

HEADS UP: Concussion in High School Sports

The Iowa Legislature passed a new law, effective July 1, 2011, regarding students in grades 7 – 12 who participate in extracurricular interscholastic activities. Please note this important information from Iowa Code Section 280.13C, Brain Injury Policies:

- (1) A child must be immediately removed from participation (practice or competition) if his/her coach or a contest official observes signs, symptoms, or behaviors consistent with a concussion or brain injury in an extracurricular interscholastic activity.
- (2) A child may not participate again until a licensed health care provider trained in the evaluation and management of concussions and other brain injuries has evaluated him/her and the student has received written clearance from that person to return to participation.
- (3) Key definitions:
 - “**Licensed health care provider**” means a physician, physician assistant, chiropractor, advanced registered nurse practitioner, nurse, physical therapist, or athletic trainer licensed by a board.
 - “**Extracurricular interscholastic activity**” means any extracurricular interscholastic activity, contest, or practice, including sports, dance, or cheerleading.

What is a concussion?

A concussion is a brain injury. Concussions are caused by a bump, blow, or jolt to the head or body. Even a “ding,” “getting your bell rung,” or what seems to be a mild bump or blow to the head can be serious.

What parents/guardians should do if they think their child has a concussion?

1. **OBEY THE NEW LAW.**
 - a. Keep your child out of participation until s/he is cleared to return by a licensed healthcare provider.
 - b. Seek medical attention right away.
2. Teach your child that it’s not smart to play with a concussion.
3. Tell all of your child’s coaches and the student’s school nurse about ANY concussion.

What are the signs and symptoms of a concussion?

You cannot see a concussion. Signs and symptoms of concussion can show up right after the injury or may not appear or be noticed until days after the injury. If your teen reports one or more symptoms of concussion listed below, or if you notice the symptoms yourself, keep your teen out of play and seek medical attention right away.

STUDENTS:

If you think you have a concussion:

- **Tell your coaches & parents** – Never ignore a bump or blow to the head, even if you feel fine. Also, tell your coach if you think one of your teammates might have a concussion.
- **Get a medical check-up** – A physician or other licensed health care provider can tell you if you have a concussion, and when it is OK to return to play.
- **Give yourself time to heal** – If you have a concussion, your brain needs time to heal. While your brain is healing, you are much more likely to have another concussion. It is important to rest and not return to play until you get the OK from your health care professional.

IT’S BETTER TO MISS ONE CONTEST THAN THE WHOLE SEASON.

Signs Reported by Students:

- Headache or “pressure” in head
- Nausea or vomiting
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light or noise
- Feeling sluggish, hazy, foggy, or groggy
- Concentration or memory problems
- Confusion
- Just not “feeling right” or is “feeling down”

PARENTS:

How can you help your child prevent a concussion?

Every sport is different, but there are steps your children can take to protect themselves from concussion and other injuries.

- Make sure they wear the right protective equipment for their activity. It should fit properly, be well maintained, and be worn consistently and correctly.
- Ensure that they follow their coaches’ rules for safety and the rules of the sport.
- Encourage them to practice good sportsmanship at all times.

Signs Observed by Parents or Guardians:

- Appears dazed or stunned
- Is confused about assignment or position
- Forgets an instruction
- Is unsure of game, score, or opponent
- Moves clumsily
- Answers questions slowly
- Loses consciousness (even briefly)
- Shows mood, behavior, or personality changes
- Can’t recall events prior to hit or fall
- Can’t recall events after hit or fall

Information on concussions provided by the Centers for Disease Control and Prevention.

For more information visit: www.cdc.gov/Concussion

Student’s Signature

Date

Student’s Printed Name

Parent’s/Guardian’s Signature

Date

Student’s School

Bettendorf Community School District (BCSD) Concussion Guideline

For the purposes of this guideline, the term *athlete* is defined as a Bettendorf Community School District (BCSD) student participating in extracurricular activities in which an annual pre participation physical is required. This guideline helps the safety of athletes who have sustained a concussion or mild traumatic brain injury (MTBI) in a BCSD sponsored extracurricular activity. This guideline is designed to return concussed athletes to competitive sports in a manner that will reduce the likelihood of Second Impact Syndrome. The guideline outlined below will assist the human brain to heal and repair itself before another possible injury can occur. No guideline can guarantee against future incidents, but this guideline will help increase the likelihood that the concussed brain is healed before they return to play, thus making Second Impact Syndrome much less likely.

March 4, 2010 - The National Federation of State High School Associations changed their position on concussion to the following:
“Effective with the 2010 high school football season, any player who shows signs, symptoms or behaviors associated with a concussion must be removed from the game and shall not return to play until cleared by an appropriate health-care professional.”

BCSD Concussion Guideline

- An athlete with signs and symptoms of a concussion, or an athlete believed to have sustained a MTBI, will be removed from play until evaluated and cleared by a qualified health care professional specifically trained in concussion evaluation and management. The BCSD employs Certified Athletic Trainers (ATCs) working under the BCSD Team Physician. The ATCs and BCSD Team Physician will serve as the qualified individuals in this area within the BCSD. This does not exclude other health care professionals from evaluating or treating concussions within the BCSD student athlete population outside of the school setting. If parents/guardians choose to take their student athlete for evaluation to other health care professionals outside of the school setting, it is encouraged that those health care professionals evaluating and treating concussions be qualified and trained in the area of concussion and MTBI management.
- All suspected concussions, or those showing signs or symptoms of having a concussion (listed below) will be removed from competition/practice. They then will be evaluated as soon as possible by the district ATCs or BCSD Team Physician. If those health care professionals are not available, the parents will be notified and suggested to take their son/daughter to a family physician for evaluation or to the emergency room if symptoms dictate so. If another medical professional such as a MD/DO perform an evaluation and treatment at the emergency room or family physicians office the qualified health care providers' orders will be reviewed and followed unless the BCSD Team Physician or the ATCs feel the athlete needs further evaluation and screening. The BCSD Medical Staff will be acting in the best interest of the athlete and the school district.
- The District will be using the Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT) software. ImPACT is a concussion evaluation tool that has been used by NCAA Division I schools and other professional sports. Athletes will take a pre-test on ImPACT and that data is saved. In the event of a suspected or diagnosed concussion the athlete will be given an after injury test and the scores will be evaluated by the BCSD Medical Team. This will act as another tool for the BCSD Team Physician and ATCs to use as a guide to safe return to play (RTP). ***ImPACT Tests will not be the sole determining factor for RTP decisions.*** All Bettendorf High School Football Players (all levels), Varsity Volleyball, Varsity Boys and Girls Basketball Players, Varsity Boys and Girls Soccer Players, and Varsity Wrestlers will be given the ImPACT Test.
- If the athlete is deemed to have suffered a concussion, the athlete will not be allowed to return to participation until cleared by the ATCs, BCSD Team Physician, or other qualified health care professional. ***The athlete must follow the return to play (RTP) protocol and procedure as appears in this guideline.*** Assessment and evaluation of the athlete will take place and a comparison of pre and post injury ImPACT scores will be performed to help determine RTP status. ***No student-athlete will be allowed to return to play without following the RTP protocol and procedure.***
- Following a concussion, the athlete will be administered a post injury ImPACT test and the scores will be evaluated by the BCSD Team Physician and/or the ATCs. If there is no baseline test available for comparison the scores will be compared to a national data base standard. If a parent would like the scores made available to them to take to their family physician they can make a verbal or written request to the ATC.
- ***The BCSD Team Physician and the ATCs (working directly under BCSD Team Physician) will have ultimate return to play authority.*** The BCSD Team Physician and the ATCs will take into consideration all other health care providers qualifications and directions and will make a determination as to the athletes return to play status. The BCSD Team Physician and the ATCs may agree to follow other health care providers scripts or choose to overrule those providers if believed to be in the best interest of the school district or the athlete. The BCSD Medical Staff will not overrule a restrictive note unless the parents/guardians request a second opinion from the BCSD Team Physician and will then follow the BCSD Team Physician's findings and direction. ***The ATCs will not overrule a conservative or more cautious note in any circumstance.***

Definition of Concussion:

- **Concussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces. Several common features that incorporate clinical, pathological 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.

The preceding definition is from the Consensus Statement on Concussion in Sport 3rd International Conference on Concussion in Sport Held in Zurich, November 2008.

Sign and Symptom of a Concussion:

- Signs observed
 - Appears to be dazed or stunned
 - Is confused about assignment
 - Forgets plays
 - Is unsure of game, score, or opponent
 - Moves clumsily
 - Answers questions slowly
 - Loses consciousness (even temporarily)
 - Shows behavior or personality change
 - Forgets events prior to hit (retrograde amnesia)
 - Forgets events after hit (anterograde amnesia)
- Signs reported by athlete
 - Headache
 - Nausea
 - Balance problems or dizziness
 - Double or fuzzy vision
 - Sensitivity to light or noise
 - Feeling sluggish
 - Feeling "foggy"
 - Change in sleep pattern
 - Concentration or memory problems

Additional Concussion Information:

Second Impact Syndrome (SIS) is also a very real concern and can be potentially catastrophic. According to the Center for Disease Control and Prevention (CDC) a repeat concussion that occurs before the brain recovers from the first, usually with a short period of time (hours, days, or weeks), can slow recovery or increase the likelihood of having long term problems. In rare case, repeat concussions can result in brain swelling, permanent brain damage, and even death. The CDC refers to this more serious condition as **Second Impact Syndrome**. SIS in short is suffering a second MTBI or concussion while the brain is recovering from an initial MTBI or concussion and thus potentially leading to a higher level of brain damage and catastrophic consequences. SIS is believed to have been the cause of approximately 30-40 deaths over the last decade. The risk of SIS is real, and following a gradual return to play protocol after sustaining a MTBI or concussion can greatly reduce the chances of this potentially life threatening condition.

In addition, with every MTBI or concussion there is a risk of developing **Post-Concussion Syndrome (PCS)**. According to the Mayo Clinic, PCS is a complex disorder in which a combination of post-concussion symptoms may last for weeks and sometimes months after the injury that caused the initial concussion. Symptoms of PCS may include but are not limited to chronic headaches, fatigue, sleep difficulties, personality change, increased irritability, increased emotional feelings, sensitivity to light and noise, dizziness, and deficits in short-term memory and general academic functioning. PCS can be very disabling for an athlete, and may be permanent in some cases. The majority of athletes who experience MTBI or concussion are likely to recover fully without experiencing long term detrimental effects of MTBI or concussion.

Detailed Return to Play (RTP) Protocol

- This procedure will start after injury. The athlete will move from Step to Step until completion of the protocol before full return to play (RTP) is granted. If every step is passed without complications, an athlete could potentially return to full game participation in 6 Days (See Table-1). However, this is the best case scenario and is often not the case when dealing with concussion and MTBI. If symptoms linger or resurface during the RTP protocol it will delay return and progression of the athlete through the steps. BCSD personnel, Team Physician, or the ATCs will contact the athlete's family regardless of severity of concussion or MTBI.
- **Progression past Step 1 only occurs if athlete reports and shows no signs or symptoms of concussion or Post-Concussion Syndrome. An athlete will not advance or proceed in the process with signs and symptoms of concussion.**
- If symptoms occur or persist anytime in the protocol the athlete may be referred back to BCSD Team Physician or family physician. If this occurs the athlete will not progress any further in the RTP protocol.
- **Step One**
 - Preseason ImPACT Testing will occur before participation to establish a baseline.
 - Athlete is initially evaluated by ATCs or BCSD Team Physician or qualified health care professionals and determined to have a concussion or MTBI.
 - Once diagnosed with concussion or MTBI, The parents/guardians will be notified of the injury. The athlete may be monitored at frequent intervals for deterioration of symptoms for the remainder of the day. Should symptoms deteriorate; the student-athlete will be taken to an appropriate medical care facility.
 - As part of that initial evaluation the athlete will be required to take a post injury ImPACT test the day after the concussion injury occurred. The scores will be compared to the baseline scores of the pre-injury test or national data base standard.
 - Following ImPACT Testing, the athlete will be evaluated by the ATCs or the BCSD Team Physician. If the athlete has symptoms they will be held from all physical activity and mental exertion. This could mean the absence of school and classroom activities. The ATCs will communicate with school administration, school nurse, and teachers to report the athlete's condition and cognitive abilities if necessary. The ATCs or the BCSD Team Physician may recommend time off from school to allow the brain to heal. **Once the athlete is asymptomatic (they lack signs and symptoms of a concussion) they will be progressed to Step Two providing a minimal of 2 Days has passed from time of initial injury.**
 - An athlete could stay on Step One as long as symptoms remain. If an athlete has increase signs or worsening symptoms the athlete will be referred back to a physician or to a specialist. If an athlete remains the same for more than 7 days and does not worsen or improve the athlete will also be referred back to a physician or specialist at that time.

- **Step Two**

- Athlete will take second ImPACT Test following injury. ***This is to be done no sooner than 2 Days post initial injury, and the athlete must be asymptomatic to take the second test.***
- If the athlete's scores are comparatively equal to baseline scores and the athlete remains asymptomatic the ATCs or BCSD Team Physician will determine whether to progress the athlete to physical activity and the RTP protocol as dictated in Step Three. If the athlete's scores are not comparatively equal or symptoms increase during testing, the ATCs or the BCSD Team Physician will make a determination as how to progress the athlete. This may include another day of rest before proceeding to Step 3. The BCSD Medical Team can conclude it is not in the best interest of the athlete or the district to progress the athlete, even if the athlete claims to be asymptomatic and their score are comparatively equal. This may occur more frequently in those individuals with a concussion history or other mental or cognitive conditions that may delay healing. Previous concussion history, ImPACT scores, medical evaluation results, current medications the athlete may be using, and other cognitive or physical complications will be considered in making the decision to progress the athlete in the RTP protocol. ***ImPACT scores are not the sole determining factor in RTP progression.***
- Step Two can progress to Step Three in the same day if athlete is asymptomatic and has comparatively equal ImPACT scores.

- **Step Three**

- Athlete is ready for Physical Activity.
- If symptoms result at any time during the progression, the athlete will automatically fall back to the previously passed day, and must be asymptomatic from wake-up to time of test before attempting the progressions previous day's physical or mental tests. Physician consultation may also occur if this occurs.
 - See Example 1 for further clarification.
- Physical Activity Progression (By Days)
 - Day 1 – Light cardiovascular exercise on stationary equipment, Heart rate to stay below 70% of max heart rate.
 - (If no symptoms occur they can progress to Day 2)
 - Day 2 - Athlete will be put through higher intensity cardiovascular using a non-stationary means, such as running or swimming and may or may not be specific to their sport
 - (If no symptoms occur they can progress to Day 3)
 - Day 3 – Strenuous cardiovascular workout which may be specific to position in sport. If contact sports no contact drills allowed but may participate in non-contact drills.
 - (If no symptoms occur they may progress to Day 4)
 - Day 4 – Return to normal practice. Full contact allowed with no restrictions in practices. Athlete is not released for game or competition play. ***The head coach and ATC will determine what is considered a full contact unlimited practice.***

- **Step Four**

- In this step the athlete will undergo a final evaluation and screening and be returned to full participation without restrictions. This may include a final ImPACT test. ***The athlete must have completed a full contact unlimited practice prior to being released to participated in any game or competition.***
- - Day 5 – Full and Unlimited participation in Games and Matches.

Example - 1:

Athlete completes a STEP 3 - Day 2 workout and following experiences increase symptoms, the athlete will first wait until they are asymptomatic and then have to perform the Day 1 test again to progress to Day 2. On the day of the repeated Day 1 test the athlete must be asymptomatic from early morning wake-up to time of test the same day. This means the athlete could not wake up the next day with a headache (symptoms) and then proceed to try the repeated Day 1 cardiovascular exercise in the afternoon when the headache subsides. Physicians may be consulted if this occurs.

Summation of Return to Play Procedure

The following information and chart **represents the best case scenario after a MTBI or concussion injury for return to play status.**

Athletes must be asymptomatic to progress past Day 1 (Step 1), and must continue to be asymptomatic throughout the progression to Full Release. If an Athlete experiences symptoms of concussion at any time they will not be allowed to progress to the next step.

Specifically if any athlete experiences symptoms during Day 2 – 5 they will move back 1 day and must wake up asymptomatic the day they plan to take the previous day’s physical/mental tests. At any time symptoms may dictate an athlete to be moved back more than one Day in the progression to ensure athlete safety. A referral back to a physician or specialist may also be dictated. In addition the BCSD Team Physician or BCSD ATCs can halt progression if it is determined to be in the best interest of the school district or student athlete, even if athlete states to be asymptomatic and passes all ImpACT testing.

Table - 1

Post-Concussion Summation of RTP Protocol *BEST CASE SCENERIO*

Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Concussion Occurred	ImpACT Test 1 Rest - No Physical or Mental Activity	ATHLETE IS ASYMPTOMATIC ImpACT Test 2 Light Stationary Cardiovascular Exercise <70%	Movement Based Cardiovascular Exercise	High Intensity Sport Specific Drills (NO CONTACT)	Full Practice and Contact Activities (NO GAMES)	Full Release All Activities GAME PLAY
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday
Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday
Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday
Friday	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

STEP 1

- Preseason ImpACT Testing
- Day 0**
-Athlete Sustains, or is Diagnosed with Concussion
-Athlete Removed From Participation
- Day 1**
-Athlete Re-Evaluated
-Post Injury 1 ImpACT Test
-Rest Mental/Physical

STEP 2

- Day 2**
-Only if Athlete Asymptomatic (Remain at Day 1 Until Totally Asymptomatic)
-If Asymptomatic => Post Injury 2 ImpACT Test =>

STEP 3

- Day 2 Continued**
-If Passed Post Injury 2 ImpACT Test => Light Stationary Cardiovascular Exercise <70% Max
-If Not Passing => Re-Evaluate Factors Possible No Exercise or Stay at Step 1
- Day 3**
-If Asymptomatic => Higher Intensity Cardiovascular Exercise with Movement
-If Not Asymptomatic => Re-Evaluate and Return to Day 2
- Day 4**
-If Asymptomatic => Progress to Increase Intensity Sport Specific Training (NO CONTACT)
-If Not Asymptomatic => Re-Evaluate and Return to Day 3
- Day 5**
-If Asymptomatic => Full Contact Practice (NO GAMES)
-If Not Asymptomatic => Re-Evaluate and Return to Day 4

STEP 4

- Day 6**
-If Asymptomatic => FULL RELEASE – NO RESTRICTIONS
-If Not Asymptomatic => Re-Evaluate and Return to Day 5