



Ask the Expert with Dr. Darrell Menard

Find Answers to your Sport Medicine Questions!

Can Helmets Prevent Concussion?

Q: *I have coached minor hockey for several years and always encourage safe and fair play. At the start of every season, I remind my players to wear all their protective equipment for every game and practice. I specifically stress how important helmets are for preventing concussions. At hockey school this summer my son was told hockey helmets don't protect against concussions – is this true? Coach Tim*

A: Dear Coach – Thank you so much for volunteering to work in minor sports. Considerable research and many millions of dollars have been invested into the design of protective helmets for many different sports. Despite this enormous investment there continues to be no such thing as a concussion prevention helmet for any sport – it doesn't matter how much money you are willing to spend on a helmet. Having said the above, it is important to recognize that helmets continue to be very important pieces of protective equipment.

When properly worn, helmets are very effective at preventing cuts to the scalp, brain bleeds and skull fractures. Unfortunately they all have limited effectiveness against concussions largely because of the way humans are designed. Try thinking of your skull as nature's hockey helmet. It has a hard bony exterior, a set of protective membranes and the brain essentially floats in a pool of fluid. As a result of this design, when you get hit, your brain can move around inside your skull. If you are hit, your brain may bang into the bony walls of your skull and essentially get bruised at the points of impact. In addition, almost all hits apply some rotational force to the head and this will subject the brain to shearing forces that can cause microscopic damage to the brain and its blood vessels. These injuries are also thought to lead to a cascade of metabolic abnormalities in the brain, resulting in the symptoms of concussion. Experts agree that for a helmet to protect the brain from these types of forces it would have to be so big and awkward that it would leave the neck vulnerable to injury.

The bottom line is that helmets protect your head – they do not protect your brain. So even if you are wearing a helmet, a hit to your head or body causing accelerated head movements can do to your brain what a car crash does to the vehicle's passengers. Rather than just focusing on making a better helmet, an effective strategy to reduce the incidence of concussions would be to focus our attention on the strict implementation of safe rules of play and on teaching athletes to play safer and smarter.

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Dr. Darrell Menard is the Surgeon General's specialist advisor in sport medicine. He has worked extensively with athletes from multiple sports and has covered Canadian teams competing at multiple games including the 2012 Olympics and the 2016 Paralympic games. These articles were originally published in the Canadian Forces Journal, the Maple Leaf.

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