



What is a concussion?

A concussion, or mild traumatic brain injury (mTBI), is a functional injury that causes changes in the cognitive (thinking), emotional, and motor (physical) aspects of an individual that can occur with OR without loss of consciousness (LOC). Since it is a functional disturbance, a concussion cannot be diagnosed by X-rays, CT or MRI.

What causes a concussion?

Any trauma to the head, face or neck, or a blow to the body which transmits the force to the brain, may cause a concussion (for example, motor vehicle crash, hit on the head by an object, fall).

What are the signs and symptoms of a concussion?

Table 1

COGNITIVE FINDINGS	PHYSICAL FINDINGS	OTHER FINDINGS
<ul style="list-style-type: none"> • Difficulty recalling time, date, location, situation • Confusion • Slurred speech • Slow to answer questions or follow directions • Feels dazed or “in a fog” • Cannot remember things that happened before and after the injury • Easily distracted • Poor concentration 	<ul style="list-style-type: none"> • Headache • Dizziness • Sees stars, flashing lights • Ringing in the ears • Loss of vision • Poor coordination or balance • Sees double or blurry • Stomachache/stomach pain, nausea 	<ul style="list-style-type: none"> • Blank stare/glassy eyed • Vomiting • Sleepiness /drowsiness • Strange or inappropriate emotions (ie. laughing, crying, getting mad easily)

What should you do if someone gets a concussion?

That individual should **stop all activity immediately**. He/she should not be left alone and should be seen by a Physician trained in concussion management as soon as possible. If the individual has been knocked out (has loss of consciousness), call 911 for transport to a hospital immediately. **Do NOT** move the individual until the paramedics arrive and cervical spine (neck) precautions should be initiated.

How long will it take to get better?

In a majority of instances, the signs and symptoms of concussion usually last 7-10 days. In some cases, they can last much longer – weeks to months. In younger individuals (high school age and under), symptoms often last longer. It is thought to be due to the increased vulnerability of the developing brain. Unfortunately, there is currently no way to know how long each individuals symptoms will last.

How is a concussion treated?

The primary focus of treatment for an acute concussion is **physical and mental rest**. This is the **first and most important step**. This must include removing the individual from any activity which over stimulates the brain. For example, limiting/excluding watching TV, playing video games, texting on a cell phone, or being on the computer is necessary to allow complete brain recovery. If the individual goes back to activities while they still have symptoms, they are more likely to get worse, have their symptoms longer or develop a more serious brain injury. Once the individual is asymptomatic, only then can a graded return-to-play program be initiated (see table 2). It is crucial to have a Physician assess and deem the individual symptom free and back to their cognitive baseline (pre-injury state) prior to starting the return-to-play program.



School and mental rest

In certain instances, the mental rigors of school can prolong an individual’s symptoms. It may be necessary to limit exposure to those for a short time or allow the individual more time to complete certain tasks to help the brain recover.

Return to Sport Guidelines

Any individual with concussive symptoms **CAN NOT** participate in athletic activities. Only when back to baseline can an individual begin the graded return to play protocol as below.

Table 2

STEP/STAGE	ACTIVITY	DESCRIPTION	TIME FRAME	OBJECTIVE
1	No Activity	Complete rest	Variable – as long as it takes	Recovery
2	Light Aerobic Exercise	Walking or stationary bike NO RESISTANCE TRAINING	10-20 minutes of activity	Increase heart rate (HR)
3	Sport specific activity	NON-CONTACT drills (away from practice, NO chance of head trauma)	20-30 minutes	Add movement
4	Practice	Full NON-CONTACT training drills Slowly add resistance training	Full length practice	Exercise, coordination, increase cognitive load
5	Practice	Full contact practice	All activity After this stage, needs to be re-evaluated by physician	Restore confidence, assessment of functional skills
6	Full return to sport without restriction	Full game play		

Note: Each step (2 through 6) must take place on separate days with a minimum of 24 hrs in between stages and without return of symptoms. If any of their previous symptoms return, either during the activity or later that day, all activity should be stopped immediately. The individual should rest for a minimum of 24 hours and until symptoms resolve. Once asymptomatic, the individual can restart at the level before which they developed symptoms. Prior to stage 6, the individual should be re-evaluated by his/her treating Physician.

Modified from the ThinkFirst-SportSmart Concussion Education and Awareness Program “Sport-Related Concussion: Guidelines for Parent” Handout - May, 2007.

McCrory P, Meeuwisse W, et al. Consensus Statement on Concussion in Sport 3rd International Conference on Concussion in Sport, Zurich 2008. Clin J Sport Med 2009;19:185–200)