



## Concussion

What is it?: A trauma to the head that causes impairment in the normal functioning of the brain or induces an alteration in mental status. A concussion may or may not involve a loss of consciousness. (Note that symptoms of concussion overlap with those of mild traumatic brain injury - this is really more complicated, as traumatic brain injury is on a continuum).

According to the Brain Injury Association, approximately 75% of all brain injuries fall in the “concussion-mTBI continuum.”

Cause: A blow to the head, whiplash, severe shaking, etc. Symptoms can be subtle or difficult to recognize and may not appear immediately. Symptoms can last for days, weeks, months or longer.

Prognosis: For *most* people, a full recovery is possible with proper diagnosis and care.

### Possible Symptoms

- Headache or a feeling of pressure in the head
- Seizures
- Temporary loss of consciousness
- Lethargy
- Confusion or feeling as if in a fog
- Difficulty with concentration
- Amnesia surrounding the traumatic event
- Memory complaints
- Dilated pupils or pupils different sizes
- Sensitivity to light or noise
- Dizziness or "seeing stars"
- Ringing in the ears
- Sleep disturbances
- Nausea or vomiting
- Depression
- Continued headaches
- Irritability
- Other mood or personality changes
- Slurred speech
- Changes in senses such as taste or smell
- Fatigue



## **Second Impact Syndrome (SIS)**

What is it? SIS occurs when an individual has already sustained a head injury and receives another head injury before the previous one had time to heal. The brain is already damaged from the first injury and is “recovering” so is in a vulnerable state. Even a minor blow (one that would not normally cause concussion) can be dangerous or even life-threatening because the brain is already vulnerable. **SIS can result in irreversible brain damage and can cause brain death (and physical death) in as little as 3 to 5 minutes.**

**DO NOT RETURN TO THE FIELD IF YOU FEAR THAT YOU HAVE ALREADY SUSTAINED A CONCUSSION!**

Who gets it: Athletes who return to their sport too soon or before their initial concussion has healed.

Prognosis: Possibilities range from full recovery with proper care and treatment to death. Rescue breathing may be required. If you make it past the first few minutes, get a CT scan immediately to determine if you are bleeding into your brain.

### Possible Symptoms

- May look stunned but may not lose consciousness immediately
- May be able to move themselves but may collapse
- Loss of eye movement
- Dilated pupils
- Loss of consciousness
- Coma
- Respiratory failure
- Death



## **Post-Concussive Syndrome (PCS)**

What is it?: A prolonged change in cognitive, behavioral or emotional functioning following the onset of a concussion.

Who gets it?: Anyone who has sustained a concussion is at risk, though not everyone gets it. Increasing age is a risk factor. PCS is usually diagnosed when symptoms of a concussion last for over three months, however, symptoms of PCS can last for up to a year or more.

Onset: Symptoms tend to start off as more physical in nature (headaches) but become more psychological as they progress (depression, change in mood, etc).

Prognosis: Symptoms usually improve within a couple of months following diagnosis and treatment, however, if symptoms have not improved within a year, they are likely to be permanent, though some improvement can still be made.

### Possible Symptoms:

- Tension or Migraine-type Headaches
- Dizziness
- Fatigue
- Irritability
- Anxiety
- Insomnia
- Loss of concentration and memory
- Impaired cognition or reasoning abilities
- Noise and light sensitivity
- Behavioral changes
- Emotional Changes
- Depression
- Suspiciousness
- Irritability
- Other symptoms associated with concussion



## **Chronic Traumatic Encephalopathy (Dementia Pugilistica)**

What is it?: Degenerative Brain Disease with symptoms similar to Alzheimer's.

Cause: ongoing repetitive head trauma/closed-head injuries. You are at risk if you have sustained more than one concussive injury.

Who gets it: Primarily athletes participating in contact sports (90%):, including boxers, football, hockey, rugby, soccer, lacrosse, wrestling, etc. Basically, any sport that puts you at risk for repeated concussions or head trauma. 17 out of 18 deceased contact sports athletes studied showed evidence of CTE (Sports Legacy Institute, 2010 & Center for the Study of Traumatic Encephalopathy).

Onset: Symptoms may not appear until many years after the actual head trauma.

Prognosis: Progressive

### Symptoms (Stage 1):

- Deterioration in attention, concentration, memory
- Disorientation
- Confusion
- Dizziness
- Headaches
- Lack of insight
- Poor judgment
- Overt dementia
- Slowed muscular movements
- Staggered gait
- Impeded speech
- Tremors
- Vertigo
- Deafness

### Symptoms (Stage 2)

- Further memory loss
- Social instability
- Erratic behavior
- Progressive Parkinsonian-like symptoms

### Symptoms (Stage 3)

- Progressive cognitive deterioration resulting in dementia
- Parkinsonian symptoms



## Select Resources

**Brain Injury Association of America:** <http://www.biausa.org> – Many good resources, articles and other information.

Web Article “Living with TBI” - <http://www.biausa.org/living-with-brain-injury.htm>

**Center for Disease Control (CDC):** <http://www.cdc.gov/concussion/support.html> - Information and resources

**Brain Injury Resource Center:** <http://www.headinjury.com> – many good links for resources including support groups and further information.

**The Mayo Clinic:** <http://www.mayoclinic.com> – Information and resources

**National Institute of Neurological Disorders and Stroke:** <http://www.ninds.nih.gov> – Information through the National Institute of Health regarding Neurological Disorders. This website has some good articles on mTbi.

**Psychology Today:** <http://www.psychologytoday.com> – Find a psychologist here for neuropsychological testing or treatment. You can search by your location, insurance provider, services needed, etc.

**Sports MD:** <http://www.sportsmd.com> - You can learn more about the different sports injuries here as well as resources on how to treat them. You can also find a provider near you.