How many concussions are too many?

Heather Kent

Mild head injury is a long-neglected problem in hockey, say researchers at Simon Fraser University. They are trying to determine how serious the situation is by studying junior hockey players. Public awareness of the severity of concussion has only started increasing, say researchers, because of high-profile cases involving players such as Paul Kariya. His career-threatening concussion, the result of a vicious cross-check, kept him out of the 1998 Winter Olympics.

But NHL players are not the only ones being injured. Researcher David Goodman, a professor of kinesiology at Simon Fraser, says children as young as 10 are being concussed. Goodman and PhD student Mike Gaetz are spending this hockey season working with 270 players aged 16 to 20 in the British Columbia Hockey League (BCHL).

Canapress

Concussions ended the NHL career of Brett Lindros (left)

The project, funded by the BC Rick Hansen Neurotrauma Initiative, began with the collection of baseline data. Since players are scattered throughout the province, Gaetz went to them in a 10-metre-long mobile laboratory. Almost all players on the 14 teams volunteered for 2-hour testing sessions at the start of the hockey season. Testing included visual tracking and standardized motor tests to assess speed and reaction time.

Sixty-one percent of BCHL players surveyed had already experienced at least one concussion. Concussion is defined as a loss of consciousness for less than 30 minutes, post-traumatic amnesia lasting less than 24 hours, a Glasgow coma score of 13 to 15 and transient disruption of cognitive function. Goodman and Gaetz are trying to establish whether a player who has had a mild head injury will have lingering effects, and whether this will create a "compounded" concussion if he is injured again.

The ultimate question is simple: How many concussions can the brain withstand without permanent damage? When a player is concussed, Gaetz — who is on call 24 hours a day — arrives with the mobile laboratory to retest him. By the end of October 1998 he had already made 4 trips, and the players were followed up 2 weeks, 1 and 3 months after injury; by Feb. 4, 16 players had been retested. "It's an opportunity that you don't see very often," says Goodman. "You are able to assess people in an uninjured state, and you know things [may] happen to them. It's ideal because you can say 'now I can really look at the neuroplasticity because I know there are going to be concussions and I know what their behaviour was like beforehand.' "

The first 4 players studied this fall were all unconscious for under 5 minutes. Gaetz predicts that about 20% of players in the BC league will have this type of mild head injury this season.

Although medical guidelines for diagnosis and treatment of mild head injury exist, Gaetz has observed "varying levels of familiarity with those scales." Overzealous coaches and players wanting an early return to the ice are part of the problem, and the uneven expertise of team physicians is another. Dr. Paul Watson, a team physician, recommends a standardized concussion package developed by the Brain Injury Association Inc.

Gaetz welcomes this kind of initiative. "Physicians are becoming aware of the need for standardized assessments and are starting to use them. Before, everybody thought concussions were transient disruptions in cognitive function that didn't result in any brain damage."

Another educational device, a plasticized card describing grades of concussion, sideline testing and management recommendations for mild head injury, has been developed by the BC Brain Injury Association. Applicable to all sports, Goodman says it "is going a long way in making people aware of what they should do."

The package of standardized concussion assessment forms developed by the Brain Injury Association is available at **www.biausa.org**.

Heather Kent is a Vancouver journalist.

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