Pinkerton Academy Sports Medicine

Concussion Protocol and return to play guidelines

Management of sports-related concussion is evolving rapidly. Recently there has been a significant amount of research regarding sports-related concussion. This protocol outlines procedures for athletic training staff to follow in managing head injuries (concussion) and outlines school policy as it pertains to return to play issues following a concussion. This protocol is based on the most current research available. This protocol attempts to provide guidance to insure a safe return to participation in sports.

Pinkerton Academy and its staff seek to provide a safe return to participation for all athletes after injury, including concussion. In order to effectively manage these injuries, protocols have been developed to identify, treat, refer, and safely return to play those athletes that have been identified as having a concussion.

In addition to the most recent research three documents were consulted in developing the following protocol. The "Summary and Agreement Statement of the 2nd International Conference on Concussion in Sport, Prague 2004", "National Athletic Trainers Association position statement: Management of Sport-related Concussion", and the "Consensus Statement on Concussion in Sport- the 3 rd International Conference on Concussion in Sport held in Zurich, November 2008".

The following protocol should be reviewed by the athletic training staff and school physician on a yearly basis. Any changes or modifications will be reviewed and discussed with athletic department staff and appropriate school personnel in writing.

It is important to note that the research in the area of concussions is ongoing and evolving. If new research is presented it will be discussed among athletic department staff and school physician and possible modifications /changes could be made to the protocol outlined below.

Definition of Concussion:

- Concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces.
- Concussion may be caused either by a direct blow to the head, face, neck or elsewhere on the body with an impulsive force transmitted to the head.
- Concussion typically results in the rapid onset of short-lived impairment of neurological function that resolves spontaneously.
- Concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury.
- Concussion results in a graded set of clinical symptoms that may or may not involve loss of consciousness. Resolution of the clinical and cognitive symptoms typically follow a sequential course, however in a small percentage of cases post-concussive symptoms may be prolonged.

Second Impact Syndrome - A rare phenomenon of diffuse brain swelling with delayed catastrophic deterioration due to the belief that it occurs as the result of a second concussion before the effects of the initial concussion have resolved. Although rare it is catastrophic and a major concern.

Concussion Evaluation:

The diagnosis of an acute concussion typically involves the assessment of clinical symptoms, physical signs, behavioral changes, balance and coordination, sleep, and cognition. An athlete may experience some or all of the following symptoms (reported by athlete).

1. Headache
2. Fatigue
3. Nausea or vomiting
4. Double vision or blurry vision
5. Sensitivity to light (photophobia) or noise
6. Feels sluggish
7. Feels "foggy"
8. Problems concentrating and remembering

Common signs (observed by evaluator or others) found with concussion include:

1. Athlete appears dazed or stunned
2. Confusion
3. Unsure about game, score, opponent
4. Altered coordination
5. Balance problems
6. Personality change (aggressive behavior)
7. Responds slowly to questions asked
8. Forgets events prior to trauma
9. Forgets events after trauma has taken place
10. Loss of consciousness (any duration)

Sideline Management:

Sideline assessment will be administered by athletic trainer to every athlete who is suspected of having suffered a trauma to the head or neck and/or displaying concussion-like signs and symptoms. The standardized assessment of concussion (SAC) card will be utilized to assess and evaluate orientation, memory, concentration, and other symptoms. History and verbal examination, special tests, will be used to determine the presence and severity of concussion. The evaluation is described as below:

1. Assess subjective complaints (symptoms list)
2. Assess loss of consciousness, orientation and memory
    a. Determine if athlete "blacked out"
    b. Orientation (date, day of the week, approximate time of day
    c. Game/Practice details (opponent, current game situation, recent plays or drills)

   d. Assess athlete's memory of events preceding the blow and after the blow took place.
3. Assess concentration and recall:
   a. Immediate recall using a 5-word list
   b. Delayed recall asking athlete to repeat 5-word list after completing remainder of evaluation.
   c. Concentration: Recite months of the year in reverse order and repeat 3 digit number string backwards.
   d. Special Tests
4. Assess cranial nerves
5. Assess dermatomes and myotomes

***Any athlete suspected of having a concussion after the athletic trainers have completed an evaluation, will not under any circumstance be allowed to return to a game or practice. ***

Parent or guardian, if not present at time of injury, will be contacted and details of injury sustained will be discussed including follow up care, MD referral, and discussion of Pinkerton Academy protocol on concussion will be discussed. If parent or guardian is present at time of injury, then details will be discussed at an appropriate time. The parent/guardian or athlete will also be given the Concussion Injury Warning Sheet (Appendix A)

Emergency Management:

Any athlete suspected of having head or neck trauma will be evaluated first for possible spine injury. If a spine injury is suspected, the athlete will be immobilized by the athletic trainer on duty. If there is any loss of consciousness, or rapidly deteriorating symptoms, EMS will be called immediately and student will be transported to the nearest hospital. In the event the injury occurs to an athlete in football, hockey, or lacrosse, that athlete's facemask will be removed to allow access to airway management.

If parent or guardian is not present at time of injury then every attempt will be made by athletic training staff or athletic director to notify them of injury and course of action that is being taken.

Return to Play (RTP) Procedures after Concussion:

Returning to participate on the same day of injury

1. An athlete who exhibits signs or symptoms of concussion, or has abnormal cognitive testing, will not be permitted to return to play on the day of the injury.
2. Any athlete who denies symptoms of concussion but displays abnormal sideline cognitive testing will be held out of activity.

Return to play after concussion

1. The athlete must meet all of the following criteria in order to progress to activity:
   a. Asymptomatic at rest and with exertion
   b. Have written clearance returning them to participate from treating physician if athlete saw a physician for this injury.

c. **In the case of a disagreement between medical professionals that cannot be resolved then the more conservative approach will be taken.**

Once the above criteria have been met the athlete will be progressed back to full activity under the supervision of the athletic trainer. It is important to note that progression is individualized according to the athlete's symptoms.

The stepwise progression that Pinkerton Academy will utilize is the Zurich Consensus Statement November 2008 which at this time is the most current and widely recognized return to play protocol. This protocol will be followed once the athlete is symptom free for 24 hours. The progression is as follows:

Phase 1 No activity except for daily living activities including physical and mental activities.

Phase 2 Light aerobic exercise- walking, jogging, and stationary bike

Phase 3 Sport specific exercise - skating in hockey running in soccer

Phase 4 Non-contact training drills (passing drills in football and hockey may start progressive resistance training).

Phase 5 Full contact practice (Following medical clearance, participate in normal training activities

Phase 6 Return to play (Normal game activity)

Each step should take 24 hours. If any post-concussion symptoms occur while in the RTP protocol then the athlete should drop back to the previous asymptomatic level and try to progress again after a 24 hour period of remaining asymptomatic has passed.

Neurologist/Specialist Referral:

An athlete will be referred to a neurologist if they experience any of the following signs or symptoms:

1. Loss of consciousness
2. Symptoms lasting more than 7 days
3. Having suffered more than one concussion in a season
4. Seizure or posturing activity
5. Deteriorating signs and symptoms