
Sports-Related Concussion in Adolescents

What is a concussion?

A concussion is any change in how you think or feel because your brain bounced around or twisted inside your skull. A direct hit to, or extreme movement of your head can cause a concussion. You can still have a concussion even if you didn't get knocked out. A concussion is a type of **mild traumatic brain injury**, or MTBI.

What happens when you get a concussion?

The things a concussion can lead to are called *symptoms*, and can include:

- Difficulty remembering things
- Confusion
- Clumsiness
- Dizziness
- Vomiting
- Headache
- Irritability
- Changes in vision

Why does a concussion cause symptoms?

If you get a concussion, it means your brain moved around inside your skull in a way that hurts your brain. It's kind of like a boat that's anchored in a rocky cove. Your brain, like a boat, is surrounded by fluid and is connected to your body by long nerves, which are like ropes. If your head moves too fast or hits something with enough force, your brain moves around in your skull, just like a boat in a storm. Your brain may even bump up against the inside of your skull and the nerves may get twisted or torn. Because our brains control everything we do, a concussion may cause symptoms like dizziness, difficulty remembering things, feeling distracted or headaches.

What if I think I have had a concussion?

If you think you have a concussion, let your parents, teacher, doctor and/or coaches know. If you are still feeling weird or still having symptoms, you should stop playing sports or doing anything that takes a lot of thinking until you see a doctor. If you think you had a concussion, but are not having symptoms anymore, still let your parents, doctor and/or coaches know. It is important you tell someone you think you had a concussion, even if you're not sure. It's important because additional concussions can make thinking harder and once you've had one concussion, chances are higher that you'll have another.

Where can I learn more about concussions? The Center for Disease Control and Prevention: www.cdc.gov/concussion/HeadsUp/

Your Brain

What does your brain look like? Is it soft and squishy or hard and rubbery? Actually ... your brain has the consistency of butter at room temperature!



Why is your brain so soft?

10% of your brain is fat. This is because many of your brain's nerve fibers are wrapped in a fatty sheath. This fatty sheath, called myelin, is vital as it insulates the nerves. This allows electrical impulses to travel quickly around your brain.

What protects your soft brain?

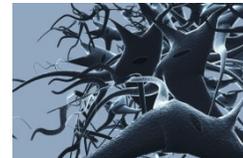
Your brain is protected by the bones of your skull. Your brain is also swaddled in several layers of membranes called *meninges*. The fluid between these layers produces a water cushion that protects your brain if you knock or bump your head.

So what does your brain look like?



Is your brain in two halves?

Yes, the outer part of your brain called the cortex is split in two, making your left and right hemispheres. They are connected by a bundle of 50 *million* neurons.



Why does your brain feel tired when you think a lot?

Your brain consumes a lot of energy - as much as a fifth of all the energy you get from food. Brain scans show that thinking uses up a lot of energy (as revealed by an increase in blood flow).

Your brain can't store much energy, and because it is tightly enclosed inside your skull, there is a limit to how much blood (and therefore energy) can be supplied to active areas. So thinking hard tires your brain.



So is your brain like a muscle?

New research shows that, as with muscles, the more you use a part of your brain, the larger it will get. London taxi drivers have very large hippocampi - the part of the brain that deals with spatial mapping.

Also like muscles, as you use a particular part of your brain, more blood is pumped to that area to provide energy. Finally, as with muscles, the more you use your brain, the better it works.