

# Springfield School District Concussion Management Procedures

## CONCUSSIONS

### Definition of a concussion:

*Concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces. Several common features that incorporate clinical, pathologic and biomechanical injury constructs that may be utilized in defining the nature of a concussive head injury include:*

- 1. 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.*
- 2. Concussion typically results in the rapid onset of short lived impairment of neurologic function that resolves spontaneously.*
- 3. Concussion may result in neuropathological changes, but the acute clinical symptoms largely reflect a functional disturbance rather than a structural injury.*
- 4. 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 follows a sequential course; however, it is important to note that, in a small percentage of cases, post-concussive symptoms may be prolonged.*
- 5. No abnormality on standard structural neuroimaging studies is seen in concussion (1)*

### Symptoms and Signs of Acute Concussion:

*The suspected diagnosis of concussion can include one or more of the following clinical domains:*

- (a) Symptoms: somatic (eg, headache), cognitive (eg, feeling like in a fog) and/or emotional symptoms (eg, lability)*
- (b) Physical signs (eg, loss of consciousness, amnesia)*
- (c) Behavioral changes (eg, irritability)*
- (d) Cognitive impairment (eg, slowed reaction times)*
- (e) Sleep disturbance (eg, drowsiness)*

*If any one or more of these components is present, a concussion should be suspected and the appropriate management strategy instituted.(1)*

## CONCUSSION ASSESSMENT

### On-field or Sideline Evaluation of Acute Concussion:

When an athlete presents with a potential head and/or neck injury the athletic trainers will assess the student-athlete immediately.

If an athletic trainer is not readily present at the time of the incident, the coaches will contact the athletic trainer(s) via cell phone or radio immediately.

The coach will keep the athlete calm and in the position they were found.

OR

If the athlete is still upright, the athlete should be sat on the bench and monitored by an assistant coach or fellow athlete until the athletic trainer(s) arrives on the scene.

The following procedures will be utilized:

*When a player shows ANY features of a concussion:*

- (a) The player will be medically evaluated onsite using standard emergency management principles, and particular attention should be given to excluding a cervical spine injury.*
- (b) The appropriate disposition of the player must be determined by the treating healthcare provider (Athletic trainer, team physician, primary care physician) in a timely manner. If no healthcare provider is available, the player should be safely removed from practice or play and urgent referral to an athletic trainer, physician, or emergency department arranged.*
- (c) The player will not be left alone following the injury, and serial monitoring for deterioration is essential over the initial few hours following injury.*
- (d) **A player with diagnosed concussion will not be allowed to return to play on the day of injury.(1)***

In the event that a team is without an athletic trainer the coaching staff will make every effort to contact the supervising certified athletic trainer for their sport or the head certified athletic trainer for consult. If the certified athletic trainer is not available, the coaching staff has the option of taking the student-athlete to a local emergency department. Any documentation relative to the emergency department visit will be presented to the team's certified athletic trainer upon arrival on campus. The student-athlete **must** follow –up with the certified athletic training staff at the next available opportunity for assessment and management.

## CONCUSSION MANAGEMENT:

The student-athlete's parents will be contacted to make arrangements to have the student-athlete transported home. The student-athlete's parents will be contacted and/or provided with information to utilize in case of concern or emergency. This document will include the supervising certified athletic trainer's cell phone and/or the head athletic trainer's cell phone numbers.

*The cornerstone of concussion management is physical and cognitive rest until symptoms resolve and then a graded program of exertion prior to medical clearance and return to play (RTP). The recovery and outcome of this injury may be modified by a number of factors that may require more sophisticated management strategies. These are outlined in the section on modifiers below.(1)*

*During recovery it is important to emphasize to the athlete that physical AND cognitive rest is required. Activities that require concentration and attention (eg, scholastic work, videogames, text messaging, etc.) may exacerbate symptoms and possibly delay recovery. Typically, apart from limiting relevant physical and cognitive activities (and other risk-taking opportunities for re-injury) while symptomatic, no further intervention is required during the period of recovery, and the athlete generally resumes sport without further problem. (1)*

During this phase of recovery, if the student-athlete is reporting an increase in symptoms with scholastic work, the Springfield School District Guidance Counselors will be contacted on the student-athlete's behalf. The supervising certified athletic trainer or the head athletic trainer will make the initial contact with the Guidance Counselor via e-mail. The student will be responsible for contacting the Guidance Counselor and requesting assistance.

### Graduated Return to Play Protocol:

*Return to play (RTP) protocol following a concussion follows a stepwise process as outlined in Table 1. With this stepwise progression, the athlete should continue to proceed to the next level if asymptomatic at the current level. Generally, each step should take 24 hours so that an athlete would take approximately one week to proceed through the full rehabilitation protocol once they are asymptomatic at rest and with provocative exercise. If any post-concussion symptoms occur while in the stepwise program, then the patient should drop back to the previous asymptomatic level and try to progress again after a further 24-hour period of rest has passed. (1)*

*An important consideration in RTP is that concussed athletes should not only be symptom free but also should not be taking any pharmacological agents/medications that may mask or modify the symptoms of concussion.(1)*

#### **TABLE 1. Graduated Return to Play Protocol**

*Rehabilitation Stage Functional Exercise at Each Stage of Rehabilitation Objective of Each Stage*

- 1. No activity Complete physical and cognitive rest Recovery*
- 2. Light aerobic exercise Walking, swimming or stationary cycling keeping intensity ,70% MPPHR; no resistance training Increase HR (2 days of stationary cycling)*
- 3. Sport-specific exercise Skating drills in ice hockey, running drills in soccer; no head impact activities Add movement (2 days of running drills)*
- 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 (1)*

**\*\*Student-athletes will not be returned to a GAME situation for stage 6, if stage 6 is game day the athlete will be permitted to warm-up with the team but not participate in the game. The student-athlete must have a full practice prior to final clearance.\*\***

### Modifying Factors in Concussion Management:

There are several factors that may alter RTP recommendations as well as additional management strategies as deemed necessary by a physician experienced with proper concussion management strategies. The identification of modifying factors may lead to the incorporation of a multi-disciplinary approach to concussion management. In the event of a multi-disciplinary approach the team physician will review all supporting documentation for treating physicians and render a final RTP decision. The team physician's decision will be final.

TABLE 2. Concussion Modifiers

<b>FACTORS</b>	<b>MODIFIER</b>
<i>Symptoms</i>	<i>Number</i>
<i>Duration</i>	<i>(&gt;10 days)</i> <i>Severity</i>
<i>Signs</i>	<i>Prolonged LOC (&gt;1 min), amnesia</i>
<i>Sequelae</i>	<i>Concussive convulsions</i> <i>Temporal Frequency - repeated concussions over time</i> <i>Timing - injuries close together in time</i> <i>“Recency” - recent concussion or TBI</i>
<i>Threshold</i>	<i>Repeated concussions occurring with progressively less impact force or slower recovery after each successive concussion</i>
<i>Age</i>	<i>Child and adolescent (&lt;18 years old)</i>
<i>Co- and Pre-morbidities</i>	<i>Migraine, depression or other mental health disorders, attention deficit hyperactivity disorder (ADHD), learning disabilities (LD), sleep disorders</i>
<i>Medication</i>	<i>Psychoactive drugs, anticoagulants</i>
<i>Behavior</i>	<i>Dangerous style of play</i>
<i>Sport</i>	<i>High-risk activity, contact and collision sport, high sporting level (1)</i>

### Physician Intervention:

**All student-athletes must receive clearance from a physician experienced in the treatment of concussions prior to return to full competition. In the event that a face to face meeting with the team physician or student-athlete's treating physician is not possible, a phone consult between the supervising athletic trainer and physician will be conducted and documented. A determination will then be made whether the athlete needs to be seen in the physician's office prior to full return to competition.**

### BASELINE TESTING:

Baseline testing is recommended for each student-athlete prior to the first practice in the sports of baseball, basketball, cheerleading, diving, field hockey, football, ice hockey, lacrosse, pole vaulting, soccer, softball, and wrestling as a minimum. Springfield School District is committed to student-athlete welfare; therefore **ALL** student-athletes **MUST** be baseline tested utilizing the ImPACT computerized neuropsychological testing prior to participation in any activity related to interscholastic athletic participation, including but not limited to pre-season workouts and non-traditional season workouts. This testing will be done in the fall, winter and spring for all sports at an agreed upon date prior to the start of the traditional or non-traditional season.

Baseline tests will be valid for two (2) years at which time they will be repeated. The testing will be done during a student-athlete's 7<sup>th</sup> grade year, freshman year, and their junior year. Student-athletes in 8<sup>th</sup>, 10<sup>th</sup> and 12<sup>th</sup> grades who are competing for the first time at Springfield will also be tested. Baseline testing will be repeated if the student-athlete has a significant episode of trauma that warrants a revision of baseline testing. This testing will be done **PRIOR** to participation in any activity related to interscholastic athletic participation.

This document will be reviewed by the Certified Athletic Trainers, Team Physician and athletic training students on an annual basis.

This document will be distributed to all Springfield School District Coaches.

## REFERENCES:

1. McCrory P, Meeuwisse W, Johnston K, Dvorak J, Aubry M, Molloy M, Cantu R. Consensus Statement on Concussion in Sport 4th International Conference on Concussion in Sport Held in Zurich, November 2012. *Clin J Sport Med* 2009;19:185–200.
2. NCAA Concussion Management Plan Memorandum Date: April 29, 2010. Available online at [www.ncaa.org/health-safety](http://www.ncaa.org/health-safety)

The foundation of the Springfield High School Athletic Department Concussion Management plan is based on the following article:

1. McCrory P, Meeuwisse W, Johnston K, Dvorak J, Aubry M, Molloy M, Cantu R. Consensus Statement on Concussion in Sport 4th International Conference on Concussion in Sport Held in Zurich, November 2012. *Clin J Sport Med* 2009;19:185–200.