-	-	-	10.88	9.13	9.01	11.12
Wrestling	25.52	26.15	24.90	22.12	-	-	-	-

\*Boys head injury data includes both males AND females playing on primarily male teams

**Figure 32.3 Head Injury Reports per 1,000 Participants by Sport and Year – Higher Incidence Sports, MHSAA Head Injury Reporting System, 2018-19 School Year**



**ABBREVIATIONS**

Baseball – BA  
 Competitive Cheer – CHR  
 Boys Golf – BGO  
 Girls Lacrosse – GLAX  
 Softball – SB  
 Boys Track & Field – BTR

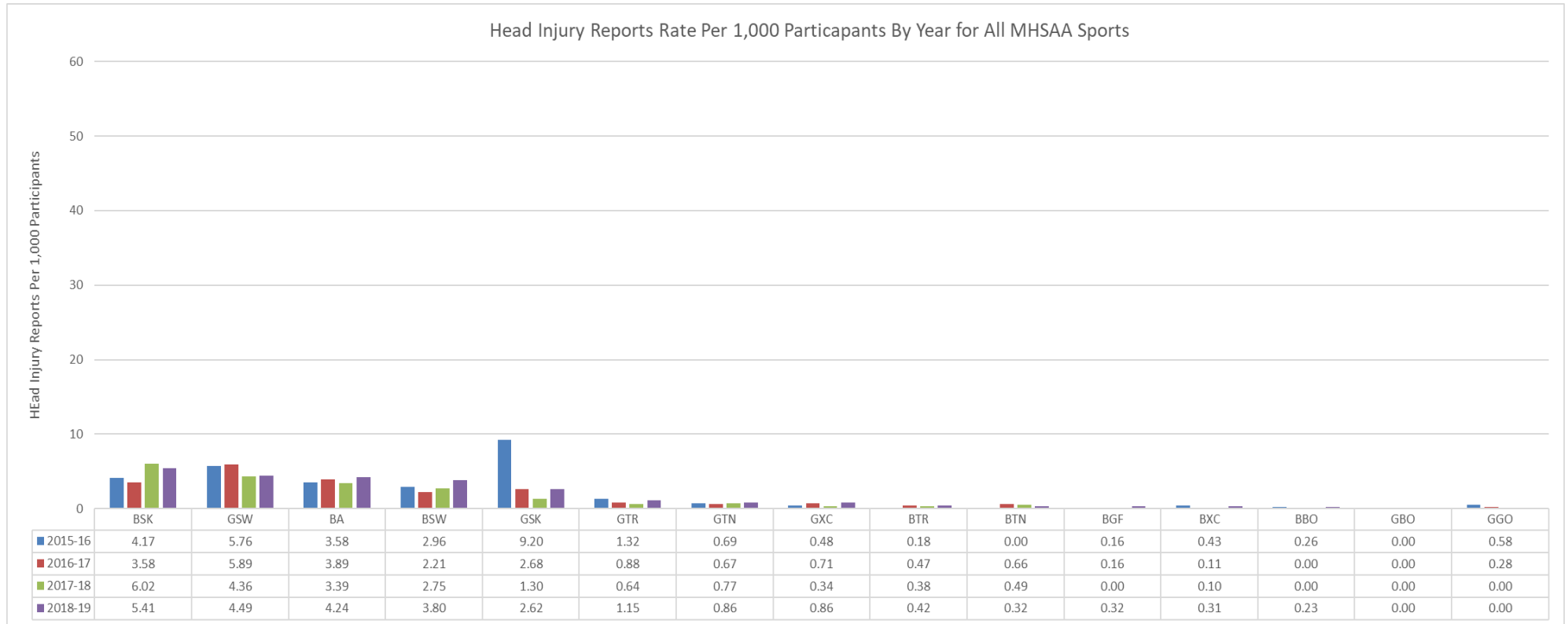
Boys Basketball – BBB  
 Boys Cross Country – BXC  
 Girls Golf – GGO  
 Boys Skiing – BSK  
 Boys Swimming & Diving – BSW  
 Girls Track & Field – GTR

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, 2018-19 School Year**



**ABBREVIATIONS**

- |                          |                              |                               |                              |                            |
|--------------------------|------------------------------|-------------------------------|------------------------------|----------------------------|
| Baseball – BA            | Boys Basketball – BBB        | Girls Basketball – GBB        | Boys Bowling – BBO           | Girls Bowling – GBO        |
| Competitive Cheer – CHR  | Boys Cross Country – BXC     | Girls Cross Country – GXC     | Football – 11-Player – FB-11 | Football – 8-Player – FB-8 |
| Boys Golf – BGO          | Girls Golf – GGO             | Gymnastics – GYM              | Ice Hockey – IH              | Boys Lacrosse – BLAX       |
| Girls Lacrosse – GLAX    | Boys Skiing – BSK            | Girls Skiing – GSK            | Boys Soccer – BSO            | Girls Soccer – GSO         |
| Softball – SB            | Boys Swimming & Diving – BSW | Girls Swimming & Diving – GSW | Boys Tennis – BTN            | Girls Tennis – GTN         |
| Boys Track & Field – BTR | Girls Track & Field – GTR    | Volleyball – VB               | Wrestling – WR               |                            |

## **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 continued in 2017-18 and 2018-19 and will continue in 2019-20.
- Concussion reporting was required for all MHSAA member high schools at practices and during competition in all levels of all MHSAA sports. That requirement continues.

The purpose of the 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, and 2018-19 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 - 11 player	33,962	1,514	45	1
Ice Hockey	3,294	115	35	2
Football 8-player	1,450	43	30	3
Girls Soccer	13,209	330	25	4
Wrestling	9,494	210	22	5
Girls Lacrosse	3,180	65	20	6
Competitive Cheer	6,672	135	20	7
Girls Basketball	15,376	302	20	8
Boys Lacrosse	5,438	88	16	9
Boys Soccer	14,492	202	14	10
Volleyball	19,072	212	11	11
Softball	13,290	143	11	12
Gymnastics	694	7	10	13
Boys Basketball	21,125	142	7	14
Boys Skiing	924	5	5	15
Girls Swimming & Diving	5,794	26	4	16
Baseball	17,234	73	4	17
Boys Swimming & Diving	5,003	19	4	18
Girls Skiing	763	2	3	19
Girls Track & Field	17,406	20	1	20
Girls Tennis	9,286	8	1	21
Girls Cross Country	8,144	7	1	22
Boys Track & Field	23,548	10	0	23
Boys Tennis	6,261	2	0	24
Boys Golf	6,284	2	0	25
Boys Cross Country	9588	3	0	26
Boys Bowling	4,329	1	0	27
Girls Bowling	3,093	0	0	28
Girls Golf	3,587	0	0	28

### 33.3 Key Observations of Year #4 (2018-19)

- During the 2018-19 school year, 4,301 suspected concussions were entered by MHSAA member high schools into the Head Injury Reporting System:
  - 19 duplicate reports were entered and subsequently deleted
  - 15 reports were not included because of entry error
  - 237 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.)
  - 289 reported head injuries were not diagnosed as concussions and not included in the 2018-19 Summary Report
  - 55 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 2018-19 Summary Report

With the above deletions and exclusions, **3,686** head injury reports were included in the 2018-19 Summary Report.

- Total head injury reports increased for the first time in four years of data collection – 3,686 concussion reports is up 3.0% from the 3,580 reports for 2017-18. Previous annual summary data show an 11.1% decrease in reports from year one to year two of the data collection (4,452 reports during the 2015-16 school year to 3,958 reports during the 2016-17 school year), and a 9.6% decrease from year two to year three (3,958 reports during the 2016-17 school year to 3,580 reports during the 2017-18 school year).
- 11-player football, 8-player football, ice hockey, girls soccer, wrestling and girls basketball continue to have the highest rate of head injury reports – these six sports have comprised the top six with regard to head injury reports per 1,000 participants in each of the past four years.
- In 2018-19, reports per 1,000 participants increased in a number of sports. The most significant increases were seen in 11-Player Football (from 41 per 1,000 in 2017-18 to 45 per 1,000 in 2018-19), Ice Hockey (32 to 35 per 1,000), Softball (7 to 11 per 1,000), Boys Soccer (12 to 14 per 1,000), and Volleyball (9 to 11 per

1,000). The most significant decreases in reports per 1,000 participants were observed in 8-Player Football (38 to 30 per 1,000), Gymnastics (16 to 10 per 1,000), and Wrestling (25 to 22 per 1,000).

- In the 2017-18 summary, it was noteworthy that the number of head injuries reported in 11-player football decreased from 45 to 41 per 1,000 participants when comparing the 2016 season to 2017. However, the frequency of head injury reports for 8-player football increased from 32 to 38 per 1,000 participants when comparing 2016 to 2017. This happened at the same time that decreases in 11-player participation matched almost exactly the increases in 8-player participation among MHSAA member schools; and this suggested that more inquiry into the policies and procedures of 8-player football was needed.

Participation decreased by over 1,600 students in 11-player football when comparing the 2017 season and 2018. There was essentially no change to the number of 8-player football participants during that same period (participation increased by 44 students). Reported head injuries increased, however, from 41 to 45 per 1,000 participants in 11-player football and decreased from 38 to 30 per 1,000 participants in 8-player when comparing 2017 to 2018. This data, combined with the data from the previous three years suggests these changes are simply year-to-year fluctuations. Additionally, these changes reaffirm and suggest caution when comparing 11-player and 8-player football data; changes in 8-player football data could potentially be misleading because of the relatively low number of participants.

- 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 – 25 per 1,000 (Ranks 4<sup>th</sup>)

Boys Soccer – 14 per 1,000 (Ranks 10<sup>th</sup>)

Girls Basketball – 20 per 1,000 (Ranks 8<sup>th</sup>)

Boys Basketball – 7 per 1,000 (Ranks 14<sup>th</sup>)

Softball – 11 per 1,000 (Ranks 12<sup>th</sup>)

Baseball – 4 per 1,000 (Ranks 17<sup>th</sup>)

- As in the previous three years, approximately two-thirds of reported concussions occur during competition (66.2%). Looking at each sport individually, about two-thirds or more of all reported concussions occur during competition with the exception of Volleyball (46.2% in practice; 53.8% in

competition), Competitive Cheer (85.2% in practice; 14.8% in competition), and Wrestling (48.6% in practice; 51.4% in 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.

- The 2018 football season marked the 5<sup>th</sup> season since the institution of MHSAA policies reducing contact during practices. Over these four years, the incidence (percentage of reports) of head injuries incurred during practice have remained consistent:

11-Player Football – 35.4% in 2015; 37.5% in 2016; 37.0% in 2017; 36.0% in 2018

8-Player Football – 15.6% in 2015; 18.9% in 2016; 18.0% in 2017; 18.6% in 2018

- 61.3% of all boys concussions occur as a result of person to person contact compared to 32.0% for girls. Primarily boys contact/collisions sports (i.e. football, ice hockey, boys lacrosse, and wrestling) likely skew this data, but if we look at sports sponsored under the same playing rules for both genders, person to person contact is the leading cause of concussions in both boys basketball and boys soccer, and the proportion of reports identifying person to person contact as mechanism of injury is higher for boys when compared to girls in the same sport:

Boys Basketball – 50.0%

Girls Basketball – 45.5%

Boys Soccer – 45.5%

Girls Soccer – 28.2%

It should be noted that the difference between the proportion of reports identifying person to person contact as the mechanism of injury is much closer this year than it was in the 2017-18 summary data.

- The majority of injured athletes are initially examined by an athletic trainer (56.4%). That proportion is likely higher as 18.6% of athletes were reported as having been initially looked at by multiple examiners. 19.1% were initially examined only by the coach.
- 18.5% of athletes determined to have a concussion were not removed from activity at the time of the injury. This is by no means an indication 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 situations may have led to the athlete not being removed at the time of injury.

- 69.6% of concussions caused athletes to be withheld from activity for 6 days or more, which suggests that a degree of caution is being exercised in most cases following removal from play.
- Male vs female injury prevalence rates in 11-Player Football, Ice Hockey, Boys Lacrosse, and Wrestling if head injury and participation numbers are separated for calculations:

#### 11-Player Football

10 reported athletes were female / 94 females participating  
10.6% or 106 head injuries per 1,000 participants

1,504 reported athletes were male / 33,868 males participating  
4.4% or 44 head injuries per 1,000 participants

#### Ice Hockey

0 reported athletes were female / 12 females participating  
0% or 0 head injuries per 1,000 participants

115 reported athletes were male / 3,282 males participating  
3.5% or 35 head injuries per 1,000 participants

#### Boys Lacrosse

0 reported athletes were female / 15 females participating  
0% or 0 head injuries per 1,000 participants

87 reported athletes were male / 5,423 males participating  
1.6% or 16 head injuries per 1,000 participants

## Wrestling

12 reported athletes were female / 327 females participating  
3.6% or 36 head injuries per 1,000 participants

198 reported athletes were male / 9,167 males participating  
2.2% or 22 head injuries per 1,000 participants

- At the time of this summary, Online Follow-up Reports were not completed for 225 (6.1%) of the 3,686 reports.
- The MHSAA has received 1,616 Return to Activity and Post-Concussion Consent Forms (37.9% of the 4,267 reported head injuries for which a clearance should have been received). This is the third year in a row the percentage has declined – in 2016-17, the MHSAA received clearance documentation in 46.0% of suspected head injuries and in 2017-18 the MHSAA received 40.5%. Of those 1,616 return to activity documents, 46 (or 2.8%) were returned to the school because there were either conditions from the medical examiner on clearance documentation or missing parent and/or student consent.
- In the Fall season, 544 schools reported concussions – 188 schools reported 0 concussions for the season – 11 schools did not have any Fall sports – 6 schools did not submit any response
- In the Winter season, 438 schools reported concussions – 284 schools reported 0 concussions for the season – 10 schools did not have any Winter sports – 17 schools did not submit any response
- In the Spring season, 351 schools reported concussions – 361 schools reported 0 concussions for the season – 26 schools did not have any Spring sports – 11 schools did not submit any response

### 33.4 Emerging Inquires for Year #5 (2019-20)

- A. The 2018 football season marked the fifth since MHSAA policies reducing contact during practices have been in effect, and the fourth year the MHSAA has been collecting data related to head injuries. During that time, we have closely monitored the head injury reporting data for both 11-player and 8-player football in an effort to determine whether or not reduced contact during practice, accompanied by more awareness and use of non-contact methods of teaching blocking and tackling, could potentially lead to lower occurrences of concussions in football and an even lower percentage of football concussions occurring during practice sessions.

As noted in the observations section above, over four years, the incidence (percentage of reports) of head injuries incurred during practice have remained consistent:

11-Player Football – 35.4% in 2015; 37.5% in 2016; 37.0% in 2017; 36.0% in 2018

8-Player Football – 15.6% in 2015; 18.9% in 2016; 18.0% in 2017; 18.6% in 2018

A new MHSAA football practice policy limiting collision contact will take effect in 2019. The policy limits collision contact during practice to no more than 6 hours in a week during the first two weeks of practice before the first contest, and 30 total minutes of collision contact in any week after the first regular-season game. It will be interesting to observe what impact this limitation may have on the incidence of head injuries, and something that we will be monitoring during 2019-20 and beyond.

Additionally, head injury reports in 11-player football increased from the previous season for the first time in four years of data collection going from 41 per 1,000 in 2017-18 to 45 per 1,000 in 2018-19.

Although the increase appears to be nominal and likely the result of simple year-to-year fluctuations, it is clear we must continue to examine closely the data related to football and try to identify where risks for injury are real and can be reduced.

- B. Four years of data substantiates that, in similar sports, three times as many concussions are reported for girls as for boys. This data is consistent with research by many other entities.

In this year's summary, it is pointed out that the dominant cause of concussion reports for boys is person-to-person contact, but this is not true for girls.

The data combines to suggest that more inquiry be devoted to the following:

1. Playing rules and equipment changes that might be beneficial in reducing head injuries for girls.
  2. Coaches education that might better prepare individuals who are working with boys teams where participants may be under-reporting head injuries.
- C. This reporting initiative by the MHSAA requires attention by member schools that is sometimes delayed or incomplete, which suggests the continued need to investigate and widely discuss procedures that will improve compliance, especially:
1. Prompt submission of initial reports.
  2. Timely submission of follow-up reports.
  3. Consistent submission of Return to Activity forms.



### 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 and 2018-19 data has helped to refine our understanding of those trends and also continues 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 and coaches and encourage everyone to report the signs and symptoms of concussion that they experience or that they see in others.

The 2019-20 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 2018-19 concussion data in their sport to assist in the health and risk management of the participants. In addition, the MHSAA Sports Medicine Advisory Committee will review the data to provide additional educational resources and address emerging issues.

Meanwhile, the MHSAA invites colleges, universities and health care system of 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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