BODY CHECKING COMMENTARY

Paul Carson, Stephen Norris; August 2006

Introduction

The available literature material on injuries in sport is widespread and varied. 'Widespread' because information is available on many activities and permeates all levels of reporting media and 'varied' due to the degree of sophistication of data gathering, analysis, interpretation and critical review. As of August 2006, 'PubMed' (www.pubmed.gov), a service of the National Library of Medicine and the National Institutes of Health in the United States, lists over 100 articles dealing with injuries in hockey spanning 1975 until July 2006 (see 'Example peer-reviewed articles' list provided at end of this document).

The general consensus is that contact sports have a greater incidence of injury than non-contact sports, whether or not the contact is deliberate or accidental. Furthermore, in sports where contact is allowable in some strata (*levels; age, competitiveness etc.*), the injury incidence is greater in the divisions where deliberate contact is permitted.

The issue of body checking is an extremely emotive one that tends to polarize opinion amongst and /or within various factions such as the Canadian hockey community at large (i.e., players, parents, administrators, commentators etc.), professional groups (i.e., Canadian Medical Association), and the Canadian Media. Aside from the obvious and important aspect of injury rates occurring for those involved in the game, the body checking issue is a complex one that encompasses several elements (e.g., growth and maturation, socio-cultural, and ethical considerations). It may even be argued that the issue of body checking masks more deep seated concerns such as the fundamental programming content of child and youth hockey and that the body checking debate distracts all parties from more important debate.

Specific research in the area

The Montelpare Report (2001)[1] for the Ontario Hockey Federation provides interesting information that was ignored due to the media furor and subsequent emotional debate that ensued following revelations concerning the data analysis. Despite the debate over the statistical processes and interpretation of the injury data, information concerning the 'relative age effect' (RAE), practice-to-game ratios and playing time was presented that clearly supports the need for a comprehensive evaluation of child/youth hockey and, for that matter, age group sport in general.

These aspects, together with the notion of differing injury rates between various forms of the game, underscore the need to approach the structure and content of developmental

[1] Measuring the effects of initiating body checking at the Atom age level: Final report to the Ontario Hockey Federation. W.J. Montelpare, Ph.D., 2001.

hockey in a substantially different manner than traditionally undertaken and with a much clearer long term view and an appropriate philosophy.

The Montelpare Report clearly illustrates a biased 'month-of-birth' participation in the sample groups examined. That is, there was a preferential participation for those born in the first half of the year and a particularly noticeable bias against those born in the final four months (*September to December*). Interestingly, this was observed to be true for both the body checking and no-body checking cohorts and points to a greater systematic problem. Of course, this is true of any age group activity where a chronological breakpoint is used for segregation purposes. Furthermore, the average height, weight and 'body mass index' (BMI; kg/m2) data were similar across all twelve months of a year of capture. This information viewed as a whole suggests that 'early born' (*i.e., those born in first few months of selection period*) and 'early physical developers' (*i.e., those in upper growth percentiles for their peer group*) increase the likelihood of participation in hockey at the expense of 'late born'/'late developers'.

Unfortunately, this study did not comprehensively address the issue that the period between about 10 years and 16 years of age (*for males*) typically encompasses the greatest changes in growth and development. Specifically, the periods around 13/14/15 years old when the greatest rate of change in height (*i.e., lengthening of the long bones of the skeletal system*) takes place and 14/15/16 years of age when the focus becomes skeletal system consolidation and a shift to the potential for a greater muscle mass (*i.e., the growth plates of the skeletal system 'close', the integrity of bone structure is accelerated, and muscle responds dramatically to natural and environmental stimuli*).

Of interest to those who wish to influence the developmental performance of hockey programming and perhaps the 'final product' for hockey in general, the Montelpare Report findings concerning practice-to-game ratios and playing time are extremely telling.

At this Atom level, 54% of the OHF had at least one practice for every two games (*therefore, 46% did not*), and 55% of ODMHA had at least one practice for every game played (*therefore, 45% did not*). When asked about playing time, 69% of coaches in the OHF distributed playing time depending upon the game situation, whereas 61% of coaches in the ODMHA distributed time equally regardless of the game situation. Arguably, it is these statistics rather than the injury rates that are the most damning for hockey and hockey development. Furthermore, several investigations including the most recent ongoing study by Riemer and coworkers (2006)[2] decisively state that the body checking issue is 'complex and complicated' and requires a multidimensional understanding involving 'physiological, psychological, sociological, and ethical concerns'.

Reports undertaken from within hockey organizations have tended to focus on single age groups rather than the overall approach adopted by non-aligned groups, such as the

[2] Effects of the implementation of body checking in Atom hockey: A preliminary report prepared for the 2006 Hockey Canada AGM. H. Riemer, K. Dorsch, L. Hoeber, & E. Karreman, 2006.

previously mentioned medical associations. The lack of a cohesive and comprehensive long term format in most hockey organizations and associations is a clear weakness that has arguably led to the level of indecisiveness, disparity and truncated progression displayed by age group hockey currently. It would appear that administrative concerns and an inappropriate fixation on short-term competition at the expense of true development drive hockey in Canada.

The Quebec Ice Hockey Federation work group examining 'Age Division/Non-Federated Hockey' in 1996 emphasized the following trends in their annual general meeting report:

- The rate and seriousness of injuries increase with age and level of competition. This can be explained by the increase in impact forces generated, the speed of the game, the intensity and the importance of winning.
- **The rate of fractures is 12 times higher in pee-wee leagues where body checks are allowed than in those where it is not.**
- **Where body checking is allowed, it is the main cause (%) of ice hockey injuries. As a general rule, it is estimated that body checks tend to be the source of approximately 40% of injuries.**
- Body checking is responsible for at least 75% of all 'major' and 'serious' injuries such as strains, dislocations, fractures and concussions.
- Although their group represents only 20% of the sample, 13 and 14 year old players accounted for 36% of all shoulder fractures.

- The score in a competition between two teams has an impact on both teams' style of play.
- What is at stake; the importance of the game for the two competing teams as well as the hostility expressed by the crowd is elements which contribute to increase the level of frustration.
- The environment and more specifically, friends, attribute a certain prestige or special status to those who display acts of aggression in during the game.
- The more the acts of violence are tolerated, the more their number will increase.
- The number of incidents where rules are transgressed and where aggression is expressed increase according to the age and the experience of the participants.
- Bodychecking in itself is not an aggression but often, its improper technical use promotes an increase in violence during the game.
- More often than not, bodychecking seems to serve the purpose of intimidating an opponent during the game.

  (The above 7 points illustrate the deep rooted sociological aspects of physical play/violence within the Canadian game).

- **Volunteer coaches do not have the necessary training to teach body checking.**
- **Bodychecking is not always used in accordance with the code of ethics or the rules.**
- **Bodychecking is related to the dropping out of peewee players (NB: 12-13 yr olds).**
- **Bodychecking has no place in minor hockey for players 13 and under.**
- **Bodychecking should be introduced progressively among players 13 and over.**

The summary report of the 1996 Brock University report, "The Age Review in Canadian Hockey", by Montelpare, Scott and Pelino identified the following points amongst its observations:

- Regarding survey results from the branches (provinces) of Canadian Hockey; ('old' ages)

  - **There were no problems (relating to growth) expressed within initiation, novice and atom divisions.**
  - **Some problems were expressed within the peewee, bantam and midget age divisions and were mostly within organizations where a minor and major system DID NOT EXIST.**
- A strong 'relative age effect' existed such that those born in the earlier months has a distinct advantage over those born in the latter part of the year.
- NHL data for 1995-1996; 64% born in first 6 months of year; 700 vs. 392 players.
- CIAU; in any given year of birth, 66% born in first 6 months.
- Typical surveys of AA bantam & midget players; 62% born in first half of year.
- YET 'house league' within same minor hockey association as above point showed even distribution of ages through the year! (Similar to football and rugby which show little or no age effect. Interestingly these sports do not have 'representative teams typically until later teen years).

- ***The combination of Relative Age Effect and Representative/All Star Teams is a powerful force for inappropriate 'identification/segregation' of players.***

- David Scott (Sport Psychologist, Brock University) summarizes by saying;
  "Hockey can be a great experience for all young players provided that the coaches and administrators are aware of the various reasons which motivate children to play. All players must be given an equal opportunity to develop their skills. Their needs and desires must be recognized and help given to aid them in achieving their goals (**winning is most often not a need for the young player**)…the life of the young player prior to the age of 13 should be filled with individual development, a nurturing environment, equal treatment and above all fun".

Christopher Honey's paper ("Brain Injury in Hockey", Clinical Journal of Sports Medicine, 8: 43-46, 1998) states that **'for young players (assuming the helmet can withstand a blow from falling on the ice), the greatest danger is from a body check from a much larger player'.**

Honey goes on to comment that **'this is the reason for Brust's and Roy's plea for banning body checking at the PeeWee level'** (Brust et al., American Journal of Disorders of Children, 146: 741-7, 1992 and Roy et al., The Physician and Sportsmedicine, 17: 119-126, 1989), since anthropometric studies show large discrepancies for body height and weight for boys at this age (Malina. In: Magill et al., eds. Children in Sport: Human Kinetics, 73-96, 1982).

The Roberts et al. paper (Medicine and Science in Sports and Exercise, 31, 1: 46-51, 1999) concluded the following:

> **The significant injury rate for boys' tournament game play was 4-6 times higher than the season game injury rates in two previous season-long studies. In boys' games, 65% of 'all' injuries and 77% of 'significant' injuries were related to collisions. The girls' rules of play do not allow bodychecking and therefore there were no significant injuries in the girls' games. The boys had high rates of cerebral concussion injury at all age levels. Minimizing the frequency and intensity of collisions in the boys' game may decrease the injury rates, especially in the tournament setting.**
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> ***(Note: Study examined 695 boys and 112 girls ages 11-19, participating in five community-sponsored ice hockey tournaments in Minnesota during the 1993-1994 winter season).***

On a more general note, a paper in the Hockey Canada library in Calgary (unknown source and year, although the latest year cited in the reference section was 2000, therefore this is relatively recent article) titled "The Connection Between Hockey and Osteoarthritis" (*author; Hollie Fischer*) made the following points:

- **Sports that subject joints to high levels of repetitive impact and torsional loading increase the risk of articular cartilage degeneration and can result in OA ('osteoarthritis').**
- **In particular, contact team sports, such as hockey, form the highest risk group for sports injuries in children aged 8-17.**
- **It is crucial to emphasize preventative measures to hockey players.**
- **Training programs that include instructions on how to develop proper conditioning skills, can greatly reduce the incidence of injury.**

This paper identifies a need for basic conditioning of young players as an integral part of the 'hockey experience' in order to reduce the potential for longer term debilitating circumstances. In addition, this would also serve the purpose of raising 'general athleticism' and perhaps instilling 'life-long' healthy lifestyle habits.

A collection of articles by Tator et al. through the 1990's as well as others (e.g., Mölsä et al. International Journal of Sports Medicine, 20: 64-67, 1999) focused upon spinal chord injuries in ice hockey in North America and Scandanavia. A common theme resulting from these investigations may be summarized by Mölsä et al. (1999):

> **These serious injuries may be prevented by changing the rules (banning body checking near the boards) with strict refereeing and education of trainers and players.**

And by Tator et al. (Canadian Journal of Surgery, 34, 1: 63-69, 1991):

> **The most common cause of injury was a push or check from behind, which caused the player to be catapulted head first into the boards.**

A review of the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) database for the 1998/1999 hockey season produced the following information:

- **…by far the most common serious injury circumstance in minor hockey (10-17 years of age, males) is player contact (both intentional and unintentional).**
- Given the importance of mass and velocity in the physics of collision, player size is a concern. The size range for 10-17 year old males is wide, a fact that is easily observed in hockey arenas across Canada. This size differential creates the potential for serious injury, **however, the chances of a collision between a 5th and a 95th percentile player is low and, in fact, the distribution of competitive minor hockey players by size may not be normal.**
- **The CHIRPP database contained 3165 records related to ice hockey for the 1998/1999 season. Almost half (49%) of these were contact injuries involving males playing organized hockey.**

The often cited paper by Roy et al. (The Physician and Sportsmedicine, 17: 119-126, 1989) demonstrated that the significant morphological differences between players in 'PeeWee' hockey (12-13 years old when this study was conducted) was reflected in the impact forces generated during bodily contact. Furthermore, these authors reported that

in 'checking leagues' 55.5% of all injuries were due to body contacts and that serious injuries occurred six times more often than in nonchecking leagues. In addition, bodychecking accounted for 88% of the 25 fractures recorded in one hockey season in this age group in the Quebec City area.

The Ontario Amateur Hockey Injuries Study 1988-1989 (Ontario Ministry of Tourism and Recreation) concluded that:

> **Including all teams and levels of play, the average injury rate for teams that body checked was about five times higher than for teams that did not body check.** Considering only those levels with both checking and non-checking leagues, differences were seen primarily in the PeeWee and Senior levels.
>
> **Rates of injuries are much higher in game situations than practice situations: the injury rate was 55 times higher in game situations than practice situations.**
>
> **Injury rates in the PeeWee age division (12-13 years old) were 7 times greater in the bodychecking leagues than the nonchecking leagues and 'representative' teams had twice the rate of house' teams. In general, over 50% of the injuries were due to bodychecking or colliding with another player, with 12% of injuries occurring due to being hit from behind.**

Recently, a number of papers have been published that are deeply critical of the stance hockey agencies take in allowing intentional body contact at young ages (King & LeBlanc, 2006; Hagel et al., 2006; Macpherson et al., 2006; Marchie & Cusimano, 2003) and these have gained a great deal of media and public attention. Although there has been criticism of the methodological design and execution of some of these studies, the fact remains that they all suggest high injury incidence rates in the ages groups in which body checking is allowed and leave the reader with a perception that hockey agencies are placing youngsters 'at risk'.

Willer et al., (2005) and Willer (2006)[3] present a slightly different view to the majority of recent articles by suggesting that no matter what the age group that has body checking introduced, injury rates will rise. This rise is then attenuated and results in a reduction of injury rates in subsequent seasons. Willer (2006) also remarks that if body checking is introduced at ages before the peak growth acceleration periods, a rise in injury incidence occurs at the 'introduction' age and again during the major growth period. This second injury peak perhaps reflecting the period when there is the greatest range in physical size in a given peer group.

Important 'commentary' articles, directives or statements

An interesting paper by Moro ('Attitudes Toward Body Checking: Survey of Minor Hockey Players in Calgary, Alberta', 1990) identifies several key issues that complicate the topic of bodychecking in minor hockey. First and foremost, the attitudes of minor hockey players in Canada is greatly impacted by behaviour and pressures exerted by

[3] Hockey Injuries: Rates and mechanisms of injury among youth ice hockey players. Presentation to the Directors and membership at the 2006 Hockey Canada AGM. B. Willer, Ph.D., 2006.

coaches, parents and officials. Of the players surveyed (205 players across atom, peewee and bantam), 31% defined 'bodychecking' as "taking the man/getting the puck" and 35% stated that it was "taking the man/forgetting the puck" even after viewing an instructional video!

Moro also stated that he did not find a consistent understanding of what 'bodychecking' actually was at all levels of the hockey community (hockey organizations, officials, coaches, parents and players), nor could he readily identify a definition that could be adopted by all at that time (1989/1990). Moro's three recommendations were to;

i. Develop a consistent definition of the skill of checking and its component parts for various age groups.
ii. Develop an instructional video to properly and progressively teach the skill of checking for various age groups.
iii. Distribute this video by establishing effective communication links to parents, coaches, and officials at various age groups.

It is obvious that the pioneering work of Polutnik and Kozak (The 4 Steps of Checking, 1992) addressed Moro's first point and that the subsequent videos have dealt with the second. However, arguably the larger social and behavioural aspects of all those involved in the game (players, parents, coaches, officials and spectators) remain the greatest challenge in shaping a constructive and appropriate policy, a point that is noted by all of the multi-factorial investigations (e.g., Moro, 1990; McDonald, 1991; Montelpare et al., 1996; Quebec Ice Hockey Federation, 1996; Montelpare, 2001; Riemer et al., 2006).

In 1992, Jamie McDonald (Manager, Coaching, Canadian Amateur Hockey Association) distributed an 'information bulletin' concerning ***"A position paper on bodychecking/contact in minor hockey"***(Canadian Amateur Hockey Association, May 1991). Considering that this document came from this organization and over a decade ago, it is a serious indictment of the current state of affairs and the process by which this situation was arrived at when one examines the following statement:

> **"The Canadian Amateur Hockey Association Coaching Committee believes the primary focus of minor hockey to be the encouragement of participation, development of the individual both in technical skills and the person, to effect long term participation and enjoyment of the sport.**
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> **Therefore, the position of the CAHA Coaching Committee is that 'Body Checking' should be removed from the Pee Wee category (12-13 years) and replaced with a 'Body Contact' ruling. Body checking should be re-introduced at the Bantam category (14-15 years). The reasoning behind this position is based upon available research and statistical information, an understanding of growth and development of young children and an appreciation for progression teaching of individual skills leading to body checking".**

The Canadian Hockey Association in 1997 released a brief document entitled ***"The Checking Issue in Canadian Hockey".*** Despite the availability of the 'progressive' ***"The 4 Steps of Checking"*** concept, the document highlighted the failure of this format

to be effectively implemented within the hockey fraternity. Issues such as terminology, lack of clarity, indecision concerning age(s) of implementation, and a seemingly inappropriate 'rush' to activate 'Stage 4' were all identified. Four recommendations were provided at the end of this document and these are listed below:

1. The NCCP checking video should be viewed before any group of hockey administrators discuss or debate the Checking issues. All participants will then have common definitions to start from.
2. Canadian Hockey and its Branches must thoroughly integrate checking Steps #1-3 into all age divisions of male and female hockey. This initiative must be supported with greater emphasis and consistency within the coaching and officiating programs.
3. **The Canadian Hockey Research Committee supports the 1991 CAHA Coaching Committee Position Paper. This paper states that checking Step#4 should be introduced at the bantam age division for males.**
4. Female hockey should continue playing with checking Steps #1-3 only.

Professional medical association statements

The two major 'position/policy statements' that should be acknowledged are those by the Committee on Sports Medicine and Fitness of the American Academy of Pediatrics (2000) and the Canadian Academy of Sport Medicine (1988). Both provide extensive material and compelling details for the abstinence of deliberate 'body checking' in age group hockey.

> **Safety in Youth Ice Hockey: The Effects of Body Checking (RE9835); March 2000**
> **AMERICAN ACADEMY OF PEDIATRICS Committee on Sports Medicine and Fitness**
>
> *ABSTRACT. Ice hockey is a sport enjoyed by many young people. The occurrence of injury can offset what may otherwise be a positive experience. A high proportion of injuries in hockey appear to result from intentional body contact or the practice of checking.* ***The American Academy of Pediatrics recommends limiting checking in hockey players 15 years of age and younger as a means to reduce injuries.*** *Strategies such as the fair play concept can also help decrease injuries that result from penalties or unnecessary contact.*
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> **Violence and Injuries in Ice Hockey: Position Statement; 1988**
> **CANADIAN ACADEMY OF SPORT MEDICINE (CASM)**
>
> *RECOMMENDATIONS*
>
> *This report arises from a need perceived by the Canadian Academy of Sport Medicine for direct medical input into the growing controversy in Canadian society regarding the issue of violence in the game of ice hockey and its impact on player safety. After thorough review of the literature, it is the position of the Canadian Academy of Sport Medicine that:*
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> 1. *A nationwide system for collection and classification of injury data be established.*
> 2. ***Body checking be eliminated from levels of minor hockey which are not designed as training for professional and international ranks.***
> 3. *Fighting be completely eliminated from the game of hockey.*

4. *A major educational program be undertaken aimed at coaches, trainers, players and parents to deinstitutionalize the current accepted norms of violence and injury.*
5. *Increased enforcement of existing rules designed to prohibit unsafe acts is required immediately.*
6. *Recreational and Oldtimer's hockey be brought under regulation to conform with equipment standards for safety.*

The second recommendation by CASM is somewhat broad *('…not designed as training for professional and international ranks'*), however, in the body of the CASM statement the following material is presented (***NB: ages cited are relevant to 1988 when this document was presented***):

> *Competitive ("Rep", "All Star") teams will continue to require the institution of training in body checking techniques at an appropriate age level.* ***Hockey played at the lower levels, by young players, appears to have a very low injury rate. There is a progressive increase in both the rate of injury and severity of injury with increasing age and competitive level above the age of 11. Due to the large variability in size and maturity of players in the 12-15 age group, and the reality of injuries as a result of this activity, it is inappropriate to have full body checking at these ages in any level of hockey. Pee Wee (age 12-13) hockey coincides with a peak growth spurt and increased risk of injury. There should be no intentional body contact at this age. Bantam hockey (age 14-15) is a more appropriate age at which to begin teaching the techniques, but in a graduated fashion (i.e. hip check and blocking only, no contact near boards). Full body checking can begin at the Midget (age 16-17) level when less variability between player's size exists, thus giving less advantage for early maturing players.*** *The competitive players will then accept the attendant risks and also an option of returning to an active non-contact, recreational division if they so desire without giving up the game completely.*

Conclusion

In summary, and after an extensive review of material, it must be commented that education of the hockey community must be accelerated and at the same time clear directives need to be implemented to establish a coherent long term development program that is focused on skill development and an appreciation of the game, with a substantial 'fun' quotient and 'one eye' on competition. It seems obvious that despite a wealth of information identifying the problems of overly zealous incorporation of 'senior' level hockey characteristics at minor hockey levels, the ground swell of emotional decision making and misaligned attitudes coming from coaches, parents, and officials has overridden reality and resulted in an infrastructure that arguably hampers or impedes hockey development.

A clear recommendation would be to clearly and firmly align the body checking component with a hockey specific long term player development strategy. An appropriately designed hockey player development guide could take into account all the available information on hockey injuries, as well as sound technical, tactical, physical, psychological, and emotional factors, and provide a decisive guide for hockey programming. Such a guide could illustrate a progressive and seamlessly linked step-by-step curriculum for player development that encompasses core content, the established '4-stage' checking system, ancillary skills (i.e., off-ice training and nutrition), and

domestic developmental competition. Coupled to this program would be the need for a comprehensive education directive targeted at parents and the 'hockey aficionados'.

A final comment is this; 'Hockey' (Canadian) needs to be very careful that critical decisions are not made for it by outside agencies (i.e. the Government, Sport Canada etc) under duress from influential parties (e.g. the medical community, educators, the media etc). The sport, it's structure and programming are under the spotlight of intense public scrutiny, this should be seen and seized upon as a golden opportunity to develop, instigate, regulate, and monitor a world-leading system.

EXAMPLE PEER-REVIEWED ARTICLES (last 5 years)

King, W.J. & LeBlanc, C.M.A. Should bodychecking be allowed in minor hockey? Canadian Medical Association Journal, 2006, 175, 2, 163-164.

Hagel, B.E., Marko, J., Dryden, D., Couperthwaite, A.B., Sommerfeldt, J., & Rowe, B.H. Effect of bodychecking on injury rates among minor ice hockey players. Canadian Medical Association Journal, 2006, 155-160, 2, 163-164.

Macpherson, A., Rothman, L., & Howard, A. Body-checking rules and childhood injuries in ice hockey. Pediatrics, 2006, 117, 2, 143-147; *Erratum*, 2006, 117, 6, 2334-2336.

Brunelle, J.P., Goulet, C, & Arguin, H. Promoting respect for the rules and injury prevention in ice hockey: evaluation of the fair play program. Journal of Science and Medicine in Sport, 2005, 8, 3, 294-304.

Benson, B.W., & Meeuwisse, W.H. Ice hockey injuries. In: Maffulli, N. & Caine, D.J. (eds), Epidemiology of pediatric sports injuries: team sports. Basel: Karger; 2005, 62-95.

Willer, B., Kroetsch, B., Darling, S. et al. Injury rates in house league, select, and representative youth ice hockey. Medicine and Science in Sports and Exercise, 2005, 37, 1658 – 1663.

Marchie, A., & Cusimano, M.D. Bodychecking and concussions in ice hockey: Should our youth pay the price? Canadian Medical Association Journal, 2003, 169, 2, 124-128.