

Head Impacts in Girls' Ice Hockey



What is this study about?

Playing ice hockey offers physical health and social benefits. However, it also comes with risks. Concussion, because of a hit or 'impact' to the head, is one example of such risks. Head impacts can happen in ice hockey due to high skating speeds and contact with other players, the boards, or the ice.

Although body checking is not allowed in girls' ice hockey, girls do experience physical contact during practice and games. **Head impacts and their potential link to concussion have been explored in boys' ice hockey, however not in girls' ice hockey.** This is important to explore, especially because ice hockey is a popular sport for both young girls and boys.

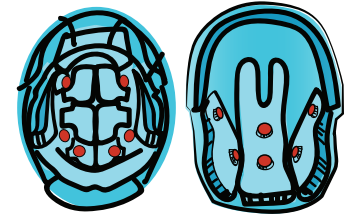
The study team explored head impacts during ice hockey games of teenage girls. The study team:

- looked at 27 girls, ages 11-14 years
- followed players from 3 competitive ice hockey teams (except goalies)
- tracked the girls for an entire hockey season

“ From a caregiver who read this study:

The coach/trainer may not see things that do not occur in the direct area of play, so as a caregiver, you need to inform them. They can't see everything. As a caregiver, you're always watching your kid, and [the information in this article] can help make more informed decisions.”

The study team placed special equipment in the players' helmets to measure head impacts during play. They looked at how fast the head moved and rotated when a hit to the head happened. They also studied the influence of the player and the game on head impact.



Player Factors

- Age
- Playing position
- Body Mass Index
- Time spent on the ice per game



Game Factors

- Regular season game
- Playoff game
- Tournament game

What is 'Body Mass Index' or BMI?

Body Mass Index is a way of expressing your weight for your height.

What is a 'head impact'?

In this study, head impact refers to any time the head (even in a helmet) makes contact with another object. In girls' ice hockey, the impact may be with another player, a puck, the boards, or the rink. A head impact can move the head and neck in many directions, and can result in injury. Visit the [Concussion Centre's](#) website for more information.





What did the study team find?

The team found that experiencing more head impacts were related to:

- older player age;
- higher BMI;
- playing the forward position;
- more time spent on the ice; and
- playing regular season games.

Players in this study had less than one head impact per game on average. This is fewer head impacts than what has been shown in studies looking at boys who play ice hockey. The head impacts in this study also appeared less severe than those in similar studies. But, there may have been head impacts the team was not able to capture, particularly for players with a lower BMI. The force of these impacts may have been too low for the study equipment to record.

None of the head impacts in the study resulted in a concussion. What the team learned was that player and game factors (in the chart above) may help predict head-impact frequency (or number) and severity. Knowing this information can help reduce the risks of head impact in girls who play ice hockey.



What this means for caregivers

Body checking is not allowed in girls' ice hockey. Yet, head impacts still happen. With a rise in the popularity of this sport, it is important for caregivers (refers to parents and others caring for the child) to understand the factors that can affect the occurrence of head impacts.

Here are some tips from families at Holland Bloorview for caregivers of youth participating in sports:



Educate yourself and others:

Know that sports like girls' ice hockey that do not allow intentional contact or body checking can still result in head impacts. Caregivers, coaches, and youth must be aware of how to reduce the risks of head injuries and manage them when they do occur. Educate coaches, trainers, and youth about safe play and removal-from-sport protocols.



Be aware of after-effects:

It is important to be aware of the signs and symptoms of concussion. Everyone is affected by a concussion differently. Know that symptoms after a game may be different than the symptoms experienced the next day. Knowing about concussion symptoms and how to manage them is key.



Advocate for safe play:

As a caregiver who knows the signs and symptoms of concussion, you can advocate for appropriate removal from sport, and medical direction.

What is 'Rowan's Law'?

The Government of Ontario has created [Rowan's Law on Concussion Safety](#). Under Rowan's Law, sport organizations must be aware of concussion safety protocols. They must also have protocols in place for removing players from and returning them to sport.

Read more about [Rowan's Law](#).



For more information

Find the [abstract here](#), or visit your local library:

Reed, N., Taha, T., Greenwald, R., & Keightley, M. (2017). Player and game characteristics and head impacts in female youth ice hockey players. *Journal of Athletic Training*, 52(8), 771-775.

- To learn more about concussion, check out resources such as infographics and handbooks created by the [Concussion Centre](#) at Holland Bloorview

