

Hard Knock

New helmets keep sudden forces from literally hurting your brain.

BAM! When athletes hit their heads, the impact can shake up their brains and cause **concussions**. A concussion is a brain injury that leads to problems like dizziness, confusion, and nausea.

All Shook Up

When you run, jump, or skate, your body is moving at an increased speed. A sudden impact causes you to **accelerate**, or change speed and direction. But your brain, which is made of a jelly-like material, doesn't change direction as quickly as the rest of your head. So it slams against the sides of the skull.

This impact damages the brain. It interferes with

the way the brain functions, causing problems like headaches and memory loss. The brain can usually repair itself in a few weeks. But repeated brain injuries can cause problems that last much longer.

High-Tech Helmets

To help prevent such injuries, some sports require athletes to wear helmets. Helmets absorb some of a hit's **force** (push or pull). The hard outer shell spreads the force over a larger area. Inside, a foam, plastic, or air-filled lining can help soften the blow.

In recent years, many companies have redesigned helmets to make them safer.

Newer helmets have thicker linings and larger, more flexible shells. The companies hope that will lower the number of concussions. Still, no helmet can prevent concussions entirely.

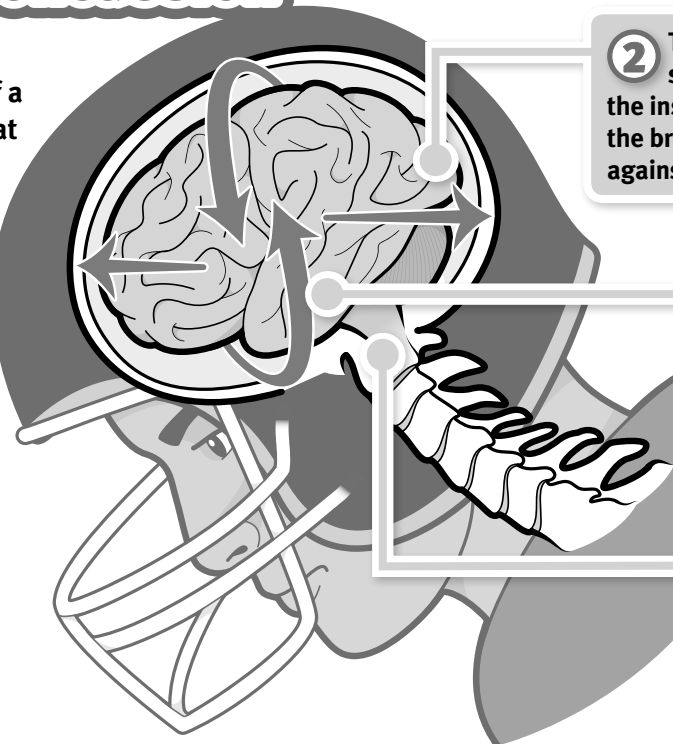
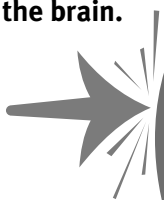
New Rules?

Along with new helmets, many youth sports leagues have set limits on physical contact to reduce the risk of concussions. These efforts should help. But the best way to prevent long-term brain injuries, scientists say, is to stop playing immediately if you have any concussion symptoms, such as headaches or blurry vision. Protect yourself today so you can go for the win next time.

Inside a Concussion

A hit to the head is the most common cause of a concussion. Here's what it does to the brain.

1 A sudden impact jolts the head in a certain direction.



2 The force of the impact slams the brain against the inside of the skull. Then the brain bounces back against the opposite side.

3 Some hits also twist and stretch the brain as it bounces around.

4 Severe concussions can make the brain swell. This puts pressure on the **brain stem**, which controls things like breathing and swallowing.