



# A STEP aHEAD

**SPORTS CONCUSSION INFORMATION FACTS AND RESOURCES  
PRESENTED BY**



**ATHLETICO**  
PHYSICAL THERAPY

**NorthShore**  
University HealthSystem







**EDUCATION AND BASELINE CONCUSSION TESTING  
PRESENTED BY**



## **TABLE OF CONTENTS**

<b>Concussions 101 .....</b>	<b>6</b>
<b>Treatment/Management of a Concussion .....</b>	<b>10</b>
<b>Concussion Facts &amp; Myths .....</b>	<b>13</b>
<b>BASELINE ImpACT® testing .....</b>	<b>14</b>
<b>Persistent Symptoms after a Concussion .....</b>	<b>16</b>
<b>Action plan.....</b>	<b>18</b>
<b>Web resources .....</b>	<b>19</b>



**The Chicago Blackhawks** are committed to increasing the awareness, enthusiasm and participation in amateur hockey in the Midwest. Through our initiatives, we hope to supply the resources to allow EVERYONE to play hockey.

The **Amateur Hockey Association of Illinois (AHA)** was founded as the governing body of Illinois amateur hockey in 1975. AHA and the Chicago Blackhawks have been partnering in numerous programs for over 25 years. There are over 25,000 registered players and coaches in Illinois youth hockey.

**The Sports Concussion Program at NorthShore University HealthSystem** is led by nationally – recognized experts in concussion and sports medicine and provides a multidisciplinary approach to concussion care. Our specialists offer urgent care appointments at locations across Chicagoland, including Oak Brook and Glenview. We work to ensure seamless communication to patients and families, their care team, coaches and others involved in return-to-play decisions.

**Athletico’s Head Injury and Concussion Management Program** benefits individuals suffering from ongoing concussion symptoms. As the largest provider of athletic trainers in the United States, Athletico recognizes the importance of providing concussion management training to its athletic trainers, who are often the first to come in contact with athletes who sustain concussions. Athletico also employs vestibular therapists who are trained in concussion management and can evaluate and treat patients with complaints of dizziness, balance deficits and motion sensitivity if symptoms persist 7-10 days after sustaining a concussion.

For more information on **“A Step aHead” Baseline ImPACT testing** and to schedule your child’s test at Athletico, visit [www.athletico.com/impact](http://www.athletico.com/impact)



The Chicago Blackhawks, Amateur Hockey Association of Illinois (AHA), Athletico Physical Therapy and NorthShore University HealthSystem have come together to create A Step aHead, an initiative to address one of the most common head injuries: concussions. These four groups pledge to educate the Illinois youth hockey community on the importance of concussion management and to be proactive with implementing baseline testing. Through A Step aHead we will offer free baseline concussion testing, as well as educational programs, to youth hockey players in the AHA program.



# CONCUSSIONS 101

WHAT EVERY PARENT, COACH AND ATHLETE SHOULD KNOW



## What is a concussion?

Think of the head as an egg. The brain is the egg yolk, surrounded with fluid and then a hard outer shell. A concussion is caused when a “jolt” is sent to that egg. Specifically, a concussion occurs when the brain moves rapidly within the skull, causing a complex metabolic chain of events. In addition, many people may not realize that concussions can also occur from a blow to the body, which causes the head to move rapidly. A concussion is a functional injury to the brain, so structurally the brain appears normal on CT scans and MRIs.

Due to the metabolic chain of events, blood flow, and therefore glucose (the body's main form of energy), decreases in the brain. In most injuries, the body wants to have more glucose flow to an injured area. With the decreased blood flow and increased need, the brain has a large gap of supply and demand for energy.



## **What are the Signs and Symptoms of concussion?**

Athletes who experience any of the signs and symptoms listed below after a bump, blow or jolt to the head or body may have a concussion.

### **An athlete may report (symptoms):**

- Headache/pressure in head
- Dizziness/imbalance
- Nausea/vomiting
- Blurred/double vision
- Ringing in the ears
- Sensitivity to light/sound
- Difficulty concentrating
- Impaired memory
- Feeling “in a fog”
- Slowed thinking

### **A coach or parent may observe (signs):**

- Loss of consciousness
- Slurred speech
- Sleepiness/grogginess
- Abnormal behavior
- Balance problems
- “Out of it” behavior



## **What should I do if a concussion is suspected?**

- Tell your athletic trainer and/or coaches, as well as your parents. Never ignore any symptoms after a bump or blow to the head. Also, tell your coach if one of your teammates might have a concussion.
- Give yourself time to get better. If you have had a concussion, your brain needs to heal. While your brain is still healing, you are more susceptible to another injury. A subsequent concussion can cause an increase in your symptoms and increase the time it takes for you to fully recover. It is important to not return to play until you have fully recovered.
- Consult your primary care physician immediately
- Contact NorthShore University HealthSystem at 847-503-4361 or [www.northshore.org/concussion](http://www.northshore.org/concussion)

## **No athlete with a concussion should continue to play or return to a game after sustaining a concussion.**

Athletes who experience additional contact to the head after suffering a concussion may experience a worsening of their symptoms and take longer to recover from a concussion.



## **Diagnosis:**

Diagnosis of a concussion is determined through clinical examination.

### **Immediate Evaluation and Exam after a Concussion:**

- An examination by a physician is important to rule out a more serious injury, although in the vast majority of patients this will appear normal. Balance issues or nystagmus on lateral gaze may be found, and they usually disappear as the patient recovers. Based on this exam, the physician will determine if a CT scan or MRI is needed.
- CT scans and MRIs of the head usually come back normal but are necessary when the patient has an increase in concussion symptoms or there is concern that there might be a bleed. By definition, all imaging tests, such as CT scan and MRI, appear normal.

## **Prognosis:**

The prognosis for a concussion that is properly managed is good! Recovery is expected, generally within a short period of time. However, some people may remain symptomatic for longer periods of time and should be followed by an appropriate healthcare provider.

### **Remember:**

There is no such thing as a minor head injury. Athletes should not return to play until cleared by a medical personnel. Consult an athletic trainer or concussion expert immediately if any signs or symptoms are reported or observed.

## **Treatment/Management of a Concussion:**

Each concussion should be treated individually depending on the symptoms and physical examination. When someone sustains a concussion, the main objective is to initially reduce the amount of exertion to the brain. This will keep the gap of supply and demand to a minimum. During the first few days after a concussion, this means no significant physical exertion (running, biking), no extreme visual stimulus, and limited cognitive stress (exams in schools). Cognitive and physical activity can then be increased, as tolerated. Some individuals can manage school or work within a day or two, while others need additional time of reduced activity.

**Most patients do not need to be placed on complete rest unless they are having severe symptoms (severe headaches, marked photophobia, disorientation, balance problems, extreme fatigue, etc.).**

Many concussed individuals may be unable to concentrate. They may not be able to read, watch TV, work at a computer or absorb material and may develop an increased headache while doing so. Others may be able to participate in an activity for a shorter period before symptoms increase and require more breaks from activity. As the symptoms begin to subside longer intervals can be spent reading, watching TV and using the computer.

## **What to avoid after a concussion:**

- If you are sensitive to noise, avoid any loud sounds (music, TV, band practices, earphones).
- You do not need to cease all activities, but avoid excessive texting, reading, video games or internet use.
- Avoid any over-the-counter medications (Tylenol, Advil, Motrin, Aleve) that may mask any symptoms, unless advised otherwise by a physician.
- If studying is needed to be done for a quiz or test the next day or that week, the school nurse, athletic director, administrator, and/or guidance counselor should be contacted and advised that a concussion is suspected and appropriate academic accommodations made.

## **Should my child stay home from school after a concussion?**

Students who experience symptoms of a concussion often need extra help to perform school-related activities and may not perform at their best on classroom or standardized tests. Allowing the student to stay home for 1-2 days is often beneficial. Most students can then return to school with temporary accommodations, although some students may need additional time away from school.

### **Based on your healthcare provider's direction, some students may benefit from the following:**

- Some individuals can return to a full day of school quickly, while others need a shorter school day. As recovery proceeds, hours spent in school may be gradually increased.
- They should not attend gym or exercise classes and should have a written physician note excusing them from such activities.
- Take breaks away from stimulation during the day, if necessary
- Allowing student to avoid noisy or busy environments, such as the cafeteria or hallway (leaving their classrooms a few minutes early to avoid passing periods) can help reduce symptoms during the day
- Workload and homework may need to be reduced.
- More frequent breaks while doing homework may be helpful.
- Assignments may need to be postponed or deadlines renegotiated.
- Tests and quizzes should also be postponed until the student feels they can adequately prepare.



**No athletes should return to competitive contact sports until they are symptom-free, both at rest and with exercise, and have normal neurocognitive testing.**

After an athlete has been evaluated by an athletic trainer and physician and it has been determined that the athlete has sustained a concussion, the following protocol will be used to safely progress their return to play.

**An athlete should never return to participation the same day as a concussive event.**

An athlete is able to return to play when they are symptom-free at rest and with exertion and have returned to expected performance levels on cognitive testing. When returning athletes to play, they follow a stepwise increase in exertion (outline below). If symptoms return with exertion, they should rest and then return to the previous stage of physical activity.

Once the athlete has received clearance from an appropriately trained healthcare provider (laws vary from state to state) they may return to play. If an athlete receives clearance from a physician, the athletic trainer still reserves the right to hold the athlete out of participation. A parent's consent is not a sufficient means for an athlete to return to participation.

### **Levels of Activity:**

- |    |   |
|----|---|
| 1. | No activity   |
| 2. | Low level exertion (walking, stationary cycling)                  |
| 3. | Higher levels exertion (running, elliptical, stationary cycling)  |
| 4. | Agility exercises/sport-specific exercises. No contact activities |
| 5. | Non-contact practice full practice without contact                |
| 6. | Full contact practice following medical clearance                 |
| 7. | Return to play  |



### **Concussion facts:**

- Symptoms can be subtle, such as a headache or feeling mentally foggy (“out of it”).
- Symptoms may not surface immediately but develop within a few hours or the next day.
- Recovery is different for every person who sustains a concussion. Recovery time cannot and should not be predetermined until after medical evaluation by an appropriately, trained healthcare provider.

### **Concussion myths:**

**Myth:** You have to lose consciousness to have sustained a concussion.

**Reality:** Studies show that less than 10 percent of concussions result in loss of consciousness.

**Myth:** Concussions are only a result of a direct blow to the head.

**Reality:** A concussion can be sustained by a sudden, violent movement of the head caused by an unexpected external force to the body.

**Myth:** You need to wake someone with a concussion every 20 minutes.

**Reality:** Though it is important to check on someone periodically, once every 2-3 hours is sufficient. If they have been examined by a physician and there was no evidence of more serious injury, allow them to sleep.

**Myth:** You need to check pupils with a flashlight to see if they are dilated or uneven.

**Reality:** Any response to the pupils is indicative of a much more serious brain injury. Typically, this is only present when the injured individual is unconscious. Therefore, if the athlete is coherently speaking to you, there is no need to check their pupils.

### **Remember:**

There is no such thing as a minor head injury. Athletes should not return to play until cleared by medical personnel. Consult an athletic trainer or concussion expert immediately if any signs or symptoms are reported or observed.



## **What is BASELINE ImPACT® testing?**

A Step aHead will use a computer based online test called ImPACT® (Immediate Post-Concussion Assessment and Cognitive Testing) to establish a baseline of normal cognitive function for each individual athlete. The baseline test will then be used as part of a comprehensive clinical evaluation to determine recovery following a concussion.

## **How does the BASELINE ImPACT® test work?**

The test takes approximately 30 minutes and is designed to evaluate multiple aspects of an athlete's neurocognitive state – brain processing speed, memory and visual motor skills. All NHL players undergo such a test.

The baseline ImPACT® test is used to establish a benchmark score when a player is in his or her non-concussed or “normal” state. It should be noted: *The baseline test does not evaluate the subject for a concussion, identify past concussion(s), prevent future concussions or determine if your son or daughter is predisposed to a concussion.*



Neurocognitive testing is an important component for the management of concussions. The use of neurocognitive testing is one piece of the puzzle in assessing recovery from concussions and determining the timing of return to play. It should only be used as a tool and should not be the only deciding factor in returning a concussed athlete to play. It provides objective data and prevents athletes who hide their symptoms from returning to play before they are fully recovered.

Typically, the symptoms of a concussion disappear before the neurocognitive findings return to normal, although occasionally, this can be reversed. For example, a patient may have zero symptoms following a concussion but their ImPACT® test takes two weeks to return to normal. It is for these reasons that symptom evaluations alone cannot be used as the sole criteria for return to play.

Once an athlete is without symptoms and wishes to return to sport, a post-injury test can then be administered. There are two components of the test: the Symptom Score and the six-part neurocognitive test. Both component scores should return to baseline or normal before an athlete is allowed to resume playing a contact sport.

These results are compared to the baseline scores and normative data to judge recovery. Only an appropriately trained healthcare clinician, preferably a neuropsychologist, can interpret the test data. The A Step aHead program does not provide post-injury ImPACT® testing. A list of ImPACT® providers is available at [www.impacttest.com](http://www.impacttest.com)

If for any reason you think your son or daughter may have suffered a concussion, it is strongly recommended that he or she seek medical care from NorthShore University HealthSystem.

NorthShore University HealthSystem is an official Certified ImPACT® Consultation (CIC) testing location. Additional information regarding the concussion program is available on the NorthShore University HealthSystem website at [www.northshore.org/concussion](http://www.northshore.org/concussion)

## **Persistent Symptoms after a Concussion:**

Fortunately, most people recovery quickly from a concussion, within days or a few weeks. Individuals with a history of migraines, anxiety/depression, ADHD/learning disabilities and multiple concussions may also take longer to recover than those without that history. High school and grade school athletes also appear to be slower to recover than adults.

However, some individuals will experience persistent symptoms behind the normal recovery period. These symptoms may include headaches, dizziness, impaired concentration/memory, sleep disturbance and mood changes.

If you or your child with a concussion continues to have symptoms beyond 2-4 weeks, it is recommended that you seek out the advice of a concussion specialist.



In summary, each concussion should be treated individually. No one guideline will work for each patient. The general public, physicians, coaches, athletic trainers, parents and athletes themselves must be educated about the signs, symptoms and treatment of concussions. In order to prevent poor outcomes from concussions, education is crucial.



### Action Plan:

1. Remove the athlete from play.
2. Ensure that the athlete is examined by a health care professional experienced in the evaluation of concussions.
3. Inform the athlete's parent(s) or guardian(s) about the possible concussion, and give them a fact sheet on concussions.
4. Keep the athlete out of play the day the injury occurred and until a health care professional experienced in the assessment and treatment of concussions says they are symptom-free and cleared to return to play.

**It is better to miss one game than the whole season.**



## **Web Resources:**

[www.athletico.com/concussions](http://www.athletico.com/concussions)

[www.northshore.org/concussion](http://www.northshore.org/concussion)

[www.impacttest.com/about/background](http://www.impacttest.com/about/background)

[www.cdc.gov/concussion/sports](http://www.cdc.gov/concussion/sports)



---

[chicagoblackhawks.com](http://chicagoblackhawks.com)

---



---

[ahai.org](http://ahai.org)

---

**ATHLETICO**  
*PHYSICAL THERAPY*

[athletico.com](http://athletico.com)

---

 **NorthShore**  
University HealthSystem

[northshore.org](http://northshore.org)