



# SHREWSBURY PUBLIC SCHOOLS

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## Concussion Report to the School Committee Data from 2015-16 School Year

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October 5, 2016

### Introduction

According to the CDC's "Heads Up Concussion" website, "A concussion is a type of traumatic brain injury—or TBI—caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move quickly back and forth. This fast movement can cause the brain to bounce around or twist in the skull, creating chemical changes in the brain and sometimes stretching and damaging the brain cells."

Signs and symptoms typically appear immediately following the injury. However the severity may not be clearly understood for hours or days later. Monitoring of concussion symptoms should take place immediately following the injury and for several days after. (See Appendix 1 for a list of typical signs and symptoms of a concussion.)

A total of 101 concussions were reported to Shrewsbury Public Schools (SPS) school nurses and/or the SHS athletic trainer throughout the 2015-16 school year. This total includes concussions that occurred during athletics and other school activities, as well as those that occurred outside of school activities.

Depending on the severity of the injury, a concussion may have short- or long-term impact on a student's learning. Some students return to full academics and other activities within 7 - 10 days, while other students can continue to have symptoms that affect their ability to attend classes and complete assignments for months after the initial injury. These students require careful monitoring and academic accommodations in order to ensure an eventual full recovery.

### Statistics

School nurses throughout the district collected the following data over the 2015-16 school year:

	SHS athletes	OMS athletes	District wide - concussions occurring in school (not related to athletics)	District wide - concussions occurring outside of school
Total	28	0	7	66

Below is breakdown of concussions sustained in SHS athletic activities by sport per data collected by Walter Hildebrand, ATC:

	<b>2011-2012</b>	<b>2012-2013</b>	<b>2013-2014</b>	<b>2014-2015</b>	<b>2015-2016</b>
<b>Baseball</b>	2	0	0	0	0
<b>Basketball, Boys</b>	1	2	3	0	2
<b>Basketball, Girls</b>	2	2	5	1	0
<b>Cheer</b>	5	1	3	2	1
<b>Crew, Boys</b>	0	2	0	1	0
<b>Crew, Girls</b>	0	1	3	0	1
<b>Cross Country, Boys</b>	0	0	0	0	2
<b>Cross Country, Girls</b>	0	0	0	0	0
<b>Dance</b>	1	0	0	0	0
<b>Field Hockey</b>	0	3	2	4	3
<b>Football</b>	19	13	16	26	12
<b>Gymnastics</b>	0	1	0	1	0
<b>Hockey, Boys</b>	1	4	0	2	2
<b>Hockey, Girls</b>	1	1	1	1	0
<b>Lacrosse, Boys</b>	4	1	1	2	0
<b>Lacrosse, Girls</b>	3	3	0	0	1
<b>Ski</b>	1	0	0	0	0
<b>Soccer, Boys</b>	1	2	2	5	0
<b>Soccer, Girls</b>	4	3	3	4	2
<b>Softball</b>	1	0	2	1	0
<b>Swim, Girls</b>	0	1	0	0	0
<b>Track, Girls</b>	4	1	3	0	0
<b>Volleyball</b>	2	1	3	0	2
<b>TOTAL</b>	52	42	47	50	28

## Care of Students Diagnosed with Concussion

### Nursing Care of All Students

Nurses are involved in the care and daily monitoring of all students who are diagnosed with a concussion, whether the concussion is sustained during a school event such as an athletic competition, or sustained outside of school. At times, the school nurse is the first to notice symptoms of a concussion. She then contacts the parents to recommend follow up care with an outside provider.

After a diagnosis of concussion has been made, the school nurse meets with the student and parent to evaluate the student's symptoms, and determine if the student should be in school, should attend partial or half days, or if the student needs additional time at home for cognitive rest. Rest at home for one to several days may be required. When a student is able to attend school, a plan is put into place for the student to attend class as tolerated, with a reminder that any increased symptoms should be reported to the nurse. Partial days or alternating class and rest is often necessary.

The nurse communicates recommended accommodations to teachers as they are received from the student's physician, and sends updates as needed. (See Appendix 2 for a list of typical accommodations.)

Throughout the return to class process, students are evaluated daily by the nurse to assess any increase in symptoms with academic work. If an increase in symptoms is noted, teachers will be contacted to further decrease academic expectations. For increased symptoms, half or partial school days are encouraged. If symptoms persist, student will be referred back to his/her physician for evaluation. The school nurse maintains frequent communication with parents and outside providers throughout this process.

When symptoms have subsided, and the student is able to attend a full day of school, the student's academic workload will gradually increase. Only when the student is able to tolerate a full day of school and a full academic workload can he/she begin the return to play (RTP) protocol for athletics, and/or consider returning to other extracurricular activities such as band, chorus, orchestra, play rehearsal, etc.

### **Care of Student Athletes**

If an athlete is suspected of sustaining a head injury at a practice or game, the Coach notifies the Certified Athletic Trainer (ATC) of the injury. The injured athlete is then assessed by the ATC to determine the severity of the injury based on the Sport Concussion Assessment Tool 2 (SCAT 2), sideline testing and on field neurocognitive screening. If immediate medical attention is warranted, EMS is summoned and the SHS emergency action plan is put into place, while the ATC continues to treat the injured athlete.

Parents are notified by the ATC or Athletic Director of any student injury upon completion of the assessment. Depending on the severity of injury, a follow up appointment is advised with the student athlete's health care provider, ER, or team physician. In less severe cases, parents are instructed in home monitoring of student, and when to seek further care if symptoms worsen. The parents of the student athlete are given a brief informational packet that informs them of the signs and symptoms that were observed at the time of initial evaluation. This packet should be used as a resource when following up with their health care provider, as initial findings are often an important part of the final diagnosis. A copy of the SHS return to play protocol and copy of the Massachusetts Department of Public Health "*Head Injury During Sports Season*" Reporting form is also provided to the student athlete's parents.

The parents of any athlete who sustains a blow to the head or body jarring injury will receive notification from the ATC or Athletic Director informing them of the incident and advise home monitoring of the student athlete for signs and symptoms of concussion, even if concussion is not suspected upon completion of the initial evaluation.

After any suspected concussion, the ATC notifies the school nurses and Athletic Director by, phone, email, or direct communication advising a follow up with the student athlete on the next school day. The school nurses will then conduct their own assessment of the student athlete and communicate any newly developed symptoms with the ATC.

If the student returns to school with the diagnosis of concussion, the school nurses work with the student, parents and school staff around recovery and return to full academics as noted above. When the student is attending school fully, the SHS Return to Play (RTP) protocol is completed. (See Appendix 3 for details regarding the RTP protocol.)

After completion of RTP, the student athlete is responsible to report back to the ATC, School Nurses, or coaches if experiencing any symptoms at any time throughout the day.

The average time from diagnosis to return to academics/play varies depending on severity of injury and sport in which the student is participating. Students must be able to fully participate in their academic schedule before return to play is started. For a simple concussion, return may be as soon as 1-2 weeks, while more complex injuries can take several months. Some students have long-term impact (months to years) on both academics and athletics.

During the 2015-16 school year, three students experienced concussions that had significant long-term effects. All of these students' concussions occurred during outside of school activities.

## Prevention/Education

Education of students, parents, teachers and coaches is our best strategy for concussion prevention. Each of these stakeholders is provided with opportunities to learn about the causes, signs and symptoms of concussion, as well as what to expect for treatment and follow up if a concussion does occur.

Student athletes and their parents attend a mandatory Sports Night which takes place at the beginning of each season (fall, winter and spring). At this meeting, basic information regarding concussion and return to play are presented by the Athletic Director and ATC. As of the 2016-2017 academic school year, concussion statistics for all sports are also presented to parents and athletes' allowing them to better understand the associated risk concussion plays in their sport. As part of the sports registration process, both students and parents are also expected to read the SPS Concussion Manual (available on the Athletics and Nursing Department web pages) and sign off that they have read and understand the information that is provided therein. Concussion information is available as a resource for families on the Department of Nursing and Department of Athletics web pages.

Coaches receive annual concussion training through the National Federation of State High School Associations (NFHS). Each coach completes an online training and the certificates of completion are kept on file by the athletic trainer. Our ATC is available to provide recommendations on how to reduce the risk of concussion and as a general resource for coaching staff throughout school year should they have questions or concerns.

During the 2015-2016 school year the Head Football Coach and ATC met on several occasions to discuss changes that could be made to the football teams' strength and conditioning program to help reduce the risk of sustaining a concussion during football. Core stabilization and neck strengthening exercises were implemented in the team's off-season, pre-season, and in-season team lifts. An emphasis was also placed on educating these student athletes on proper "heads up" hitting technique to help reduce the incidence of head to head contact during play. After implementing these strategies, we have seen a significant decrease in the number of concussions diagnosed in the 2015-2016 football season when compared to the prior season.

The total number of football related concussions in 2015-16 was 12, down from 26 in the 2014-15 season. The mechanism of injury for these concussions is further detailed in the chart below.

<b>Cause of concussion</b>	<b>2013-14</b>	<b>2014-15</b>	<b>2015-16</b>
Head to head contact during practice	5	7	2
Head to head contact during games	7	13	8
Hit to body	2	4	0
Other	2	2	2
<b>Total</b>	<b>16</b>	<b>26</b>	<b>12</b>

Pre-participation baseline screening (ImPACT - Immediate Post-Concussion Assessment Cognitive Testing) is another layer of education and awareness that is provided for student athletes. ImPact is a computerized concussion evaluation system, which provides trained clinicians with neurocognitive assessment tools that aid in determining safe return to play for athletes. At SHS, this testing is mandatory for all collision-based sports (football, hockey, lacrosse), and is offered as an option to all SHS athletes. ImPACT testing is a fee-based service, which is paid for by the athletic department for students who choose to participate. Initial screening provides a baseline to which subsequent data can be compared if an athlete sustains a concussion. For the 2015-16 school year, 280 athletes participated in ImPACT testing. This is an increase from 218 tests in 2014-15. From those 280 baseline tests, a total of 17 post injury tests were performed for 14 athletes.

All student athletes must submit medical clearance in the form of a recent physical exam by their primary healthcare provider. MIAA rules require that every athlete has a physical exam within 13 months of any participation. School nurses track this information and provide clearance lists to coaches. Any student who has sustained a concussion is required to have documentation of full clearance from that concussion by their doctor before being cleared to participate.

Teachers throughout the district receive a staff handbook annually that includes basic concussion information and typical academic accommodations. As noted above, individual emails are sent to teachers when a student in their class is diagnosed with concussion, and specific accommodations are recommended. School nurses are available as a resource to teachers as needed throughout the school year.

## Appendix 1

Signs/symptoms of concussion that may be observed by parents or coaches include:

- Appears dazed or stunned
- Forgets an instruction, is confused about an assignment or position, or is unsure of the game, score, or opponent
- Moves clumsily
- Answers questions slowly
- Loses consciousness (*even briefly*)
- Shows mood, behavior, or personality changes
- Can't recall events *prior to* or *after* a hit or fall

Symptoms that may be reported by children and teens include:

- Headache or “pressure” in head
- Nausea or vomiting
- Balance problems or dizziness, or double or blurry vision
- Bothered by light or noise
- Feeling sluggish, hazy, foggy, or groggy
- Confusion, or concentration or memory problems
- Just not “feeling right,” or “feeling down”
- Difficulty sleeping

## Appendix 2

Upon return to class, an email with accommodation information similar to the following is sent to the student’s teachers:

Please implement the usual post concussive accommodations for (student’s name):

- Extra time for all course work
- No tests this week
- Decrease the amount of homework nightly, as reading and concentration are headache triggers
- Hold student responsible for **essential** assignments only
- Easy access to the Nurse's Office for periods of rest during the school day
- No PE or Sports until cleared by health care provider

## Appendix 3

Return to Play Protocol:

- Day 1-2: The student athlete must be asymptomatic for a minimum of 2 days, attending school full time before beginning any physical activity
- Day 3: Light Aerobic Exercise: Walking, cycling, or light jogging. No resistance training. Limit 30 Minutes.
- Day 4: Sports Specific training: Agility drills, change of direction, sprinting. No extended exertion. No contact, No helmet or equipment.
- Day 5: Light Contact Training: Resume body contact drills, limit direct head contact drills (tackling in football, heading in soccer, checking in hockey), light resistance training is allowed.
- Day 6: Full Contact Practice: Participation in all areas of practice, contact is allowed (tackling drills, heading, checking). Full resistance training.
- Day 7: Game Play: Return to full Participation

If at any point throughout the RTP the student athlete's symptoms return, the student athlete will stop the protocol immediately and the ATC will reevaluate her/him for lingering or newly developed symptoms. Once asymptomatic the RTP protocol will restart at day one. If the student athlete is incapable of finishing the RTP for a second time due to the recurrence of symptoms, s/he must return to her/his health care provider for follow up prior to proceeding with the RTP protocol.

If a student athlete has taken an ImPACT Baseline test they must return to their baseline score prior to beginning the RTP protocol. ImPACT Baseline testing is offered to all Shrewsbury High School student athletes at no additional fee.