Injury Research in Hockey

This summary has been accomplished in memory of our mentor, leader and friend

Dr. Peter Wefers-Bettink

Introduction

Injury data collection is the mainstay and pre-requisite for injury prevention in sports.

Several Federations have already established a comprehensive injury research system such as FIFA, which has the financial power to engage a whole institution.

FIH started injury reporting around 15 years ago employing "Match-Injury-Reports", which were completed by the match official. These recordings took place at major international tournaments only.

Furthermore, around 10 years ago, Dr. Wefers-Bettink enforced the use of "Daily-Medical-Reports", which were already an integral component of Olympic injury assessment, during international hockey competitions.

These reports were collated at the FIH head office and a sub-group of the FIH Health & Safety Committee (compromising Dr Peter Wefers-Bettink, Dr Wiebke, Müller-Eising and Dr Udo Rolle) started in 2015 to evaluate this information, looking to draw conclusions for further injury prevention.

Also in 2015, the well-known FIH official Richard Wilson started to provide specific video clips, specially selected to include injury sequences, for further and more detailed investigation of injury mechanisms in hockey.

Methods of injury recording in FIH

We were able to employ three different forms/methods of injury recording in FIH.

1. Match Injury Forms (MIR)

2. Daily Medical Reports (DMR)

3. Video sequences

The mode of assessment was, that we evaluated the MIR, DMR and videos using structured protocols. We did this subsequently, due to the availability of the records. On one occasion, we were able to combine the assessments of all three methods (Men´s Junior WC 2016).

We assessed the overall number of injuries during matches, the overall number of injuries during 1000 player match hours, localization, time and mechanism of injuries on the pitch and injured body parts.

Main results

Number of acute injuries per match during competition.

0.7 (95% CI 0.5 – 1.0)	in women
1.2 (95% CI 0.8 – 1.7)	in men
1.48 (95% CI 1.07 – 1.9)	in junior men
2.2	in youth girls
1.35	in youth boys

Women sustained less injuries than men, youth girls sustained more injuries than youth boys.

Overall number of acute injuries/1000 player-match-hours.

29/1000	in women
48/1000	in men
58/1000	in junior men
86/1000	in youth girls
53/1000	in youth boys

Women sustained less injuries than men, youth girls sustained more injuries than youth boys.

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Comparison to other sports (*only of limited value, due to unequal recording methods*)

35/1000	Rugby women
40/1000	Soccer men
62/1000	Hurling
89/1000	Rugby men
108/1000	Handball men

Hockey comprises less injuries than most other team sports.

Injuries on the field of play

Women/Men	Circle > 25 yard > Midfield
Junior men	Circle > Midfield > 25 yard
Youth girls/boys	Circle/25 yard> Midfield

The circle is clearly, and not surprisingly, the main localization for injuries.

Injuries at the time of play

Women	1^{st} quarter < 3^{rd} quarter < 2^{nd} quarter < 4^{th} quarter
Men	1^{st} quarter < 2^{nd} quarter = 3^{rd} quarter < 4^{th} quarter
Junior Men	1^{st} half < 2^{nd} half
Youth girls	1^{st} quarter < 3^{rd} quarter < 2^{nd} quarter < 4^{th} quarter
Youth boys	1^{st} quarter < 3^{rd} quarter < 2^{nd} quarter < 4^{th} quarter

Injury rate increases according to the time of play, but this is less pronounced if 4 quarters are played.

Injured body parts

Women	Head/face > Calf/ankle > Finger/Hand > Thigh/Knee
Men	Head/face > Thigh/Knee > Finger/Hand > Calf/Ankle > Trunk
Junior Men	Lower limb > Head/Face > Upper Limb > Trunk
Youth girls	Foot/Ankle > Head/face > Upper limb > Lower limb > Trunk
Youth boys	Trunk > Foot/Ankle > Upper limb > Head/Face

Overall head and face injuries are most common followed by injuries to the lower leg and hands/fingers.

Cause of injury

Women	Ball > Tripping/Falling > Stick > Player collision
Men	Ball > Stick > Player collision > Tripping/Falling
Junior men	Ball > Stick > Player collision > Tripping
Youth girls	Ball/Stick > Tripping/Falling > Player collision
Youth boys	Ball/Stick > Player collision > Tripping/Falling

Ball and stick are most common causes of injuries.

Male players tend to have more injuries due to collisions compared to female players.

Injury types

Women	Contusion >> Sprain > Laceration > Concussion
Men	Contusion >> Sprain > Laceration > Concussion
Junior men	Contusion > Sprain > Laceration > Concussion

Vast majority of injuries in hockey are contusions followed by sprains, lacerations and concussion.

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Penalty corners (PC)

Women	0.11 PC injuries per match
Men	0.21 PC injuries per match

Women	4.6 PC injuries per 1000 player match hours
Men	9.6 PC injuries per 1000 player match hours

Leg > Trunk > Head > Hand > Shoulder

Contusions > Sprains > Lacerations

Ball > Stick > Player collision > Equipment > Surface

This provides baseline data for further studies.

Relevance

Our studies revealed a comparable low overall incidence of acute injuries during hockey matches. Hockey scores low in overall incidence of acute injuries in competition compared to other team sports, even given the fact, that the recording techniques differ.

Concerns should be raised due to the fact, that the overall incidence of acute injuries is higher in junior and youth tournaments.

Comprehensive and consistent data on serious injuries is still missing and hence the FIH are trialing a universal injury reporting process that can be consistently used by all National Associations to provide the collation of injury data at all levels of hockey throughout the world. This data will be invaluable in creating a full picture of the injury prevalence and therefore the areas that may require further analysis going forwards.

Most of the acute injuries in hockey occur during competition in the circle, which is regarded as inherent to the game.

Injuries occur frequently during penalty corners, which requires further attention.

Fortunately, our injury recording results did not require immediate change of rules. But constant surveillance on high balls, high sticks and penalty corners is warranted.

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