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Heads Up: Using Your Brain When Tackling Concussions

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Introduction:

A concussion is a type of traumatic brain injury (TBI) typically caused by biomechanical forces inflicted on the head that change the way the brain works. Concussions can also result from a blow elsewhere in the body causing an impulsive force transmitted to the head. These types of injuries often involve a sudden onset of neurologic function impairment such as confusion, amnesia, or loss of consciousness that quickly dissipates and is generally not life-threatening. Unfortunately, these seemingly “mild” symptoms have led numerous primary care providers to undermine its potential risks, often leading to inadequate evaluation, premature return to play, and poor psychological management. Complications of severe or repeated concussions include migraines, depression & mood changes, sleep disorders, convulsions, coma, and in some instances even death. The goals of our study were to evaluate public awareness and knowledge of concussion, identify common misconceptions, assess barriers to proper management, and propose uniform guidelines for education, prevention, diagnosis, and treatment to be used in the Vermont school system.

Methods:

Survey Design: A 14-question survey was designed in order to assess community member’s knowledge and attitudes about concussion and the treatment of concussion in Middle School and High School athletes. Our target population included parents, coaches, athletic trainers, teachers, school nurses, and health care providers who are associated with students in the Chittenden East Supervisory Union school district.

Data was collected using an online-based survey website called Survey Monkey, and also by administering a paper form of the survey to parents and coaches who attended a Concussion Meeting that took place at Mount Mansfield Union High School. The online survey was sent to coaches and parents via an e-mail which contained a link to the survey. In order to include physicians and other health care practitioners in the survey, we called, faxed and emailed 11 local pediatric and family medicine offices to encourage them to take part in our survey.

The paper surveys that were filled out at the Concussion Meeting and via fax by Physicians were entered into Survey Monkey in order to compile all of the results into one database.

“It needs to be out there in all media to become part of our normal information system. People understand broken bones, head injuries need to be as clear to us as that.”

--Anonymous Survey Participant

Which of the following best describes you (Select one):

Answer Options	Response Percent	Response Count
Parent	74.4%	332
Coach	5.2%	23
Athletics Volunteer	1.1%	5
Nurse	3.4%	15
Teacher	12.8%	57
Athletic Trainer	0.0%	0
Physician	2.7%	12
Physician's Assistant	0.0%	0
Nurse Practitioner	0.4%	2
answered question		446

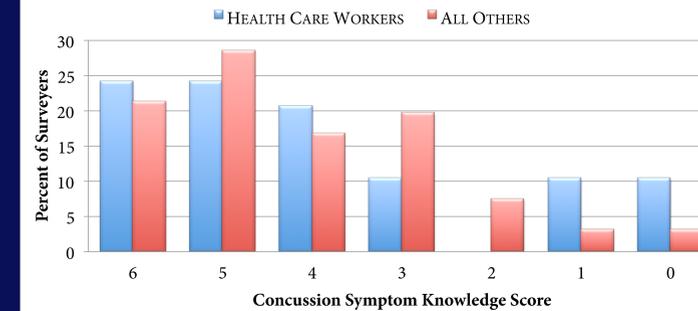
What is your gender?:

Answer Options	Response Percent	Response Count
Male	29.4%	129
Female	70.2%	308
Prefer not to specify	0.5%	2
answered question		439
skipped question		7

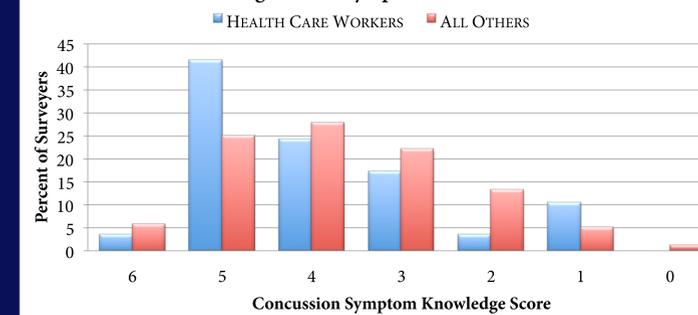
Which of the following best describes you (Select one):

Answer Options	Response Percent	Response Count
Under 25	1.1%	5
26-45	37.5%	166
46-65	60.3%	267
Over 65	1.1%	5
answered question		443
skipped question		3

Knowledge of Early Concussion of Symptoms



Knowledge of Late Symptoms of Concussion



Responses were converted to overall scores by adding +1 for a correct sign and -1 for an incorrect sign, selection of “none” was weighed as 0.

Early Signs:

- * Correct Signs: nausea, vomiting, confusion, vision changes, sensitivity to light
- * Incorrect Signs: fever

Late Signs:

- * Correct Signs: headache, general tiredness, memory loss, sensitivity to light, depression, neck pain
- * Incorrect Signs: stomach pain



Discussion/Conclusion:

There are many states within the US that have passed laws relating to concussions in high school athletics. The results of our survey highlight some very important points about sport-related concussions in the Chittenden East Supervisory Union:

- 97% of those surveyed strongly agreed, or agreed that there should be a uniform guideline for the management of sport-related concussions in the CESU.
- More education is needed about the use of helmets and the risk of concussions.
- There is a wide range of knowledge on how to detect a concussion based on the early and late symptoms.
- 67% would like more information on the detection/management of concussions.

From the results of our survey, nearly all respondents in the CESU support a standardized approach to the management of sport-related concussions. From our research, we recommended this guideline include specific instructions pertaining to:

1. Coach and Student Athlete (and possibly parent) education about concussion prior to the start of the sport season.
2. What to do if a player is suspected of receiving a concussion.
3. When a player is allowed to return to play after being diagnosed with concussion.

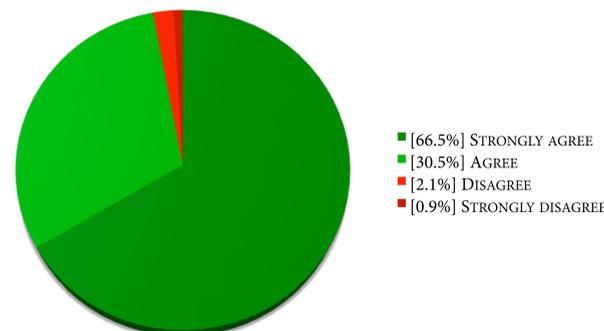
With the implementation of such a protocol, there will be no ambiguity about when and how to take action if a player receives a head injury. The hope is that this will prevent further head injury to those already injured, and allow the injured player to get back into the game as soon as he/she is healthy and ready. We recommend using evidence based guidelines, such as the ones recommended by Fletcher Allen Health Care. It is important to remember the most crucial rule when managing concussions, “When in doubt, leave them out.”

References:

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2. Makkissi, Michael, David Darby, Paul Maruff, Anthony Ugoni, and Peter Brukner. “Natural History of Concussion in Sports: Markers of Severity and Implications for Management.” *American Journal of Sports Medicine*. 38.3 (2010): 464-471. Print.
3. Kirkwood, Michael, Keith Yeates, and Pamela Wilson. “Pediatric Sport-Related Concussion: A Review of the Clinical Management of an Off-Neglected Population.” *American Academy of Pediatrics*. 117.4 (2006): 1359-1371.



“I believe the school district should have a uniform guideline on how to recognize, treat and manage concussion.”



Coaches and Athletic Trainers response to “If a player is wearing the proper equipment, the risk of concussion is minimal.”

“Would you like to receive more information on concussion in sports?”

Parent’s response to “I have been well informed on recognizing the signs and symptoms of concussion and feel I could recognize them in a student athlete.”

Legend: STRONGLY AGREE (green), AGREE (light green), DISAGREE (red), STRONGLY DISAGREE (dark red)