



Introduction

- Head injuries in youth can lead to multiple cognitive problems, which may have negative impacts later in their lives [1]
- This study will discover the events and risks that can lead to head contact and injury in youth hockey
- This will help determine the leading mechanisms of head contact events, which may lead to injuries in youth non-body checking hockey
- The data will be used in the Neurotrauma Impact Science Laboratory at the University of Ottawa to reconstruct the head contact events to determine the speed and force of events and their potential impact on the brain.
- The information in this study will have a real impact in that it will help a leading hockey manufacturer (CCM) develop a helmet designed to protect youth hockey players
- The data from this study will be essential to helmet manufacturers to guide the development and innovation of helmet designs that will prove effective in mitigating the risk of head injuries for youth hockey players playing non-body checking hockey



Methods

- Using a mixed methods approach this study analyzed the injury rates of youth non-body contact hockey teams
- During the 2015-2016 season, 180 athletic exposures of minor atom AAA players were observed
- To carry out the observational component of this study, a self-designed observation grid based on previous research was used to document *in situ* head events
- A single camera was placed in a position that captured the majority of the ice surface, thereby minimizing blind spots
- Video footage was then analyzed and all injuries were subjected to a frame by frame analysis
- In this study a head event was defined as “any physical trauma that has occurred as a result of participation in an organized competition whereby a player, **in order of increasing severity**: (1) is in discomfort; (2) missed playing time but returned to the current game; (3) missed playing time and did not return to the current game; (4) missed subsequent game(s)

Results

- Once all the data was collected in the form of field notes, observation grids and video, information was transferred to a database that included different categories for each player
- The categories are as follows: head contact event, falling situational factors, injury severity, period and descriptive observations.
- Of the 180 athletic events observed over the course season, 0 head contact events were recorded
- The data presented no findings of head events that would be considered as an injury.
- While these results do not intend to challenge existing ice hockey injury reporting research, they do show promise that ice hockey at this level is not necessarily the high risk sport it is often perceived to be

Conclusions

- In contrast to many leading research and media reports about the role of injuries in hockey, the results from this study indicate that participants are not receiving the head contact events that lead to head injuries
- Given the limited sample it was striking how few head contacts events occurred. This is relevant given the public consternation around hockey and head injuries
- A study done by Cusimano, Taback, Mcfaull, Hodgins, Bekele & Elefeki (2011) shows that at the atom age category the amount of concussions is very limited due to the rule of no body checking. This is presented in the table below [2]
- This study warrants further research, with a greater sample size to see 1) what the leading mechanisms are for head contact and 2) how frequent head contact events are in youth hockey.

Table 5: Number of bodychecking-related concussions, by minor hockey league division, before and after the rule change allowing bodychecking in the Atom division*†

Division	Timing:‡ no. of concussions§		OR (95% CI)	p value
	Before rule change	After rule change		
Novice	3 (4)	2 (7)	0.13 (0.01–2.18)	0.16
Atom	4 (15)	22 (28)	10.08 (2.35–43.29)	0.01
PeeWee	18 (25)	64 (86)	1.13 (0.42–3.07)	0.81
Bantam	16 (23)	65 (99)	2.23 (0.31–2.23)	0.72
Midget	15 (21)	59 (77)	1.31 (0.44–3.88)	0.63

OR = odds ratio, CI = confidence interval.
 *Source: Canadian Hospitals Injury Reporting and Prevention Program.
 † For the period 1994/1995 to 2003/2004.
 ‡ Date delimiting “before” and “after” varies by hospital, because minor hockey leagues in Ottawa and Kingston did not adopt the new rule until the 2001/2002 season; see text for further explanation.
 § Value within parentheses refers to the total number of concussions (bodychecking-related and non-bodychecking-related) used to calculate the OR.

References

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2. Cusimano, M., Taback, N., Mcfaull, S., Hodgins, R., Bekele, T., & Elefeki, N. (2011). Effect of bodychecking on rate of injuries among minor hockey players. *Open Medicine*, 5(1). Retrieved March 7, 2016.

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