

XXXX High School Athletic Department  
Guidelines for Management of Sports-Related Concussion

Medical management of sports-related concussion is evolving. In recent years, there has been a significant amount of research and expert consensus-gathering concerning sports-related concussion in high school athletes. These guidelines outline procedures for staff to follow in managing concussions, and outlines school policy as it pertains to return to play issues after concussion. It is a template based on current research and best-practice. Specific situations may deviate from these procedures. Systematic differences should be noted and changed within the document. The guidelines attempt to provide guidance and structure to ensure safe participation in sports.

XXXX High School seeks to provide a safe return to activity for all athletes after injury, particularly after a concussion. In order to effectively and consistently manage these injuries, procedures have been developed to aid in ensuring that concussed athletes are identified, treated and referred appropriately, receive appropriate follow-up medical care during the school day, including academic assistance, and are fully recovered prior to returning to activity.

In addition to recent research, two primary documents were consulted in developing these guidelines. The “Consensus Statement on Concussion in Sport—The 4<sup>th</sup> International Conference on Concussion in Sport” held in Zürich, November 2012 (referred to as the Zürich Statement)<sup>1</sup> and the “National Athletic Trainers’ Association Position Statement: Management of Sport-Related Concussion” (referred to in this document as the NATA Statement).<sup>2</sup> Disagreement between resources was resolved in favor of the Zürich statement as it is the most recent.

These guidelines should be reviewed on a yearly basis by the school medical staff. Any changes or modifications will be reviewed and given to athletic department staff and appropriate school personnel in writing.

**I. Overview: the primary components of the guidelines**

A. Benchmarks of the program:

1. Education and training of participants
  - a. The goal is to have all medical staff update their knowledge on concussion management;
  - b. Educate coaches, parents, athletes and local primary care physicians about the school guidelines;
2. Baseline cognitive and balance assessments for all appropriate (collision & contact sports) athletes;
3. Follow-up physical, symptom, balance and cognitive assessments of identified injuries within 72 hours (allows for Friday night game to Monday) unless the athlete does not return to school on Monday;
4. Communication with treating MD, neuropsychologist (NP) or Credentialed ImPACT Consultant, parent, coach, school nurse about injury and assessments;

5. Continued monitoring and assessment until cleared for RTP exertion protocol;
  - a. Clearance to begin return-to-play (RTP) process when symptoms, balance and cognitive testing have returned to athlete's baseline. Light walking, if clinically indicated, may be initiated *after* symptom resolution but before balance and cognitive tests are within normal limits.
6. Step-wise exertion protocol leading to RTP monitored by certified athletic trainer (AT).

## II. Recognition of concussion

### A. Definitions

1. Concussion: there is no universal agreement on the standard definition or nature of concussion; however, agreement does exist on several features that incorporate clinical, pathologic and biomechanical injury constructs associated with head injury:
  - a. Concussion may be caused by a direct blow to the head or elsewhere on the body from an "impulsive" force transmitted to the head.
  - b. Concussion may cause an immediate and a typically short-lived impairment of neurologic function.
  - c. Concussion may cause neuropathologic changes; however, the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury.
  - d. Concussion may cause a gradient of clinical syndromes that may or may not involve loss of consciousness (LOC). Resolution of the clinical and cognitive symptoms typically follows a sequential course.
  - e. Concussion is most often associated with normal results on conventional neuroimaging studies.
2. Second Impact Syndrome: A rare phenomenon of diffuse brain swelling with delayed catastrophic deterioration has been labeled "second-impact syndrome" due to the belief held by some that it occurs as the result of a second concussion before the effects of the initial concussion have resolved. While rare, it is catastrophic and a major concern.

## III. Common signs and symptoms of sports-related concussion

### A. Signs (observed by others):

1. Athlete appears dazed or stunned
2. Confusion (about assignment, plays, etc.)
3. Forgets plays
4. Unsure about game, score, opponent
5. Moves clumsily (altered coordination)
6. Balance problems
7. Personality change

8. Responds slowly to questions
9. Forgets events prior to trauma
10. Forgets events after the trauma
11. Loss of consciousness (any duration)

B. Symptoms (reported by athlete):

1. Headache
2. Fatigue
3. Nausea or vomiting
4. Double vision, blurry vision
5. Sensitive to light or noise
6. Feels sluggish
7. Feels “foggy”
8. Problems concentrating
9. Problems remembering

C. These signs and symptoms are indicative of probable concussion. Other causes for symptoms should also be considered. It is important to review medical history and baseline symptoms from screening/baseline.

#### **IV. Cognitive impairment (altered or diminished cognitive function)**

A. General cognitive status can be determined by simple sideline cognitive testing.

1. AT may utilize SCAT3 (Sports Concussion Assessment Tool)<sup>1</sup>, SAC (Standardized Assessment of Concussion) or other standard tool for sideline cognitive assessment.
2. Coaches or others medically responsible for athletes may utilize the basic SAC/SCAT3 assessment form if AT is not available and make appropriate referrals.

#### **V. Balance impairment (altered or diminished balance)**

A. General balance status can be determined by simple sideline (BESS or modified BESS) testing.

1. AT may utilize instrumented BESS or Modified BESS testing with C3 logix iPad platform.
2. Coaches or other medically responsible for athletes may utilize the basic BESS or Modified BESS assessment and record errors on paper if AT is not available and make appropriate referrals.

#### **VI. Baseline assessment and use of neurocognitive and balance testing**

A. Neurocognitive testing is recommended to establish baseline level cognitive functioning.

1. All collision/contact sport athletes should take a baseline neurocognitive test prior to participation in sports (usually freshman year, then again in junior year).
2. Testing should be conducted under the auspices of a qualified neuropsychologist or Credentialed ImpACT Consultant for administration and interpretation. Athletes with invalid baseline scores as identified by the ImpACT software will be discussed with AT and retesting considered.

3. Athletes in collision and contact sports (See Appendix 1) should take “new” baseline tests prior to participation their junior year. Athletes who are new to a sport or new to the school will be tested prior to sport participation regardless of year in school to assure a valid baseline.
4. Computerized testing should be scheduled with adequate supervision and a script should be followed
  - a. At least one trained proctor should be present.
  - b. The background information takes about 10-15 minutes.
  - c. Current symptoms mean “in the last 24 hours.”
  - d. The tests themselves take about 20 minutes.
  - e. Tell athletes to read instructions twice before starting each test and to ask questions before starting the module. Some modules keep going whether you answer or not.
  - f. The tests can detect "faking bad" - that is, trying to get bad results on baseline testing. Athletes may be asked to retake the test if it appears they were not trying.
  - g. When finished, athletes should raise their hand to let the proctor know they are finished; proctor will log the computer out.

B. Balance testing is also recommended as an additional tool.

1. All collision/contact sport athletes should take a baseline balance test prior to participation in sports (usually freshman year, then again in junior year).
2. Athletes in collision and contact sports (See Appendix 1) should take “new” baseline tests prior to participation their junior year. Athletes who are new to a sport or new to the school will be tested prior to sport participation regardless of year in school to assure a valid baseline.
3. Balance testing will be completed on the iPad as part of the C3 logix battery of tests. The C3 logix test should be conducted with appropriate administration and supervision.
  - a. Athletes enter demographic information into the iPad
  - b. Balance is performed with the iPad placed in a belt and strapped to the athlete’s back just below the iliac crests positioning the iPad on the sacrum.
  - c. Athlete is asked about foot dominance and lower extremity musculoskeletal injury history.
  - d. BESS protocol is followed using accelerometer and gyroscope in iPads.
  - e. Errors are scored when athlete steps, stumbles or falls; lifts forefoot or heel; opens eyes; removes hands from hips; and/or bends at the waist greater than 30 degrees.
  - f. If athlete remains out of testing position greater than 5 seconds, the trial is score as 10 errors (max).
4. Additional tests within the C3 logix platform include static and dynamic vision, simple and choice reaction time, symbol digit matching and trails A and B neurocognitive tests.

## VII. Management and Referral Guidelines

### Sideline Management – General Guidelines

- A. Sideline assessment will be administered by AT to every athlete who is suspected of sustaining a potential concussion-causing injury and/or displaying concussion-like signs and symptoms. The AT will assess orientation, memory, concentration and other symptoms.
- B. History and oral examination, special tests, and physical exertion will be used to determine the presence and severity of the concussion, and to help the athletic trainer identify the appropriate referral course.
- C. The general approach will be as described below:
  1. Assess subjective complaints (graded symptom checklist)
  2. Assess loss of consciousness, orientation and memory
    - a. Did the athlete black out?
    - b. Orientation...date, day of the week, approximate time of day
    - c. Game/practice details (opponent, current game situation, recent plays or drills, knowledge of their position/role...)
    - d. Assess athlete's memory of events preceding the blow (i.e., how did you get to the stadium today) and since the blow (recall of the event and if appropriate, plays or other events that occurred after the event).
  3. Assess concentration and recall
    - a. Immediate recall: use a 5-word list (i.e. dog, ball, lotion, game, restaurant)
    - b. Delayed recall: after completing remainder of evaluation (5 minutes or so), ask athlete to repeat the 5 words.
    - c. Concentration: recite months of the year in reverse order beginning at a random month
    - d. Concentration: 3-digit number string repeated backwards
  4. Assess cranial nerves
  5. Assess dermatomes and myotomes
- D. Any athlete suspected of having a concussion by the AT must be removed from play for the remainder of that day's game or practice.

### VIII. Suggested guidelines for on-field management of sports-related concussion in the absence of an AT

- A. Any athlete with a witnessed loss of consciousness (LOC) of any duration should be evaluated by appropriate medical personnel and transported immediately to nearest emergency department via emergency vehicle.
- B. Any athlete who has symptoms of a concussion, and who is not stable (i.e., condition is changing or deteriorating), is to be transported immediately to the nearest emergency department via ambulance.
- C. An athlete who exhibits any of the following symptoms should be transported immediately to the nearest emergency department, via emergency vehicle.
  1. deterioration of neurological function
  2. decreasing level of consciousness
  3. decrease or irregularity in respirations
  4. decrease or irregularity in pulse
  5. unequal, dilated, or unreactive pupils

6. any signs or symptoms of associated injuries, spine or skull fracture, or bleeding
7. mental status changes: increasing lethargy, confusion or agitation and/or difficulty maintaining arousal
8. seizure/posturing activity
9. vomiting after sustaining a potentially concussion-causing injury

D. An athlete who is symptomatic but stable, may be transported by his or her parents. The parents should be advised to contact the athlete's primary care physician, or seek care at the nearest emergency department, on the day of the injury.

E. The coach/AD should contact the AT to advise him/her of the injury.

F. ALWAYS give parents the option of emergency transportation, even if you do not feel it is necessary.

### **IX. Procedures for the Certified Athletic Trainer (AT)**

Certain concussions (e.g., mild, uncomplicated, resolving) may be managed by the AT (operating under the team physician's standing orders and in regular contact with the team physician) without referral to outside physician. In cases when an injured athlete has not seen a physician, the AT is empowered to clear an athlete to return to play. When an athlete has seen a physician, however, a physician note will be required prior to return to play clearance. Said note must come from a physician other than an emergency room physician.

A. The AT will assess the injury, or provide guidance to the coach if unable to personally attend to the athlete.

1. Immediate referral to the athlete's primary care physician or to the hospital will be made when medically appropriate.
2. Delayed referrals will be made as necessary (See Section XVII B).

B. The AT will notify the athlete's parents and give written and verbal home and follow-up care instructions.

C. The AT will notify school RN and continue to provide coordinated care with the school RN.

1. The AT will notify the school nurse of the injury, prior to the next school day if possible (e.g., immediate email so it's there awaiting the nurse's next day arrival), so that the school RN can initiate appropriate follow-up in school immediately upon the athlete's return to school.
2. The AT will communicate with the school nurse (or guidance counselor) regarding the athlete's neurocognitive and recovery status. If needed the school nurse will initiate procedures for academic accommodations for athlete.
3. School nurse and AT will determine which of them should communicate with the athlete's treating physician/provider, then keep the other apprised of physician wishes.

D. The AT will notify the athletic director and team physician that an athlete has suffered a concussion. *The athletic director should notify school administration (e.g., vice principal).*

E. The AT will notify the supervising neuropsychologist or Credentialed ImPACT Consultant, whichever has been retained by the school, of the injury.

- F. The AT is responsible for administering post-concussion cognitive and balance testing.
1. Whenever possible, the initial post-concussion tests will be administered 48-72 hours post-injury (or as soon as possible after 48 hours post-injury as allowed by athlete's return to school).
  2. Repeat post-concussion tests will be given at appropriate intervals, dependent upon clinical presentation. The timing of retesting shall be determined on a case by case basis.
  3. AT will send notification of neurocognitive test data for supervising consultant to review as soon as possible upon the athlete's completion of the test.
  4. The AT will review post-concussion tests data (neurocognitive and balance) with the athlete and the athlete's parent.
  5. The AT will forward testing results to the athlete's treating physician, with parental permission.
- G. The AT will monitor the athlete, and keep the School Nurse informed of the individual's symptomatology and neurocognitive status, for the purposes of developing or modifying an appropriate health care plan for the student-athlete. The AT will perform serial assessments of symptoms, signs, balance and cognition using assessment tools (e.g., SCAT3 and/or SAC) and/or computerized neurocognitive tests, and balance testing with the C3 logix platform.
- H. The AT is responsible for monitoring recovery & coordinating the appropriate return to play activity progression.
- I. The AT will maintain appropriate documentation regarding assessment and management of the injury.

**X. Guidelines and procedures for supervising neuropsychologist or Credentialed ImPACT Consultant, whichever the school has retained**

- A. Provide education and training as needed for AT, coaches, nurses, other relevant school personnel (e.g., guidance, psychologist, administrators), parents, primary care physicians, parents
1. Topics may include
    - a. Neuropathology of concussion
    - b. Research about and use of cognitive testing
    - c. Specific procedures for conducting baseline and follow-up testing
    - d. Treatment strategies
    - e. RTP guidelines
- B. Assist in coordinating and conducting initial baseline testing procedure
- C. Review all baseline testing
- D. Consult with AT and determine needs for repeat baseline testing or follow-up discussions
1. In cases of high symptom counts, AT should review with athlete
- E. Review follow-up assessments in a timely manner; communicate impressions with AT, team physician or medical director, and PCP if permission granted.
- F. Provide consultation on return to play status and treatment as indicated.
- G. Communicate with AT and School Nurse regarding any needed accommodations or treatment interventions at school.
- H. Consult with involved medical providers in cases of potential retirement from contact sports.

## **XI. Guidelines and procedures for coaches:**

A. CALL FOR AT IMMEDIATELY IF AVAILABLE; IF NOT AVAILABLE:

B. RECOGNIZE, REMOVE, REFER

1. Recognize concussion
  - a. All coaches should become familiar with the signs and symptoms of concussion that are described in Section II.
  - b. Coaches shall follow NHIAA Concussion Management Guidelines and sideline testing advice.
2. Remove from activity
  - a) If a coach suspects the athlete has sustained a concussion, the athlete should be removed from activity, and the athlete will not return to play until completing the XXXX High School concussion pathway and receiving clearance from appropriate medical personnel (e.g., AT, physician).
  - b) Any athlete who exhibits signs or symptoms of a concussion should be removed immediately, assessed, and shall not be allowed to return to activity that day.
3. Refer the athlete for medical evaluation.
  - a) Coaches should report all head injuries to the AT (or to other healthcare professionals if the AT is not available) as soon as possible, for medical assessment and management, and for coordination of home instructions and follow-up care.

C. The AT should be contacted as soon as possible.

1. The AT will be responsible for contacting the athlete's parents and providing follow-up instructions. The AT will also be responsible for initiating school-based follow-up.
2. Coaches should seek assistance from the host site AT if at an away contest.
3. If the AT is unavailable, or the athlete is injured at an away event, the coach is responsible for notifying the athlete's parents of the injury.
4. This call or contact with parents should happen as soon as the person to make the call is not tied up taking care of this or another athlete. If the athlete has to be transported emergently, the parents should be notified immediately.

D. If there is any question about the status of the athlete, or if the athlete cannot be monitored appropriately, the athlete should be referred to the emergency department for evaluation. If possible, a coach should accompany the athlete and remain with the athlete until the parents arrive.

E. Contact the parents to inform them of the injury and make arrangements for them to pick the athlete up at school. In the event that an athlete's parents cannot be reached, and the athlete is able to be sent home (rather than directly to MD):

1. The Coach or AT should insure that the athlete will be with a responsible individual, who is capable of monitoring the athlete and understanding the home care instructions, before allowing the athlete to be taken home. Written home care instructions should be provided to the individual responsible for monitoring the athlete.
2. The Coach or AT should continue efforts to reach the parent.

F. Remind the athlete to report directly to the school nurse before school starts,

on the day he or she returns to school after the injury. If you have not spoken directly with the AT or AD, notify nurse about the injury via email or cell. She needs to know about the concussion before the athlete next returns to school.  
 G. Athletes with suspected concussions should not be permitted to drive home.  
 H. Notify athletic director of the injury ASAP via phone or email on the day of the injury.

## **XII. FOLLOW-UP CARE OF THE ATHLETE DURING THE SCHOOL**

### **DAY: Responsibilities of the School Nurse**

- A. The athlete will be instructed to report to the school nurse upon his or her return to school. At that point, the school nurse will:
1. Re-evaluate the athlete utilizing a graded symptom checklist.
  2. Provide an individualized health care plan (as needed) based on both the athlete's current condition and initial injury information provided by the AT or parent.
  3. Notify the student's guidance counselor and teachers of the injury immediately.
  4. Notify the student's physical education/wellness teacher immediately that the athlete is restricted from all physical activity until further notice.
- B. School nurse and AT will determine which of them should communicate with the athlete's treating physician/provider then keep the other apprised of physician wishes.
- C. If the school RN receives notification of a student-athlete who has sustained a concussion from someone other than the AT (athlete's parent, athlete, physician note), the AT should be notified as soon as possible, so that an appointment for cognitive testing can be made.**
- D. The school nurse will monitor the athlete, and keep the AT informed of the individual's symptomatology and neurocognitive status, for the purposes of developing or modifying an appropriate health care plan for the student-athlete.
- E. Monitor the athlete on a regular basis during the school day.

## **XIII. FOLLOW-UP CARE OF THE ATHLETE DURING THE SCHOOL**

### **DAY: Responsibilities of the student's psychologist or guidance counselor**

- A. Monitor the student closely and recommend appropriate academic accommodations (including removal from class if necessary) for students who are exhibiting signs/symptoms of post-concussion syndrome.
- B. Communicate with school health office on a regular basis, to provide the most effective care for the student.
- C. Advocate for and develop appropriate accommodations during recovery, as needed.
- D. Assist in baseline and/or follow-up testing as needed (with appropriate training).

## **XIV. RETURN TO PLAY (RTP) PROCEDURES AFTER CONCUSSION**

- A. Returning to participate on the same day of injury
1. An athlete who exhibits signs or symptoms of concussion shall not be permitted to return to play on the day of the injury.

2. Any athlete who denies symptoms but has abnormal sideline cognitive testing should be held out of activity.

3. “When in doubt, hold them out.”

B. 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 (including mental exertion in school) AND:
  - b. Within normal range of baseline on post-concussion neurocognitive and balance testing
  - c. Have written clearance from primary care physician or specialist **if** they saw a physician for this injury. (This clearance cannot be provided by the Emergency Room physician.)
  - d. Have written permission from a parent or guardian to return to play.
2. When clinically indicated, asymptomatic athletes who have not yet returned to baseline on cognitive tests may begin a daily program of light walking as long as symptoms do not return.
3. Treatment during recovery
  - a. There is disagreement about the need for rest versus exertion during the recovery phase (both cognitive and physical rest/exertion); in lieu of data the recommendation is for activity to the point *before* worsening symptoms. That is if symptoms worsen or recur, the level of activity should be regressed.
  - b. School activities can proceed as long as the athlete does not experience an increase in physical, cognitive, somatic or emotional symptoms; any increase should result in a reduction in the level of activity.
  - c. School personnel should be notified of status changes.
4. Once the above criteria are met, the athlete will be progressed back to full activity following a stepwise process, (as recommended by both the Zurich and NATA Statements) under the supervision of the AT.
5. Progression is individualized, and will be determined on a case by case basis.
  - a. Factors that may affect the rate of progression include: previous history of concussion, duration and type of symptoms, age of the athlete, and sport/activity in which the athlete participates.
  - b. An athlete with a prior history of concussion and/or one who has had severe or prolonged symptoms **should be progressed more slowly**. In athletes with previous concussions, slower progression (e.g., 48 hours between stages) may be appropriate.
  - c. See further specifics regarding past concussions in the physician referral section at the end of the document.
6. Stepwise progression based on the Zurich Statement recommendations with 24-48 hours between stages, determined on a case by case basis considering past concussion history and severity of the current concussion, will begin after the athlete has been

asymptomatic for at least 24 hours. A sample progression is detailed below:

- a. Only light, sub-symptom activities of daily living including physical and mental activity should be allowed. Do not progress to step b until asymptomatic and cognitive tests are within normal limits.
    - i. When clinically indicated, asymptomatic athletes who have not yet returned to baseline on cognitive tests may begin a daily program of light walking as long as symptoms do not return.
  - b. Stage 1 of RTP progression: Light aerobic, nonimpact, exercise – e.g., walking, stationary bike, supervised by AT.
  - c. Stage 2 of RTP progression: Light aerobic exercise – e.g., jogging on field, track or treadmill, supervised by AT.
  - d. Stage 3 of RTP progression: Sport-specific training – progress aerobic activities depending on the athlete’s sport and position (to include sprinting, stop/start, cutting as indicated), incorporate progressive balance training, increasing difficulty of balance task and adding toss and catch over the next several stages supervised by AT.
  - e. Stage 4 of RTP progression: Sport specific training – progress aerobic activities (e.g., longer, harder, jumping/landing), progress balance rehab supervised by AT.
  - f. Stage 5 of RTP progression: Non-contact (no hitting, no scrimmaging, and no heading) training drills with team.
  - g. Stage 6 of RTP progression: Full practice (no game play) with team after medical clearance by AT or treating physician when there is one.
  - h. Stage 7 of RTP progression: Released for game play.
7. Note: If the athlete experiences post-concussion symptoms during any stage, activity should cease for that day and until symptoms have again resolved. Once the athlete has a new 24-hour asymptomatic period, the athlete may resume the RTP progression beginning at the previous asymptomatic level.
8. If symptoms (self-report and/or sub-baseline test scores) persist for more than 10-14 days post injury, referral to a physician with expertise managing concussions should be considered.

C. Stages 1-4 are to be supervised by the AT. Stages 5-7 will be supervised by the team coach after she or he has received specific instructions from the AT.

D. When supervised by the team coach, the AT and athlete will discuss appropriate activities. The athlete will be given verbal and written instructions regarding permitted activities. The AT and athlete will each sign these instructions. One copy of this form is for the athlete to give to the coach, and one will be maintained by the AT.

E. Progression through RTP stages is to be approved by AT, and not left up to the coach.

F. The athlete should see the AT daily for re-assessment and instructions until he, or she, has progressed to unrestricted activity (i.e., Stage 7), and been given a written report to that effect, from the AT. This daily monitoring should continue

until the concussion has resolved regardless of whether the athlete's sports season has ended.

G. Coaches should be instructed to be aware that the AT will be providing such paperwork and should not allow the athlete to participate until he has seen that form each day.

#### **XV. Disqualifying an Athlete**

A. Current Game or Practice: This decision will be based on the sideline evaluation, the symptoms the athlete is experiencing, the severity of the symptoms and the patient's past history. Any question of concussion will result in removal from the contest and the athlete will be ineligible to return on the same day. Any suspected concussion will start the athlete on the concussion pathway outlined above and return to play will be determined as outlined there.

B. Season: The decision for disqualification for the season will be based on the recommendations of a physician with expertise managing concussion and the medical team. Concussion history, severity of episodes, and athlete's future health should be considered when this decision is made.

C. Career: Disqualification from a certain sport will be done in the same manner as the season disqualification above. This may only keep this athlete from contact and collision sports.

**\*Please refer to Amy and Eric for guidelines on how to do this\***

#### **XVI. Home Instruction**

A. Parents should be notified the day of the suspected concussion. A concussion warning sheet shall be given to the athlete or parent. Athletes should not drive if concussion is suspected. Alternative transportation should be coordinated by the injured athlete, parents, coaches, AT and/or athletic director.

B. Special Considerations: if the AT feels that the concussion may be significant enough to warrant wake-ups during the night, the athlete should be referred for same-day further medical workup.

C. AT or another member of the medical team will provide the ACE Care Plan for returning to school.

**XVII. Physician Referral:** In non-emergency situations, a written injury report including test results should be sent to the physician who will see the athlete; the athlete may hand carry the documents or they may be faxed to the doctor. In cases where a written report cannot be produced/delivered to the physician, the athletic trainer may contact the physician with a verbal report.

A. Same-Day Referral in the presence of the AT or team physician (See Section VIII for referral guidance in the absence of the athletic trainer.)

1. An athlete will be immediately referred if there is any single or combination of:

- a. Prolonged (>15 seconds) loss of consciousness
- b. Seizure or posturing activity
- c. Deteriorating signs and symptoms. Worsening of symptoms should result in activation of EMS.
- d. Significant amnesia (e.g., repetitive questioning)
- e. Vomiting

2. Serious consideration for rapid referral should be given when athlete:

- a. Complains of severe headache
- b. Complains of prolonged (20 minutes) disturbance of vision or hearing
- c. Paresthesia or weakness

B. Delayed Referral:

1. A referral will be deemed necessary any time signs and symptoms worsen (i.e., neurocognitive status deteriorates). If mild symptoms do not improve in a 2-hour time-frame post-injury (or by the time the athlete will be leaving the presence of the AT), the athletic trainer will exercise clinical judgment regarding referral at that time.
2. A referral shall be deemed necessary in cases where symptoms significantly interfere with ADLs and/or are persistently severe.
3. Symptoms of any severity that are not improving after 7-10 days may warrant referral to the team physician, primary care physician or a physician with expertise managing concussion.
4. If symptoms persist for more than 10-14 days post injury, referral to a physician with expertise managing concussion should be considered.
5. Athletes whose reported symptoms have resolved but whose neurocognitive or balance test scores are not within normal range 7-10 days after resolution of symptoms may warrant referral to a neuropsychologist or physician with expertise managing concussion.
6. Athletes who have suffered a concussion within 6-12 months of the current concussion will be referred to a physician with expertise managing concussion, and then if cleared by the concussion specialist, a more conservative timeframe (e.g., 48+ hours between stages) will be applied to the return to play progression.

## **Appendix 1 - Sports that should be included in neurocognitive and balance baseline testing**

### Fall:

Football  
Soccer  
Field Hockey  
Spirit  
Volleyball

### Winter:

Basketball  
Ice Hockey  
Wrestling  
Alpine Skiing  
Spirit

### Spring:

Lacrosse  
Baseball  
Softball  
Pole vaulters

## References

1. McCrory P, Meeuwisse W, Johnston K, Dvorak J, Aubry M, Molloy M, et al. Consensus statement on Concussion in Sport-The 3rd International Conference on Concussion in Sport held in Zurich, November 2008. *J Sci Med Sport* 2009.
2. Guskiewicz KM, Bruce SL, Cantu RC, Ferrara MS, Kelly JP, McCrea M, et al. National Athletic Trainers' Association Position Statement: Management of Sport-Related Concussion. *J Athl Train* 2004;39(3):280-97.