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**A concussion is a brain injury...and all brain injuries are serious.**

A concussion can be caused by a blow to the head, a jolt to the body, or any sudden force that results in a rapid acceleration/deceleration of the brain inside the skull. Made up of a soft tofu-like substance, the impact of the brain against the rigid inside walls of the skull can cause a change in neurological function and a host of other symptoms depending on which part of the brain was injured.

The terms "ding" or "bell rung" minimize concussions. While most do heal within a few weeks, an athlete who returns to play before a concussion has completely resolved risks re-injuring an already injured brain, which can have catastrophic consequences. Although rare, adolescents seem most vulnerable to this rapid brain swelling known as **second impact syndrome** which can be fatal. Additionally, multiple concussions suffered prior to complete resolution of a previous injury can result in prolonged symptoms lasting weeks, months, or years. Know how to minimize the risk of a complicated recovery if you suspect a concussion.

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Signs reported by observers

- Appears dazed or stunned
- Is confused about assignment or position
- Forgets an instruction
- Is unsure of game, score, or opponent
- Moves clumsily
- Answers questions slowly
- Loses consciousness (even briefly)
- Shows mood, behavior, or personality changes
- Can't recall events prior to hit or fall
- Can't recall events after hit or fall

Symptoms reported by athlete

- Headache or "pressure" in head
- Nausea or vomiting
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light
- Sensitivity to noise
- Feeling sluggish, hazy, foggy, or groggy
- Concentration or memory problems
- Confusion
- Does not "feel right" or is

Most concussions do not result in emergency care. However, if symptoms worsen, you notice behavioral changes or **any** of the following, seek care urgently:

- **headaches that worsen**
- **seizures**
- **neck pain**
- **very drowsy, can't be awakened**
- **repeated vomiting**
- **increasing confusion or irritability**
- **weakness, numbness in arms and legs**
- **unable to recognize people/places, less responsive than usual**

**If you observe any of the above signs, call your doctor or go to the emergency room immediately.**

Source: [ACE Post-Concussion Home/School Instructions](#) Children's National Medical Center, Washington DC

## Diagnostic tests for concussions

**Unfortunately, there are few good imaging options for concussions**

**A negative MRI or CT scan does not mean a brain injury did not occur.** A concussion is "a software problem, not a hardware problem," in other words, they are rarely detectable through the use of either of these diagnostic tests. However, CT scans and MRIs are valuable in ruling out more severe problems such as hematomas and skull fractures. CT scans can add significant amounts of radiation to one's overall lifetime accumulation, so make sure they are warranted.

For more information including downloadable items visit the [CDC concussion website](#)

Consensus Statement on Concussion in Sport: the 3rd International Conference on Concussion in Sport held in Zurich, November 2008 *Br J Sports Med* 2009;43:i76-i84  
[doi:10.1136/bjism.2009.058248](#)