



Dr. Charles Tator is taking a three-pronged approach to help reduce the number of concussions in Canadians.

→ **39%**
 Percentage of children aged 10 to 18 who have visited an emergency room for a sports-related head injury and were diagnosed with a concussion.
 (Government of Canada)

Putting a halt to head hits

Combatting concussions through research, education and policy

Claire Gagne

Concussions are a serious issue in sport. According to the National Football League, 13.5 per cent more concussions were reported among its players in 2017 over the year before, while Blue Cross Blue Shield found a 43 per cent increase in sports-related concussions between 2010 and 2015. That's not a surprise to Dr. Charles Tator, director of the Canadian Concussion Centre, an organization based out of the Krembil Brain Institute that conducts concussion-related research. "There's still a lack of awareness and lack of recognition around concussions," he says. "We want to change that."

Dr. Tator has made it his mission to reduce the number of concussions in Canada, but unlike other doctors who mostly focus on science, he's taking a three-pronged approach to his work: Research, education and policy change. Since researchers are just starting to learn how concussions work, it could take time before any treatment is found. That's why he wants to change laws

and raise awareness of what can happen when someone gets hit in the head.

GETTING POLICY PASSED

So far, Dr. Tator and his team have made progress in all three areas. In March, the Ontario government passed Rowan's Law, named after 17-year-old Rowan Stringer who died in 2013 after suffering two concussions within a week. Dr. Tator, among others, helped lobby the government to pass it.

The law states that hockey coaches must oversee player safety, while organizations need to develop protocols for the removal and re-entry of a player into a game after a hit to the head has occurred. He hopes other provinces will adopt this, too. "That's the plan," he says. "To have it spread across the country."

DONATING BRAINS TO RESEARCH

On the research side, the Canadian Concussion Centre recently made headlines after it received commitments from four female athletes –

Olympic skier Kerrin Lee-Gartner, hockey legends Cassie Campbell-Pascall and Fran Rider, and rugby star Jen Kish – to receive their brains after they pass away.

This is a coup, because, so far, the Centre has only received brains from male athletes. Since concussion symptoms can be worse in women, and last longer, than in men, doctors need the brains of female athletes to fully understand the damage concussions can do, says Dr. Tator.

Ideally, by studying the brains of deceased athletes, and monitoring the health of still-living ones – the Centre is doing regular tests on more than 100 Canadian Football League alumni – doctors will be able to help people prevent brain damage before it's too late.

LOOKING FOR A TREATMENT

To that end, Dr. Carmela Tartaglia, a neurologist at Krembil, and the Marion and Gerald Soloway Chair in Brain Injury and Concussion Research, is looking at the abnormal buildup of a protein called

phosphorylated tau or p-tau in the brain. It's linked to the development of chronic traumatic encephalopathy (CTE), a neurodegenerative disease that has been found in former athletes like boxers or football players, who have sustained multiple hits to the head over time.

She's trying to detect abnormal tau and its effects on the brain by combining information from p-tau imaging tests and cerebrospinal fluid, genetics, eye tracking and neuropsychological assessments. "We want to say your brain is vulnerable to concussions and you cannot afford to get any more," she says.

While the Centre may be tackling the concussion issue from various sides – Dr. Tator is also working with Ontario's Ministry of Education to study concussion education – whether it's policy, education or research, the goal is the same: To keep brains safe. "Our duty is to the research, but it can't just be that," he says. "We need to be at the centre of this and shaping those around us." ■