



Concussions



Why are concussion education, management and treatment important?

The ability to educate others on the signs and symptoms of a concussion, recognize the symptoms of a concussion and how to manage the concussion, are vital to insuring the athlete has a full recovery.

Epidemiology:

- Recent research has identified a 62% increase in nonfatal non-traumatic brain injuries between 2001 and 2009.
- With as many as 3.8 million reported and unreported sport- and recreation-related concussions occurring each year in the United States.
- As many as 50,000 people die each year as a result of a traumatic brain injury.
- High school sports show a direct fatality rate of .09 per 100,000 participants.



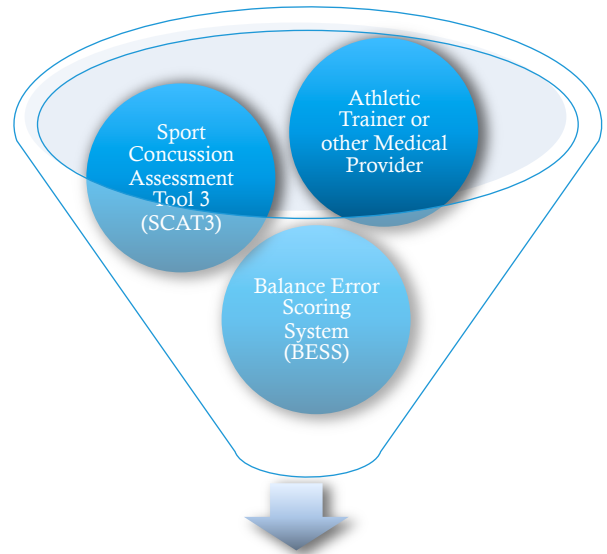
What does the research say?

Education is Key

Up to 50% of high school athletes did not report concussions sustained.

84% of coaches disclose they have some type of concussion knowledgebase.

With increased education of all parties, additional long-term effects may be mitigated.



Concussion Evaluation

Risk Factors	Modifying Factors
Symptoms	Number Duration (>10d) Severity
Signs	Prolonged loss of consciousness (>1min), amnesia
Sequelae	Concussive convulsions
Temporal	Frequency: repeated concussions over time Time: injuries close together in time Recency: recent concussion or traumatic brain injury
Threshold	Repeated concussion occurring with progressively less impact, force, or slower recovery after each successive event
Age	Child or adolescent (<18y)
Comorbidities and premorbidities	Migraine, depression, or other mental health disorders; attention-deficit hyperactivity disorder; learning disabilities; sleep disorders
Medication	Psychoactive drugs, anticoagulants
Behavior	Dangerous style of play
Sport	High-risk activity, contact or collision sport, high sporting level

The athletic trainer should be aware of and document potential modifying factors that could delay the return to play, and patients should be educated on the implications of these conditions as they affect recovery.



Best Practice Recommendations

Evidence-Based Practice Recommendations	Meets Best Recommendation Policy
<i>1. Schools should develop an EAP for handling potentially life-threatening injuries and a referral plan for concussions.</i>	
<i>2. Enforcing the standard use of sport-specific, properly fitting, and certified helmets/equipment.</i>	
<i>3. The PPE (pre-participation exam) should include concussion specific questions.</i>	
<i>4. Preseason education for personnel, coaches, and athletes (should be tailored to the group being taught, strongly recommend educational materials for parents) on basics of concussion (i.e. that helmets do not prevent cerebral concussions, signs/symptoms, treatment, testing options, RTP).</i>	
<i>5. Athletes suspected of sustaining a concussion are not permitted to return to a practice, game, or activity involving exertional activity on the same day.</i>	
<i>6. Athletes suspected of a concussion are not permitted to return to participation until written release from a licensed physician or athletic trainer.</i>	
<i>7. No child/adolescent should return to sport/activity unless he/she has managed to return to school.</i>	
<i>8. Implementation of a graduated return to participation protocol (see Zurich/AMSSM example, at least 5 steps, no more than 2 in one day).</i>	
<i>9. Comprehensive medical-management plan for acute care of a potential head or cervical spine injury.</i>	

Notes:



Why is it important to...

1



Use standard, sport-specific, properly fitted, certified helmets/equipment?

- To have equipment to be certified means they are sent to be refurbished, where they are refreshing the equipment back to almost its original state.
- This means any part of the equipment that was damaged during a season of play is repaired and recovered to full working order.
- All equipment should be properly fitted to each individual athlete.
- Concussions cannot be prevented, it is important to remember that certified equipment are designed to prevent against other head injuries such as fractures or brain bleeds.

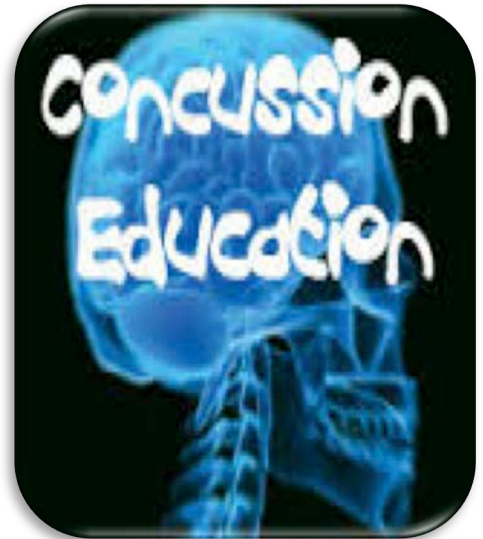
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Include concussion specific questions in a PPE (pre-participation exam)?

- Many athletes do not recognize that they have had concussions in the past due to a lack of education and knowledge
- A history of concussions may pre-identify athletes at high-risk.
- History should include:
 - Previous symptoms
 - Length of recovery
 - Number of concussions
 - Previous head, face or cervical spine injuries
 - Protective equipment



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Develop preseason education for personnel, coaches, and athletes on basics of concussion?

- The best way to prevent a catastrophic brain injury is to educate those involved with athletics on how to recognize the signs and symptoms of a concussion.
- Education of signs, symptoms, assessment techniques and management are important to avoid a catastrophic injury.
- Preseason education of:
 - Coaches
 - Athletes
 - Parents
 - Facility managers

+ Why is it important to...

4



Not permit athletes suspected of sustaining a concussion to return to a practice, game, or activity involving exertional activity on the same day and that they not return to participation until a written release is obtained from a licensed physician or an athletic trainer?

- Research has identified a person with a concussion who returns to activity without clearance from a medical professional, and who is still experiencing symptoms of a concussion, are at a significantly higher risk of second impact syndrome.
- Second impact syndrome (SIS) typically occurs after an injured athlete receives an additional blow to the head causing a swelling of the brain stem and eventual death.

5

Implement a graduated return to participation protocol?

- It is important to remember that this is a working document.
- All of the preparedness in the world can still relate in flaws within the plan itself.
- Following an emergent situation, it is important to debrief immediately post emergency in order to identify the areas of necessary improvement.

Rehabilitation stage	Examples of functional exercise at each stage of rehabilitation	Objective of each stage
1. No activity	Symptom limited physical and cognitive rest	Recovery
2. Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity <70% maximum permitted heart rate No resistance training	Increase HR
3. Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
4. Non-contact training drills	Progression to more complex training drills, eg, passing drills in football and ice hockey May start progressive resistance training	Exercise, coordination and cognitive load
5. Full-contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6. Return to play	Normal game play	

+ Why is it important to...

6

Provide a comprehensive medical-management plan, including an EAP, for acute care of a potential head or cervical spine injury?

- Players with any features of a concussion should be removed from play IMMEDIATELY.
- Examination by a physician, athletic trainer or other licensed health care provider is imperative.
- Once the player has been evaluated for first aid, a SCAT3 or other sideline assessment tool should be utilized
- Player should not be left alone immediately following the injury or for the initial few hours after an injury occurs.
- No player should RTP the same day as a concussion



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Not allow a child/adolescent to return to sport/activity unless he/she has managed to return to school?

- In most circumstances, it is possible that schoolwork such as lectures, exams or group work, exacerbates signs and symptoms of a concussion.
- If an athlete is not fully cleared for all academic work, this means he/she is still having some type of symptoms.
- Physical activity typically exacerbates these symptoms; therefore players must not be allowed to return to play in athletics until all symptoms related to increased mental activity are resolved.

Notes:



Essential Framework

Key Personnel

- Athletic Trainers
- Trained physicians or other medical personnel trained in concussions
- Coaches
- Parents
- Administrators
- Teachers

Equipment

Paper or phone application symptom scale checklist	\$0
Education materials	\$0
Train coaches and/or league officials on properly fitting equipment	\$varies
Certification Course	\$varies
Neurocognitive testing	\$200-\$1000

Implementation Sequence

Implementation Sequence	Complete
List what your organization does well	
List what your organization can improve upon	
Review example documents	
Determine if a policy or suggestion is warranted for your organization	
Draft a general concussion policy	
Have medical professionals review and revise your policy	
Create a final concussion policy	
Consider all options to educate coaches, parents and athletes on concussions (Group meetings, separate meetings, send home paperwork, quiz, PowerPoint, online concussion training tools, etc.)	

+ Potential Barriers and Solutions

Problem: No medical staff present at practices or games.

Solutions:

- Medical staff is not necessary to properly recognize a potential concussion
- All coaches should be educated in concussion signs and symptoms and should be held accountable to remove the athlete from play
- All athletes with a suspected concussion should be removed from play immediately and not allowed to return to play until evaluated by proper medical personnel



Problem: Limited access to medical personnel trained in concussion management.

Solutions:

- Ensure all referred physicians are trained in concussion education
- Reach out to local athletic trainers or sports medicine doctors for referrals



Problem: Concussion materials can be expensive; we do not have that type of money.

Solutions:

- Free concussion materials are located all over the Internet. It is important you find a credible website to obtain this information
- KSI.uconn.edu provides concussion education as well as the CDC



Notes: