

# **IMPACT TESTING – CONCUSSION MANAGEMENT**

ALL coaches on the Palmerton staff are now required to take a course once a year to complete the concussion management certification-training course offered by the Centers of Disease Control and Prevention, the National Federation of State High School Associations or another provider approved by the Pennsylvania Department of Health.

**ALL players are required to take the IMPACT test that is offered by the school for free. Check the school's website for further Impact testing dates and times.**

**IMPACT TEST** provides computerized neurocognitive assessment tools and services that are used by medical doctors, psychologists, athletic trainers, and other licensed healthcare professionals to assist them in determining an athlete's ability to return to play after suffering a concussion.

The Impact site and provides a protocol/timeline if a player suffers a concussion and explains things to expect during recovery. Please take the time to check out this link.

<http://impacttest.com/pdf/improtocol.pdf>

**SCHOOL DISTRICT HEAD INJURY PROVIDER:** St. Luke's Health Network

St. Luke's Concussion Management website:

<http://www.slhn.org/en/News/2013/Concussion-Treatment-SL-Sports-Medicine.aspx>

## **Facilities**

*St. Luke's Family Medicine Center*

### **Bethlehem**

153 Brodhead Road  
St. Luke's Sports Medicine  
Bethlehem, PA 18017  
(484) 526-3884

### **Bethlehem**

2830 Easton Avenue  
Bethlehem, PA 18018  
(484) 526-3555

**St. Luke's contact people for Palmerton are:** John Hauth, EdD, LAT, ATC and Brian Gloyeske, MS, LAT, ATC – If you are having trouble with scheduling an appointment contact Trainer Dave or myself and we will contact these two gentlemen so they can help assist in the process.

**Parents calling should use this number if they need to set up an appointment: 484-526-3884**

# **Palmerton Area School District**

## **Concussion Information for Parents**

What is a concussion? Concussion is a mild traumatic brain injury that occurs when a blow or jolt to the head disrupts the normal functioning of the brain. Some people lose consciousness after a concussion, but others are just dazed and confused. Concussion is usually caused by a blow to the head, but can also occur after whiplash.

### **Myths**

- o If you weren't knocked out, then you don't have a concussion
- o Everyone gets better in two weeks
- o Once the headache goes away, everything will be fine
- o Concussion is a minor brain injury with no long-term effects
- o If there's no visible injury, everything's okay
- o You should play through the pain--get back into the game!

You can't see a concussion. Signs and symptoms of concussion can show up right after the injury or may not appear or be noticed until days or weeks after the injury. If your child reports any symptoms of concussion, or if you notice the signs yourself, seek medical attention right away.

### **After A Diagnosis Of A Concussion**

The medical staff and administration at Palmerton Area School District are committed to managing your child's concussion in the safest manner possible. No sports team or event will ever be more important than your child's health and safety. We have developed a protocol that will ensure that each concussed student-athlete will receive the most appropriate medical care and will not return to sports participation until it is safe to do so.

### **Concussion Protocol and Procedures - Acute Management**

1. Any student-athlete who exhibits concussion signs and/or symptoms while participating on any school athletic team will be removed from the remainder of the event and not allowed to perform any activities that may increase the severity of the signs and/or symptoms.
2. If a team physician or athletic trainer (LAT) is on site, the student-athlete will be referred to that individual for a prompt, comprehensive evaluation.
3. After examination by the team physician or LAT, a student-athlete who is suspected to have suffered a concussion shall not return to participation on the same day. Return on the same day will be allowed only if the team physician and/or LAT determine that no concussion or other brain injury has occurred and that it is safe to return to participation.
4. If a physician or LAT is not present at the event, the head coach for the sport will be responsible for keeping the student-athlete out of competition for the day and contacting the LAT and parents of the student-athlete.
5. Any student-athlete who is exhibiting concussion symptoms must have their parent(s)/guardian notified by the team physicians, LAT, or head coach.
6. The student-athlete should be released only to the direct supervision of the parent(s)/guardian unless arrangements have been made directly between the physician or LAT and the parent(s)/guardian.

### **Monitoring At The Time Of Concussion**

1. Following a suspected concussion, the LAT or member of the coaching staff should escort the student-athlete at all times.
2. Serial neurological checks will be performed by the LAT. Any decline in the neurological status should be noted and may involve emergency transport for further evaluation.
3. The LAT will complete the concussion evaluation and refer the student athlete to a physician trained in the recognition and management of concussion.
4. Parents will be notified of concussion.
5. Student-athletes will be notified they are off exercise and vigorous activity until cleared by a qualified physician.

## **Initial 24-72 Hours**

1. Student-athlete will be instructed to check in with LAT daily.
  - a. Concussion evaluation will be completed by LAT.
  - b. Coaches will be notified of concussion and off-exercise status.
  - c. Teachers will be notified that the student-athlete may require special academic accommodations.
  - d. Any student-athlete who demonstrates signs and symptoms of a concussion will not be permitted to exercise, including participation in physical education classes, until medically cleared.
2. Student athletes will undergo post-concussion neurophysiological testing (ImPACT® testing) at the discretion of the treating physician.

## **Subsequent Management (post-initial 72 hours)**

1. Plan of care will be established as a collaborative effort between physician, parent, student-athlete and LAT.
  - a. Plan of care will be communicated to coaching staff by LAT.
  - b. Decline in condition will be communicated directly to treating physician via phone or e-mail.
2. Physician will establish post-concussive ImPACT® testing timeline. Athletes will not have more than one ImPACT® test in a seven-day period of time unless outlined in treatment plan of physician.

## **Emergency Referral**

1. The student-athlete will be transported to the nearest medical facility by EMS if any of the following signs or symptoms are noted:
  - a. Loss of consciousness on the field/court
  - b. Deterioration of neurological function
  - c. Decreasing level of consciousness
  - d. Abnormally unequal, dilated, or unreactive pupils
  - e. Any signs of symptoms of associated head/neck injuries, spine or skull fractures, or bleeding
  - f. Mental status changes: lethargy, difficulty maintaining mental arousal, confusion, or agitation
  - g. Weakness or numbness
  - h. Slurring of speech
  - i. Headaches that are worsening over time
  - j. Cranial nerve deficits
2. Student-athletes who are stable, but symptomatic can be transported by parents.
3. It is the discretion of the medical staff to determine necessity of emergency transport to the hospital.
4. The parents always have the option of emergency transportation.

## **Return to Play Guidelines**

1. Return to play depends on several factors:
  - a. Physical exam
  - b. Past history of head injury
  - c. ImPACT® scores within normal range of baseline
  - d. Recommendations by medical staff, including LAT
2. The student-athlete must meet all of the following criteria to return to play:
  - a. Asymptomatic at rest and with exertion
  - b. ImPACT® scores within normal range of baseline
  - c. ImPACT® scores reviewed by medical staff and recommendations obtained
  - d. Student athletes must remain asymptomatic for 7 days
  - e. Student athletes must obtain written clearance from physician trained in the recognition and management of concussions.
3. Progression is individualized and will be determined on a case by case basis. The speed of progression will be established by collaboration between student-athlete, LAT and physician.
4. Factors affecting speed of progression:
  - a. Previous concussion history
  - b. Duration and type of symptoms
  - c. Age of student-athlete
  - d. Sport of participation

5. Stepwise progressions will be utilized. Each step should take 24-48 hours. Student Athlete must remain asymptomatic prior to taking the next step. If symptoms return, a 24-hour suspension of progression should take place before resuming the previous level.
  - a. If symptoms return during progression, student-athletes should be removed from participation until symptoms resolve.
  - b. If symptoms do not resolve, the student-athlete should be referred back to physician for re-evaluation.
6. St. Lukes utilizes the Zurich Consensus Statement from the 4th International Congress on Concussion in Sport:
  - a. Step 1: Light aerobic exercises (i.e. stationary bike, elliptical machine)
  - b. Step 2: Moderate aerobic exercises (begin running program)
  - c. Step 3: Functional exercises (increase running intensity, begin agilities, NON-contact sport-specific drills)
  - d. Step 4: NON-contact practice activities
  - e. Step 5: Full contact practice
  - f. Step 6: Full game participation
8. All return to play guidelines must be met and each step must be completed in its entirety with LAT clearance prior to being cleared to participate.

### **ImPACT®**

Palmerton Area School District utilizes the ImPACT® (Immediate Post Concussion Assessment and Cognitive Testing) software program to assist in the management of head injuries. This program tracks neurocognitive information such as memory, reaction time, brain processing speed and concentration. Additional information about ImPACT® can be found at [www.impacttest.com](http://www.impacttest.com).

## **CONCUSSION SIGNS/SYMPTOMS**

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

## **ADDITIONAL INFORMATION CONCERNING THE MANAGEMENT OF CONCUSSION IN SPORTS BY THE NFHS.**

**National Federation of State High School Associations (NFHS)  
Sports Medicine Advisory Committee (SMAC)**

### **Introduction**

A concussion is a type of traumatic brain injury that interferes with normal function of the brain. It occurs

when the brain is rocked back and forth or twisted inside the skull as a result of a blow to the head or body. What may appear to be only a mild jolt or blow to the head or body can result in a concussion. The understanding of sports-related concussion has evolved dramatically in recent years. We now know that young athletes are particularly vulnerable to the effects of a concussion. Once considered little more than a “ding” on the head, it is now understood that a concussion has the potential to result in short or long-term changes in brain function, or in some cases, death.

### What is a concussion?

You’ve probably heard the terms “ding” and “bell-ringer.” These terms were once used to refer to minor head injuries and thought to be a normal part of sports. There is no such thing as a minor brain injury. Any suspected concussion must be taken seriously. A concussion is caused by a bump, blow, or jolt to the head or body. Basically, any force that is transmitted to the head causes the brain to literally bounce around or twist within the skull, potentially resulting in a concussion.

It used to be believed that a player had to lose consciousness or be **“knocked-out” to have a concussion.** This is not true, as the vast majority of concussions do not involve a loss of consciousness. In fact, less than 10% of players actually lose consciousness with a concussion.

What exactly happens to the brain during a concussion is not entirely understood. It appears to be a very complex injury affecting both the structure and function of the brain. The sudden movement of the brain causes stretching and tearing of brain cells, damaging the cells and creating chemical changes in the brain. Once this injury occurs, the brain is vulnerable to further injury and very sensitive to any increased stress until it fully recovers.

Common sports injuries such as torn ligaments and broken bones are structural injuries that can be seen on MRIs or x-rays, or detected during an examination. A concussion, however, is primarily an injury that interferes with how the brain works. While there is damage to brain cells, the damage is at a microscopic level and cannot be seen on MRI or CT scans. Therefore, the brain looks normal on these tests, even though it has been seriously injured.

### Recognition and Management

If an athlete exhibits any signs, symptoms, or behaviors that make you suspicious that he or she may have had a concussion, that athlete must be removed from all physical activity, including sports and recreation. Continuing to participate in physical activity after a concussion can lead to worsening concussion symptoms, increased risk for further injury, and even death.

### SYMPTOMS REPORTED BY ATHLETE

Headache

Nausea

Balance problems or dizziness

Double or fuzzy vision

Sensitivity to light or noise

Feeling sluggish

Feeling foggy or groggy

Concentration or memory problems

Confusion

Parents and coaches are not expected to be able to “diagnose” a concussion. That is the role of an appropriate health-care professional. However, you must be aware of the signs, symptoms and behaviors of a possible concussion, and if you suspect that an athlete may have a concussion, then he or she must be immediately removed from all physical activity.

## SIGNS OBSERVED BY PARENTS, FRIENDS, TEACHERS OR COACHES

Appears dazed or stunned

Is confused about what to do

Forgets plays

Is unsure of game, score, or opponent

Moves clumsily

Answers questions slowly

Loses consciousness

Shows behavior or personality changes

Can't recall events prior to hit

Can't recall events after hit

When you suspect that a player has a concussion, follow the “Heads Up” 4-step Action Plan.

1. Remove the athlete from play.
2. Ensure that the athlete is evaluated by an appropriate health-care professional.
3. Inform the athlete's parents or guardians about the possible concussion and give them information on concussion.
4. Keep the athlete out of play the day of the injury and until an appropriate health-care professional says he or she is symptom-free and gives the okay to return to activity.

The signs, symptoms, and behaviors of a concussion are not always apparent immediately after a bump, blow, or jolt to the head or body and may develop over a few hours. An athlete should be observed following a suspected concussion and should never be left alone.

Athletes must know that they should never try to “tough out” a suspected concussion. Teammates, parents and coaches should never encourage an athlete to “play through” the symptoms of a concussion. In addition, there should never be an attribution of bravery to athletes who do play despite having concussion signs or symptoms. The risks of such behavior must be emphasized to all members of the team, as well as coaches and parents.

If an athlete returns to activity before being fully healed from an initial concussion, the athlete is at risk for a repeat concussion. A repeat concussion that occurs before the brain has a chance to recover from the first can slow recovery or increase the chance for long-term problems. In rare cases, a repeat concussion can result in severe swelling and bleeding in the brain that can be fatal.

### Cognitive Rest

A concussion can interfere with school, work, sleep and social interactions. Many athletes who have a concussion will have difficulty in school with short- and long-term memory, concentration and organization. These problems typically last no longer than a week or two, but for some these difficulties may last for months.

It is best to lessen the student's class load early on after the injury. Most students with concussion recover fully. However, returning to sports and other regular activities too quickly can prolong the recovery. The first step in recovering from a concussion is rest. Rest is essential to help the brain heal. Students with a concussion need rest from physical and mental activities that require concentration and attention as these activities may worsen symptoms and delay recovery. Exposure to loud noises, bright lights, computers, video games, television and phones (including texting) all may worsen the symptoms of concussion. As the symptoms lessen, increased use of computers, phone, video games, etc., may be allowed.

## Return to Play

After suffering a concussion, no athlete should return to play or practice on that same day. Previously, athletes were allowed to return to play if their symptoms resolved within 15 minutes of the injury. Newer studies have shown us that the young brain does not recover quickly enough for an athlete to return to activity in such a short time.

An athlete should never be allowed to resume physical activity following a concussion until he or she is symptom free and given the approval to resume physical activity by an appropriate health-care professional.

Once an athlete no longer has signs, symptoms, or behaviors of a concussion and is cleared to return to activity by a health-care professional, he or she should proceed in a step-wise fashion to allow the brain to re-adjust to exercise. In most cases, the athlete will progress one step each day. The return to activity program schedule may proceed as below following medical clearance:

## Progressive Physical Activity Program

- Step 1: Light aerobic exercise- 5 to 10 minutes on an exercise bike or light jog; no weight lifting, resistance training, or any other exercises.
- Step 2: Moderate aerobic exercise- 15 to 20 minutes of running at moderate intensity in the gym or on the field without a helmet or other equipment.
- Step 3: Non-contact training drills in full uniform. May begin weight lifting, resistance training, and other exercises.
- Step 4: Full contact practice or training.
- Step 5: Full game play.

If symptoms of a concussion re-occur, or if concussion signs and/or behaviors are observed at any time during the return to activity program, the athlete must discontinue all activity and be re-evaluated by their health care provider.

## Concussion in the Classroom

Following a concussion, many athletes will have difficulty in school. These problems may last from days to months and often involve difficulties with short- and long-term memory, concentration, and organization. In many cases, it is best to lessen the student's class load early on after the injury. This may include staying home from school for a few days, followed by a lightened schedule for a few days, or longer, if necessary. Decreasing the stress on the brain early on after a concussion may lessen symptoms and shorten the recovery time.

## What to do in an Emergency

Although rare, there are some situations where you will need to call 911 and activate the Emergency Medical System (EMS). The following circumstances are medical emergencies:

1. Any time an athlete has a loss of consciousness of any duration. While loss of consciousness is not required for a concussion to occur, it may indicate more serious brain injury.
2. If an athlete exhibits any of the following: decreasing level of consciousness, looks very drowsy or cannot be awakened, if there is difficulty getting his or her attention, irregularity in breathing, severe or worsening headaches, persistent vomiting, or any seizures.

## Suggested Concussion Management

1. No athlete should return to play (RTP) or practice on the same day of a concussion.
2. Any athlete suspected of having a concussion should be evaluated by an appropriate health-care professional that day.
3. Any athlete with a concussion should be medically cleared by an appropriate health-care

- professional prior to resuming participation in any practice or competition.
4. After medical clearance, RTP should follow a step-wise protocol with provisions for delayed RTP based upon return of any signs or symptoms.

## **References:**

1. **National Federation of State High School Associations, Suggested Guidelines for the Management of Concussion in Sports; January 2011**  
<http://www.nfhs.org/Football/> - for more information