HOCKEY SAFETY

Jamie Kissick MD, CCFP, Dip Sport Med

CASEM/FIMS 2014
June 19, 2014

Objectives

1. To review the existing evidence and steps taken to reduce the risk of injury in ice hockey, specifically the prevention of eye injury, spinal injury, and concussion
2. To examine the debate on when and/or if body checking should be initiated, through review of the literature
3. To develop an approach to injury prevention, looking at concussion specifically, using the 3 E’s (Education, Equipment, Enforcement)

Recommended reading

Spinal Injuries


Of spinal cord injuries, 65.8% resulted from colliding with the boards, and 36.6% were due to players being checked or pushed from behind. Survey showed number of major spinal cord injuries declining, especially those caused by checking from behind.


Decline in the number of cases between 2000-2005; may be related to improved education and/or specific rules against checking from behind.

Facial Protection


The use of full face shields reduced the time lost due to concussion when compared to half shields (visors).


Full facial protection significantly increased protection against facial injuries and lacerations when compared with half shields. There was no significant difference in concussion and neck injury between the two groups.

Risk Factors For Injury
Injury Rates, Risk Factors, and Mechanisms of Injury in Minor Hockey
Significant differences in injury rates were found by age (increased as players got into older age groups) and division of play (increased in elite levels). Body checking (BC) was the primary mechanism of injury at all levels of play where BC allowed. Concussion was the most common specific injury.

BC was identified as a significant risk factor for all injuries and concussion. More injuries in games than practices, otherwise findings re other risk factors inconclusive.

Injury rates, types, mechanisms and risk factors in female youth ice hockey
Lower injury rates in youth female versus youth male and women’s leagues. BC technically not permitted, but was mechanism of injury in 21%. Increased risk in more competitive divisions. Previous injury and menarche also associated with increased risk.

Body Checking and Injury Risk

Effect of bodychecking on injury rates among minor ice hockey players
Brent E. Hagel, Josh Marko, Donna Dryden, Amy B. Couperthwaite, Joseph Sommerfeldt, Brian H. Rowe CMAJ 2006;175(2):155-60
The introduction of BC resulted in a large increase in injury rates. Rate of severe injury 2X greater in 11 year olds in BC league vs 11 yr olds in non-BC

Body-Checking Rules and Childhood Injuries in Ice Hockey
Alison Macpherson, Linda Rothman, Andrew Howard Pediatrics 2006; 117:e143-147
10-13 year olds had increased risk of suffering an injury when BC allowed. Players playing in a province where BC introduced at earlier age had greater risk of a BC injury than those from province where BC introduced later (especially fractures; slight increase in concussion).

A Systematic Review of the Association Between Body Checking and Injury in Youth Ice Hockey
Joel M. Warsh, Sxerban A. Constantin, Andrew Howard, MSc,† and Alison Macpherson Clin J Sport Med 2009;19:134–144
All but one study found increased risk of injuries from BC. Methodological concerns about this one study.

Risk of Injury Associated With Body Checking Among Youth Ice Hockey Players
3-fold increase in game-related injuries in 11 and 12 year olds in BC leagues compared to non-BC.
Effects of Changing Body-Checking Rules on Rates of Injury in Minor Hockey
Atif Kukaswadia, Joel Warsh, Jason P. Mihalik and William Pickett *Pediatrics* 2010;125;735-741
*Overall rates of injury declined in the years after change in BC rules where BC allowed in Atom, rather than PeeWee. Rates of injury attributable to BC remained consistent.*

Intentional versus unintentional contact as a mechanism of injury in youth ice hockey
*Unintentional contact caused 66% of overall injuries. Leagues where BC allowed had 4X greater injury rate from intentional and unintentional contact than non-BC leagues. 8X increase in 9 and 10 yr olds when BC allowed.*

Risk of injury associated with bodychecking experience among youth hockey players
Carolyn Emery, Jian Kang, Ian Shrier, Claude Goulet, Brent Hagel, Brian Benson, Alberto Nettel-Aguirre, Jenelle McAllister, Willem Meeuwisse *CMAJ* 2011; 183(11): 1249-1256
*Risk of injury resulting in >7 day time loss reduced by 33% in Bantam players with 2 years BC experience compared to those introduced to BC for first time. (Remember, their first study showed a 3X increase in concussion and all injuries in PeeWee players in BC leagues vs non-BC leagues)*

Hockey-Related Emergency Department Visits After a Change in Minor Hockey Age Groups
Andrew W. Harris, Donald C. Voaklander, and Colleen Drul *Clin J Sport Med* 2012;22:455–461
*Introducing BC 1 year earlier than in a previous cohort neither significantly increased nor decreased the rate of serious injuries occurring 2 years after the introduction of BC.*

Position Statement

Bodychecking in youth ice hockey
Kristin M Houghton, Carolyn A Emery; Canadian Pediatric Society Active Living and Sports Medicine Committee *Paediatr Child Health* 2012; 17(9): 509
*Restrict BC to competitive divisions, and do not begin until Bantam.*

Risk Reduction Strategies

What are the most effective risk-reduction strategies in sport concussion?
*No evidence to support an association between neck strength increases and concussion reduction. Evidence that fair play rules and eliminating BC in 11 and 12 year olds were effective injury prevention strategies.*

Risk Compensation

Risk Compensation: A “Side Effect” of Sport Injury Prevention?
Brent Hagel, and Willem Meeuwisse *Clin J Sport Med* 2004; 14: 193-196
*Beware of unintended “side effects” of injury prevention strategies.*