Injury Pattern in Swedish Male Elite Ice Hockey - A study on registry data from the Swedish National Sports Injury Registry

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Conclusion

In this study on injuries among Swedish professional hockey players the head and cervical spine were the most frequently affected anatomical location.

Checking was the most common injury mechanism and cause of concussion. Hip-groin and knee injuries were associated with longer time-loss from team activities.

Additionally, there was also a trend towards a higher game-related incidence of injury during the study period.

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Introduction

Ice hockey is a fast paced collision sport with a high risk of injuries. Therefore, a reliable injury reporting system is needed to gain control over the injury situation in a team or league. In 2007 a web-based injury surveillance system, the Swedish National Sports Injury Registry, was launched for use in all teams in the Swedish hockey league.

Aim

To investigate the incidence, types, locations, mechanisms and severity of injuries in male professional ice hockey players, in Sweden.

Photo: Robert Lygdbäck, Växjö Lakers

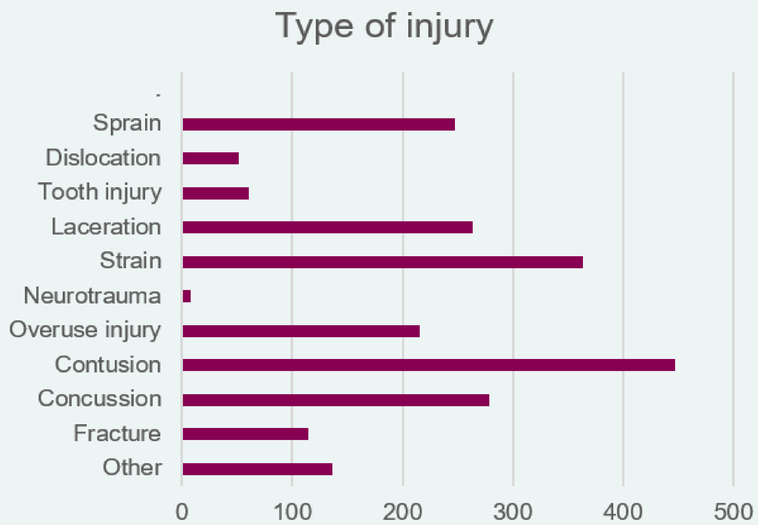

Figure 1 Number of injuries per injury type.

Study Design

Descriptive epidemiological study.

Relevance

Knowledge about the epidemiology of injuries within a sport is crucial, to be able to identify possible risk factors, as a basis for injury prevention measures.

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“UNPUBLISHED DATA – DO NOT COPY OR DISTRIBUTE”.

Material and methods

Already collected registry data on injuries in the Swedish Hockey League (SHL). Collected by the team therapists and physicians using a web-based Injury Report Form in the Swedish National Sports Injury Registry.

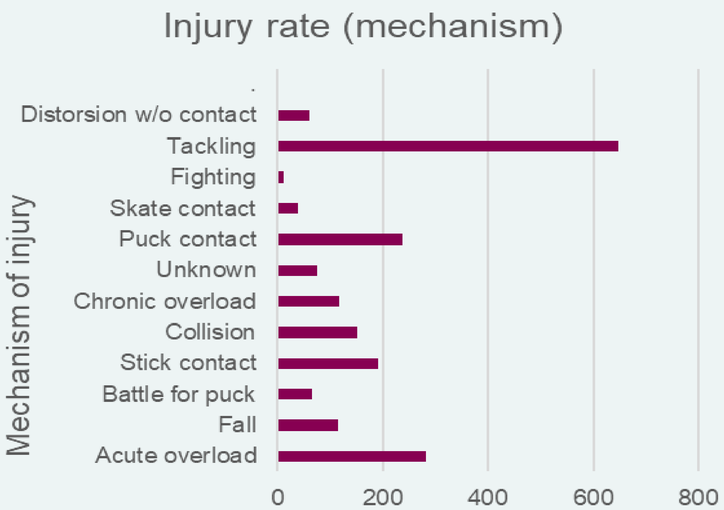

Figure 2 Number of injuries per type of mechanism

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Photo: Albin Welander, Växjö Lakers

The study period covered the 2013/2014 through 2018/2019 competition seasons. The Swedish Hockey League is the highest male professional hockey league in Sweden. All SHL teams were represented.

The study was approved by the Swedish ethical review authority (ethics ID: 2020-02920). Anonymized register data were used for all calculations. Descriptive analysis performed in IBM SPSS (version 27).

Faculty Disclosure Information:

Nothing to disclosure

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Preliminary results

In total, 2208 injuries were reported, of which 1468 occurred during regular seasons and 168 during play off games (74% games-related). 572 of the injuries occurred during practice (26%). 1297 players were included in study base.

The overall regular season incidence of injury for an individual player, over six seasons:

57.8 injuries /1000 player-game hours

(range 46.7 – 71.9, mean 57.4 (SD 8.63), median 56.9 (IQR 50.3 – 63.5).

Photo: Albin Welander, Växjö Lakers

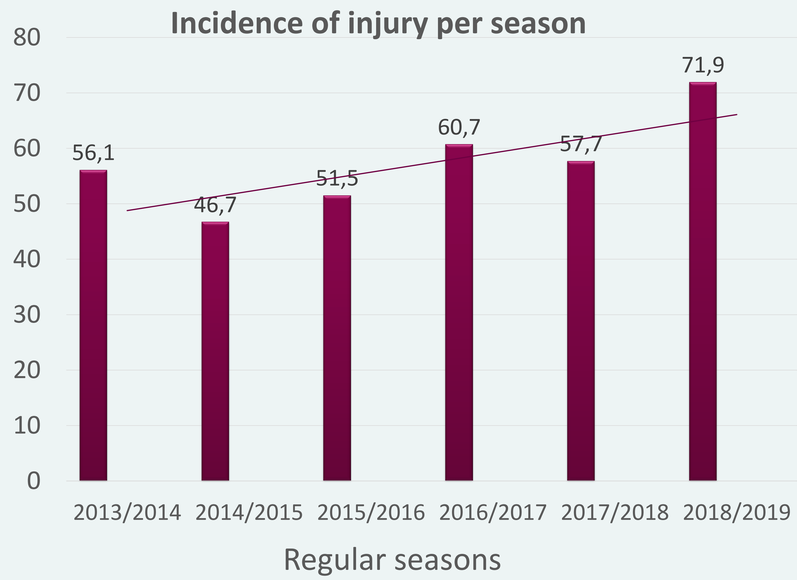

Figure 3 Incidence of injury/1000 player-game hours

Mean severity of time-loss injury (days) was 17.2 (SD=47,3), and median severity 6.0 (IQR 2.0-15.0).

The injury burden was calculated to 994.2 days absence/1000 player-hours during six seasons. Injury burden were used as a measure of injury risk.

Most common locations of injury

	n	%	Incidence
Head/ C-spine	461	31,4	18,1
Hip-groin	184	12,4	7,2
Knee	168	11,4	6,6
Shoulder	158	10,8	6,2

Table 1 Number, percentage and incidence of injury/1000 player-game hours, regular seasons

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Preliminary results

- Checking was the most common mechanism of injury (29.3%)
- 13,5 % of injuries reported as reinjuries
- More injuries occurred during home vs. away games (n=839 (51.3%) resp. n=793 (48.5%))
- A slightly higher number of injuries occurred during the second period of play

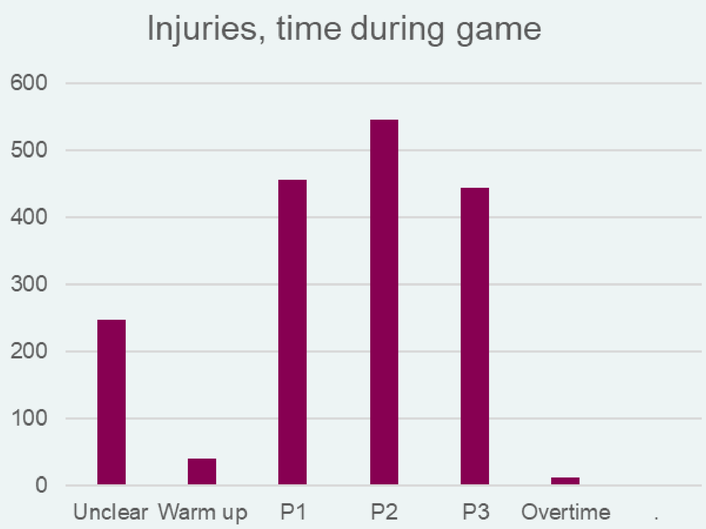

Figure 4 Number of injuries per period

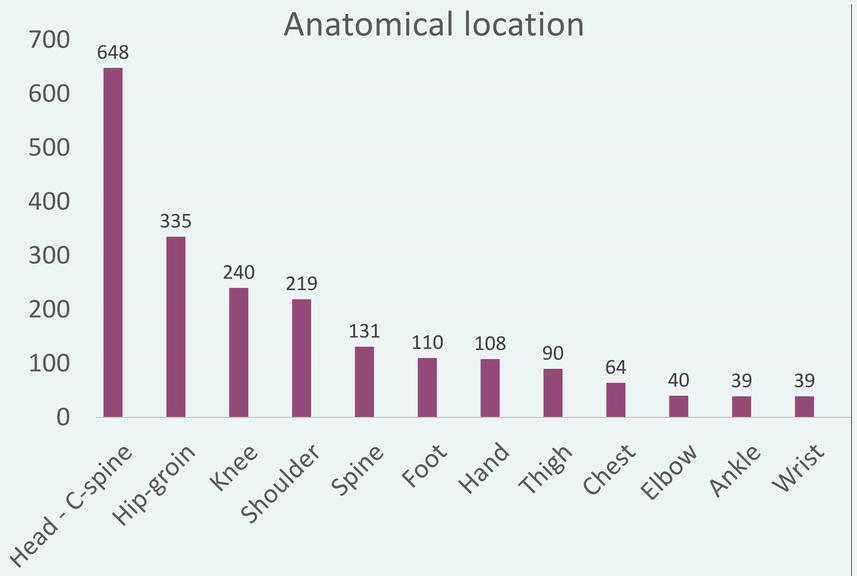

Figure 5 Incidence of injury/1000 player-game hours

The head-cervical spine location (29.3%) was the most commonly injured body region. Which, also included all sutured lacerations in the face. It was followed by the hip-groin (15.2%) and knee (10.9%) location of injuries.

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Photo: Albin Welander, Växjö Lakers

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Preliminary results

Body contact injuries, such as checking (29.3%) and collision between players (6.9%) are common and accounted together for 36.2% of all injuries.

Sudden onset overload injuries (12.8%) the second most common cause of injury and contact with puck (10.7%) third, followed by high sticking or other stick contact (8.6%).

Photo: Albin Welander, Växjö Lakers

Most common types of injuries

- contusions (20.2%)
- strains (16.4%)
- concussions (12.6%)
- laceration (12.0%)
- sprains (11.2%)

Most of the injuries occurred during regular season games, were acute traumatic injuries dominated.

90 % of all injuries (games/practice) were caused by acute trauma while only 10 % by overload.

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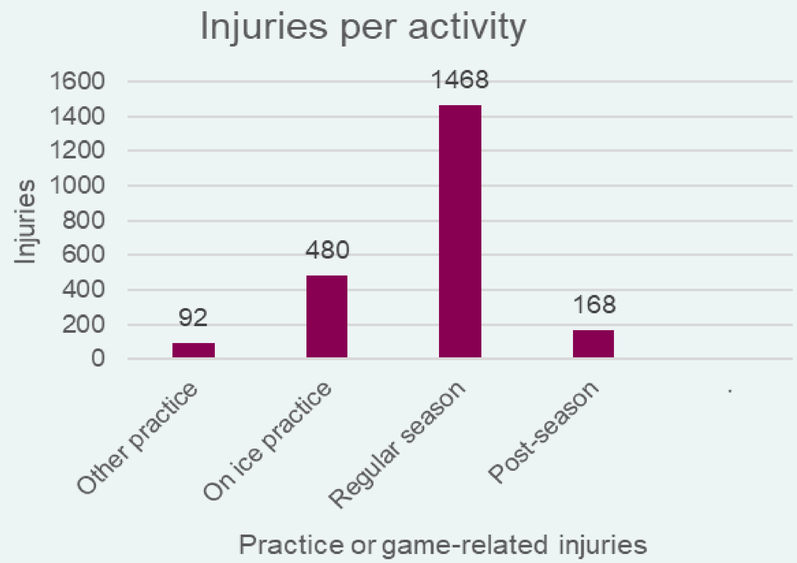

Figure 4 Number of injuries per activity

- Injuries during games 74%
- Injuries during practices 26%

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Discussion

Ice Hockey is a fast-paced collision sport with high speed and intensity, were injuries are common. Most of them are minor but some of them moderate or severe, giving a longer time-loss from activity (1-6).

However, there are also a few very serious and cathastrophic injuries like concussions, eye-injuries, spinal trauma and cervical vessel injuries with a risk of long disability, carreer ending and in rare cases with lethal outcome.

Fortunately, the number of eye and orbital injuries has been reduced when using visors or full face protection (7). The use of neck guard collars may reduce the risk of cervical vessel lacerations. However, there is still a knowledge gap regarding the protective effect, due to the difficulty of studying this.

By contrast, concussions are still a major problem in professional Hockey. In this material we saw a higher game-related incidence compared with earlier Swedish studies but in line with other recent European studies (1-4).

Injury surveillance in sport is of outmost importance to protect the player (8). In Swedish professional Ice Hockey we are, since 2007, using a web based injury survellance system including an injury an illness report form.

The team therapist and phycisian work together to report injury data to the Swedish National Sports Injury Registry for each injury event that meets the inclusion criteria.

Photo: Robert Lygdbäck, Växjö Lakers

The registry are using a definition of injury combining medical attetion and time-loss (5,9-10). This includes all game and practice-related injuries requiring medical attention, for example all sutured lacerations, dental injuries and fractures.

It also include all injuries causing the player to miss the next game or practice.

The purpose of this descriptive study was to investigate the injury pattern in Swedish male professional ice hockey during six seasons and compare data with earlier studies in the field.

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Conclusion

The overall game-related incidence of injury was about the same as earlier Swedish studies. However, there was a trend towards an increased annual incidence seen during the study period.

Player contact was the most common mechanism where checking caused most injuries. Concussion rate were higher compared with the early 1990s, but in line with other recent European studies.

Hip-groin and knee injuries had a higher severity.

We were unable to report the proportion of very serious or cathastrophic injuries due to the low frequency of these.

Take home message

- Concussions are still a substatial problem in professional ice hockey
- Player education in fair play and referees attention regarding prohibited checkings, like checking to the head and from behind is crucial to reduce concussions in hockey
- Hip-groin and knee injuries are associated with a longer time-loss from team activity

The Research group

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Sara Holmberg, MD, assoc prof.

Anders Stålman, MD, assoc prof.

Whats's going on in our research group?

- The Swedish National Sports Injury Registry has been developed.
- Ongoing cohort study with prospectively collected data on injuries in Swedish professional ice hockey.
- Cross-sectional study examining the prevalence of hip - groin problems among male junior elite hockey players.

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