

# **Protocol for the Management of a Mild Traumatic Brain Injury (Concussion)**

## **Athletic Department Northern York County School District**

### **NORTHERN ATHLETIC DEPARTMENT**

#### **Protocol for Management of a Traumatic Brain Injury**

Northern York County School District's Athletic Department has developed a protocol for the staff to follow in the event of a traumatic brain injury (TBI), a.k.a. concussion, sustained by a student-athlete whether in an athletic activity or otherwise. The purpose of this protocol is to educate and minimize the risk and potential injury that can be sustained during athletic activities. As stated by the Consensus Statement on concussion in sport – the 5<sup>th</sup> international conference on concussion in sport held in Berlin, October 2016, a TBI can 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.<sup>1</sup> Traumatic Brain Injuries can cause many health and mental problems such as depression, anxiety, etc., throughout life as well as the possible risk of death. The protocol is in place so that we as an Athletic Department, student-athletes and parents are aware of the severity and consequences that can develop from second-impact syndrome, which is caused by repeated trauma to the brain in a short period of time which can result in catastrophic or fatal injuries.<sup>2</sup> The Athletic Department has access to the ImPACT test, which can assist the Athletic Trainer in determining the severity of the TBI and subsequent return to activity. A description of the ImPACT test is listed below:

#### **ImPACT TESTING**

**What is ImPACT testing?** ImPACT testing is a software program used by the Athletic Training Staff to help determine if your son/daughter has suffered a head injury and when it is safe for an athlete to return to sports participation. The ImPACT test is a 20-minute, computerized test that assesses short and long-term memory, reaction time, mental processing speed, etc. Athletes are required to complete the first test while uninjured to establish a normal, healthy baseline evaluation of mental function. If your son/daughter is suspected of suffering a head injury during the sports season, a second test will be done within 24 hours after becoming asymptomatic and the scores of the two tests will be compared to look for deficits in memory, reaction time, processing speed, etc.

**Why is ImPACT testing so important?** This is an essential question when your son/daughter is considering athletic participation. Head injuries are very serious and research has shown that athletes tend to hide the signs and symptoms of a head injury because they do not want to be removed from athletic competition. The consequences of hiding a concussion can result in a condition called Second Impact Syndrome. Second Impact Syndrome occurs when an athlete receives a second traumatic force before the initial injury is totally resolved. A second force has very serious consequences such as permanent brain damage or death. If that isn't scare enough, the force required to cause Second Impact Syndrome is minimal. Research shows that as a person recovers from a head injury, the symptoms they were suffering from may completely disappear long before their brain injury has resolved or mental function has returned to normal. Consequently, using physical symptoms isn't enough to determine if an athlete is safe to return to sports. ImPACT testing gives Athletic Trainers and Physicians an objective tool to evaluate mental function and acuity in determining a safe return to sports. At Northern, we take head injuries very seriously and use every method available to ensure our athletes are competing in sports safely following head injury.

#### **Baseline Testing**

At the beginning of each school year, each Northern Athlete is required to fill out a PIAA physical packet. In the packet is a health history questionnaire which includes a question about whether your son or daughter has ever suffered a concussion. This history can assist the Athletic Trainer and Physician in diagnosing or treating a TBI. Because the student athlete's brain is constantly developing as they progress through school, each athlete is also required to take an ImPACT baseline exam before they are eligible to participate in their sport every other year starting in their 7<sup>th</sup> grade year. This will also include each athlete's 9<sup>th</sup> grade and 11<sup>th</sup> grade year. Athletes that are new to the school will also be required to take a baseline exam regardless of which grade they are entering.

## RECOGNITION

Recognizing a TBI is the very first step in treating a student-athlete. The list of signs and symptoms below are divided into three categories to differentiate the variety of signs/symptoms that can result from a Traumatic Brain Injury.

The following signs and symptoms are related to TBI; <sup>3</sup>

- Cognitive Signs/Symptoms:
  - Attention difficulties, concentration problems, memory problems, increased symptoms with mental activity, and/or orientation problems.
- Physical Signs/Symptoms:
  - Headache, dizziness, insomnia, fatigue, postural or balance problems, uneven gait, nausea, blurred vision, sensitivity to light or noise, and/or seizures.
- Behavioral Changes
  - Irritability, more emotional than normal, depression, anxiety, sleep disturbances, problems with emotional control, and or loss of initiative.

## REMOVAL

If a student-athlete is suspected of suffering a head injury, they should be immediately removed from participation. After the athlete has been removed, a qualified sports medicine specialist (Athletic Trainer or Physician) will evaluate the injured athlete. The sports medicine specialist will utilize a tool called the SCAT-5 exam which is used to evaluate attention and memory function.<sup>1</sup> If an athlete is suspected of a TBI they are NOT to return to participation on the same day unless a qualified sports medicine specialist deems the athlete OK to return to participation following a sideline assessment.<sup>1</sup>

Parents/Guardians and Coaches are not expected to “diagnose” a concussion, that is the roll of an appropriate health-care professional. However, everyone involved in athletics must be aware of the signs, symptoms and behaviors associated with a concussion. If you suspect that an athlete may have a TBI, then the athlete must be **immediately removed** from all physical activity and notify the Athletic Trainer.<sup>4</sup> It is also up to the coach, athlete and/or parents to notify the Athletic Trainer if the student athlete was removed from play during an away match or off campus practice and evaluated for a suspected TBI.

## REFER

If the student athlete is deemed to have suffered a traumatic brain injury by the Athletic Trainer or other qualified sports medicine specialist, they must be referred to a licensed physician of medicine or osteopathic medicine (MD or DO) who is comfortable with current concussion management principles.<sup>5</sup> Please note that an MD or DO **MUST BE** the healthcare professional to clear the athlete.<sup>5</sup> Once deemed appropriate, the MD or DO will clear the athlete to return to activity. Please note that after being cleared by the physician, the student athlete **MUST** complete the Return to Play Protocol listed below before they are eligible to return to full participation.

## REHABILITATION

In some rare cases, the student athlete who has suffered a traumatic brain injury may suffer from prolonged symptoms. In this circumstance, it may be deemed beneficial or necessary for the student athlete to be referred to Physical Therapy for Post Concussive Rehabilitation which includes Occulomotor, Vestibular, Balance and Cognitive Training.<sup>1, 6</sup>

## RETURN-TO-LEARN

While recovering from a traumatic brain injury, the student athlete may appear physically normal, but may be unable to perform as expected in the classroom due to concussive symptomatology, or performing activities in the classroom may exacerbate the cognitive or physical symptoms that the concussed athlete is feeling.<sup>7</sup> Because of this, Northern York County School District follows the Brain Steps<sup>8</sup> return to learn program which consists of a team of professionals such as the school nurse, athletic trainer, physician and guidance counselors who work in cohort to give the student athlete any accommodations as needed in order to succeed, not fall behind in the classroom while recovering from a TBI.

## RETURN-TO-PLAY

A student athlete is ready to return-to-play from a TBI when s/he has been cleared by a qualified physician and has been through the seven stages listed below. The stages are designed to allow sufficient amount of time to elapse between each stage for a safe return to activity. A 24-48 hour period (dependent on past medical history) is needed between progressions from one stage to the next.<sup>1</sup> If signs/symptoms return at any point during any stage, then the student-athlete needs to stop activity until asymptomatic and return to the previous stage before progression to the next stage may take place. Please note that the following return-to-play is more cautious with student athletes under the age of 18 because of still developing brains and lack of research on how concussions affect this age group.<sup>5</sup>

### Six Stages of Return-to-Play Criteria:<sup>1, 4, 5, 7</sup>

1. A. Rest until asymptomatic (physical/mental rest) without medication during regular activities of daily living. Once the student athlete has had no symptoms for 24-48 hours (past medical history dependent), they may retake the ImPACT test. Retaking the ImPACT test too soon may actually increase signs/symptoms or prolong the recovery process due to cognitive stress.  
B. Post-Concussion ImPACT test results are compared with Baseline Scores. If no Baseline score is available, then the scores should be at the normative data range. Once Baseline Scores are reached or better, the student athlete may progress on to the next stage.
2. Light Aerobic Exercise for 10-15 minutes which may include light jogging or biking.
3. Light Aerobic Cardio for 10 minutes in addition to light basic bodyweight exercises.
4. Light Aerobic Cardio for 10 minutes in addition to harder plyometric exercises.
5. Non-Contact Sport Specific Training or Practice. \*\*Light resistance training may resume at this stage.
6. Full Contact Training or Practice.
7. Return-To-Play

**PLEASE NOTE** – All steps of the return-to-play protocol **MUST** be completed in the presence of the Athletic Trainer or a coach or other medical professional that has been trained in the return-to-play protocol or discussed the specific step beforehand with the Athletic Trainer.

**PLEASE NOTE** – If no Athletic Trainer or appropriate medical professional is available on any specific day (weekends), then the athlete will continue the next step on the next available day.

**PLEASE NOTE** – If your son or daughter has suffered a concussion at the end of a sporting season, they **MUST** complete the return-to-play protocol before becoming eligible for their next season. The Athletic Trainer can modify Step 6 and 7 to simulate practices if needed.

<sup>1</sup> Courtesy of Consensus Statement on Concussion in sport – 5<sup>th</sup> international conference on concussion in sport held in Berlin, October 2016

<sup>2</sup> Courtesy of the CDC

<sup>3</sup> Courtesy of Dickinson College Post-Concussion Return-To-Play Criteria

<sup>4</sup> Courtesy of the National Federation of State High School Associations (NFHS) Suggested Guidelines for Management of Concussion in Sports

<sup>5</sup> Courtesy of Pennsylvania Interscholastic Athletic Association (PIAA) Handbook – Section IV – PIAA Sports Medicine Guidelines

<sup>6</sup> Courtesy of Drayer Physical Therapy Institute

<sup>7</sup> Courtesy of 2014-2015 NCAA Sports Medicine Handbook

<sup>8</sup> Courtesy of Brain Steps


\*\*This document has been reviewed and accepted by the following:

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