



2016 Concussion Management Survey Results

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DEPT. OF HEALTH AND HUMAN SERVICES

Division of Public Health
Injury Prevention Program

2016 Concussion Management Survey

Nebraska Department of Health & Human Services
Injury Prevention Program

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Table of Contents

Executive Summary.....	1
Introduction	3
Survey Response and Respondent Characteristics.....	4
Concussion Policies	5
Concussion Training and Education	7
Baseline Testing	10
Assessment of Concussions and Removal from Play.....	13
Return-to-Learn	16
Return-to-Play.....	20
Possible Improvements to Concussion Management Program	25
Certified Athletic Trainers (ATCs).....	27
Conclusion.....	28

Executive Summary: 2013, 2015, and 2016 Comparisons

Background

In 2016, the University of Nebraska – Lincoln, Center for Brain, Biology, and Behavior conducted the Concussion Management Survey of high school athletic directors with support from the Nebraska DHHS Injury Prevention Program. The Concussion Management Survey was a new instrument in 2016. However, the survey included a core set of questions from the 2013 and 2015 Nebraska Sports Concussion Athletic Director Surveys. This core set of questions was largely designed to track compliance with Nebraska’s Concussion Awareness Act.

Survey sample

Figure 1 below presents the survey response from the three surveys of Nebraska high school athletic directors that are compared in this report.

Figure 1	Survey response		
	Number of Respondents	Number of Surveys Sent Out	Response Rate
2013 Nebraska Sports Concussion Athletic Director Survey	164	307	53.4%
2015 Nebraska Sports Concussion Athletic Director Survey	261	304	85.9%
2016 Concussion Management Survey	276	304	90.8%

Survey Results

Figure 2 presents the survey items that were the same across the Nebraska Sports Concussion Athletic Director Surveys (2013 and 2015) and the Concussion Management Survey (2016). There have been notable improvements in school policies (items 1 and 2), yet not all schools have policies for removal and return to play and return to learn, the latter of which is mandated by state law. All respondents reported making concussion training available to coaches in 2016 (item 3).

Lastly, 87.6% of respondents reported that a coach or athletic trainer always removes an athlete with a suspected concussion from play (item 6). While this is an improvement from the rate of 75.5% in 2013, it is still low enough to indicate that some athletes are at risk for enduring a second concussion before they have recovered from an initial concussion.

Figure 2	Comparison of survey items: 2013, 2015, and 2016		
	2013	2015	2016
1. School has a formal written policy for removal and return to play for athletes with a suspected concussion	63.2%	74.3%	90.6%
2. School has a written return-to-learn policy that provides accommodations for the classroom work of students with a suspected concussion	6.1%	70.8%	83.9%
3. School has made concussion education/training available to coaches	93.9%	99.6%	100%
4. School has made concussion education/training available to teachers	32.5%	71.6%	70.5%
5. Concussion training/education is mandatory for coaches	77.1%	95.7%	99.3%
6. Coaches or athletic trainers always remove an athlete with a suspected concussion from play	75.5%	81.8%	87.6%
7. School has a designated person(s) to assist students as they complete return-to-learn	34.4%	60.0%	62.5%

2016 Concussion Management Survey Results

Introduction

In an attempt to reduce the long-lasting consequences of second-impact concussions, the Nebraska State Legislature enacted the Concussion Awareness Act in 2012. There are four essential components of this law as it was originally designed, which are:

- Concussion education training must be made available to all coaches on how to recognize symptoms of a concussion and how to seek proper medical treatment.
- Athletes and parents must be provided with information about concussions prior to an athlete's participation in school sanctioned sports on an annual basis.
- An athlete suspected of having a concussion must be removed from participation and may not return until evaluated by an appropriate licensed health care professional.
- An athlete removed from participation for a suspected concussion must receive written and signed clearance from an appropriate licensed health care professional and from the athlete's parents prior to returning to play.

In 2014, an amendment was added to the Concussion Awareness Act, creating a fifth component: Schools must have a policy outlining the protocol for students returning to the classroom after sustaining a concussion.

In order to evaluate the effectiveness of this new law, the Concussion Evaluation Work Group conducted surveys of high school athletic directors and head coaches in 2013 and 2015. The survey for athletic directors was known as the "Nebraska Sports Concussion Athletic Director Survey". Both administrations of this survey were supported by the Nebraska DHHS Injury Prevention Program.

In 2016, the University of Nebraska – Lincoln, Center for Brain, Biology, and Behavior conducted the "Concussion Management Survey" of high school athletic directors with support from the Nebraska DHHS Injury Prevention Program. This report presents results from this 2016 survey with comparisons to the 2013 and 2015 Nebraska Sports Concussion Athletic Director Survey where possible. The 2016 survey was a divergence from the previous surveys, however, a core group of questions were retained to track compliance with Nebraska's Concussion Awareness Act.

The 2016 Concussion Management Survey was conducted online via SurveyMonkey in the fall of 2016. The 2013 and 2015 Nebraska Sports Concussion Athletic Director Surveys were also conducted online via SurveyMonkey but were taken in the spring.

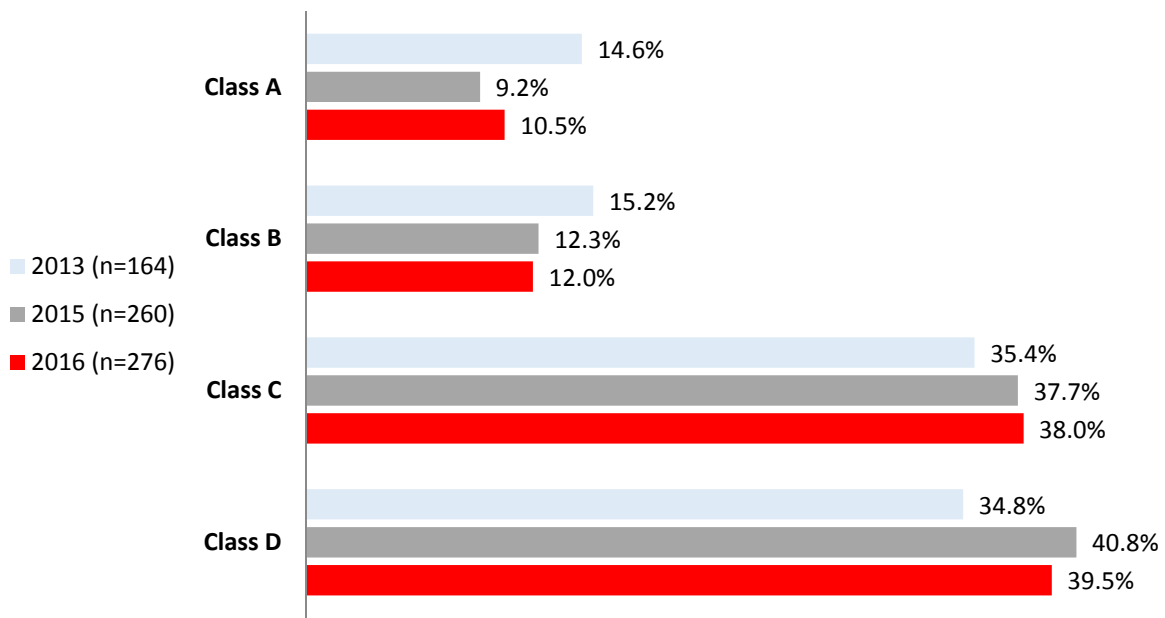
Survey Response and Respondent Characteristics

In 2016, the response rate to the Concussion Management Survey was 90.8% (Figure 3). Reflecting the demographic of Nebraska, most respondents represented a rural, smaller school (Class C or D) (Figures 4 and 5).

Figure 3	Survey response		
	Number of Respondents	Number of Surveys Sent Out	Response Rate
2013 Nebraska Sports Concussion Athletic Director Survey	164	307	53.4%
2015 Nebraska Sports Concussion Athletic Director Survey	261	304	85.9%
2016 Concussion Management Survey	276	304	90.8%

Figure 4	Type of school (2016 only) (n=164)	
	Urban	Rural
	19.2%	80.8%

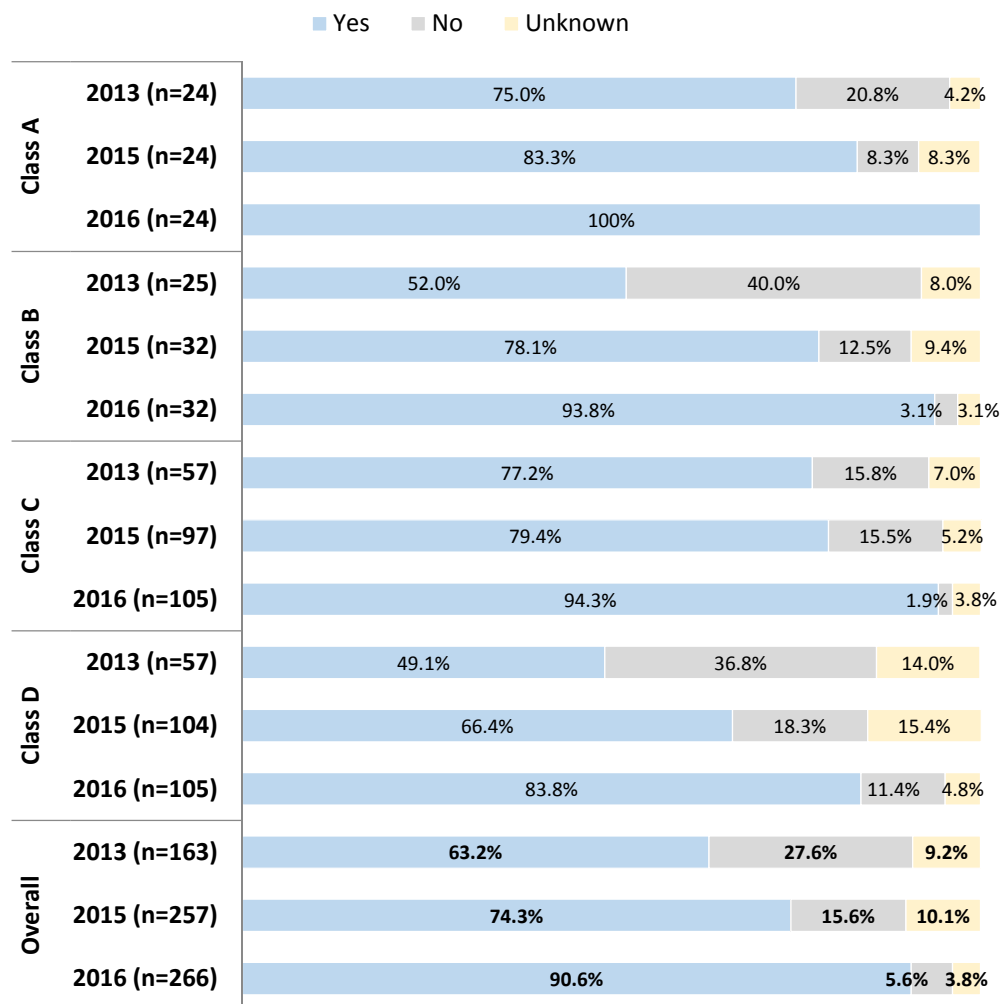
Figure 5. Class in which school participates for most sports and activities



Concussion Policies

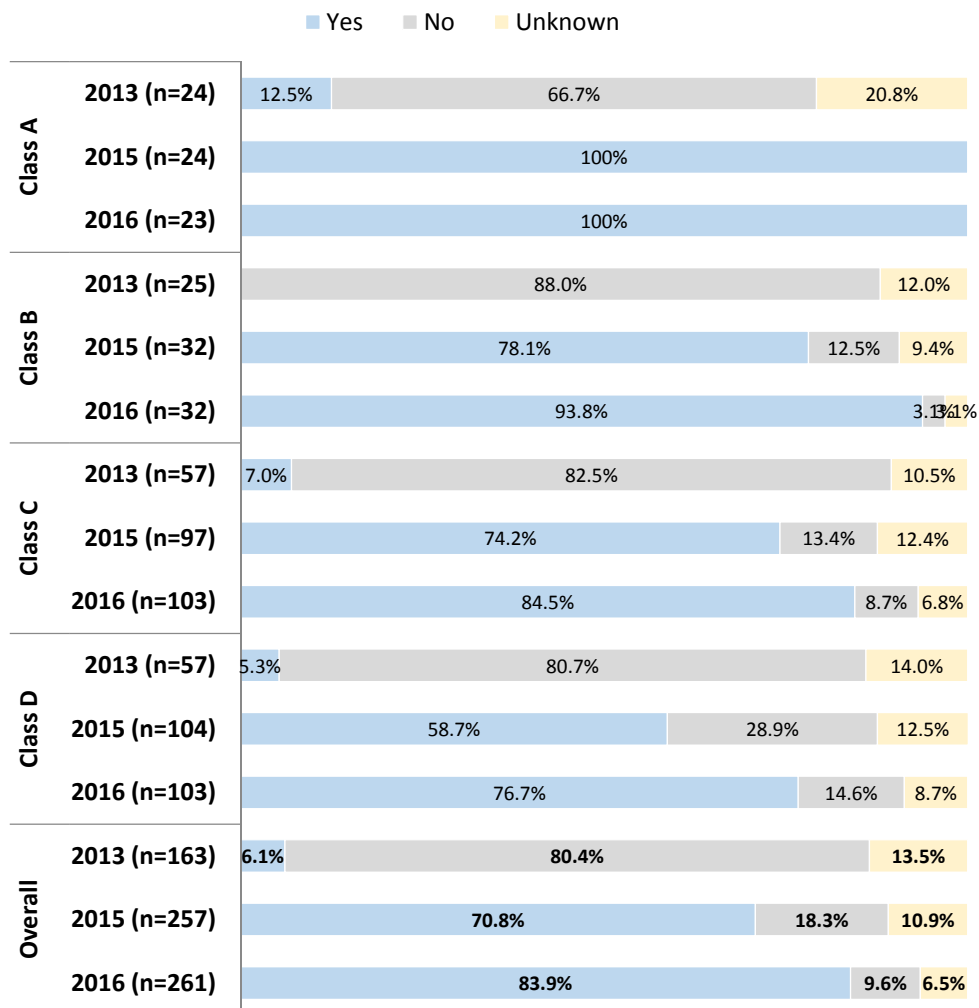
The percentage of schools with a formal written policy for removal and return to play for athletes with a suspected concussion has increased from 63.2% in 2013 to 90.6% in 2016. Some of the state's smallest schools (i.e. Class D) still tend to be a bit behind other schools in terms of developing a concussion policy (Figure 6).

Figure 6. School has a formal written policy for removal and return to play for athletes with suspected concussions



There has been a great improvement in the percentage of schools with a written return-to-learn policy that provides accommodation for the classroom work of a student athlete with a suspected concussion. In 2013, just 6.1% of schools had such a policy. In 2014, the state legislature amended the Concussion Awareness Act to require schools to have such a policy. In 2016, 83.9% of respondents indicated their school has a written return-to-learn policy (Figure 7). While this is certainly a vast improvement, it still means that one-in-seven schools have not yet become compliant with the law.

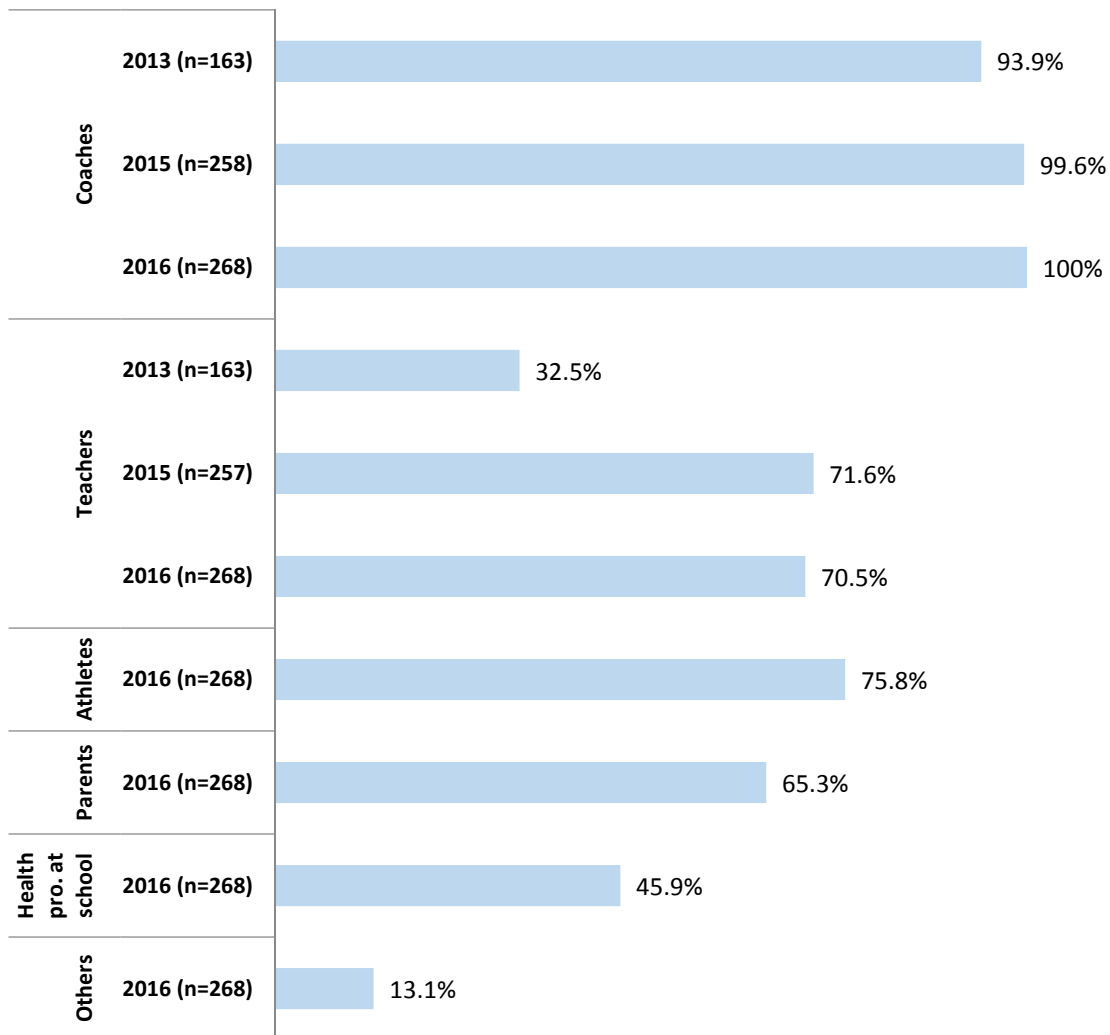
Figure X. School has a written return-to-learn policy that provides accomodation for the classroom work of a student athlete with a suspected concussion



Concussion Training and Education

In 2016, all respondents indicated that their school has made concussion training available to coaches. The mandate to have a return-to-learn policy has impacted the percentage of teachers who receive concussion training/education. In 2013, 32.5% of respondents indicated that teachers had received concussion training/education. This increased to 71.6% in 2015 and had a similar rate (70.5%) in 2016. State law requires that athletes and parents also receive concussion training/education. In 2016, 75.8% of respondents indicated that athletes had concussion training/education available. Fewer of respondents (65.3%) indicated that parents had training available (Figure 8).

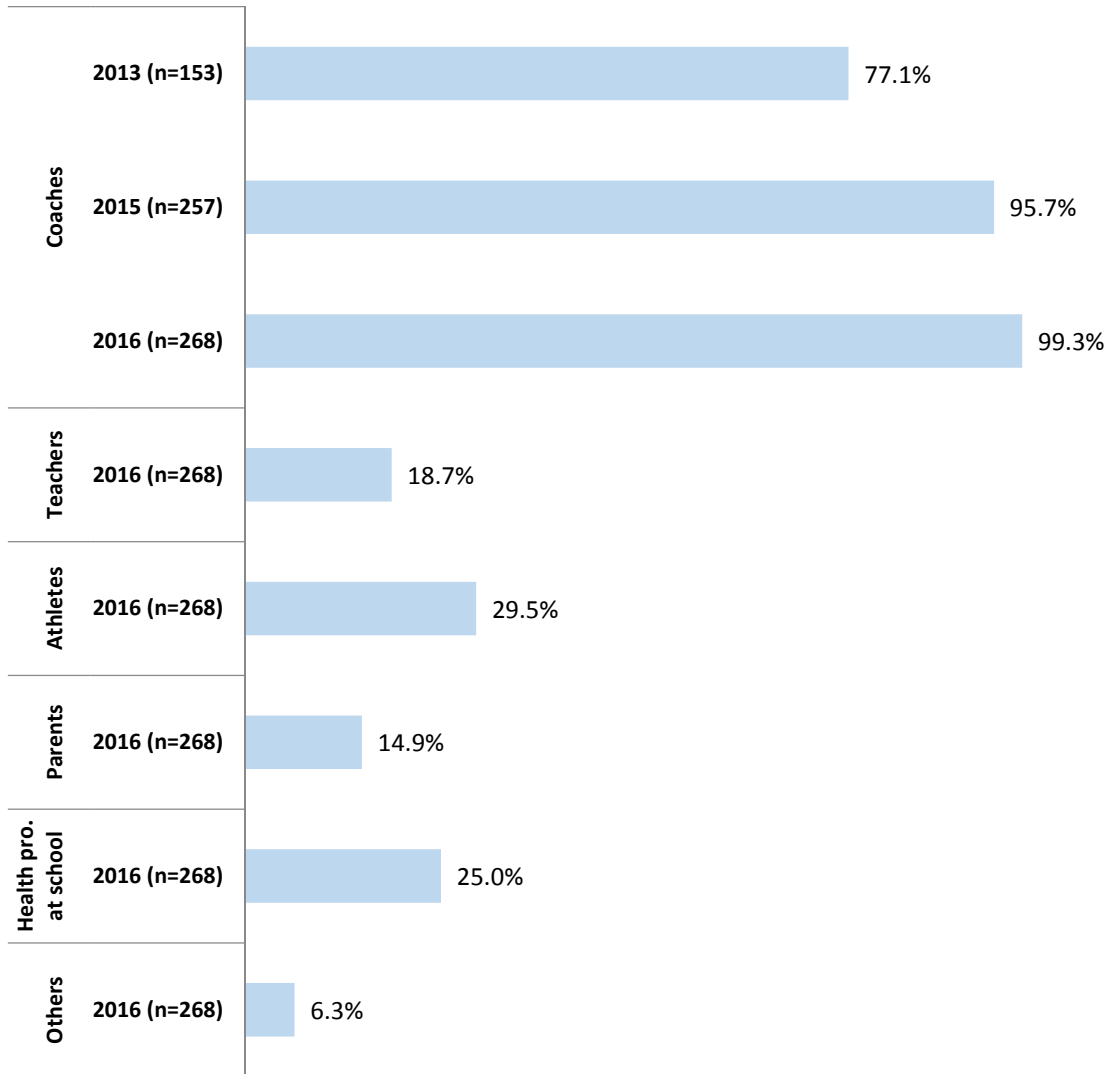
Figure 8. Concussion training/education has been made available to...



Others include athletic trainers, administrators, athletic directors support professionals (paras, classroom helpers, etc.), physical therapists, and others.

While concussion training is reported as mandatory for nearly all coaches, relatively few schools make it mandatory for any other group (Figure 9).

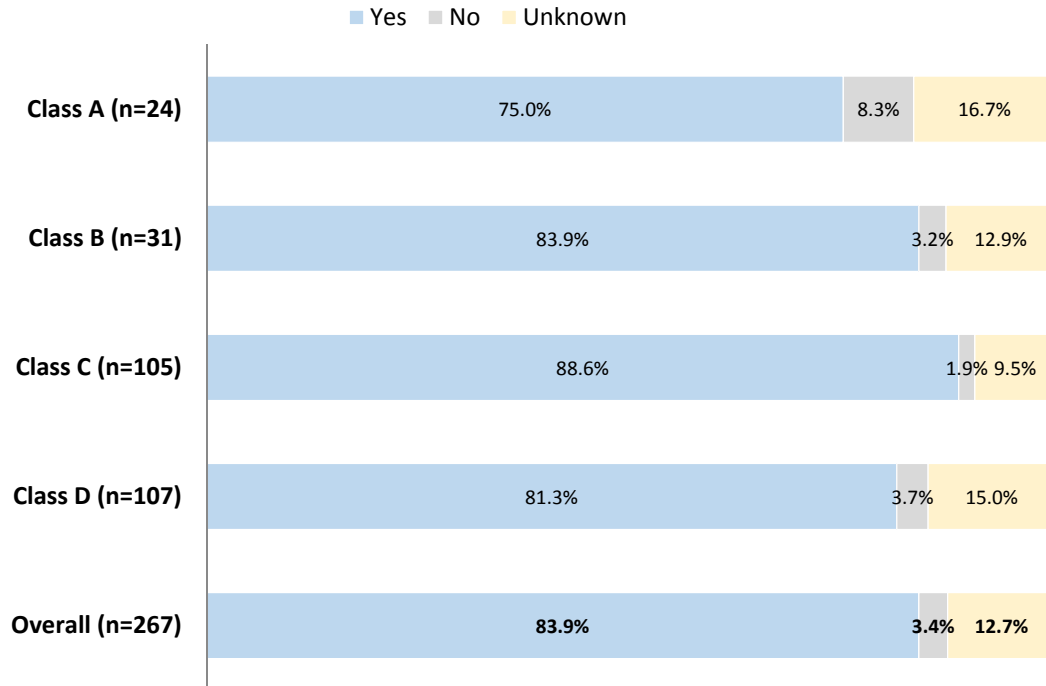
Figure 9. Concussion training/education has been made mandatory for...



Others include athletic trainers, administrators, athletic directors support professionals (paras, classroom helpers, etc.), physical therapists, and others.

A substantial majority (83.9%) of respondents indicated that coaches have changed practice or drills in response to the head injury education that they have received (Figure 10).

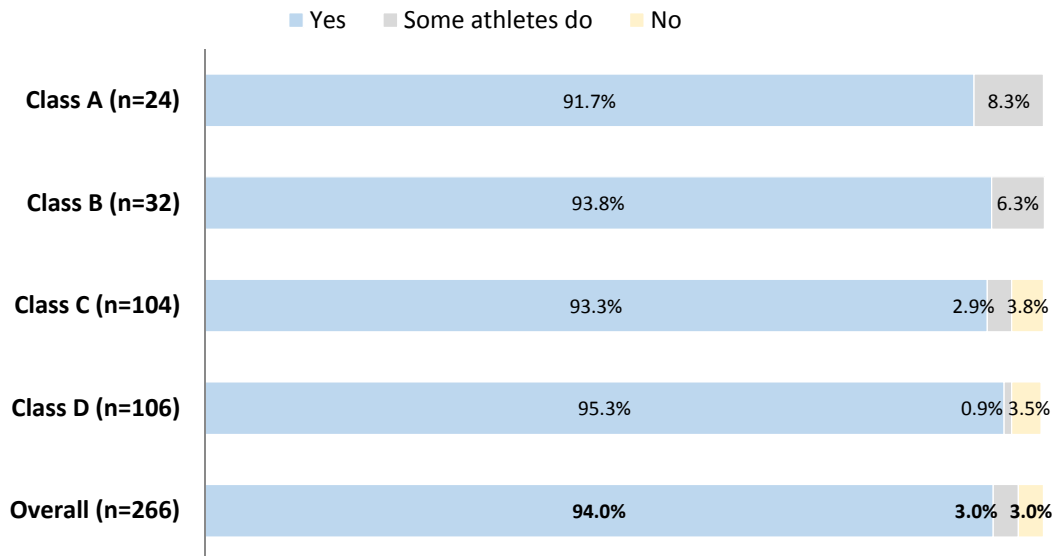
Figure 10. Coaches have changed practice or drills in response to head injury education (2016 only)



Baseline Testing

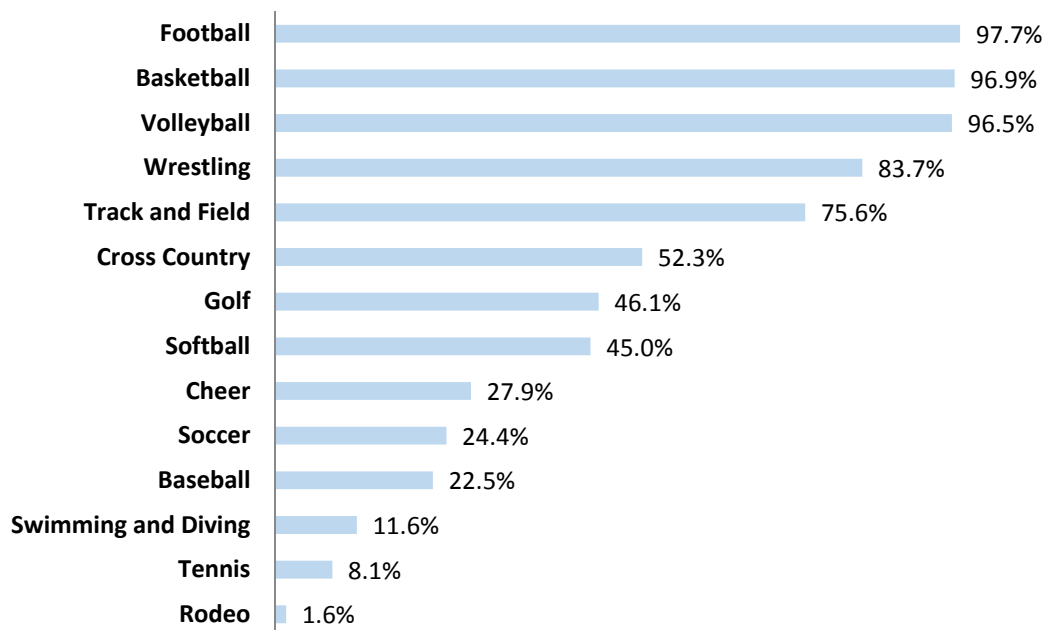
The vast majority (94.0%) of schools offer baseline testing for athletes (Figure 11).

Figure 11. Do athletes complete baseline testing? (2016 only)



The vast majority (95% or more) of respondents indicated athletes in football, basketball, and volleyball complete baseline testing (Figure 12).

Figure 12. Which sports complete baseline testing? (n=258) (2016 only)



ImpACT is used for baseline testing by nearly all schools (98.1%) that indicated using baseline testing on athletes (Figure 13).

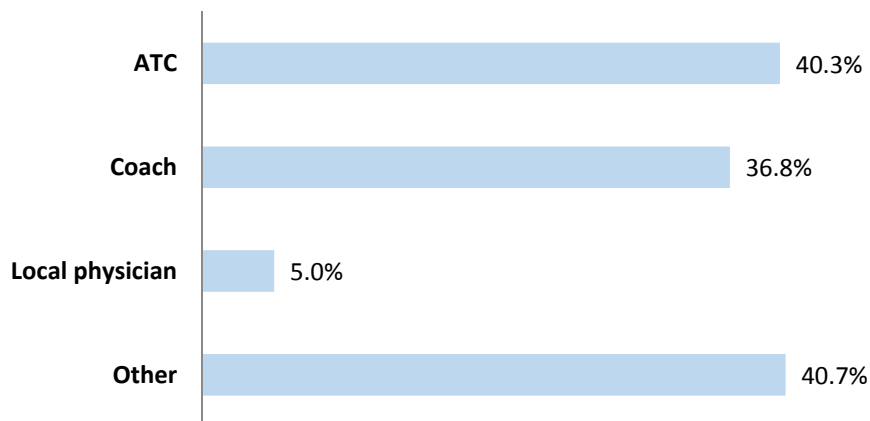
**Figure 13. Tests used for baseline testing (n=257)
(2016 only)**



Other responses include SAC and "not sure".

The individual responsible for proctoring baseline testing tends to vary by school (Figure 14). Note the high number of "other" responses in Figure 14. Athletic director/activity director was the most common "other" response.

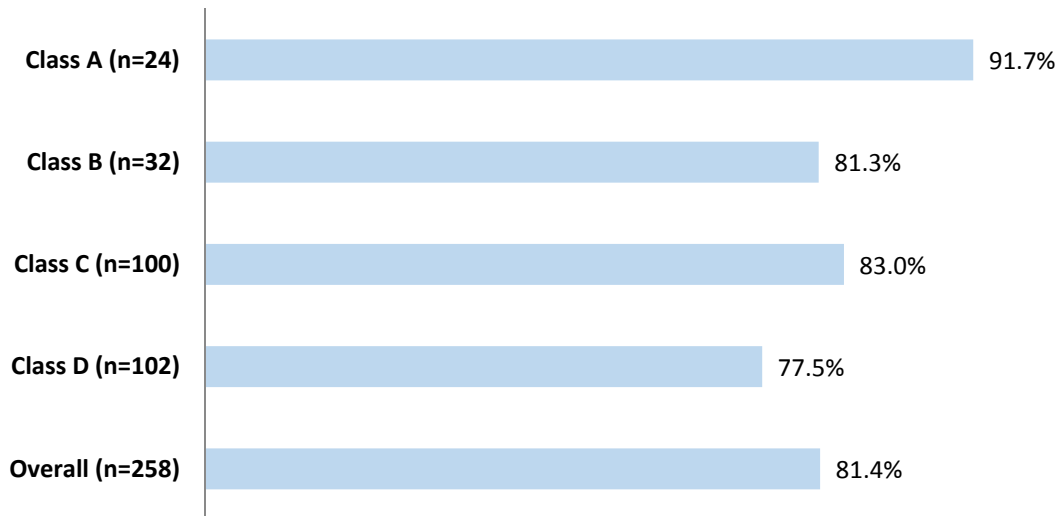
Figure 14. Who proctors baseline testing? (n=258) (2016 only)



Other responses include athletic director/activity director, administration, school nurse, and others.

Overall, 81.4% of respondents indicated that they review baseline tests for validity/effort. Larger schools are slightly more likely than smaller schools to review for validity/effort (Figure 15). This is perhaps due to the fact that larger schools have greater access to Certified Athletic Trainers (ATCs) and medical professionals.

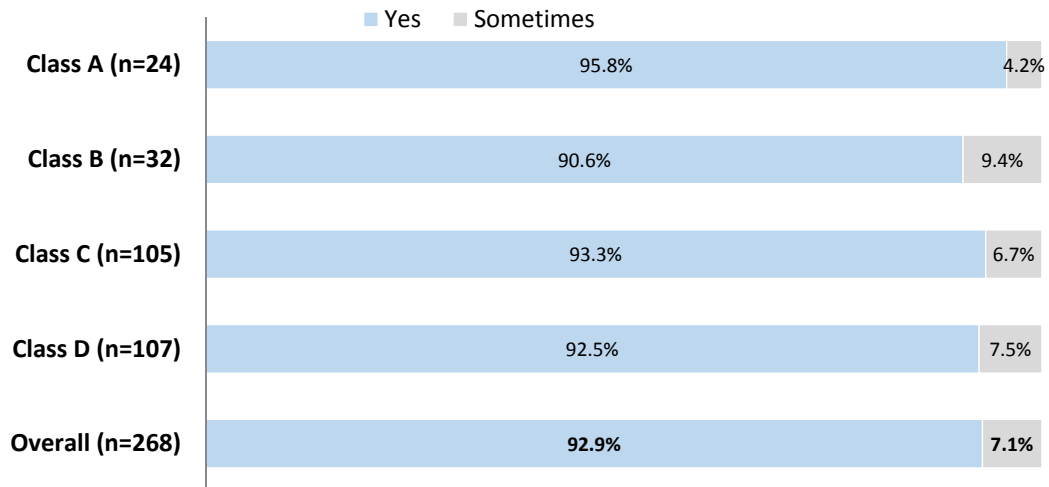
Figure 15. Baseline tests are reviewed for validity/effort to look for athletes who may not have given enough effort (2016 only)



Assessment of Concussions and Removal from Play

The vast majority (92.9%) responded “yes” to the question: “Are athletes assessed on the sideline for concussion?” The remainder responded “sometimes”, with none of the respondents answering “no” (Figure 16).

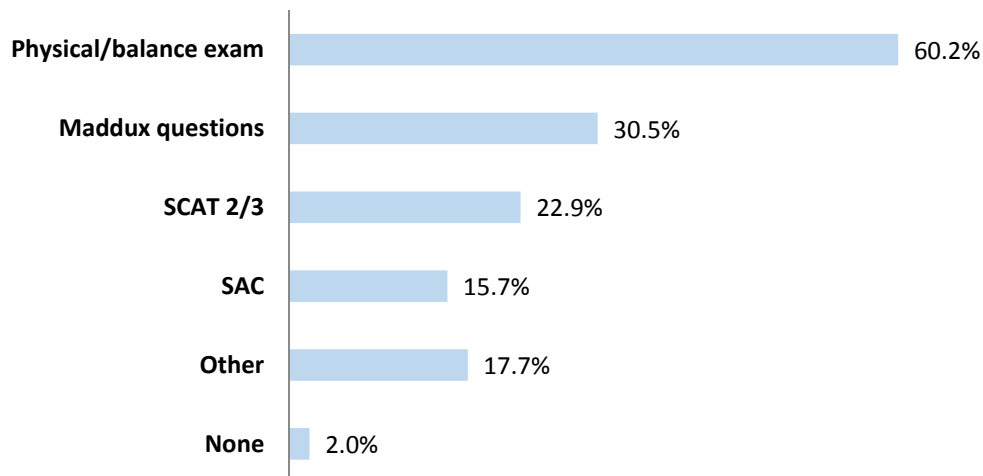
**Figure 16. Are athletes assessed on the sideline for concussion?
(2016 only)**



Note: a third response option (“no”) was not selected by any respondents.

Figure 17 records the assessments used for a sideline assessment of a concussion. Physical/balance exam is the most common.

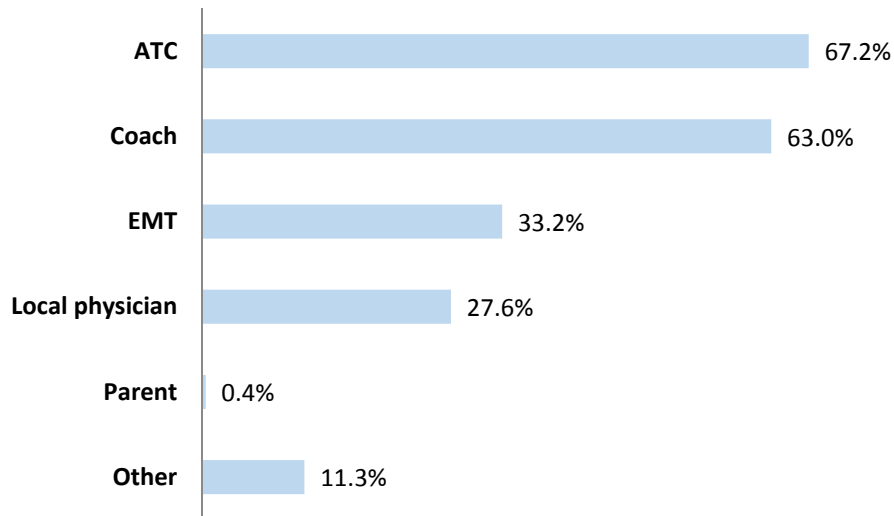
**Figure 17. Assessments used for sideline assessment of a
concussion (n=249) (2016 only)**



Other responses include Concussion Symptom Inventory (CSI), “not sure”, athletic trainers, and others.

An ATC or a coach is most likely to perform the sideline assessment of a concussion (Figure 18).

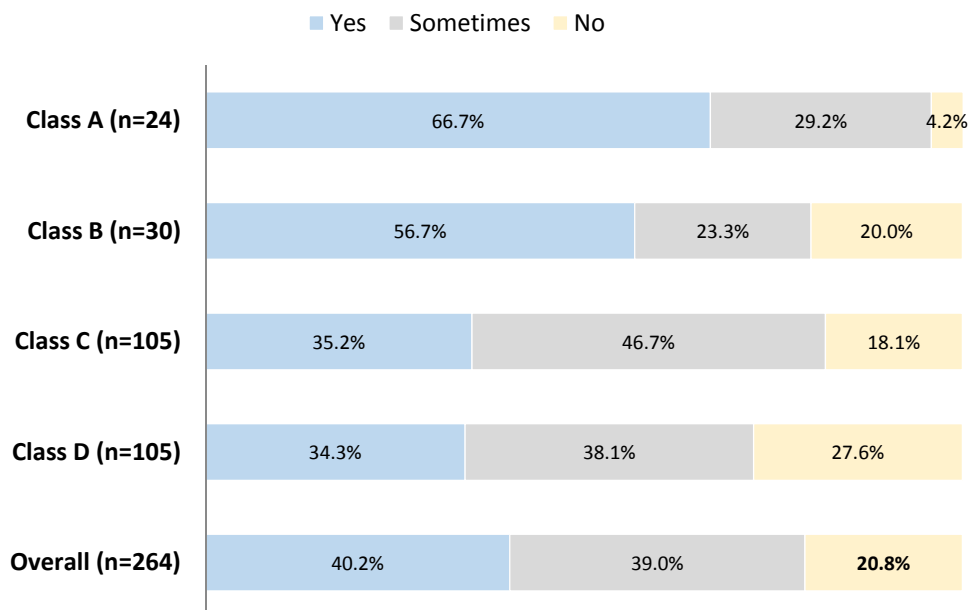
Figure 18. Who performs the sideline assessment of a concussion? (n=265) (2016 only)



Other responses include athletic director, athletic trainer, EMT, and others.

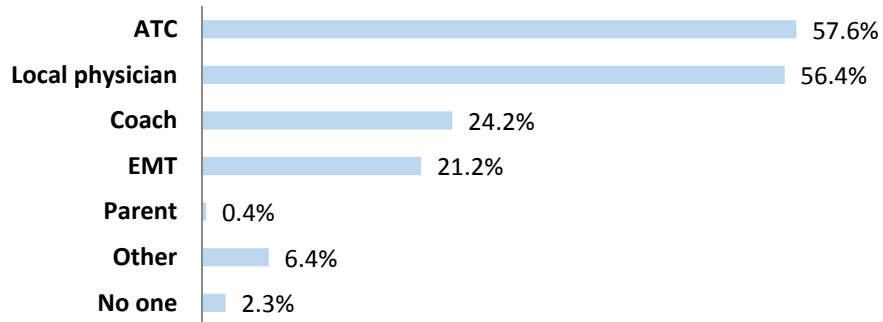
A sideline diagnosis of a concussion is more likely to occur in Class A and B schools as compared to Class C and D schools (Figure 19). Again, this may be due to the professionals (especially ATCs) that larger schools have at their disposal (see also Figure 39 on page 27 of this report).

Figure 19. Is diagnosis done on the sideline? (2016 only)



An ATC or local physician is most likely to provide the diagnosis of a concussion (Figure 20).

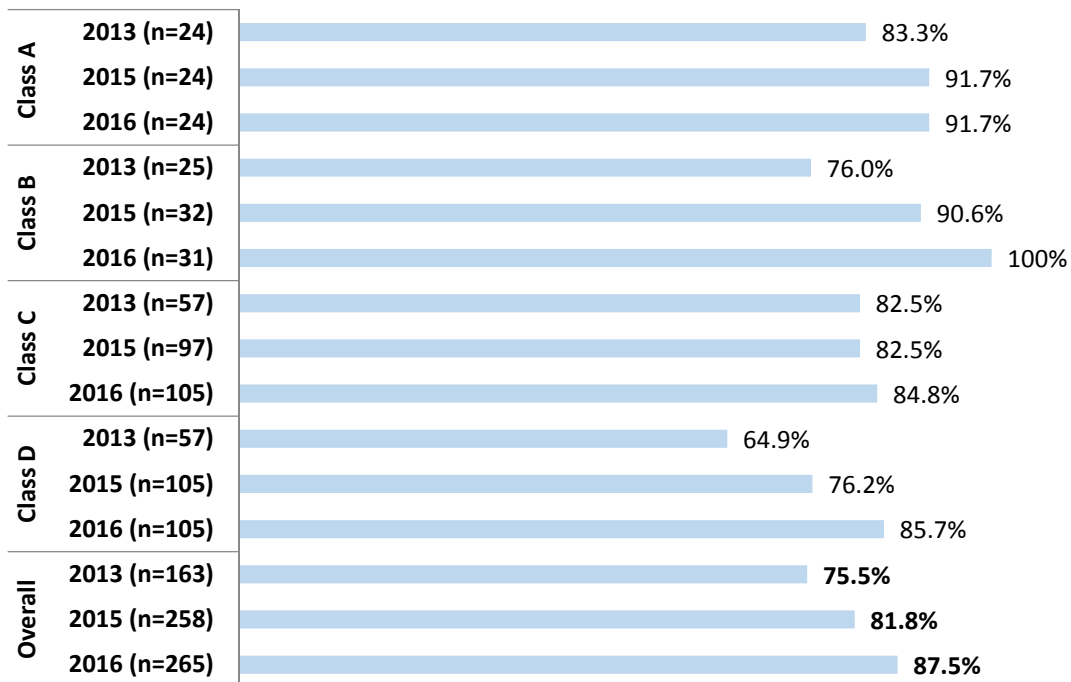
**Figure 20. Who provides the diagnosis of concussion?
(n=264) (2016 only)**



*Other responses include athletic director, EMT, nurse practitioner, physical therapist, doctor, and others

In 2016, 87.5% of respondents responded “always” to the statement: “Coaches or athletic trainers always remove an athlete with a suspected concussion from play.” This represents a moderate increase from 75.5% in 2013. Class C and D schools are slightly lower than Class A and B schools in terms of reporting always removing an athlete from play after a suspected concussion (Figure 21).

Figure 21. Coaches or athletic trainers always* remove an athlete with a suspected concussion from play

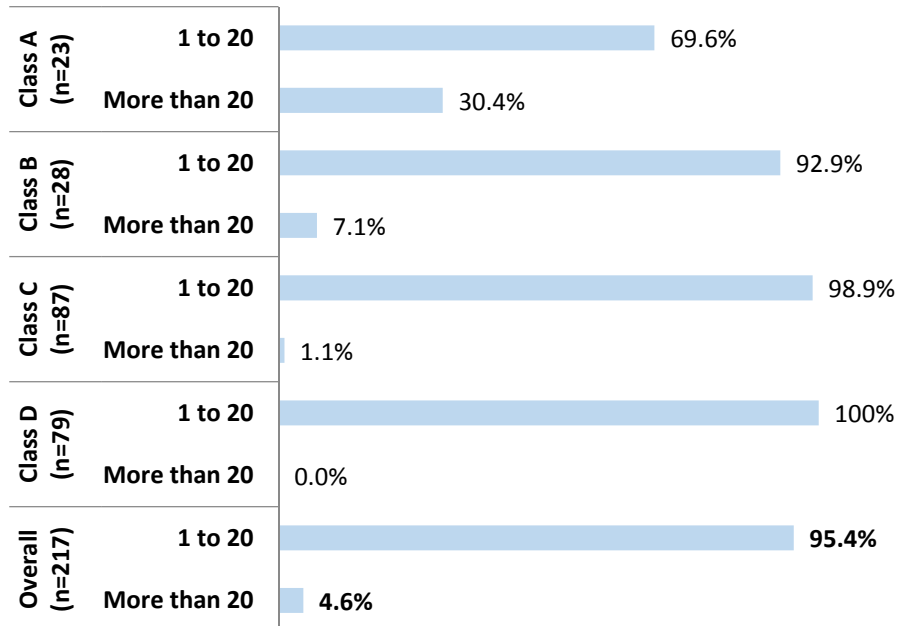


*Response options: always, often, sometimes, rarely, never, unknown.

Return-to-Learn

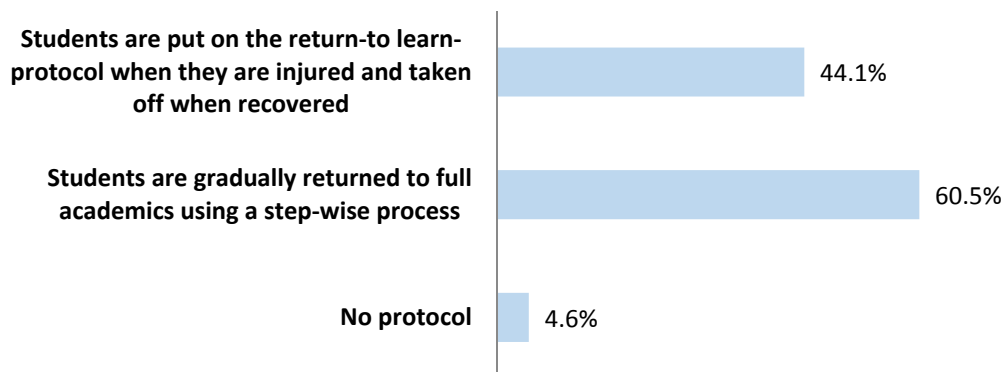
The vast majority (95.4%) of schools have between 1 and 20 return-to-learn cases per school year (Figure 22).

Figure 22. How many concussions does your return-to-learn program manage each academic year (i.e. concussions received by students who are not athletes)? (2016 only)



About three-fifths (60.5%) of respondents indicated that their return-to-learn protocol consists of a gradual return to full academics using a step-wise process (Figure 23).

Figure 23. Which of the following best describes your return-to-learn protocol? (n=261) (2016 only)



The vast majority of respondents indicated that teachers are usually notified of a student's suspected or diagnosed concussion on the same day (18.8%) or the following day (69.7%) (Figure 24).

Figure 24. When are teachers usually notified of a student's suspected or diagnosed concussion? (n=261) (2016 only)

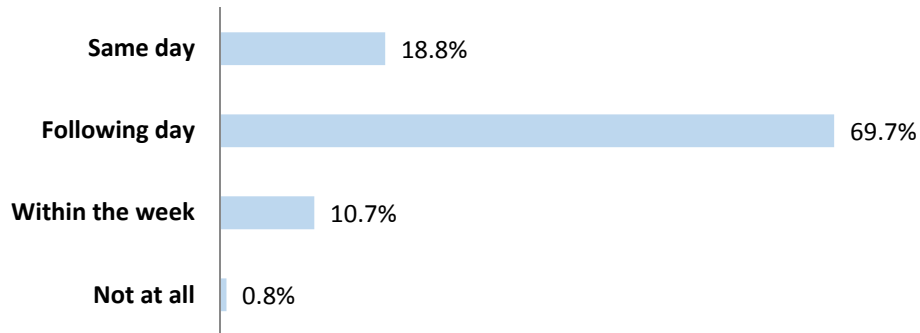
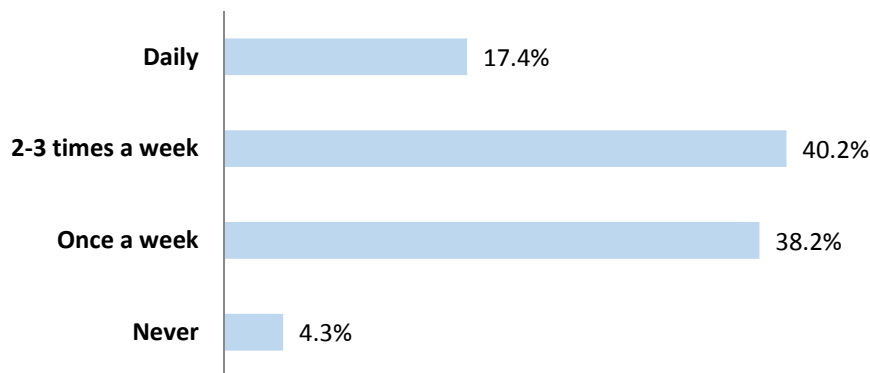


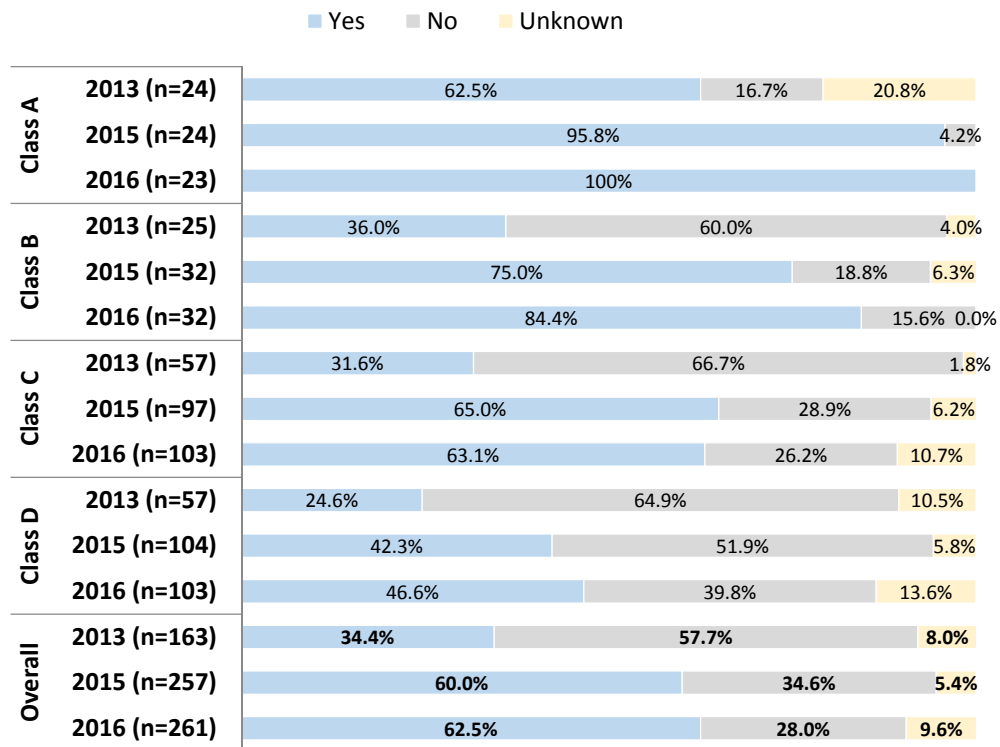
Figure 25 presents the reported frequency by which teachers are typically updated on a student's return-to-learn progress.

Figure 25. How often are teachers typically updated on a student's progress? (n=259) (2016 only)



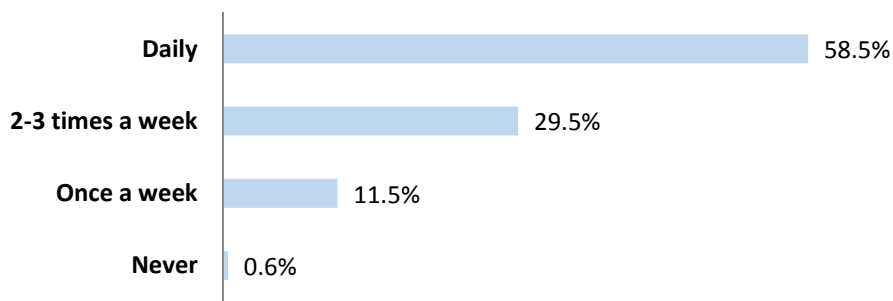
Five out of eight (62.5%) respondents in 2016 indicated that their school has a designated person to assist students as they complete return-to-learn. This represents a notable increase from the 34.4% of 2013 (Figure 26).

Figure 26. School has a designated person(s) to assist students as they complete return-to-learn



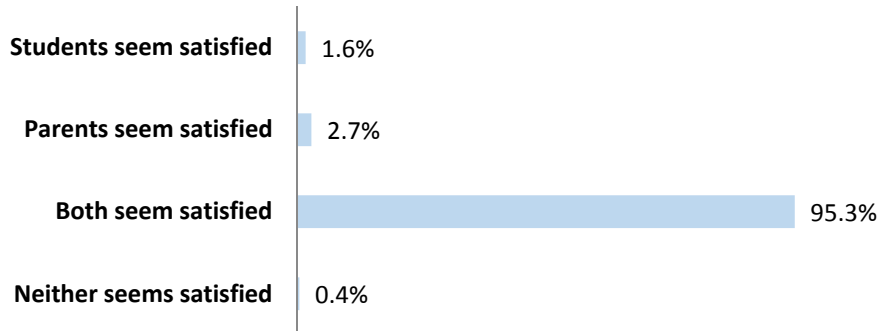
Among those with a designated person who assists students with return-to-learn, nearly three-fifths (58.5%) reported that the person assisting students checks in daily (Figure 27).

Figure 27. How frequently does this person(s) (i.e., designated person to assist students with return-to-learn) check in with recovering students or have students check in with them? (n=183) (2016 only)



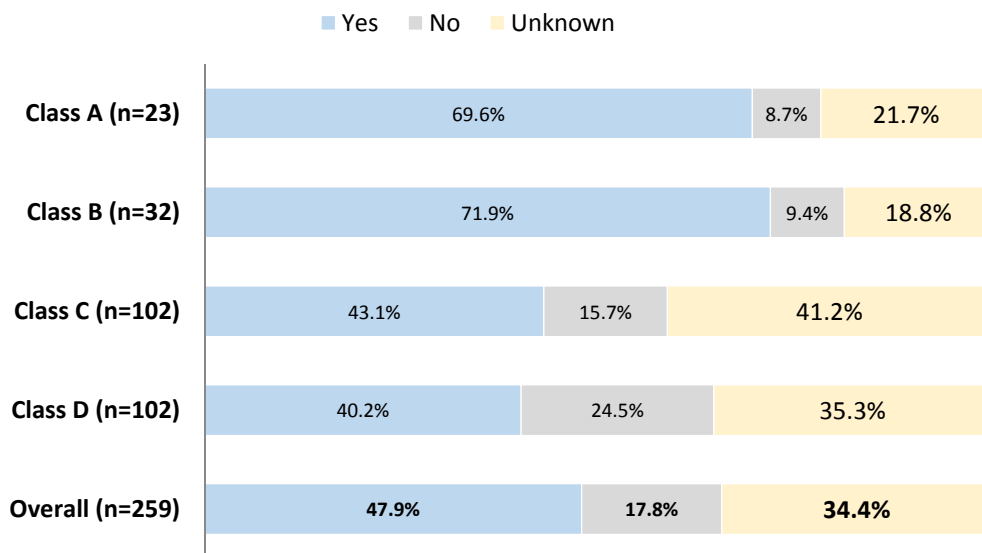
The vast majority (95.3%) of respondents indicated that both students and parents seem to be satisfied with the school's return-to-learn concussion protocol (Figure 28).

Figure 28. Do students and parents seem to be satisfied with the school's return-to-learn concussion protocol? (n=255) (2016 only)



Less than half (47.9%) of respondents indicated that anxiety, depression, and other psychiatric disorders are routinely taken into consideration in return-to-learn concussion management. Larger schools (i.e. Class A and B) are more likely to take such psychiatric disorders into account, as compared to smaller schools (i.e., Class C and D) (Figure 29).

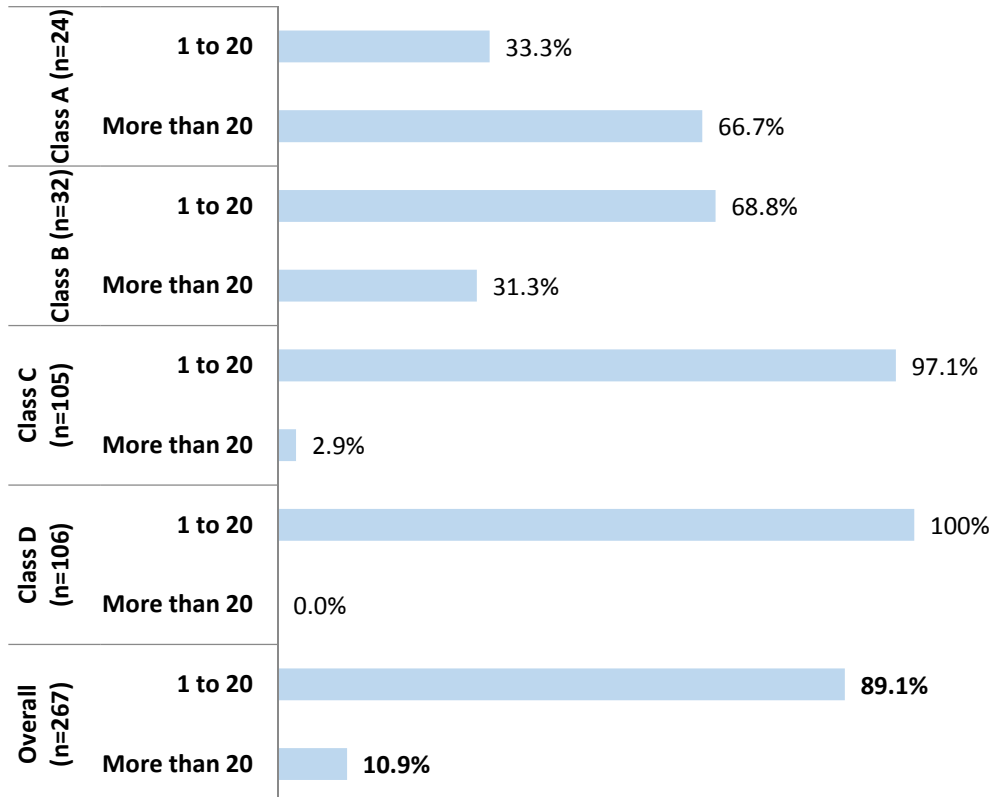
Figure 29. Are anxiety/depression/other psychiatric disorders routinely taken into consideration in return-to-learn concussion management? (2016 only)



Return-to-Play

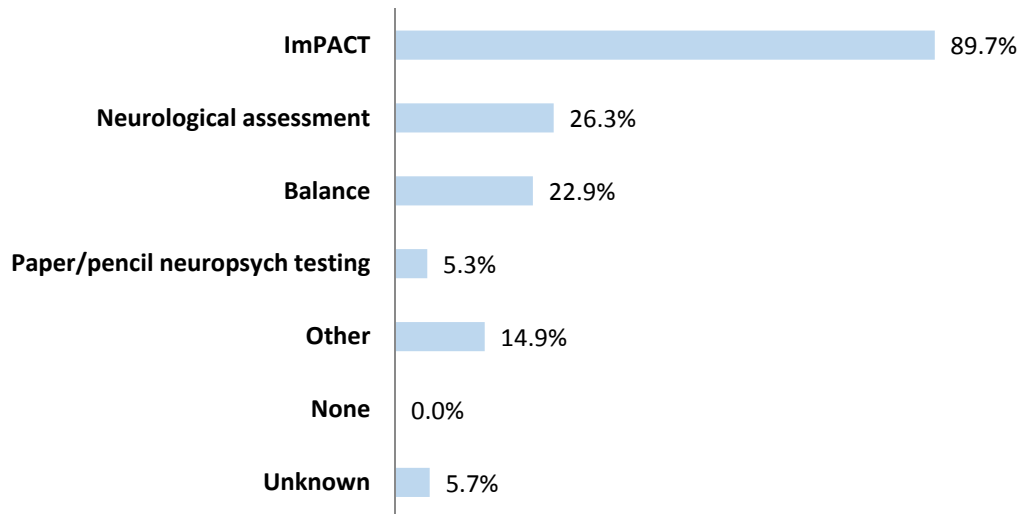
A substantial majority (89.1%) of schools have between 1 and 20 return-to-learn cases per school year. In comparison, two-thirds (66.7%) of Class A schools indicated that their school's return-to-play program manages more than 20 concussions each year (Figure 30).

Figure 30. How many concussions does your return-to-play program manage each academic year? (2016 only)



ImPACT is most commonly used to determine when an athlete is ready to return to play, as reported by 89.7% of respondents (Figure 31).

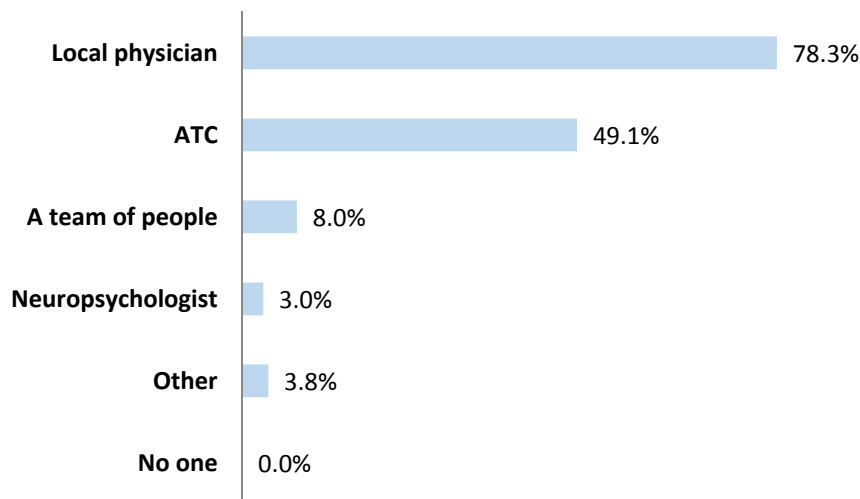
Figure 31. What tools are used for assessment after diagnosis and to determine when an athlete is ready to return to play? (n=262) (2016 only)



Most common "other" response: physician/medical professionals.

Nearly four-in-five (78.3%) respondents indicated that a local physician performs the post-injury assessment (Figure 32).

Figure 32. Who performs post-injury assessment(s)? (n=263) (2016 only)

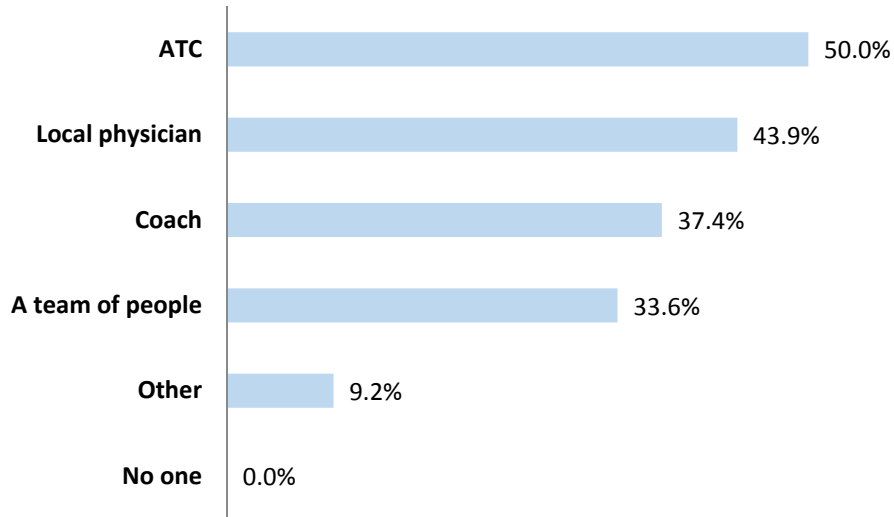


A team of people may include athletic directors, nurses, physicians, athletic trainers and teachers.

Other responses include athlete directors, nurses, coaches, and others.

Half of respondents indicated that an ACT is responsible for the concussion management return-to-play plan (Figure 33).

Figure 33. Who is responsible for the implementation of the concussion management return-to-play plan? (n=262) (2016 only)

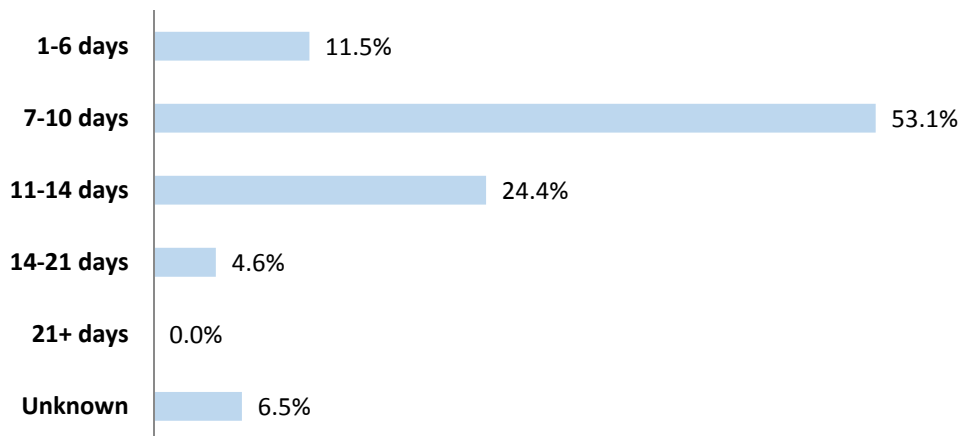


A team of people may include athletic directors/activities coordinators, administration, coaches, school nurses, ATCs, teachers, and physicians, among others.

Other responses include athletic directors, administration, and school nurses.

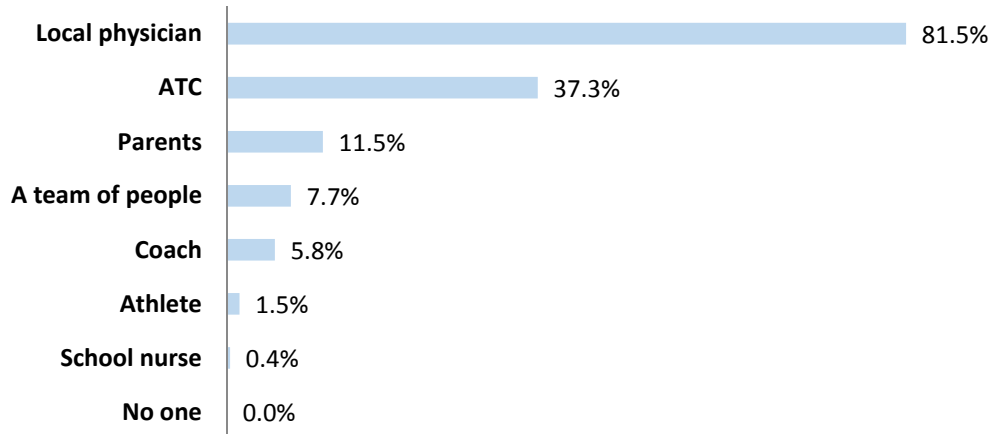
Over half (53.1%) of respondents indicated that the estimated average number of days from concussion to full return-to-play clearance is 7-10 days (Figure 34).

Figure 34. What is the estimated average number of days from concussion injury to full return-to-play clearance? (n=262) (2016 only)



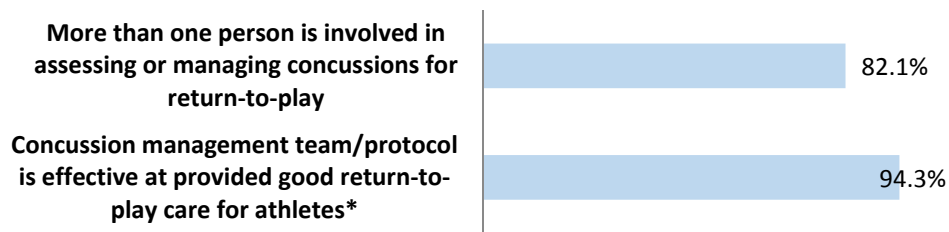
A local physician is most commonly responsible for clearing an athlete to return to play after a suspected concussion (Figure 35).

Figure 35. Who is most commonly responsible for clearing an athlete to return to play after a suspected concussion? (n=262) (2016 only)



The majority of respondents reported that more than one person is involved in assessing or managing concussions for the return-to-play plan and that concussion management team/protocol is effective at providing good return-to-play care for athletes.

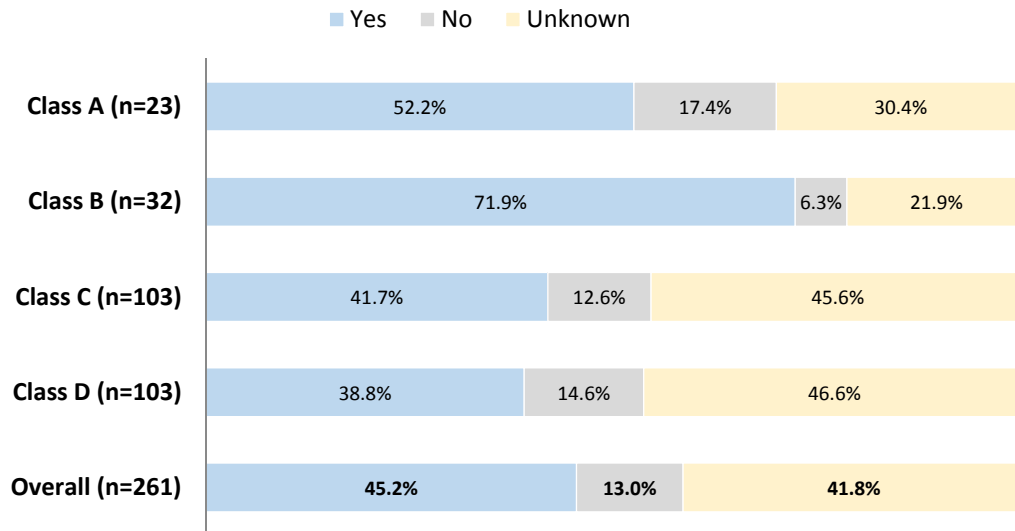
Figure X. Additional return-to-play survey items (n=262) (2016 only)



*Percentage responding "Yes". Other response options: "No" (0.0%) and "Somewhat" (5.7%).

Less than half (45.2%) of respondents indicated that anxiety, depression, and other psychiatric disorders are routinely taken into consideration in return-to-play concussion management. Larger schools (i.e. Class A and B) are more likely to take such psychiatric disorders into account, as compared to smaller schools (i.e., Class C and D) (Figure 37).

Figure 37. Are anxiety/depression/other psychiatric disorders routinely taken into consideration in return-to-play concussion management? (2016 only)



Possible Improvements to Concussion Management Program

Respondents were asked how their concussion management program could be improved. The following is a selected list of responses grouped thematically.

Figure 38	Open-ended comments: If you have a concussion management program, how do you feel it can be improved? (selected comments)
<i>Improved Communication and Teamwork</i>	
<ul style="list-style-type: none"> • There needs to be better communication among team members. • Communication between coach and trainer to the school administration needs to improve. • Encouraging and monitoring daily feedback from teachers and coaches on return to play/learn process. • Get us updates as needed. Keep trying to improve and not rush student back to class....communication with all involved. • Being able to communicate with all the number of concussions and checking on them in the classroom and at home. If we could streamline that better then it would eliminate any potential conflicts. • Better communication from our local doctors and staff so everyone is on the same page. • I believe the communication between the physicians and the school could improve somewhat, but overall we have a pretty good handle on concussions in our high school. • Better communication between health care providers and school. • Better communication between ATC and school nurse as well as more prompt communication from parents after they see a health professional. • Better early communication with the athletes before practice starts. • It can be difficult to keep in touch with the concussed student from a school nurse's perspective. Student could contact school official in charge of progression steps. • More teamwork on between school and physician. • Better communication from the doctor on limitations. • Making sure follow through occurs once the counselor and teachers are informed. Most of the times it is, but at times needs reinforcement. • More frequent checks. We currently check consistently 2-4 times a week and then also get professional opinions from doctors and our athletic trainer. 	
<i>Education for Parents and Students</i>	
<ul style="list-style-type: none"> • Parents to also discourage texting, phone use and screen time. • Keeping parents abreast of concussion protocols and the need to allow coaches and trainers to do what is in the best interest of their kid during a suspected concussion situation. • Continuing education to parents of the protocol. • More educational opportunities for students and parents. • Need to better inform parents of the entire process. • We could provide more information to parents ahead of time. • Ensuring that return to learn protocol is communicated to parents and non-athletes. • Better inform parents, teachers and students of the program. • Parents understanding that this is important and to allow the process to run its course. • Parental understanding and agreement to return to learn and play protocols. 	

Access to Athletic Trainers (ATC)

- We only see our ATC once a week. It would be better to see the ATC more often.
- Have ATC become more involved, though difficult because of part-time status.
- For us it would be nice to have an Athletic Trainer on site at all times.
- We need to have a trainer full time. I have been told that we do an excellent job of managing concussions but I feel just having a part time trainer is not good enough. I know that our budget cannot allow for that but we need to figure out a way to do this.

Baseline Testing

- Impact Test earlier. Test all students, regardless if athlete.
- More doctors in our area to do the Impact Testing to diagnose and clear the athletes in our poverty area.
- We need to start doing baseline testing.
- Funding to baseline test all students. Training and incentives for DRs to do IMPACT testing as part of the sports physical.

Education and Training for Teachers and Other Staff

- Probably having all staff members take the training.
- More teacher training on the return to learn.
- Better concussion training for non-health care professionals.
- Education for the BIRSST team in all areas.
- Keep offering on-line classes to inform/teach our coaches/staff.

Access to Medical Professionals

- A full time medical person (MD) at every contest. Cost is a factor.
- We would benefit from having more medical professionals frequently available. I imagine a number of rural schools feel the same way.
- Assistance of some type of medical professional, to help with evaluation, return to learn, return to play.
- A full time nurse would help.

Recognition/Diagnosis of Concussions

- A more defined or exact sideline testing procedure like Impact for possible concussions would help in game time decisions on determining if a concussion has in fact occurred.
- It seems the initial diagnosis is difficult sometimes, because every time a student hits their head and has a headache the student thinks they have a concussion.
- Early recognition of a concussion and consistent communication from all parties.

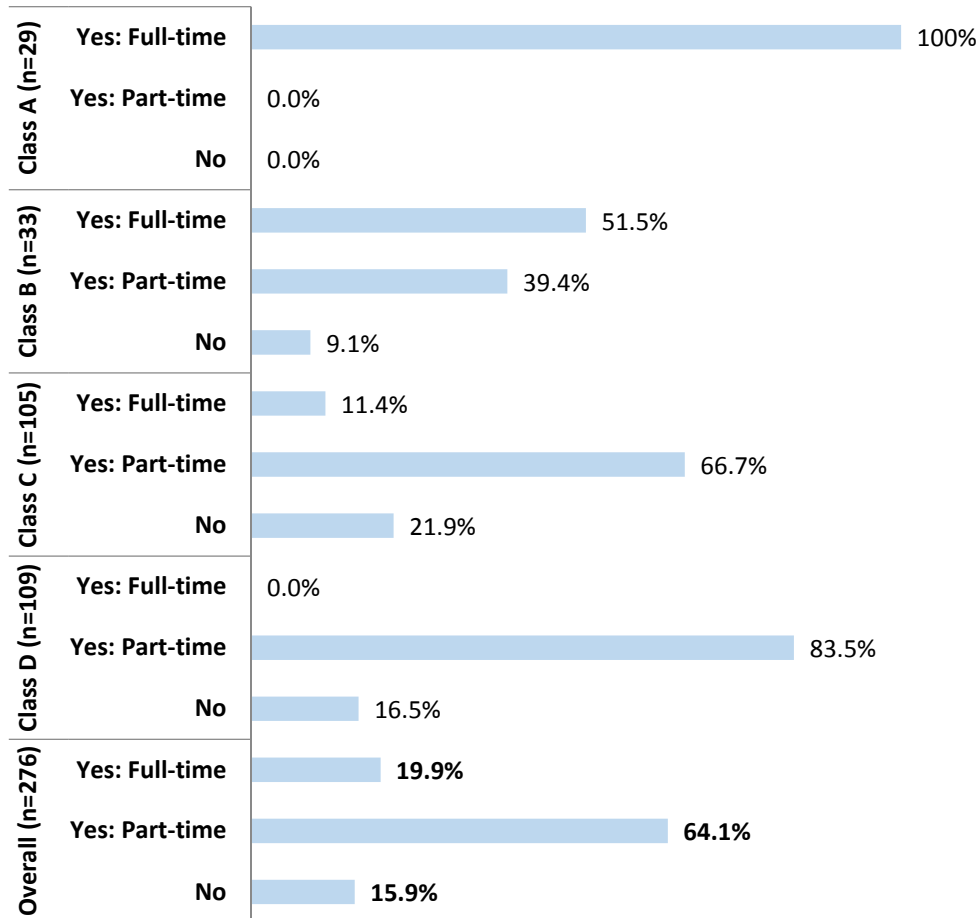
Other Comments

- We need a written concussion management program that is available to all.
- If it were more systemic with all coaches.
- Accuracy in reporting injuries could improve.
- Doctors need more education.
- We still have an issue of whether some students have a concussion or not, but we treat all head injuries the same and will not let a student back on the field until they have seen a physician and have been clear to begin the protocol if they have had a concussion.
- More cooperation with medical professionals

Certified Athletic Trainers (ATCs)

There is a considerable difference between large and small schools in terms of access to Certified Athletic Trainers (Figure 39).

Figure 39. Does your school have a Certified Athletic Trainer (ATC) who comes to your school to see athletes (in-house)? (2016 only)



Conclusion

Results from the 2016 Concussion Management Survey reveal a continuation in improvements related to overall concussion management from the 2013 and 2015 Nebraska Sports Concussion Athletic Director Surveys. More schools appear to be developing policies related to concussions. In 2016, 90.6% of athletic directors reported that their school has a formal written policy for removal and return to play for athletes with a suspected concussion (a notable increase from 63.2% in 2013). Furthermore, in 2016, 83.9% of athletic directors reported that their school has a written return-to-learn policy that provides accommodations for the classroom work of students with a suspected concussion (a vast improvement from 6.1% in 2013). While there is a clear trend toward concussion policy development among high schools in Nebraska, there is room for improvement. One would expect all schools to have concussion policies given the stipulations of Nebraska's Concussion Awareness Act, especially since one of these stipulations mandates a policy for return-to-learn.

The primary purpose of the Concussion Awareness Act was to reduce second-impact concussions, which can cause life-altering, permanent injuries. Coaches and athletic trainers are typically the first line of defense against a second-impact concussion. The decision to remove an athlete from play after a suspected concussion typically falls on these two individuals, and in rural settings, usually a coach must make the decision without the assistance of an athletic trainer. Training for coaches is the first requirement to proper concussion management and an important mandate of the Concussion Awareness Act. In 2016, 100% of athletic directors indicated that their school has made concussion training available to coaches. With proper training, coaches are equipped to make the right decision to remove an athlete from play. In 2016, 87.6% of athletic directors reported that coaches or athletic trainers always remove an athlete with a suspected concussion from play. While this represents a moderate improvement from 75.5% in 2013, there is still an indication that athletes are continuing to play after sustaining a concussion.

It is important to note that often athletes will hide symptoms of a concussion, in order to continue playing, or coaches will face resistance from athletes and/or their parents after removing an athlete from play after a suspected concussion (survey results from the 2015 Nebraska Sports Concussion Head Coach Survey indicate that these occurrences take place with some frequency). Therefore, athletes and their parents are also in need of education. In 2016, athletic directors indicated that concussion training/education was made available to 75.8% of athletes and 65.3% of parents. Given that the Concussion Awareness Act requires education be made available to athletes and parents, education for athletes and parents is arguably one of the most important areas of need indicated in these survey results.