# A retrospective epidemiological investigation of the Chiropractic Students' Sports Questionnaire, with reference to field hockey : a methodological perspective.

by

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*I, Charmaine Maria Korporaal, do hereby solemnly declare this is my own work in conception, compilation and execution, except where otherwise indicated in the text.*

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**Approved for final submission**

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## DEDICATION

This research is dedicated to my father, mother and brother - for their everlasting encouragement and support throughout my student life.

I am also grateful to the following people / organisations for their involvement and contribution to this research project:

1. Dr Brian Nook for his enthusiasm and encouragement in the development of sports Chiropractic in South Africa.

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3. The Chiropractic Students' Sports Association and its members.

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5. Members of the focus group for participating in the study.

## Abstract

The purpose of this retrospective investigation was to analyze and critique, the Chiropractic Students' Sports Questionnaire in order to refine the questionnaire and establish its face validity with reference to field hockey.

A mixed quantitative-qualitative approach was followed, with the objectives of the study being, firstly, to statistically analyze and critique the epidemiological information gleaned from the questionnaire in terms of data cross tabulations, Chi-squared and multinomial regression analyses. Secondly, to assess this information in terms of the currently available literature in field hockey. And thirdly, to establish the face validity of the questionnaire by means of a focus group, including all stakeholders, in order to refine the questionnaire based on the outcomes of this investigation.

The quantitative data was analyzed using the cross tabulation and Chi-squared analysis, as well as multinomial logistic regression analysis. Qualitative data was analyzed by thematic analysis of the focus group transcript.

In terms of the conclusions arrived at, it can be stated that the results of this investigation lend weight to the arguments of Herring and Nilson (1987) and Baquie and Bruckner (1997), in that there is a tendency towards indicating that hockey players suffer more chronic injury. This can be seen when assessing the 78% response in terms of previous injury and the 63% response in terms of

the clinical assessment of the condition as being chronic, as well as the large proportion of visits being follow – up rather than initial (i.e. for a new complaint).

In terms of the clinical impressions (based on the diagnostic assessment of the hockey players / patients) general muscle tightness and altered biomechanics, which were treated by massage, stretch (PNF and static), ischaemic compression and manipulation, were seen frequently again indicating a chronic injury.

The focus group revealed several areas of importance, which have been included in the updated version of the questionnaire (page 168) (from type of turf and various aspects of the mechanism of injury, to the layout of the questionnaire) as well as refinements to the already existing categories and subcategories present in the questionnaire. Changes included the following examples: race became ethnicity, position was given the adverb player, several of the location of injury terms were grouped more congruently and the clinical impressions had some terms excluded and others combined.

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# CHAPTER ONE

# THE INTRODUCTION TO

A retrospective epidemiological investigation of the

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## 1.2 INTRODUCTION:

Field hockey is recognised as one of the mainstream sporting activities followed in South Africa (www.sahockey.com, 2000), yet it becomes apparent that the health related knowledge base is poorly developed when one assesses the literature in this field. This is most obviously reflected in a complete lack of even basic demographic information such as the number of exponents of the sport nationally (www.sahockey.com, 2000).

When compared to field hockey, the discipline of astroturf hockey has higher demand on the player in terms of the technical, tactical and physiological requirements and would therefore change the demographic presentation of the individual player as well as that of the group (Reilly and Borrie, 1992). This is thought to be as a result of the increased speed of play on the Astroturf surface (Reilly and Borrie, 1992).

However, with the absence of information with respect to field hockey and even less with respect to that of astroturf hockey, the information that is available is generally seen as being applicable to hockey in general (Reilly and Borrie, 1992).

It was therefore the objective of this investigation to initiate a data collection process, with respect to Astroturf hockey, so as to verify and refine an existing instrument that could be used for collection of further data or allow for further

areas of research.

The instrument (a structured clinical questionnaire) has been used. However no information could be found as to its origins and therefore its validity as an assessment tool could not be established.

## 1.2 THE OBJECTIVES OF THE STUDY WERE:

1.2.1 The first objective was to interpret the data from cross tabulations, Chi-squared and Multinomial Logistic Regression analysis to assess whether the questionnaire is sensitive and specific enough for use as a tool in data collection.

1.2.2 The second objective was to critique the epidemiological information gleaned from the Chiropractic Students' Sports Questionnaire in the context of Astroturf hockey, in terms of the current literature and the statistical data gained from objective one.

1.2.3 The third objective was to establish (or re-establish) the face validity of the questionnaire by means of a focus group.

# CHAPTER TWO

# REVIEW OF RELATED LITERATURE,

## 2.1 INTRODUCTION

The purpose of this literature review is to summarise the relevant literature with respect to field hockey in general and specifically to Astroturf hockey. Then also to assess the procedures by which the information / data should be gathered.

## 2.2 AN OVERVIEW OF THE CURRENT LITERATURE RELATED TO HOCKEY

When one considers the reported rate of admission of children to emergency rooms for injuries related to field hockey (4.6%), it indicates that, in comparison to such sports as basketball (19.5%) football (17.1%), softball (14.9%) and soccer (14.2%), it could be insignificant, in terms of injury and therefore safe and risk free, according to the findings of Taylor and Attia (2000).

Notwithstanding this assumption, it should be noted that in the study by Taylor and Attia (2000), the spread of injuries in comparable children, indicated that sprains and strains accounted for 32.0% of the injuries followed by fractures (29.4%), contusions and abrasions (19.3%), and lacerations (9.7%).. However, this trend is not reflected in the literature available on the adult participating in field hockey, in fact the opposite is proposed (Taylor and Attia, 2000).

On the other hand the types of injury as reported by Eggers-Stroder et al. (1991), in the adult population, indicated that 53% of the injuries were contusions (following collisions), 22% were related to collateral ligaments or the meniscus of the knee, only 8% related to muscle injury and the remainder of the injuries were almost equally divided between fractures, lacerations or punctures of the skin and a category designated as "other".

Attia and Taylor (2000) found that, the majority of the injuries where localised to the wrist and hand (28%), head and face (22%) and the foot and ankle (18%) and caused - in more than 50 % of the reported injuries - by contact with a person or object (in the case of field hockey - the ball, the stick or another person).

Whereas the study by Eggers-Stroder and Hermann (1994) indicates that 6% of injuries occurred in the region of the head and face, 39% in the upper extremity and 55% in the lower extremity. In a previous study by Eggers-Stroder et al. (1991), the localization of injuries was more specific for the adult population.

The indications (in percentage) from here showed the following (adapted from Eggers-Stroder et al., 1991):

| | The goalkeeper | The field player |
|---|---|---|
| | | |
| Head | 2 | 12 |
| Upper arm | 10 | 1 |
| Forearm and hand | 26 | 14 |
| Torso | 5 | 8 |
| Hip and thigh | 21 | 19 |
| Knee | 17 | 15 |
| Shin | 0 | 7 |
| Foot and ankle | 19 | 24 |

In terms of the injury rate, a study conducted by Kingma and ten Duis (1998) found that the injury rate in field hockey (158 injuries per 10,000 participants) came second only to basketball (231 injuries per 10,000 participants) in terms of the number of reported injuries and second only to gymnastics in terms of the injury severity score.

When compared to the study by Taylor and Attia (2000), it seems to indicate that the adult hockey participants have a higher rate of acute injury than when compared to their children (13-20 years of age) counterparts.

This is supported by the findings of Finch et al. (1998), in which it was reported that children were more prone to injuries related to skating/blading, skateboarding and trampolining (hockey being the second last on the list of the 10 sports assessed) as compared to adults who reported the most injuries in

field hockey followed by martial arts and dancing. This therefore, indicates that field hockey was an insignificant cause of injuries in children, but played a much greater role in the cause of injuries in adult participants.

The results achieved by Stevenson et al. (2000), in a prospective cohort study of sports injuries in western Australia, indicated that participants in field hockey had injury rates comparable to basketball and football, in addition to stating that players older than 18 years (26 – 30 years predominantly) had a 55% higher risk of injury than participants younger than 18 years.

The findings in the above studies are supported by Michaud et al. (2001), who claim that the field hockey player presentation changes with time as a result of increased exposure to the specific sport, and with pubertal development. The factors or potential factors related to this change have not been well researched and it is the opinion of Michaud et al. (2001) that there is a paucity of literature in terms of demographic statistics of the sports-playing population in general and for a specific sporting type such as field hockey.

In congruence with the assertion by Michaud et al. (2001), the retrospective study conducted by Eggers-Stroder and Hermann (1994) again indicated that the adult participants in the hockey population were more prone to injury. The study showed the nature of the injury to be acute - in congruence with other authors (Finch et al. (1998), Kingma and ten Duis (1998), Stevenson et al.

(2000)).

The results of the study by Eggers-Stroder and Hermann (1994), were again generated data located at an outpatient clinic setting and therefore the definitions of the acute and chronic injury are questionable in this study, as the study necessitated hospital admission (casualty) of the injured player, before the data was generated and interpreted by means of the questionnaire. The questionnaire used in the study was employed after the treatment for a particular condition was completed. It therefore indicates that the information gathered was not on site (as assessed by a qualified practitioner), but rather in terms of the memory and perception of the player. This limits the clinical accuracy of the data.

The data collected and analysed by Eggers-Stroder and Hermann (1994), centred only on mechanism of injury, location of injury and degree of injury (interpreted as time away from participation). The limitation of data collection was limited by the application of the questionnaire at variable intervals after the occurrence of the injury and its subsequent treatment (Eggers-Stroder and Hermann, 1994). The conclusions reached indicated that most injuries necessitated a one week break from active participation in training or competition and thus the results are perceived as more acute injuries (Eggers-Stroder and Hermann, 1994).

However with data collection at the clinical outpatient interface, the data seems to be biased towards the presentation of more acute injuries. The information generated therefore, does not accurately reflect the general hockey playing population and cannot be generalised (Michaud et al., 2001).

Nonetheless, the results gained by Eggers-Stroder and Hermann (1994) seem to be substantiated by several studies, such as Stevenson et al. (2000), Finch et al. (1998) and Kingma and ten Duis (1998). Two studies however, which were not specific to field hockey, but included the data that was generated for field hockey, tried to define the type of injuries found in sporting and recreational activities. These studies – a prospective, questionnaire-based study by Jago and Finch (1998) and a retrospective review by Finch et al. (1998) - established that the most likely injuries to occur were sprains of the lower extremity and that the players most likely affected were hockey, soccer and football participants (Jago and Finch, 1998, Finch et al., 1998). In this prospective study and retrospective review, the data again stemmed from emergency rooms, players removed from the field due to injury, and data sheets that reported only severe injury, in a clinical outpatient setting.

It can therefore be stated that the majority of data currently in the literature, is based on data gathered in clinical settings and therefore represents acute (often severe) injury only (Backx et al., 1989, Michaud et al., 2001).

The perception that the hockey players suffer mainly acute injuries is reinforced when reading texts such as Reid (1992:215), where it is stated that acute ankle sprains are responsible for approximately 14 percent of all the sports related injuries. This percentage is even higher in athletes that participate in ballistic sports such as hockey (field or ice), according to Reid (1992:215). It is furthermore stated that many of the exercise-induced leg pains that are experienced by the hockey players are related to previous traumatic injury (e.g. acute ankle sprain) (Reid 1992:269-270).

In support of the assertion by Backx et al. (1989) and Michaud et al. (2001) that the current demographic data only represents acute (often severe) injury and contrary to the above literature, a review by Herring and Nilson (1987) and a prospective 12-month study by Baquie and Bruckner (1997), indicate that between 30 - 50 % of injuries encountered in field hockey are due to chronic overuse injuries. This would support the assertions by Michaud et al. (2001), in terms of the development of significantly more injuries sustained by the adult population, due to increased exposure to the specific sport. These studies were, however based on extrapolations from literature (Herring and Nilson, 1987) and reported findings from clinical practice (Baquie and Bruckner, 1997). Therefore, the data generated cannot be used as representative of the hockey population, as one could reasonably argue that the population reporting to clinical practice sites are not representative of the general hockey population.

The data thus collected in the literature, according to Michaud et al. (2001) does not accurately reflect the epidemiology of the general sports playing population and in particular field hockey.

This presentation (in terms of the current literature) reflects a global trend that is enhanced by the information carried on the websites created for hockey participants (www.usfieldhockey.com, 1996). On the website for the United States of America Field Hockey Association (www.usfieldhockey.com, 1996), there are published figures related to field hockey in terms of the 14,000 players, coaches and officials, who are affiliated to the U.S.A. Field Hockey Association. Some figures on the types of injuries thought to be common and a topical case study - are normally related to acute injury and the most efficient way to treat such – either by referral mechanisms or by home treatment – as the case finds necessary (www.usfieldhockey.com, 1996).

Outside of the United States, other countries seem to have large memberships within their national associations (by virtue of the number of clubs within the national association) (www.yeahsports.com, 1999). However no basic demographic data is available and yet there is an abundance of literature that indicates that acute injury is the greatest concern for all players of field hockey.

With field hockey being recognised as one of the mainstream sporting activities followed in South Africa (www.sahockey.com, 2000), and the lack of global information pertaining to the sport, it becomes even more apparent that the health related knowledge base is lacking when one assesses the local literature in this field. This is most obviously reflected in a complete lack of basic demographic information such as the number of exponents of the sport nationally.

It can therefore be stated that the current demographic statistics and injury / health profile literature with regard to the adult hockey player is inadequate (both locally and globally) and it can therefore be argued that, in order to develop effective training and player management strategies, the accurate health and injury profile of the players should be determined. Firstly, this definition should be as broad as possible to encompass as many potential factors and then as narrow as possible to allow for the evaluation of each factor.

It is therefore the purpose of this study to initiate investigation into the demographic statistics and injury / health profile of field hockey, in particular Astroturf hockey players.

## 2.3 THE DEVELOPMENT AND USE OF QUESTIONNAIRES IN THE GATHERING OF INFORMATION FOR THIS STUDY

### 2.3.1 BACKGROUND TO THE QUESTIONNAIRE USED IN THIS STUDY

The questionnaire was initially developed by Nook (1997) (Appendix A), as a "SOAPE note" format, to allow for simple record keeping in terms of presenting patients at various sporting events attended by the Chiropractic Students Sports Association. The questionnaire was not developed to gather data in terms of research analysis. Therefore, the questionnaire that was used in this investigation was that developed by Nook (1997), so as to establish its validity and refine it as an assessment tool for future collection of data.

The development and the initial data collection was thus beyond the control of this investigation. The component parts in the development of such a questionnaire will be discussed with reference to the questionnaire used to collect the data for this investigation. The development of the questionnaire was based on clinical experience and not on a research question.

### 2.3.2 THE DEVELOPMENT OF A QUESTIONNAIRE

There are many methods in gathering data, ranging from the methods of observation to in-depth interviews and questionnaires to active interventions with data collection sheets. However, the most common and widely used technique is that of the questionnaire (Sommer and Sommer, 1980).

In his text, de Vaus (1996:81) states that there are certain set principles that need to be incorporated into the development of each new questionnaire that will be used as the research tool. These are:

1. Inclusion of the research question into the questionnaire (measures of the dependant variable).
2. Inclusion of indicators that have been established through consultation with literature, to ensure that any possible relationship can be detected (measures of the independent variables).
3. The inclusion of the hypothesized relationships which are being tested (measure of the test variables).
4. The inclusion of simple language concepts, to allow for understanding and ease of completion of the questionnaire by the participant in the research process, as well as generic background variables (demographic variables).

In terms of the questionnaire that was used for the data collection, these basic principles were adhered to, except for that of the first principle - as at the outset, the questionnaire was not envisaged as a research tool.

In terms of the (generic) background variables, it is noted by Dillman (1978:80) that it is important to differentiate between beliefs, behaviour, attitudes / values and the characteristics of the participants.

Each of these background variables need to be catered for in a questionnaire. This means that depending on their importance, each of the background variables were included as necessary for data collection. The strength of the variables depended on the question type and structure within the questionnaire (de Vaus, 1996:99).

Thus, the use of more open questionnaires allows for the research participants to comment as part of the information gathering process and caters for beliefs, attitudes / values, in that the research participant responds in their own words and uses their own frame of reference. This however means that at the data coding stage, misinterpretation of the research participants' words or frame of reference on the researcher's part can occur (de Vaus, 1996:87).

This is commonly avoided by the use of "nonattitudinal" or "middle position" questions in which the research participant has the option of remaining neutral in answering the question(s). This has its own pitfalls in that it could lead to false positives and false negatives (i.e. someone with an opinion opts out or someone without an opinion related to the question gives a positive response) (Gilljam and Granberg, 1993).

It is therefore a common finding that closed questions are used, whereby the participant has to choose between the options given. This type of questionnaire allows for increased congruency at the data coding stage as the interpretation of the data does not happen at the data collection stage and because the questionnaire does not discriminate between different types of respondents (de Vaus, 1996:87).

In terms of the questionnaire used for this study, the research participants completed the basic demographic data in a direct, open-ended question and the remainder of the data was collected through the use of closed questions. This means that the value of the questionnaire was increased as the degree of the related structure was high (de Vaus, 1996:87).

Following on the question style, other data that needs to be assessed when compiling a questionnaire are those related to the questionnaire layout, such as answering procedures, contingency questions, instructions, use of space, order of questions and the setting up of the coding for the data analysis (e.g. Likert scale) (de Vaus, 1996:92-95).

The questionnaire used in this study used simple answering procedures, in that no contingency procedures were needed. The order of the questions on the questionnaire followed the basis of Appendix C:

1. Patient information
2. Condition presentation
3. Location of the problem / complaint
4. Mechanism of the problem / complaint
5. History of the problem / complaint
6. Cause of the problem / complaint
7. Clinical impression
8. Treatment of the problem / complaint
9. Restrictions and / or continuation of play
10. The signatures and names of the persons responsible for treatment and case management

The order and sequence of the questionnaire is crucial in obtaining the correct flow to the questionnaire. This sequencing needs to be looked at in 2 ways; the first being total questionnaire sequence and the second being sequence related to specific questions - which need to be answered prior to another question(s). If the questionnaire addresses these two flow structures, then the questionnaire will achieve a "funnel effect" and it should minimize the "context effect" (Neumann, 2000:265-266).

The questionnaire (as was designed) had an inherent flow through it, in terms of

the doctor-patient relationship and structure. This provided for a decrease in threatening questions early on and allowed the research participant to feel at ease with documenting that which was happening in the order that it occurred.

In relation to the context, the questions were context based in that the presenting patient had to have a problem or condition to be presenting. This meant that the context was that of the patient's problem and therefore the context was the same for the research participant and the patient, and questions were answered on this basis.

Instructions on the questionnaire were not present and this could be a potential area in which data omission, word and concept interpretation or misinterpretation may arise.

The use of space on the questionnaire does not seem to have been considered and the presentation of the questionnaire seems cumbersome and "patchy".

When deciding to use the information gleaned from the Chiropractic Students' Sports Questionnaire in this investigation, the challenge was not so much in gathering the information, but more so how to code the already structured questionnaire in such a way as to achieve maximum results from it. A Likert – type scale was used to allow for the depiction of each of the variables as both dependant and independent (de Vaus, 1996:92-95).

### 2.3.3 The gathering of the data

The gathering of the data occurred prior to the use of the questionnaires as a source of information. It was therefore beyond the scope of this study. However, to assess the reliability of the data, a description of the manner in which the data should have been collected and how it compares to the way that it was collected, is given below. This process allows for ensuring that the results achieved will not provide a list of categories and numbers that give a "false impression of meaningfulness" (Hinderer and Hinderer, 1993).

Therefore, when looking at the definition of reliability, it refers to the consistency with which various measurements or recordings occur. This, according to Triano et al., (1992) means that there must be a consistency in factors relating to the instrument used (questionnaire or other), operator or research participant proficiency and skill, patient compliance and the environment in which the tests / questionnaires were conducted.

In terms of the application of the questionnaire, the questionnaire design never changed over the period of application, even though it was applied over a period of 2 years at various field hockey (Astroturf) tournaments. Therefore the application of the instrument remained the same.

The consistency of the research participant in terms of the proficiency and skill.

The research participant or data collection person / people had had previous exposure to similar questionnaires as well as being able to assess patients that presented. However between the persons collecting the data, there could have been a difference. To counter this, a supervisor was in place (the researcher) to assess the proper completion and interpretation of the collected data on site.

Patient compliance, in terms of the therapy administered, was not considered a problem as their compliance or non-compliance reflected the norm for the field hockey population and a reflection of such in the data may allow for better interpretation of the data picture being built through the research. If any such problem was present; it would have been recorded on the respective follow up questionnaires and data captured as such. This was also made more reliable by the use of personal contact by a research participant, who ensured that the questionnaire was complete (de Vaus, 1996:111).

## 2.4 THE FOCUS GROUP DISCUSSION / FORUM:

A focus group is defined as a group, which has been put together (or participants sought for a group meeting), who are astute observers of the area of research or a component thereof and as a result are well informed in their area of ability as regards the research process. This by implication means that the group is of greater value than any number of research samples taken out of the same population (hockey in this study), in terms of the quantitative approach (Blumer, 1969:41). This in turn also implies that the total group's contribution is more representative than any individual contribution, as the group allows for increased diversity of expression and acts as a "brainstorming" unit to allow for the incorporation of more information into the discussion (de Vaus, 1996:111).

The advantages of such a group are many, according to Denzin and Lincoln (1998:55), including being inexpensive, flexible, cumulative and elaborative, over and above individual responses and therefore data rich. The disadvantages however, are those of having one person dominate the conversation or having individual participants being reluctant to participate (Denzin and Lincoln, 1998:55), as well as having the interviewer affect the participants by means of what de Vaus (1996:110) explains as "observable characteristics" of the interviewer.

According to Neuman (2000:278-279), interviewer bias can also occur as a result of respondent(s) errors, unintentional interviewer errors, intentional subversion by the interviewer due to researcher / interviewer's expectations of the outcome of the questionnaire, failure of the interviewer to probe or probe properly as well as undue influence by the interviewer's responses to the respondent (both verbally and non-verbally) during the course of the interview.

The focus group in this investigation was therefore used as the validity check of the questionnaire, by allowing for the critique of the questionnaire and the resultant assessment of the data and interpretation thereof as representing the norm in the field hockey population.

The aim of such a forum was to allow for the re-designing and customizing of the questionnaire, to allow for the individualization of the questionnaire more specifically to field hockey (Yeomans, 2000:120-121).

This process is largely a qualitative process, in which there is discussion of the theme within a group of 6 – 12 people that allows for the questionnaire to be discussed and addressed from all points of view (Neuman, 2000: 274). This allows for the assessment of the questionnaire's weaknesses and strengths.

# CHAPTER THREE

# MATERIALS AND METHODS

## 3.1 INTRODUCTION:

This chapter deals with the location and collection of data and the research methodology utilized. The process of statistical analysis is also discussed.

## 3.2 BACKGROUND TO THE STUDY:

The Chiropractic Students' Sports Questionnaire (CSSQ) (Appendix C) was developed as a tool for data collection and recording of patient information outside the Technikon Natal Clinic setting. The CSSQ has been used over the past 3 –4 years at various sporting events and a large volume of data has been collected.

The most data was generated in field hockey and it was therefore taken as an example of the information database that has been generated.

The data collected was beyond the control of the researcher and there will be limitations in terms of the information available and therefore its interpretation. However, it is the intention of the researcher to validate the CSSQ (allow for the validation of the data in the database) and therefore the publishing of the information collected.

## 3.3 THE DATA FOR THIS INVESTIGATION WAS COLLECTED AS FOLLOWS:

### 3.3.1 DATA COLLECTION:

#### 3.3.1.1 COLLECTION PROCESS:

The data was collected on site, at the various field hockey (Astroturf) events prior to this study being initiated. Therefore the data was retrieved from the established database.

### 3.3.2 STUDY PROTOCOL AND DESIGN

#### 3.3.2.1 OBJECTIVES OF THE STUDY

The first objective of the study was to interpret the data from cross tabulations, Chi-squared and Multinomial Logistic Regression analysis, to assess whether the questionnaire is sensitive and specific enough for use as a tool in data collection. Secondly, to use the statistical analysis to critique the epidemiological information gleaned from the Chiropractic Students' Sports Questionnaire in the context of Astroturf hockey, in terms of the current literature. And thirdly, to establish the face validity of the questionnaire by means of a focus group including all relevant stakeholders.

### 3.3.2.2 ALLOCATION OF SUBJECTS / PATIENTS

Sampling :

Convenience sampling through self-selection was used when the questionnaires were data captured. However, on data capture, the selection process of the questionnaires was based on the amount of data omitted from the questionnaires. Any information omitted or contradictory would have made the questionnaire invalid and would have ensured that only fully completed questionnaires were used. This procedure would have increased the stability and consistency of the information gleaned from the CSSQ and minimised the "human reactivity" (Mouton, 1996:62) which could have biased the results.

Sample size:

Per event sample size should average at 16 teams with 15 members per team (240 players). This would indicate that over a period of 5 events a potential of 1200 questionnaires could have been completed, provided every player presented for treatment once. This means that the number of questionnaires would be the total sample size and therefore the total population in terms of this investigation. The total number of questionnaires achieved at the end of the data collection process was 914 (n = 914).

### 3.3.2.3 CRITERIA FOR ACCEPTANCE OF COMPLETED QUESTIONNAIRES

**Inclusion criteria:**

The initial patient has to have been a hockey player in the event at which the chiropractic treatment facility was available, to have treatment recorded for research purposes and statistical analysis. Even if the patient had presented with a condition that cannot be treated, their details had to have been recorded for clinical and diagnostic purposes.

The patient had to have filled in the patient details and thereby given a fully informed decision to have treatment (i.e. the patient had the choice not to have treatment).

**Exclusion criteria:**

If the patient information details or diagnostic information were contradictory or incorrect or omitted on the questionnaire, the information would not be used for the purposes of data analysis in this study.

### 3.3.2.4 CONFIDENTIALTY CLAUSES

**Patient confidentiality, in terms of the information database:**

Each patient's or research participant's name becomes replaced by a file number, so as to make the association of the patient details to their names inaccessible to the researcher, once the data has been captured.

**Focus group confidentiality:**

All data discussed or used within the focus group to arrive at decisions and or trends will also be kept confidential (Appendix F) and a code of conduct will be adhered to (Appendix G). The participants of the focus group will be required to sign an informed consent form (Appendix E) and receive a letter of information (Appendix D).

The focus group will at all times be kept anonymous, and documents and tape recordings of the focus group proceedings will be kept confidential and destroyed as appropriate (incineration or shredding) at that time.

### 3.3.2.5 DETAILED DATA COLLECTION AND INTERPREATATION PROCEDURE

The Chiropractic Students' Sports Questionnaire was drawn up based on the patient visit sheets used at the 6th All Africa Games (Appendix B) and a form as compiled by Nook (personal communication, 1997) (Appendix A) for sports data collation.

This unvalidated (pilot) Chiropractic Students' Sports Questionnaire (Appendix C) was used to collect data from the patients and their consultant chiropractic doctors at a minimum of five hockey tournaments, at national and international level. This was done in order to generate a demographic profile of the hockey players. In addition, the number of events was taken as 5 to allow for the accumulation of sufficient numbers of questionnaires, thereby allowing for the attrition due to incomplete questionnaires, as well as deemed necessary for an accurate assessment of the circumstances, timing, frequency and types of injuries that occur at the national and international level to make the findings representative of those found within the hockey fraternity.

The purpose of collecting such data was to pilot the Chiropractic Students' Sports Questionnaire (CSSQ) and ascertain its face validity, in order to allow for the generation of demographic data with respect to field hockey.

The data and its analysis:

The data collected at each of the sports events was then taken for data capturing purposes. The descriptive statistics were analysed using the SPSS package (version 9) and included:

1. Number of new patients per day
2. Number of follow-up patients per day
3. Total number of patients per day and over the tournament
4. The perceived cause of the injury by the patient
5. Training patterns for the players
6. The region of injury and type of injury (i.e. diagnosis)
7. The classification of the injury - acute or chronic
8. The severity of the injury and the necessity for referral
9. The treatment modalities given over the time period

Multinomial logistic regression analysis was used to determine how closely the above factors are linked. The data generated is represented by means of graphs, bar graphs and tables for visual communication. Further analysis of the data was done by means of cross tabulations and the Chi-square analysis, in order to determine the significance of the relationship between the significant factors as indicated by the multinomial logistic regression analysis. Contingency co-efficients were used to analyse the degree of relationship after significance had been established.

### 3.3.2.6 THE FOCUS GROUP DISCUSSION / FORUM

The questionnaire was then tabled at a Focus Group Discussion / Forum and analysed using a qualitative research analysis package (Atlas T1 version 4.2) and done manually using thematic analysis.

The focus group had members representing the various aspects of the hockey fraternity (a hockey player, a coach and a past hockey player), a participant in the data collection process and the researcher. The composition of the group ensured the members were not affiliated in any way (i.e. relatives or business associates), so as to limit potential bias or improper input into the research process, as well as undue conflict as suggested by Neuman (2000:274).

The researcher had the role of facilitator and moderator, keeping the discussion focussed and introducing new ideas, based on the results of the quantitative analysis of the data collected. All responses were recorded in writing and on tape. The recorded data was then analysed according to topic trends or "themes" (Neuman, 2000). Based on this process, the results of the quantitative portion of the research was analysed, highlighting information omitted or duplicated in the data gathering process (CCSQ) and thereby allowing for the addition or omission of the questions relevant to the "themes" highlighted in the qualitative portion.

This allowed for the verification of the results generated by the Chiropractic Students' Sports Questionnaire (CCSQ) as well as for additional themes or questions added to the CCSQ to improve its validity, in terms of field hockey.

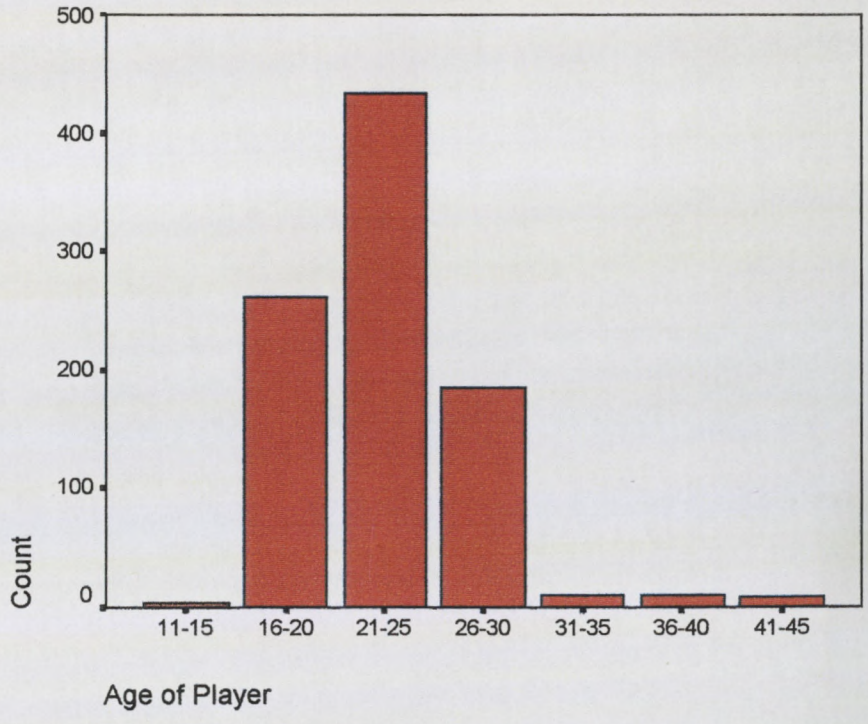
# CHAPTER FOUR

# RESULTS

## 4.1 DEMOGRAPHIC DATA – FREQUENCY STATISTICS:

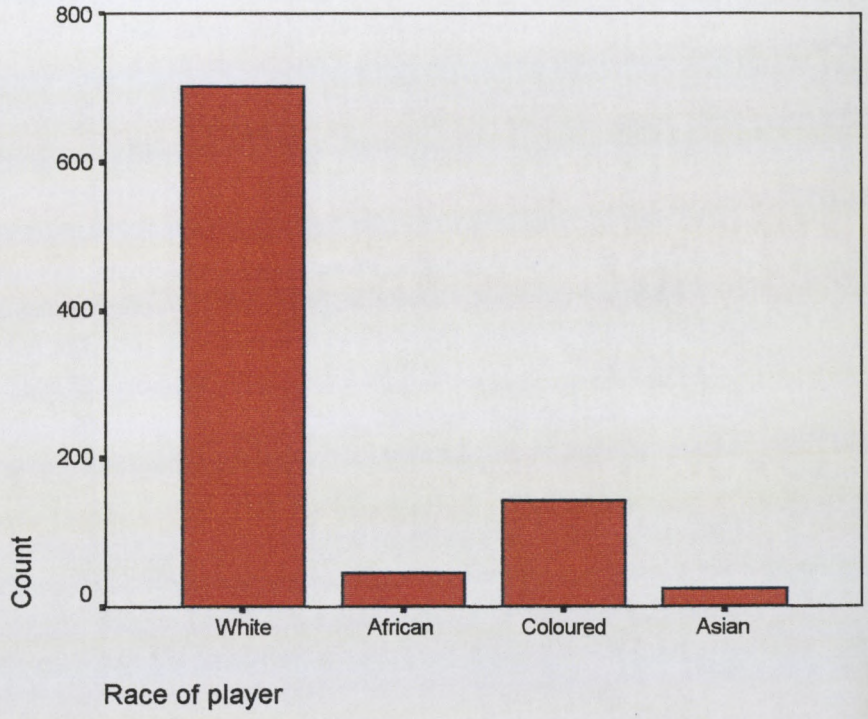
### 4.1.1 Age of Player:

| Years | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| 11-15 | 4 | .4 | .4 | .4 |
| 16-20 | 261 | 28.6 | 28.6 | 29.0 |
| 21-25 | 434 | 47.5 | 47.5 | 76.5 |
| 26-30 | 186 | 20.4 | 20.4 | 96.8 |
| 31-35 | 10 | 1.1 | 1.1 | 97.9 |
| 36-40 | 10 | 1.1 | 1.1 | 99.0 |
| 41-45 | 9 | 1.0 | 1.0 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |



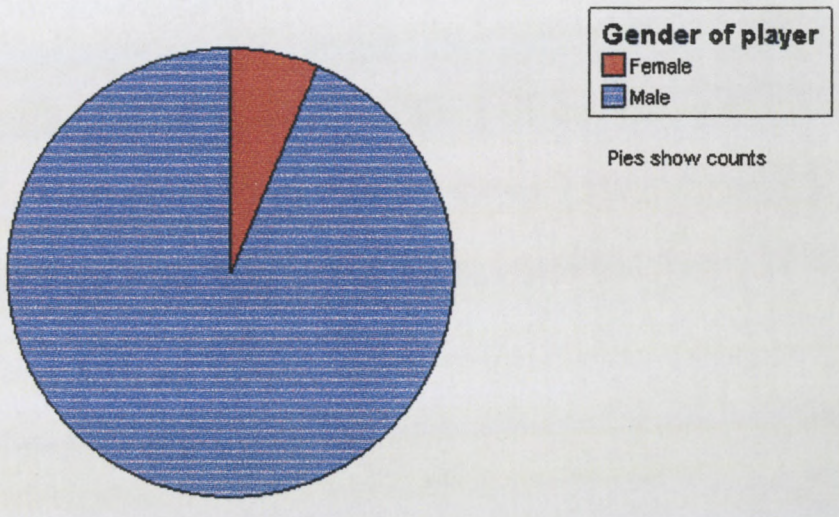
4.1.2 Race of player:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| White | 703 | 76.9 | 76.9 | 76.9 |
| African | 44 | 4.8 | 4.8 | 81.7 |
| Coloured | 144 | 15.8 | 15.8 | 97.5 |
| Asian | 23 | 2.5 | 2.5 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |



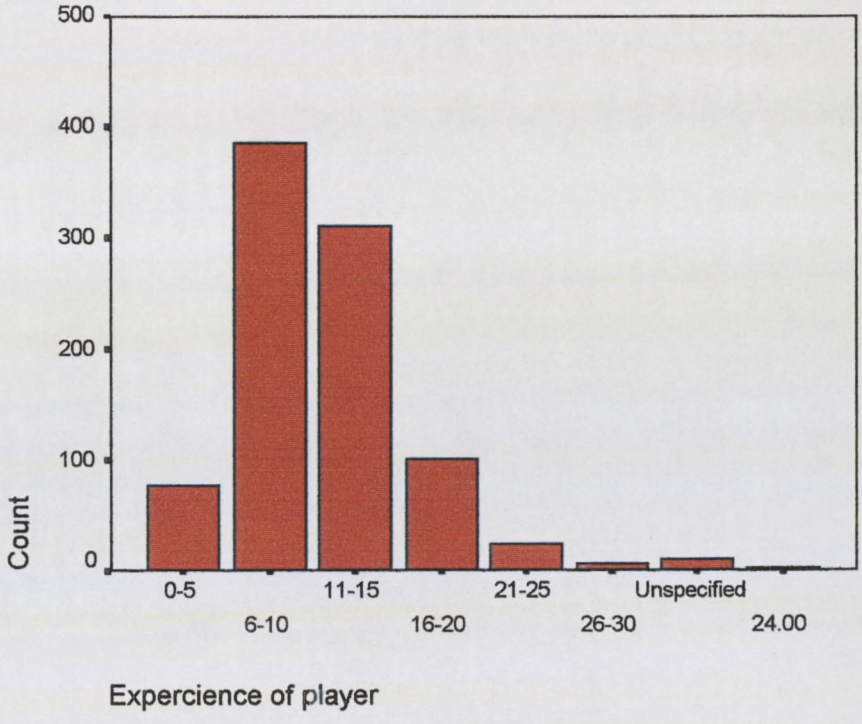
4.1.3 Gender of player:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Female | 58 | 6.3 | 6.3 | 6.3 |
| Male | 856 | 93.7 | 93.7 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |



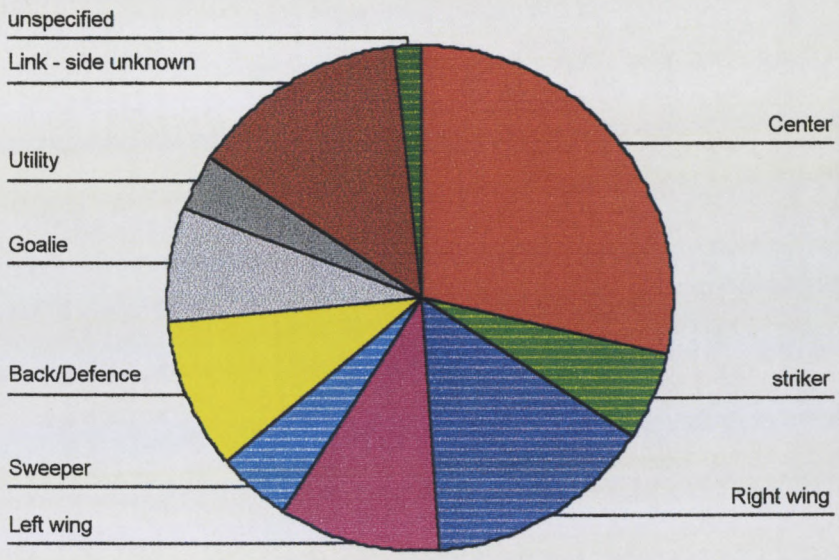
4.1.4 Experience of player:

| Years | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| 0-5 | 76 | 8.3 | 8.3 | 8.3 |
| 6-10 | 385 | 42.1 | 42.1 | 50.4 |
| 11-15 | 312 | 34.1 | 34.1 | 84.6 |
| 16-20 | 101 | 11.1 | 11.1 | 95.6 |
| 21-25 | 24 | 2.6 | 2.6 | 98.2 |
| 26-30 | 5 | .5 | .5 | 98.8 |
| Unspecified | 10 | 1.1 | 1.1 | 99.9 |
| 24.00 | 1 | .1 | .1 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |



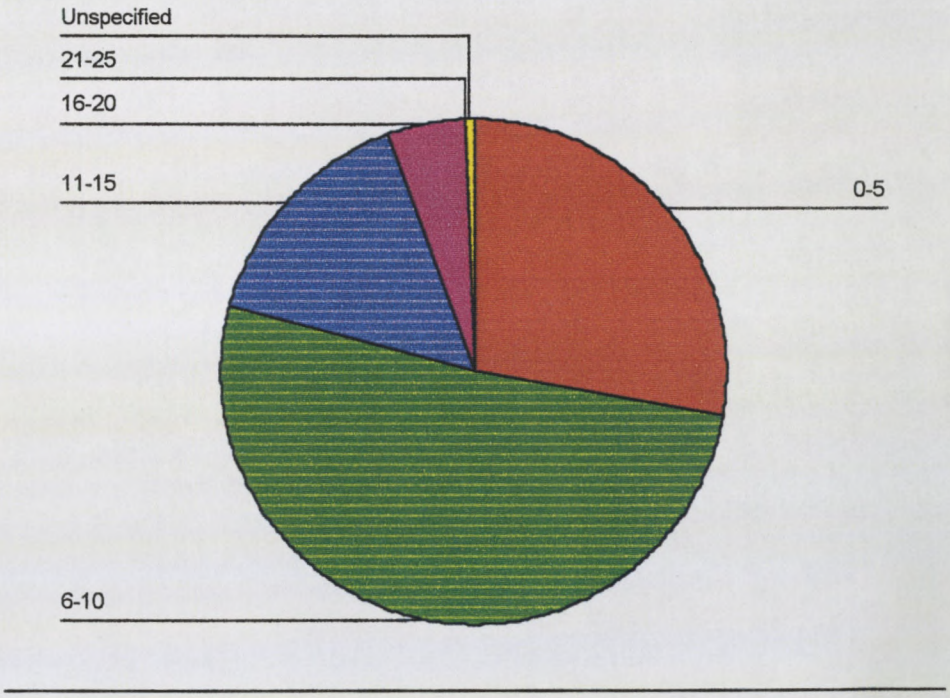
4.1.5 Position of player:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Center | 262 | 28.7 | 28.7 | 28.7 |
| Striker | 50 | 5.5 | 5.5 | 34.1 |
| Right wing | 134 | 14.7 | 14.7 | 48.8 |
| Left wing | 96 | 10.5 | 10.5 | 59.3 |
| Sweeper | 42 | 4.6 | 4.6 | 63.9 |
| Back / Defense | 89 | 9.7 | 9.7 | 73.6 |
| Goalie | 65 | 7.1 | 7.1 | 80.7 |
| Utility | 35 | 3.8 | 3.8 | 84.6 |
| Link - side unknown | 127 | 13.9 | 13.9 | 98.5 |
| Unspecified | 14 | 1.5 | 1.5 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |



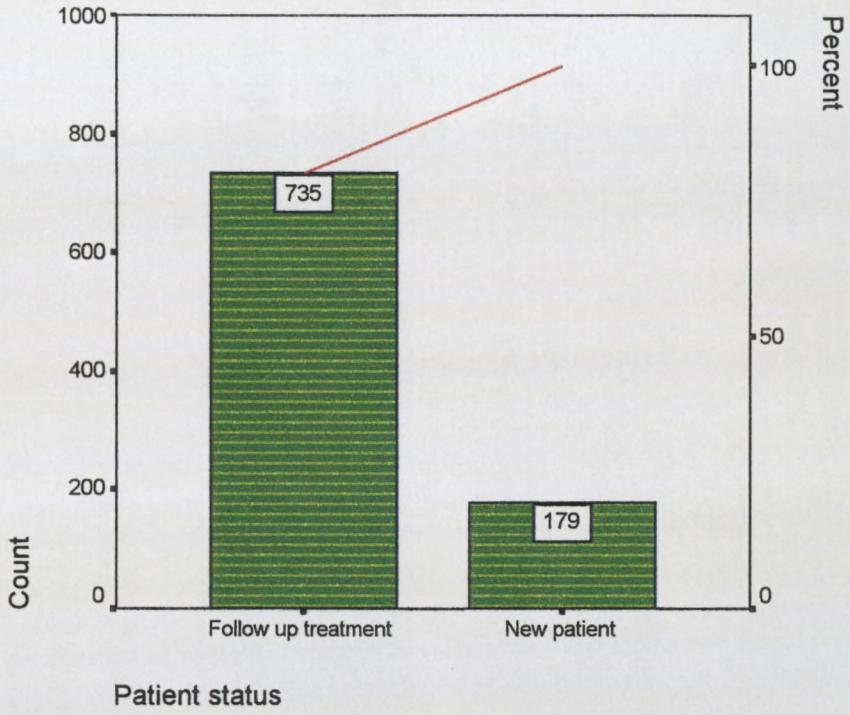
4.1.6 Average hours of training in season:

| H ours | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| 0-5 | 254 | 27.8 | 27.8 | 27.8 |
| 6-10 | 469 | 51.3 | 51.3 | 79.1 |
| 11-15 | 139 | 15.2 | 15.2 | 94.3 |
| 16-20 | 46 | 5.0 | 5.0 | 99.3 |
| 21-25 | 2 | .2 | .2 | 99.6 |
| Unspecified | 4 | .4 | .4 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |



## 4.1.7 Patient status:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| New patient | 179 | 19.6 | 19.6 | 19.6 |
| Follow up treatment | 735 | 80.4 | 80.4 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |




## 4.1.8 Previous injury:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Yes - to region | 714 | 78.1 | 78.1 | 78.1 |
| No - to region | 200 | 21.9 | 21.9 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |

4.1.9 Anatomic location of the injury:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Head | 1 | .1 | .1 | .1 |
| Ankle | 53 | 5.8 | 5.8 | 5.9 |
| Foot | 13 | 1.4 | 1.4 | 7.3 |
| Shoulder | 23 | 2.5 | 2.5 | 9.8 |
| Wrist | 12 | 1.3 | 1.3 | 11.2 |
| Hand | 15 | 1.6 | 1.6 | 12.8 |
| Thigh - quad | 54 | 5.9 | 5.9 | 18.7 |
| Thigh - adductors | 26 | 2.8 | 2.8 | 21.6 |
| Neck | 83 | 9.1 | 9.1 | 30.6 |
| TFL – ITB | 6 | .7 | .7 | 31.3 |
| Thoracic | 81 | 8.9 | 8.9 | 40.2 |
| Low back | 298 | 32.6 | 32.6 | 72.8 |
| Ribs | 10 | 1.1 | 1.1 | 73.9 |
| Hip | 9 | 1.0 | 1.0 | 74.8 |
| Thigh - ham | 96 | 10.5 | 10.5 | 85.3 |
| Knee | 74 | 8.1 | 8.1 | 93.4 |
| Leg | 60 | 6.6 | 6.6 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |

4.1.10 Mechanism of injury:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Running | 204 | 22.3 | 22.3 | 22.3 |
| Abrupt stopping | 23 | 2.5 | 2.5 | 24.8 |
| Traveling to venue | 17 | 1.9 | 1.9 | 26.7 |
| Sliding | 21 | 2.3 | 2.3 | 29.0 |
| Protecting goal | 10 | 1.1 | 1.1 | 30.1 |
| Unknown | 3 | .3 | .3 | 30.4 |
| Unrelated to hockey | 37 | 4.0 | 4.0 | 34.5 |
| Shooting for goal | 2 | .2 | .2 | 34.7 |
| Sprinting | 3 | .3 | .3 | 35.0 |
| Colliding with ball | 30 | 3.3 | 3.3 | 38.3 |
| Colliding with stick | 78 | 8.5 | 8.5 | 46.8 |
| Colliding with player | 89 | 9.7 | 9.7 | 56.6 |
| Twisting | 123 | 13.5 | 13.5 | 70.0 |
| Tackle | 7 | .8 | .8 | 70.8 |
| Collision - other | 6 | .7 | .7 | 71.4 |
| Bending over stick | 261 | 28.6 | 28.6 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |

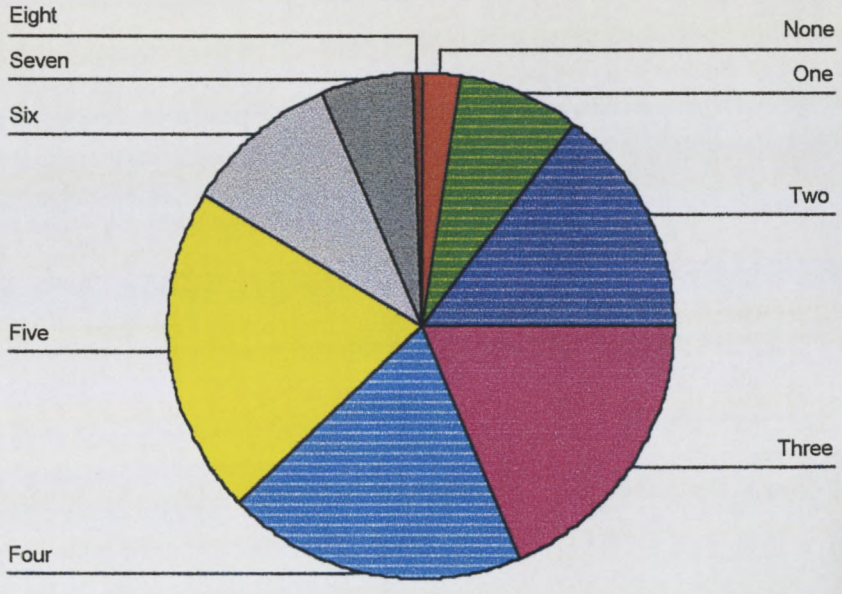
4.1.11 Injury status:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Acute | 338 | 37.0 | 37.0 | 37.0 |
| Chronic | 576 | 63.0 | 63.0 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |

4.1.12 Games in tournament:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| None | 22 | 2.4 | 2.4 | 2.4 |
| One | 72 | 7.9 | 7.9 | 10.3 |
| Two | 135 | 14.8 | 14.8 | 25.1 |
| Three | 170 | 18.6 | 18.6 | 43.7 |
| Four | 175 | 19.1 | 19.1 | 62.8 |
| Five | 190 | 20.8 | 20.8 | 83.6 |
| Six | 91 | 10.0 | 10.0 | 93.5 |
| Seven | 54 | 5.9 | 5.9 | 99.5 |
| Eight | 5 | .5 | .5 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |

Games in the tournament:



4.1.13 Clinical impressions:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Abrasions | 3 | .3 | .3 | .3 |
| Thoracic facet | 60 | 6.6 | 6.6 | 6.9 |
| Lumbar facet | 105 | 11.5 | 11.5 | 18.4 |
| Sacro-iliac syndrome | 93 | 10.2 | 10.2 | 28.6 |
| Costotransverse syndrome | 4 | .4 | .4 | 29.0 |
| Tendinitis | 27 | 3.0 | 3.0 | 31.9 |
| Patellofemoral Pain Syndrome | 14 | 1.5 | 1.5 | 33.5 |
| General muscle tightness | 13 | 1.4 | 1.4 | 34.9 |
| Contusion | 81 | 8.9 | 8.9 | 43.8 |
| Joint dysfunction – ankle and foot | 2 | .2 | .2 | 44.0 |
| Joint dysfunction – knee | 20 | 2.2 | 2.2 | 46.2 |
| Joint dysfunction – hip | 1 | .1 | .1 | 46.3 |
| Joint dysfunction – hand and wrist | 1 | .1 | .1 | 46.4 |
| Joint dysfunction - shoulder | 2 | .2 | .2 | 46.6 |
| Fracture | 10 | 1.1 | 1.1 | 47.7 |
| Myofascial pathology | 8 | .9 | .9 | 48.6 |
| GMT and myofascial | 237 | 25.9 | 25.9 | 74.5 |
| Muscle tear | 14 | 1.5 | 1.5 | 76.0 |
| Puncture | 1 | .1 | .1 | 76.1 |
| Instability | 10 | 1.1 | 1.1 | 77.2 |
| Fat pad syndrome of knee | 2 | .2 | .2 | 77.5 |
| Disc pathology | 7 | .8 | .8 | 78.2 |
| Concussion | 1 | .1 | .1 | 78.3 |
| Flatfoot | 2 | .2 | .2 | 78.6 |
| Dislocation | 2 | .2 | .2 | 78.8 |
| Baker's cyst | 4 | .4 | .4 | 79.2 |
| Ingrown toe nail | 1 | .1 | .1 | 79.3 |
| Corn | 1 | .1 | .1 | 79.4 |
| Sprain | 41 | 4.5 | 4.5 | 83.9 |
| Strain | 89 | 9.7 | 9.7 | 93.7 |
| Cervical facet | 58 | 6.3 | 6.3 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |

4.1.14 Treatment received:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Manipulation | 13 | 1.4 | 1.4 | 1.4 |
| Strapping | 60 | 6.6 | 6.6 | 8.0 |
| Cryotherapy | 64 | 7.0 | 7.0 | 15.0 |
| Voltaren and massage | 57 | 6.2 | 6.2 | 21.2 |
| TENS | 18 | 2.0 | 2.0 | 23.2 |
| Exercises | 7 | .8 | .8 | 24.0 |
| Disinfection and plaster | 3 | .3 | .3 | 24.3 |
| Manipulation and massage | 2 | .2 | .2 | 24.5 |
| Manipulation, massage and stretch | 328 | 35.9 | 35.9 | 60.4 |
| Massage | 5 | .5 | .5 | 60.9 |
| Mobilisation and massage | 6 | .7 | .7 | 61.6 |
| Mobilisation, massage and stretch | 13 | 1.4 | 1.4 | 63.0 |
| Needle and stretch | 1 | .1 | .1 | 63.1 |
| Massage and cryotherapy | 11 | 1.2 | 1.2 | 64.3 |
| Ischemic and stretch | 138 | 15.1 | 15.1 | 79.4 |
| Referral - x-rays | 4 | .4 | .4 | 79.9 |
| Myofascial - grip and rip | 10 | 1.1 | 1.1 | 81.0 |
| Observation + monitoring | 9 | 1.0 | 1.0 | 81.9 |
| Padding | 1 | .1 | .1 | 82.1 |
| Mobilisation | 2 | .2 | .2 | 82.3 |
| Myofascial - ischemic compression | 1 | .1 | .1 | 82.4 |
| Myofascial - cross friction and ice | 38 | 4.2 | 4.2 | 86.5 |
| Myofascial - dynamic ischemic compression | 1 | .1 | .1 | 86.7 |
| Needling | 17 | 1.9 | 1.9 | 88.5 |
| Stretching - PNF | 100 | 10.9 | 10.9 | 99.5 |
| Stretching - passive | 5 | .5 | .5 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |

4.1.15 Play status of player:

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Continuation of play | 892 | 97.6 | 97.6 | 97.6 |
| Reportable - hospital | 10 | 1.1 | 1.1 | 98.7 |
| Reportable - off field | 5 | .5 | .5 | 99.2 |
| Reportable - restricted play | 7 | .8 | .8 | 100.0 |
| Total | 914 | 100.0 | 100.0 | |

## 4.2 DEMOGRAPHIC DATA – DESCRIPTIVE STATISTICS

### 4.2.1 Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age of Player | 914 | 3.00 | 9.00 | 5.0033 | .8985 |
| Average hours of training in season | 914 | 1.00 | 13.00 | 2.0295 | 1.0867 |
| Experience of player | 914 | 1.00 | 24.00 | 2.7243 | 1.5881 |
| Games in tournament | 914 | .00 | 8.00 | 3.7921 | 1.7483 |
| Valid N (listwise) | 914 | | | | |

## 4.3 RESULTS OF STATISTICAL ANALYSIS OF THE DATA - Cross tabulations, Chi-squared analysis and Multinominal logistic regression analysis

**For the cross tabulations and Chi-squared analysis, the following parameters where in place:**

1. Chi-squared testing
2. Contingency co-efficient
3. Correlations
4. Parameter statistics set at the 95 % confidence interval level

**For the Multinomial logistic regression the following parameters where in place:**

1. Model – main effects with summary statistics, likelihood ratios and parameter statistics set at the 95 % confidence interval level
2. Maximum iterations set at 100
3. Step halving set at 5
4. Likelihood convergence set at 0
5. Parameter convergence set at 1.0E-06
6. Singularity tolerance set at 1.0E-08

## 4.3.1Case Processing Summary for cross tabulations and Chi-squared analysis:

| | Cases | | | | | |
|---|---|---|---|---|---|---|
| | Valid | | Missing | | Total | |
| | N | Percent | N | Percent | N | Percent |
| Position of player * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Position of player * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Position of player * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Position of player * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Race of player * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Race of player * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Race of player * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Race of player * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Gender of player * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Gender of player * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Gender of player * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Gender of player * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Patient status * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Patient status * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Patient status * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Patient status * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Previous injury * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Previous injury * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Previous injury * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Previous injury * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Anatomic location of the injury * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Anatomic location of the injury * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Anatomic location of the injury * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Anatomic location of the injury * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Mechanism of injury * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Mechanism of injury * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Mechanism of injury * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Mechanism of injury * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Injury status * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Injury status * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Injury status * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Injury status * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Clinical impressions * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Clinical impressions * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Clinical impressions * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Clinical impressions * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Treatment received * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Treatment received * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Treatment received * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Treatment received * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Play status of player * Games in tournament | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Play status of player * Average hours of training in season | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Play status of player * Experience of player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |
| Play status of player * Age of Player | 914 | 100.0% | 0 | .0% | 914 | 100.0% |

## 4.3.2 Cross tabulations and Chi-squared tests:

### 4.3.2.1 Race of player:

### a. Race of player * Games in tournament:

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Race of player | White | 22 | 61 | 116 | 132 | 124 | 150 | 53 | 40 | 5 | 703 |
| | African | | 1 | 6 | 2 | 23 | 5 | 7 | | | 44 |
| | Coloured | | 10 | 13 | 36 | 28 | 28 | 22 | 7 | | 144 |
| | Asian | | | | | | 7 | 9 | 7 | | 23 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 122.000 | 24 | .000 |
| Likelihood Ratio | 118.938 | 24 | .000 |
| N of Valid Cases | 914 | | |

a 17 cells (47.2%) have expected count less than 5. The minimum expected count is .13.

## b. Race of player * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Race of player | White | 184 | 354 | 124 | 35 | 2 | 4 | 703 |
| | African | 5 | 39 | | | | | 44 |
| | Coloured | 65 | 53 | 15 | 11 | | | 144 |
| | Asian | | 23 | | | | | 23 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 77.737 | 15 | .000 |
| Likelihood Ratio | 93.829 | 15 | .000 |
| N of Valid Cases | 914 | | |

a 11 cells (45.8%) have expected count less than 5. The minimum expected count is .05.

## c. Race of player * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Race of player | White | 67 | 300 | 206 | 92 | 23 | 5 | 10 | | 703 |
| | African | 2 | 32 | 10 | | | | | | 44 |
| | Coloured | 7 | 53 | 73 | 9 | 1 | | | 1 | 144 |
| | Asian | | | 23 | | | | | | 23 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 101.568 | 21 | .000 |
| Likelihood Ratio | 112.851 | 21 | .000 |
| N of Valid Cases | 914 | | |

a 18 cells (56.3%) have expected count less than 5. The minimum expected count is .03.

## d. Race of player * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Race of player | White | 4 | 240 | 316 | 115 | 10 | 9 | 9 | 703 |
| | African | | 5 | 21 | 18 | | | | 44 |
| | Coloured | | 16 | 97 | 30 | | 1 | | 144 |
| | Asian | | | | 23 | | | | 23 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 152.428 | 18 | .000 |
| Likelihood Ratio | 143.262 | 18 | .000 |
| N of Valid Cases | 914 | | |

a 14 cells (50.0%) have expected count less than 5. The minimum expected count is .10.

### 4.3.2.2 Gender of player:

## a. Gender of player * Games in tournament

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Gender of player | Female | 5 | 15 | 15 | 3 | 11 | 9 | | | | 58 |
| | Male | 17 | 57 | 120 | 167 | 164 | 181 | 91 | 54 | 5 | 856 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 57.516 | 8 | .000 |
| Likelihood Ratio | 55.840 | 8 | .000 |
| N of Valid Cases | 914 | | |

a 5 cells (27.8%) have expected count less than 5. The minimum expected count is .32.

## b. Gender of player * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Gender of player | Female | 17 | 32 | 9 | | | | 58 |
| | Male | 237 | 437 | 130 | 46 | 2 | 4 | 856 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 3.759 | 5 | .585 |
| Likelihood Ratio | 7.049 | 5 | .217 |
| N of Valid Cases | 914 | | |

a 5 cells (41.7%) have expected count less than 5. The minimum expected count is .13.

## c. Gender of player * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Gender of player | Female | 3 | 34 | 20 | | | 1 | | | 58 |
| | Male | 73 | 351 | 292 | 101 | 24 | 4 | 10 | 1 | 856 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 15.523 | 7 | .030 |
| Likelihood Ratio | 23.306 | 7 | .002 |
| N of Valid Cases | 914 | | |

a 7 cells (43.8%) have expected count less than 5. The minimum expected count is .06.

## d. Gender of player * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Gender of player | Female | | 22 | 24 | 11 | | | 1 | 58 |
| | Male | 4 | 239 | 410 | 175 | 10 | 10 | 8 | 856 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 4.421 | 6 | .620 |
| Likelihood Ratio | 5.737 | 6 | .453 |
| N of Valid Cases | 914 | | |

a 5 cells (35.7%) have expected count less than 5. The minimum expected count is .25.

### 4.3.2.3 Position of player:

## a. Position of player * Games in tournament

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Position of player | Center | 7 | 29 | 48 | 50 | 31 | 44 | 27 | 23 | 3 | 262 |
| | Striker | | 5 | 6 | 4 | 19 | 4 | 6 | 6 | | 50 |
| | Right wing | | 7 | 8 | 31 | 37 | 39 | 5 | 7 | | 134 |
| | Left wing | | 3 | 10 | 19 | 19 | 22 | 17 | 6 | | 96 |
| | Sweeper | | 2 | 10 | 11 | 3 | 8 | 5 | 1 | 2 | 42 |
| | Back / Defense | 6 | 11 | 22 | 20 | 18 | 8 | 4 | | | 89 |
| | Goalie | 2 | 4 | 12 | 3 | 8 | 22 | 13 | 1 | | 65 |
| | Utility | 6 | 3 | 4 | 10 | 7 | 5 | | | | 35 |
| | Link - side unknown | 1 | 7 | 14 | 15 | 28 | 38 | 14 | 10 | | 127 |
| | Unspecified | | 1 | 1 | 7 | 5 | | | | | 14 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 230.315 | 72 | .000 |
| Likelihood Ratio | 231.243 | 72 | .000 |
| N of Valid Cases | 914 | | |

a 36 cells (40.0%) have expected count less than 5. The minimum expected count is .08.

## b. Position of player * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Position of player | Center | 66 | 138 | 46 | 10 | 2 | | 262 |
| | striker | 11 | 20 | 13 | 6 | | | 50 |
| | Right wing | 36 | 46 | 32 | 20 | | | 134 |
| | Left wing | 38 | 36 | 18 | | | 4 | 96 |
| | Sweeper | | 37 | 3 | 2 | | | 42 |
| | Back/Defense | 30 | 46 | 13 | | | | 89 |
| | Goalie | 29 | 32 | 4 | | | | 65 |
| | Utility | 13 | 14 | 8 | | | | 35 |
| | Link - side unknown | 22 | 95 | 2 | 8 | | | 127 |
| | unspecified | 9 | 5 | | | | | 14 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 199.774 | 45 | .000 |
| Likelihood Ratio | 206.926 | 45 | .000 |
| N of Valid Cases | 914 | | |

a 29 cells (48.3%) have expected count less than 5. The minimum expected count is .03.

## c. Position of player * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Position of player | Center | 24 | 101 | 100 | 22 | 9 | | 6 | | 262 |
| | Striker | | 15 | 21 | 14 | | | | | 50 |
| | Right wing | 6 | 69 | 46 | 9 | | | 3 | 1 | 134 |
| | Left wing | 13 | 31 | 51 | | | | 1 | | 96 |
| | Sweeper | 2 | 19 | 18 | 3 | | | | | 42 |
| | Back / Defense | 5 | 53 | 16 | 13 | 2 | | | | 89 |
| | Goalie | 13 | 21 | 7 | 20 | 4 | | | | 65 |
| | Utility | | | 3 | 18 | 9 | 5 | | | 35 |
| | Link - side unknown | 12 | 63 | 50 | 2 | | | | | 127 |
| | Unspecified | 1 | 13 | | | | | | | 14 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 452.155 | 63 | .000 |
| Likelihood Ratio | 335.857 | 63 | .000 |
| N of Valid Cases | 914 | | |

a 47 cells (58.8%) have expected count less than 5. The minimum expected count is .02.

## d. Position of player * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Position of player | Center | 2 | 63 | 93 | 95 | | 9 | | 262 |
| | Striker | | 9 | 23 | 18 | | | | 50 |
| | Right wing | 2 | 27 | 105 | | | | | 134 |
| | Left wing | | 31 | 63 | 2 | | | | 96 |
| | Sweeper | | 24 | 11 | 7 | | | | 42 |
| | Back / Defense | | 38 | 41 | 10 | | | | 89 |
| | Goalie | | 22 | 26 | 17 | | | | 65 |
| | Utility | | | 2 | 13 | 10 | 1 | 9 | 35 |
| | Link - side unknown | | 37 | 66 | 24 | | | | 127 |
| | Unspecified | | 10 | 4 | | | | | 14 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 705.070 | 54 | .000 |
| Likelihood Ratio | 395.999 | 54 | .000 |
| N of Valid Cases | 914 | | |

a 42 cells (60.0%) have expected count less than 5. The minimum expected count is .06.

### 4.3.2.4 Patient status:

#### a. Patient status * Games in tournament

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Patient status | New patient | 10 | 29 | 38 | 30 | 40 | 25 | 5 | 2 | | 179 |
| | Follow up treatment | 12 | 43 | 97 | 140 | 135 | 165 | 86 | 52 | 5 | 735 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 63.127 | 8 | .000 |
| Likelihood Ratio | 65.851 | 8 | .000 |
| N of Valid Cases | 914 | | |

a 3 cells (16.7%) have expected count less than 5. The minimum expected count is .98.

#### b. Patient status * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Patient status | New patient | 55 | 86 | 26 | 9 | 1 | 2 | 179 |
| | Follow up treatment | 199 | 383 | 113 | 37 | 1 | 2 | 735 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 4.747 | 5 | .448 |
| Likelihood Ratio | 3.986 | 5 | .551 |
| N of Valid Cases | 914 | | |

a 4 cells (33.3%) have expected count less than 5. The minimum expected count is .39.

## c. Patient status * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Patient status | New patient | 28 | 71 | 52 | 16 | 6 | 2 | 4 | | 179 |
| | Follow up treatment | 48 | 314 | 260 | 85 | 18 | 3 | 6 | 1 | 735 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 21.937 | 7 | .003 |
| Likelihood Ratio | 19.376 | 7 | .007 |
| N of Valid Cases | 914 | | |

a 6 cells (37.5%) have expected count less than 5. The minimum expected count is .20.

## d. Patient status * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Patient status | New patient | 2 | 72 | 64 | 33 | 3 | 2 | 3 | 179 |
| | Follow up treatment | 2 | 189 | 370 | 153 | 7 | 8 | 6 | 735 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 21.582 | 6 | .001 |
| Likelihood Ratio | 20.446 | 6 | .002 |
| N of Valid Cases | 914 | | |

a 5 cells (35.7%) have expected count less than 5. The minimum expected count is .78.

### 4.3.2.5 Previous injury:

## a. Previous injury * Games in tournament

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Previous injury | Yes - to region | 21 | 54 | 101 | 133 | 137 | 143 | 72 | 48 | 5 | 714 |
| | No - to region | 1 | 18 | 34 | 37 | 38 | 47 | 19 | 6 | | 200 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 11.169 | 8 | .192 |
| Likelihood Ratio | 14.179 | 8 | .077 |
| N of Valid Cases | 914 | | |

a 3 cells (16.7%) have expected count less than 5. The minimum expected count is 1.09.

## b. Previous injury * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Previous injury | Yes - to region | 167 | 382 | 118 | 44 | 2 | 1 | 714 |
| | No - to region | 87 | 87 | 21 | 2 | | 3 | 200 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 44.951 | 5 | .000 |
| Likelihood Ratio | 45.078 | 5 | .000 |
| N of Valid Cases | 914 | | |

a 4 cells (33.3%) have expected count less than 5. The minimum expected count is .44.

## c. Previous injury * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Previous injury | Yes - to region | 50 | 300 | 261 | 75 | 15 | 5 | 7 | 1 | 714 |
| | No - to region | 26 | 85 | 51 | 26 | 9 | | 3 | | 200 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 18.731 | 7 | .009 |
| Likelihood Ratio | 19.231 | 7 | .007 |
| N of Valid Cases | 914 | | |

a 5 cells (31.3%) have expected count less than 5. The minimum expected count is .22.

## d. Previous injury * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Previous injury | Yes - to region | | 176 | 373 | 147 | | 9 | 9 | 714 |
| | No - to region | 4 | 85 | 61 | 39 | 10 | 1 | | 200 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 86.403 | 6 | .000 |
| Likelihood Ratio | 81.115 | 6 | .000 |
| N of Valid Cases | 914 | | |

a 5 cells (35.7%) have expected count less than 5. The minimum expected count is .88.

### 4.3.2.6 Anatomic location of the injury:

### a. Anatomic location of the injury * Games in tournament

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Anatomic location of the injury | Head | | | | | | 1 | | | | 1 |
| | Ankle | 1 | 5 | 3 | 13 | 10 | 13 | 5 | 3 | | 53 |
| | Foot | | 2 | 1 | 1 | 5 | 3 | | 1 | | 13 |
| | Shoulder | | 2 | 5 | 1 | 3 | 4 | 7 | 1 | | 23 |
| | Wrist | | 1 | 2 | | | 3 | 4 | 1 | 1 | 12 |
| | Hand | | 3 | 2 | 2 | 2 | 2 | | 4 | | 15 |
| | Thigh - quad | | 2 | 6 | 6 | 13 | 20 | 4 | 3 | | 54 |
| | Thigh - adductors | | | 2 | 5 | 7 | 7 | 2 | 3 | | 26 |
| | Neck | 5 | 15 | 14 | 11 | 18 | 8 | 8 | 4 | | 83 |
| | TFL – ITB | | | 2 | 1 | 2 | 1 | | | | 6 |
| | Thoracic | 2 | 9 | 10 | 10 | 14 | 17 | 15 | 4 | | 81 |
| | Low back | 8 | 19 | 46 | 72 | 49 | 66 | 22 | 13 | 3 | 298 |
| | Ribs | | 1 | 3 | | | 3 | 3 | | | 10 |
| | Hip | 1 | | 2 | 2 | | 2 | 2 | | | 9 |
| | Thigh - hamstring | 1 | 6 | 9 | 17 | 17 | 23 | 14 | 9 | | 96 |
| | Knee | 4 | 4 | 17 | 14 | 19 | 8 | 4 | 4 | | 74 |
| | Leg | | 3 | 11 | 15 | 16 | 9 | 1 | 4 | 1 | 60 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 191.042 | 128 | .000 |
| Likelihood Ratio | 188.632 | 128 | .000 |
| N of Valid Cases | 914 | | |

a 104 cells (68.0%) have expected count less than 5. The minimum expected count is .01.

## b. Anatomic location of the injury * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Anatomic location of the injury | Head | 1 | | | | | | 1 |
| | Ankle | 25 | 13 | 13 | | 2 | | 53 |
| | Foot | 9 | 2 | 2 | | | | 13 |
| | Shoulder | 3 | 20 | | | | | 23 |
| | Wrist | 1 | 9 | 2 | | | | 12 |
| | Hand | 8 | 1 | 2 | 4 | | | 15 |
| | Thigh – quad | 14 | 26 | 10 | 4 | | | 54 |
| | Thigh - adductors | 1 | 18 | 2 | 5 | | | 26 |
| | Neck | 14 | 47 | 17 | 5 | | | 83 |
| | TFL – ITB | 1 | 5 | | | | | 6 |
| | Thoracic | 21 | 50 | 1 | 9 | | | 81 |
| | Low back | 76 | 153 | 51 | 17 | | 1 | 298 |
| | Ribs | 6 | 1 | | | | 3 | 10 |
| | Hip | 6 | 2 | 1 | | | | 9 |
| | Thigh - hamstring | 24 | 47 | 23 | 2 | | | 96 |
| | Knee | 19 | 45 | 10 | | | | 74 |
| | Leg | 25 | 30 | 5 | | | | 60 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 393.619 | 80 | .000 |
| Likelihood Ratio | 212.156 | 80 | .000 |
| N of Valid Cases | 914 | | |

a 69 cells (67.6%) have expected count less than 5. The minimum expected count is .00.

## c. Anatomic location of the injury * Experience of player

Cross tabulations Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Anatomic location of the injury | Head | 1 | | | | | | | | 1 |
| | Ankle | 4 | 15 | 21 | 13 | | | | | 53 |
| | Foot | | 6 | | 6 | 1 | | | | 13 |
| | Shoulder | | 15 | 5 | 3 | | | | | 23 |
| | Wrist | 3 | | 9 | | | | | | 12 |
| | Hand | 2 | 2 | 11 | | | | | | 15 |
| | Thigh – quad | 2 | 25 | 12 | 11 | | | 3 | 1 | 54 |
| | Thigh – adductors | 5 | 9 | 8 | 4 | | | | | 26 |
| | Neck | 6 | 29 | 27 | 12 | 1 | 2 | 6 | | 83 |
| | TFL – ITB | 3 | | 2 | | 1 | | | | 6 |
| | Thoracic | 7 | 41 | 24 | 6 | 1 | 2 | | | 81 |
| | Low back | 16 | 136 | 112 | 19 | 13 | 1 | 1 | | 298 |
| | Ribs | 2 | 5 | 3 | | | | | | 10 |
| | Hip | | 4 | 5 | | | | | | 9 |
| | Thigh – hamstring | 16 | 37 | 23 | 17 | 3 | | | | 96 |
| | Knee | 6 | 18 | 39 | 7 | 4 | | | | 74 |
| | Leg | 3 | 43 | 11 | 3 | | | | | 60 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 268.958 | 112 | .000 |
| Likelihood Ratio | 237.442 | 112 | .000 |
| N of Valid Cases | 914 | | |

a 98 cells (72.1%) have expected count less than 5. The minimum expected count is .00.

## d. Anatomic location of the injury * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Anatomic location of the injury | Head | | | 1 | | | | | 1 |
| | Ankle | 1 | 15 | 22 | 15 | | | | 53 |
| | Foot | | 3 | 3 | 6 | | 1 | | 13 |
| | Shoulder | | 7 | 13 | 3 | | | | 23 |
| | Wrist | | 10 | | 2 | | | | 12 |
| | Hand | | 5 | 6 | 4 | | | | 15 |
| | Thigh - quad | | 15 | 27 | 12 | | | | 54 |
| | Thigh - adductors | | 11 | 15 | | | | | 26 |
| | Neck | | 32 | 29 | 16 | | | 6 | 83 |
| | TFL – ITB | | | 5 | | | 1 | | 6 |
| | Thoracic | | 22 | 32 | 25 | | | 2 | 81 |
| | Low back | | 55 | 168 | 65 | 4 | 5 | 1 | 298 |
| | Ribs | | 6 | 4 | | | | | 10 |
| | Hip | | 4 | 5 | | | | | 9 |
| | Thigh – hamstring | 1 | 27 | 43 | 22 | | 3 | | 96 |
| | Knee | | 24 | 36 | 8 | 6 | | | 74 |
| | Leg | 2 | 25 | 25 | 8 | | | | 60 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 212.867 | 96 | .000 |
| Likelihood Ratio | 183.034 | 96 | .000 |
| N of Valid Cases | 914 | | |

a 87 cells (73.1%) have expected count less than 5. The minimum expected count is .00.

## 4.3.2.7 Mechanism of Injury:

### a. Mechanism of injury * Games in tournament

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Mechanism of injury | Running | | 11 | 25 | 46 | 46 | 47 | 11 | 18 | | 204 |
| | Abrupt stopping | | 1 | 2 | 5 | 4 | 5 | 4 | 2 | | 23 |
| | Traveling to venue | 6 | 4 | 5 | 1 | 1 | | | | | 17 |
| | Sliding | | 3 | 4 | 3 | 6 | 3 | | 2 | | 21 |
| | Protecting goal | | 1 | 2 | | 4 | 2 | 1 | | | 10 |
| | Unknown | | 1 | 2 | | | | | | | 3 |
| | Unrelated to hockey | | 5 | 14 | 9 | 7 | | 2 | | | 37 |
| | Shooting for goal | | 1 | 1 | | | | | | | 2 |
| | Sprinting | | | | | 3 | | | | | 3 |
| | Colliding with ball | | 2 | 6 | 6 | 6 | 5 | 2 | 2 | 1 | 30 |
| | Colliding with stick | | 7 | 9 | 10 | 15 | 20 | 11 | 5 | 1 | 78 |
| | Colliding with player | | 14 | 13 | 10 | 6 | 23 | 14 | 9 | | 89 |
| | Twisting | 5 | 9 | 22 | 29 | 30 | 14 | 7 | 7 | | 123 |
| | Tackle | | | | | 2 | 2 | 3 | | | 7 |
| | Collision - other | 6 | | | | | | | | | 6 |
| | Bending over stick | 5 | 13 | 30 | 51 | 45 | 69 | 36 | 9 | 3 | 261 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 511.175 | 120 | .000 |
| Likelihood Ratio | 279.447 | 120 | .000 |
| N of Valid Cases | 914 | | |

a 102 cells (70.8%) have expected count less than 5. The minimum expected count is .01.

## b. Mechanism of injury * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Mechanism of injury | Running | 63 | 108 | 25 | 7 | | 1 | 204 |
| | Abrupt stopping | 3 | 12 | 8 | | | | 23 |
| | Traveling to venue | 2 | 11 | 4 | | | | 17 |
| | Sliding | 9 | 11 | 1 | | | | 21 |
| | Protecting goal | 5 | 5 | | | | | 10 |
| | Unknown | 2 | | | 1 | | | 3 |
| | Unrelated to hockey | 8 | 26 | | 3 | | | 37 |
| | Shooting for goal | | 2 | | | | | 2 |
| | Sprinting | | 3 | | | | | 3 |
| | Colliding with ball | 15 | 12 | 3 | | | | 30 |
| | Colliding with stick | 29 | 32 | 9 | 8 | | | 78 |
| | Colliding with player | 23 | 54 | 3 | 6 | | 3 | 89 |
| | Twisting | 43 | 33 | 39 | 6 | 2 | | 123 |
| | Tackle | | 7 | | | | | 7 |
| | Collision - other | 4 | 2 | | | | | 6 |
| | Bending over stick | 48 | 151 | 47 | 15 | | | 261 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 168.957 | 75 | .000 |
| Likelihood Ratio | 171.625 | 75 | .000 |
| N of Valid Cases | 914 | | |

a 67 cells (69.8%) have expected count less than 5. The minimum expected count is .00.

## c. Mechanism of injury * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Mechanism of injury | Running | 27 | 100 | 38 | 23 | 11 | | 4 | 1 | 204 |
| | Abrupt stopping | 1 | 11 | 4 | 7 | | | | | 23 |
| | Traveling to venue | | 2 | 7 | 4 | | 4 | | | 17 |
| | Sliding | 5 | 8 | 4 | 4 | | | | | 21 |
| | Protecting goal | 2 | 2 | 6 | | | | | | 10 |
| | Unknown | 1 | | 2 | | | | | | 3 |
| | Unrelated to hockey | | 24 | 8 | | 5 | | | | 37 |
| | Shooting for goal | | | 2 | | | | | | 2 |
| | Sprinting | 3 | | | | | | | | 3 |
| | Colliding with ball | 3 | 6 | 13 | 8 | | | | | 30 |
| | Colliding with stick | 4 | 22 | 48 | 4 | | | | | 78 |
| | Colliding with player | 13 | 49 | 23 | 4 | | | | | 89 |
| | Twisting | 3 | 54 | 48 | 18 | | | | | 123 |
| | Tackle | | | | 7 | | | | | 7 |
| | Collision - other | 2 | 4 | | | | | | | 6 |
| | Bending over stick | 12 | 103 | 109 | 22 | 8 | 1 | 6 | | 261 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 455.538 | 105 | .000 |
| Likelihood Ratio | 285.619 | 105 | .000 |
| N of Valid Cases | 914 | | |

a 96 cells (75.0%) have expected count less than 5. The minimum expected count is .00.

## d. Mechanism of injury * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Mechanism of injury | Running | | 67 | 90 | 38 | | 9 | | 204 |
| | Abrupt stopping | 2 | 6 | 8 | 7 | | | | 23 |
| | Traveling to venue | | 4 | 5 | | | | 8 | 17 |
| | Sliding | | 12 | 5 | 4 | | | | 21 |
| | Protecting goal | | 5 | | 5 | | | | 10 |
| | Unknown | | 3 | | | | | | 3 |
| | Unrelated to hockey | | 13 | 12 | 7 | 4 | 1 | | 37 |
| | Shooting for goal | | | 2 | | | | | 2 |
| | Sprinting | | 3 | | | | | | 3 |
| | Colliding with ball | | 17 | 3 | 10 | | | | 30 |
| | Colliding with stick | | 28 | 39 | 9 | 2 | | | 78 |
| | Colliding with player | | 28 | 30 | 31 | | | | 89 |
| | Twisting | 2 | 33 | 68 | 20 | | | | 123 |
| | Tackle | | | 7 | | | | | 7 |
| | Collision - other | | 6 | | | | | | 6 |
| | Bending over stick | | 36 | 165 | 55 | 4 | | 1 | 261 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 628.604 | 90 | .000 |
| Likelihood Ratio | 285.184 | 90 | .000 |
| N of Valid Cases | 914 | | |

a 86 cells (76.8%) have expected count less than 5. The minimum expected count is .01.

### 4.3.2.8 Injury status:

## a. Injury status * Games in tournament

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Injury status | Acute | 7 | 37 | 39 | 47 | 57 | 80 | 41 | 28 | 2 | 338 |
| | Chronic | 15 | 35 | 96 | 123 | 118 | 110 | 50 | 26 | 3 | 576 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 28.103 | 8 | .000 |
| Likelihood Ratio | 28.026 | 8 | .000 |
| N of Valid Cases | 914 | | |

a 2 cells (11.1%) have expected count less than 5. The minimum expected count is 1.85.

## b. Injury status * Average hours of training in season

Cross tabulations Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Injury status | Acute | 123 | 156 | 40 | 16 | | 3 | 338 |
| | Chronic | 131 | 313 | 99 | 30 | 2 | 1 | 576 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 24.822 | 5 | .000 |
| Likelihood Ratio | 25.147 | 5 | .000 |
| N of Valid Cases | 914 | | |

a 4 cells (33.3%) have expected count less than 5. The minimum expected count is .74.

## c. Injury status * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Injury status | Acute | 38 | 128 | 124 | 44 | 1 | | 3 | | 338 |
| | Chronic | 38 | 257 | 188 | 57 | 23 | 5 | 7 | 1 | 576 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 25.550 | 7 | .001 |
| Likelihood Ratio | 31.197 | 7 | .000 |
| N of Valid Cases | 914 | | |

a 5 cells (31.3%) have expected count less than 5. The minimum expected count is .37.

## d. Injury status * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Injury status | Acute | 4 | 125 | 127 | 77 | | 1 | 4 | 338 |
| | Chronic | | 136 | 307 | 109 | 10 | 9 | 5 | 576 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 42.009 | 6 | .000 |
| Likelihood Ratio | 47.141 | 6 | .000 |
| N of Valid Cases | 914 | | |

a 5 cells (35.7%) have expected count less than 5. The minimum expected count is 1.48.

4.3.2.9 Clinical impressions:

## a. Clinical impressions * Games in tournament

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Clinical impressions | Abrasions | | 1 | | 1 | | 1 | | | | 3 |
| | Thoracic facet | 2 | 7 | 6 | 10 | 10 | 10 | 10 | 5 | | 60 |
| | Lumbar facet | 3 | 6 | 20 | 23 | 16 | 24 | 9 | 4 | | 105 |
| | Sacro-iliac syndrome | | 7 | 15 | 13 | 18 | 20 | 12 | 6 | 2 | 93 |
| | Costotransverse syndrome | | 1 | 2 | | | 1 | | | | 4 |
| | Tendinitis | | 1 | 3 | 6 | 5 | 8 | 3 | 1 | | 27 |
| | Patellofemoral pain syndrome | | 1 | 3 | 1 | 4 | 3 | 1 | 1 | | 14 |
| | General muscle tightness | | | 2 | 3 | 4 | | | 4 | | 13 |
| | Contusion | | 8 | 11 | 14 | 18 | 20 | 8 | 2 | | 81 |
| | Joint dysfunction - ankle and foot | 1 | | | 1 | | | | | | 2 |
| | Joint dysfunction - knee | | | 1 | 4 | 10 | 3 | 1 | 1 | | 20 |
| | Joint dysfunction - hip | 1 | | | | | | | | | 1 |
| | Joint dysfunction - hand and wrist | | | 1 | | | | | | | 1 |
| | Joint dysfunction - shoulder | | | | | | 1 | 1 | | | 2 |
| | Fracture | | | 2 | | | 3 | 4 | 1 | | 10 |
| | Myofascial pathology | 2 | 2 | | 3 | | | | 1 | | 8 |
| | GMT and myofascial | 3 | 18 | 39 | 50 | 47 | 47 | 22 | 9 | 2 | 237 |
| | Muscle tear | | 2 | 2 | 6 | 1 | 3 | | | | 14 |
| | Puncture | | | | | 1 | | | | | 1 |
| | Instability | 2 | 3 | 2 | 3 | | | | | | 10 |
| | Fat pad syndrome of knee | | | 2 | | | | | | | 2 |
| | Disc pathology | 2 | | | 4 | 1 | | | | | 7 |
| | Concussion | | | | | | 1 | | | | 1 |
| | Flatfoot | | | 1 | 1 | | | | | | 2 |
| | Dislocation | | | 2 | | | | | | | 2 |
| | Baker's cyst | | | 2 | 2 | | | | | | 4 |
| | Ingrown toe nail | | | | | 1 | | | | | 1 |
| | Corn | | | | | 1 | | | | | 1 |
| | Sprain | 1 | 3 | 3 | 7 | 9 | 8 | 3 | 7 | | 41 |
| | Strain | | 1 | 5 | 11 | 20 | 32 | 10 | 9 | 1 | 89 |
| | Cervical facet | 5 | 11 | 11 | 7 | 9 | 5 | 7 | 3 | | 58 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 378.739 | 240 | .000 |
| Likelihood Ratio | 299.848 | 240 | .005 |
| N of Valid Cases | 914 | | |

a 227 cells (81.4%) have expected count less than 5. The minimum expected count is .01.

## b. Clinical impressions * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Clinical impressions | Abrasions | 1 | 2 | | | | | 3 |
| | Thoracic facet | 12 | 44 | 1 | 3 | | | 60 |
| | Lumbar facet | 28 | 59 | 13 | 5 | | | 105 |
| | Sacro-iliac syndrome | 29 | 39 | 18 | 6 | | 1 | 93 |
| | Costotransverse syndrome | 1 | 2 | | 1 | | | 4 |
| | Tendinitis | 12 | 12 | 1 | | 2 | | 27 |
| | Patellofemoral pain syndrome | 8 | 6 | | | | | 14 |
| | General muscle tightness | 5 | | 8 | | | | 13 |
| | Contusion | 36 | 29 | 12 | 4 | | | 81 |
| | Joint dysfunction - ankle and foot | 1 | | 1 | | | | 2 |
| | Joint dysfunction - knee | 4 | 13 | 3 | | | | 20 |
| | Joint dysfunction - hip | | | 1 | | | | 1 |
| | Joint dysfunction - hand and wrist | | | 1 | | | | 1 |
| | Joint dysfunction - shoulder | | 2 | | | | | 2 |
| | Fracture | 5 | 2 | | | | 3 | 10 |
| | Myofascial pathology | 4 | 4 | | | | | 8 |
| | GMT and myofascial | 57 | 135 | 33 | 12 | | | 237 |
| | Muscle tear | 4 | 8 | | 2 | | | 14 |
| | Puncture | | 1 | | | | | 1 |
| | Instability | | 9 | 1 | | | | 10 |
| | Fat pad syndrome of knee | | 2 | | | | | 2 |
| | Disc pathology | 6 | 1 | | | | | 7 |
| | Concussion | 1 | | | | | | 1 |
| | Flatfoot | 2 | | | | | | 2 |
| | Dislocation | | 2 | | | | | 2 |
| | Baker's cyst | | 4 | | | | | 4 |
| | Ingrown toe nail | | 1 | | | | | 1 |
| | Corn | | 1 | | | | | 1 |
| | Sprain | 18 | 6 | 13 | 4 | | | 41 |
| | Strain | 11 | 53 | 20 | 5 | | | 89 |
| | Cervical facet | 9 | 32 | 13 | 4 | | | 58 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 457.405 | 150 | .000 |
| Likelihood Ratio | 247.647 | 150 | .000 |
| N of Valid Cases | 914 | | |

a 151 cells (81.2%) have expected count less than 5. The minimum expected count is .00.

## c. Clinical impressions * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Clinical impressions | Abrasions | | 1 | 1 | 1 | | | | | 3 |
| | Thoracic facet | 3 | 29 | 21 | 4 | 1 | 2 | | | 60 |
| | Lumbar facet | 5 | 52 | 35 | 5 | 8 | | | | 105 |
| | Sacro-iliac syndrome | 8 | 37 | 36 | 8 | 3 | | 1 | | 93 |
| | Costotransverse syndrome | | 2 | 2 | | | | | | 4 |
| | Tendinitis | 2 | 9 | 8 | 8 | | | | | 27 |
| | Patellofemoral pain syndrome | 5 | 5 | 2 | 1 | 1 | | | | 14 |
| | General muscle tightness | | 11 | 2 | | | | | | 13 |
| | Contusion | 6 | 20 | 47 | 8 | | | | | 81 |
| | Joint dysfunction - ankle and foot | | 1 | 1 | | | | | | 2 |
| | Joint dysfunction - knee | | 12 | 5 | 3 | | | | | 20 |
| | Joint dysfunction - hip | | | 1 | | | | | | 1 |
| | Joint dysfunction - hand and wrist | 1 | | | | | | | | 1 |
| | Joint dysfunction - shoulder | | 2 | | | | | | | 2 |
| | Fracture | 2 | 4 | 4 | | | | | | 10 |
| | Myofascial pathology | 4 | 4 | | | | | | | 8 |
| | GMT and myofascial | 17 | 126 | 63 | 28 | 2 | | | 1 | 237 |
| | Muscle tear | 2 | 9 | 1 | 2 | | | | | 14 |
| | Puncture | 1 | | | | | | | | 1 |
| | Instability | | 2 | 8 | | | | | | 10 |
| | Fat pad syndrome of knee | | | 2 | | | | | | 2 |
| | Disc pathology | | | 5 | 1 | | 1 | | | 7 |
| | Concussion | 1 | | | | | | | | 1 |
| | Flatfoot | | 2 | | | | | | | 2 |
| | Dislocation | | 2 | | | | | | | 2 |
| | Baker's cyst | | | | | 4 | | | | 4 |
| | Ingrown toe nail | | 1 | | | | | | | 1 |
| | Corn | | | | | 1 | | | | 1 |
| | Sprain | 3 | 11 | 21 | 6 | | | | | 41 |
| | Strain | 13 | 24 | 27 | 19 | 3 | | 3 | | 89 |
| | Cervical facet | 3 | 19 | 20 | 7 | 1 | 2 | 6 | | 58 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 512.533 | 210 | .000 |
| Likelihood Ratio | 297.472 | 210 | .000 |
| N of Valid Cases | 914 | | |

a 212 cells (85.5%) have expected count less than 5. The minimum expected count is .00.

## d. Clinical impressions * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Clinical impressions | Abrasions | | 1 | 2 | | | | | 3 |
| | Thoracic facet | | 11 | 24 | 23 | | | 2 | 60 |
| | Lumbar facet | | 17 | 55 | 27 | 4 | 2 | | 105 |
| | Sacro-iliac syndrome | | 20 | 52 | 18 | | 3 | | 93 |
| | Costotransverse syndrome | | 1 | 2 | 1 | | | | 4 |
| | Tendinitis | | 11 | 8 | 8 | | | | 27 |
| | Patellofemoral pain syndrome | | 2 | 10 | 1 | | 1 | | 14 |
| | General muscle tightness | | 3 | 8 | 2 | | | | 13 |
| | Contusion | | 27 | 36 | 18 | | | | 81 |
| | Joint dysfunction - ankle and foot | 1 | | | 1 | | | | 2 |
| | Joint dysfunction - knee | | 1 | 17 | | 2 | | | 20 |
| | Joint dysfunction - hip | | | 1 | | | | | 1 |
| | Joint dysfunction - hand and wrist | | 1 | | | | | | 1 |
| | Joint dysfunction - shoulder | | | 2 | | | | | 2 |
| | Fracture | | 6 | 2 | 2 | | | | 10 |
| | Myofascial pathology | | 8 | | | | | | 8 |
| | GMT and myofascial | 2 | 78 | 115 | 41 | | | 1 | 237 |
| | Muscle tear | 1 | 9 | 2 | 2 | | | | 14 |
| | Puncture | | 1 | | | | | | 1 |
| | Instability | | 2 | 8 | | | | | 10 |
| | Fat pad syndrome of knee | | | 2 | | | | | 2 |
| | Disc pathology | | | 5 | 1 | | | 1 | 7 |
| | Concussion | | | 1 | | | | | 1 |
| | Flatfoot | | | 2 | | | | | 2 |
| | Dislocation | | 2 | | | | | | 2 |
| | Baker's cyst | | | | | 4 | | | 4 |
| | Ingrown toe nail | | | 1 | | | | | 1 |
| | Corn | | | | | | 1 | | 1 |
| | Sprain | | 13 | 18 | 10 | | | | 41 |
| | Strain | | 25 | 45 | 16 | | 3 | | 89 |
| | Cervical facet | | 22 | 16 | 15 | | | 5 | 58 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 812.130 | 180 | .000 |
| Likelihood Ratio | 276.520 | 180 | .000 |
| N of Valid Cases | 914 | | |

a 185 cells (85.3%) have expected count less than 5. The minimum expected count is .00.

4.3.2.10 Treatment received:

**a. Treatment received * Games in tournament**

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Treatment received | Manipulation | | 1 | 1 | 3 | 3 | 4 | | 1 | | 13 |
| | Strapping | 2 | 6 | 9 | 12 | 8 | 12 | 6 | 5 | | 60 |
| | Cryotherapy | 1 | 1 | 7 | 9 | 13 | 21 | 9 | 3 | | 64 |
| | Voltaren and massage | | 3 | 5 | 7 | 13 | 16 | 7 | 5 | 1 | 57 |
| | TENS | | 1 | 3 | 6 | 1 | 2 | 3 | 2 | | 18 |
| | Exercises | | | 2 | 3 | 2 | | | | | 7 |
| | Disinfection and plaster | | | | 1 | 2 | | | | | 3 |
| | Manipulation and massage | | 2 | | | | | | | | 2 |
| | Manipulation, massage and stretch | 10 | 30 | 57 | 56 | 64 | 60 | 34 | 16 | 1 | 328 |
| | Massage | 1 | | | 1 | 1 | 1 | | 1 | | 5 |
| | Mobilisation and massage | | 1 | 2 | 2 | 1 | | | | | 6 |
| | Mobilisation, massage and stretch | | 1 | 2 | 6 | 2 | 1 | 1 | | | 13 |
| | Needle and stretch | | 1 | | | | | | | | 1 |
| | Massage and cryotherapy | 1 | 2 | 1 | 5 | 1 | | | 1 | | 11 |
| | Ischemic and stretch | 6 | 16 | 20 | 26 | 26 | 28 | 8 | 7 | 1 | 138 |
| | Referral - x-rays | | | 1 | | | | 2 | 1 | | 4 |
| | Myofascial - grip and rip | | 1 | 2 | | | 5 | 1 | 1 | | 10 |
| | Observation + monitoring | | | | | 2 | 3 | 2 | 2 | | 9 |
| | Padding | | | | | 1 | | | | | 1 |
| | Mobilisation | | | | | 1 | | | 1 | | 2 |
| | Myofascial - ischemic compression | 1 | | | | | | | | | 1 |
| | Myofascial - cross friction and ice | | 2 | 6 | 8 | 8 | 9 | 3 | 1 | 1 | 38 |
| | Myofascial - dynamic ischemic compression | | | 1 | | | | | | | 1 |
| | Needling | | 2 | 3 | 6 | 2 | 2 | 2 | | | 17 |
| | Stretching - PNF | | 1 | 11 | 19 | 23 | 26 | 12 | 7 | 1 | 100 |
| | Stretching - passive | | 1 | 2 | | 1 | | 1 | | | 5 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 247.342 | 200 | .013 |
| Likelihood Ratio | 207.133 | 200 | .350 |
| N of Valid Cases | 914 | | |

a 192 cells (82.1%) have expected count less than 5. The minimum expected count is .01.

## b. Treatment received * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Treatment received | Manipulation | 9 | 3 | 1 | | | | 13 |
| | Strapping | 20 | 22 | 14 | 4 | | | 60 |
| | Cryotherapy | 21 | 26 | 14 | 2 | | 1 | 64 |
| | Voltaren and massage | 7 | 31 | 14 | 4 | | 1 | 57 |
| | TENS | 4 | 11 | 1 | 1 | | 1 | 18 |
| | Exercises | 1 | 6 | | | | | 7 |
| | Disinfection and plaster | 1 | 2 | | | | | 3 |
| | Manipulation and massage | | 1 | | 1 | | | 2 |
| | Manipulation, massage and stretch | 85 | 180 | 43 | 19 | | 1 | 328 |
| | Massage | 2 | 2 | | | 1 | | 5 |
| | Mobilisation and massage | 1 | 3 | 2 | | | | 6 |
| | Mobilisation, massage and stretch | 2 | 10 | | 1 | | | 13 |
| | Needle and stretch | | 1 | | | | | 1 |
| | Massage and cryotherapy | 3 | 6 | 2 | | | | 11 |
| | Ischemic and stretch | 37 | 78 | 19 | 4 | | | 138 |
| | Referral - x-rays | 3 | 1 | | | | | 4 |
| | Myofascial - grip and rip | 2 | 5 | 3 | | | | 10 |
| | Observation + monitoring | 1 | 8 | | | | | 9 |
| | Padding | | 1 | | | | | 1 |
| | Mobilisation | | 1 | 1 | | | | 2 |
| | Myofascial - ischemic compression | | 1 | | | | | 1 |
| | Myofascial - cross friction and ice | 21 | 15 | 1 | | 1 | | 38 |
| | Myofascial - dynamic ischemic compression | 1 | | | | | | 1 |
| | Needling | 4 | 9 | 2 | 2 | | | 17 |
| | Stretching - PNF | 27 | 43 | 22 | 8 | | | 100 |
| | Stretching - passive | 2 | 3 | | | | | 5 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 222.922 | 125 | .000 |
| Likelihood Ratio | 133.778 | 125 | .279 |
| N of Valid Cases | 914 | | |

a 125 cells (80.1%) have expected count less than 5. The minimum expected count is .00.

## c. Treatment received * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Treatment received | Manipulation | | 5 | 2 | 6 | | | | | 13 |
| | Strapping | 6 | 15 | 33 | 5 | | | 1 | | 60 |
| | Cryotherapy | 3 | 24 | 30 | 7 | | | | | 64 |
| | Voltaren and massage | 3 | 23 | 23 | 8 | | | | | 57 |
| | TENS | 3 | 5 | 6 | 1 | 2 | | 1 | | 18 |
| | Exercises | | 6 | 1 | | | | | | 7 |
| | Disinfection and plaster | 1 | 1 | | 1 | | | | | 3 |
| | Manipulation and massage | 1 | | 1 | | | | | | 2 |
| | Manipulation, massage and stretch | 25 | 152 | 103 | 29 | 12 | 3 | 3 | 1 | 328 |
| | Massage | | 3 | | 1 | | 1 | | | 5 |
| | Mobilisation and massage | | 2 | 1 | 1 | 2 | | | | 6 |
| | Mobilisation, massage and stretch | 4 | 6 | 3 | | | | | | 13 |
| | Needle and stretch | | 1 | | | | | | | 1 |
| | Massage and cryotherapy | 3 | 5 | 2 | 1 | | | | | 11 |
| | Ischemic and stretch | 13 | 67 | 35 | 16 | 3 | 1 | 3 | | 138 |
| | Referral - x-rays | 1 | 1 | 2 | | | | | | 4 |
| | Myofascial - grip and rip | 1 | 3 | 3 | 3 | | | | | 10 |
| | Observation + monitoring | 1 | 2 | 6 | | | | | | 9 |
| | Padding | | | | | 1 | | | | 1 |
| | Mobilisation | | 1 | 1 | | | | | | 2 |
| | Myofascial - ischemic compression | 1 | | | | | | | | 1 |
| | Myofascial - cross friction and ice | 4 | 6 | 18 | 8 | 2 | | | | 38 |
| | Myofascial - dynamic ischemic compression | | | 1 | | | | | | 1 |
| | Needling | 3 | 9 | 4 | 1 | | | | | 17 |
| | Stretching - PNF | 3 | 46 | 35 | 12 | 2 | | 2 | | 100 |
| | Stretching - passive | | 2 | 2 | 1 | | | | | 5 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 249.284 | 175 | .000 |
| Likelihood Ratio | 172.820 | 175 | .532 |
| N of Valid Cases | 914 | | |

a 177 cells (85.1%) have expected count less than 5. The minimum expected count is .00.

## d. Treatment received * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Treatment received | Manipulation | | 2 | 5 | 6 | | | | 13 |
| | Strapping | | 21 | 30 | 9 | | | | 60 |
| | Cryotherapy | | 16 | 37 | 11 | | | | 64 |
| | Voltaren and massage | 1 | 13 | 27 | 16 | | | | 57 |
| | TENS | | 7 | 7 | 2 | 2 | | | 18 |
| | Exercises | | 4 | 3 | | | | | 7 |
| | Disinfection and plaster | | 1 | 2 | | | | | 3 |
| | Manipulation and massage | | 1 | 1 | | | | | 2 |
| | Manipulation, massage and stretch | 2 | 85 | 158 | 70 | 4 | 5 | 4 | 328 |
| | Massage | | 1 | 2 | 1 | | | 1 | 5 |
| | Mobilisation and massage | | 2 | 1 | | 2 | | 1 | 6 |
| | Mobilisation, massage and stretch | | 7 | 6 | | | | | 13 |
| | Needle and stretch | | | | 1 | | | | 1 |
| | Massage and cryotherapy | | 6 | 3 | 2 | | | | 11 |
| | Ischemic and stretch | | 55 | 47 | 31 | | 2 | 3 | 138 |
| | Referral - x-rays | | 2 | 1 | 1 | | | | 4 |
| | Myofascial - grip and rip | | 4 | 6 | | | | | 10 |
| | Observation + monitoring | | | 3 | 6 | | | | 9 |
| | Padding | | | | | | 1 | | 1 |
| | Mobilisation | | 1 | 1 | | | | | 2 |
| | Myofascial - ischemic compression | | 1 | | | | | | 1 |
| | Myofascial - cross friction and ice | | 12 | 16 | 8 | | 2 | | 38 |
| | Myofascial - dynamic ischemic compression | | 1 | | | | | | 1 |
| | Needling | | 7 | 10 | | | | | 17 |
| | Stretching - PNF | 1 | 10 | 67 | 20 | 2 | | | 100 |
| | Stretching - passive | | 2 | 1 | 2 | | | | 5 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 321.747 | 150 | .000 |
| Likelihood Ratio | 178.706 | 150 | .055 |
| N of Valid Cases | 914 | | |

a 155 cells (85.2%) have expected count less than 5. The minimum expected count is .00.

### 4.3.2.11 Play status of player:

## a. Play status of player * Games in tournament

Cross tabulation Count

| | | Games in tournament | | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | None | One | Two | Three | Four | Five | Six | Seven | Eight | |
| Play status of player | Continuation of play | 17 | 72 | 133 | 169 | 173 | 183 | 87 | 53 | 5 | 892 |
| | Reportable - hospital | 1 | | 1 | | | 3 | 4 | 1 | | 10 |
| | Reportable - off field | | | | 1 | 2 | 2 | | | | 5 |
| | Reportable - restricted play | 4 | | 1 | | | 2 | | | | 7 |
| Total | | 22 | 72 | 135 | 170 | 175 | 190 | 91 | 54 | 5 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 113.848 | 24 | .000 |
| Likelihood Ratio | 49.917 | 24 | .001 |
| N of Valid Cases | 914 | | |

a 28 cells (77.8%) have expected count less than 5. The minimum expected count is .03.

## b. Play status of player * Average hours of training in season

Cross tabulation Count

| | | Average hours of training in season | | | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | Unspecified | |
| Play status of player | Continuation of play | 237 | 467 | 139 | 46 | 2 | 1 | 892 |
| | Reportable - hospital | 5 | 2 | | | | 3 | 10 |
| | Reportable - off field | 5 | | | | | | 5 |
| | Reportable - restricted play | 7 | | | | | | 7 |
| Total | | 254 | 469 | 139 | 46 | 2 | 4 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 239.544 | 15 | .000 |
| Likelihood Ratio | 62.068 | 15 | .000 |
| N of Valid Cases | 914 | | |

a 19 cells (79.2%) have expected count less than 5. The minimum expected count is .01.

## c. Play status of player * Experience of player

Cross tabulation Count

| | | Experience of player | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | Unspecified | 24.00 | |
| Play status of player | Continuation of play | 72 | 377 | 303 | 101 | 24 | 4 | 10 | 1 | 892 |
| | Reportable - hospital | 1 | 4 | 4 | | | 1 | | | 10 |
| | Reportable - off field | | | 5 | | | | | | 5 |
| | Reportable - restricted play | 3 | 4 | | | | | | | 7 |
| Total | | 76 | 385 | 312 | 101 | 24 | 5 | 10 | 1 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 41.819 | 21 | .004 |
| Likelihood Ratio | 30.387 | 21 | .084 |
| N of Valid Cases | 914 | | |

a 26 cells (81.3%) have expected count less than 5. The minimum expected count is .01.

## d. Play status of player * Age of Player

Cross tabulation Count

| | | Age of Player | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 11-15 | 16-20 | 21-25 | 26-30 | 31-35 | 36-40 | 41-45 | |
| Play status of player | Continuation of play | 4 | 251 | 425 | 184 | 10 | 10 | 8 | 892 |
| | Reportable - hospital | | 5 | 2 | 2 | | | 1 | 10 |
| | Reportable - off field | | | 5 | | | | | 5 |
| | Reportable - restricted play | | 5 | 2 | | | | | 7 |
| Total | | 4 | 261 | 434 | 186 | 10 | 10 | 9 | 914 |

Chi-Square Tests

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 24.136 | 18 | .151 |
| Likelihood Ratio | 21.473 | 18 | .256 |
| N of Valid Cases | 914 | | |

a 22 cells (78.6%) have expected count less than 5. The minimum expected count is .02.

## 4.3.3 Case Processing Summary for the Multinomial Regression Analysis

| | | N |
|---|---|---|
| Position of player | Center | 262 |
| | Striker | 50 |
| | Right wing | 134 |
| | Left wing | 96 |
| | Sweeper | 42 |
| | Back / Defense | 89 |
| | Goalie | 65 |
| | Utility | 35 |
| | Link - side unknown | 127 |
| | Unspecified | 14 |
| Age of Player | 11-15 | 4 |
| | 16-20 | 261 |
| | 21-25 | 434 |
| | 26-30 | 186 |
| | 31-35 | 10 |
| | 36-40 | 10 |
| | 41-45 | 9 |
| Experience of player | 0-5 | 76 |
| | 6-10 | 385 |
| | 11-15 | 312 |
| | 16-20 | 101 |
| | 21-25 | 24 |
| | 26-30 | 5 |
| | Unspecified | 10 |
| | 24.00 | 1 |
| Gender of player | Female | 58 |
| | Male | 856 |
| Average hours of training in season | 0-5 | 254 |
| | 6-10 | 469 |
| | 11-15 | 139 |
| | 16-20 | 46 |
| | 21-25 | 2 |
| | Unspecified | 4 |
| Patient status | New patient | 179 |
| | Follow up treatment | 735 |
| Previous injury | Yes - to region | 714 |
| | No - to region | 200 |
| Mechanism of injury | Running | 204 |
| | Abrupt stopping | 23 |
| | Traveling to venue | 17 |
| | Sliding | 21 |
| | Protecting goal | 10 |
| | Unknown | 3 |
| | Unrelated to hockey | 37 |
| | Shooting for goal | 2 |
| | Sprinting | 3 |
| | Colliding with ball | 30 |
| | Colliding with stick | 78 |
| | Colliding with player | 89 |
| | Twisting | 123 |
| | Tackle | 7 |
| | Collision - other | 6 |
| | Bending over stick | 261 |

| | | |
|---|---|---|
| Clinical impressions | Abrasions | 3 |
| | Thoracic facet | 60 |
| | Lumbar facet | 105 |
| | Sacro-iliac syndrome | 93 |
| | Costotransverse syndrome | 4 |
| | Tendinitis | 27 |
| | Patellofemoral pain syndrome | 14 |
| | General muscle tightness | 13 |
| | Contusion | 81 |
| | Joint dysfunction - ankle and foot | 2 |
| | Joint dysfunction - knee | 20 |
| | Joint dysfunction - hip | 1 |
| | Joint dysfunction - hand and wrist | 1 |
| | Joint dysfunction - shoulder | 2 |
| | Fracture | 10 |
| | Myofascial pathology | 8 |
| | GMT and myofascial | 237 |
| | Muscle tear | 14 |
| | Puncture | 1 |
| | Instability | 10 |
| | Fat pad syndrome of knee | 2 |
| | Disc pathology | 7 |
| | Concussion | 1 |
| | Flatfoot | 2 |
| | Dislocation | 2 |
| | Baker's cyst | 4 |
| | Ingrown toe nail | 1 |
| | Corn | 1 |
| | Sprain | 41 |
| | Strain | 89 |
| | Cervical facet | 58 |
| Treatment received | Manipulation | 13 |
| | Strapping | 60 |
| | Cryotherapy | 64 |
| | Voltaren and massage | 57 |
| | TENS | 18 |
| | Exercises | 7 |
| | Disinfection and plaster | 3 |
| | Manipulation and massage | 2 |
| | Manipulation, massage and stretch | 328 |
| | Massage | 5 |
| | Mobilisation and massage | 6 |
| | Mobilisation, massage and stretch | 13 |
| | Needle and stretch | 1 |
| | Massage and cryotherapy | 11 |
| | Ischemic and stretch | 138 |
| | Referral - x-rays | 4 |
| | Myofascial - grip and rip | 10 |
| | Observation + monitoring | 9 |
| | Padding | 1 |
| | Mobilisation | 2 |
| | Myofascial - ischemic compression | 1 |
| | Myofascial - cross friction and ice | 38 |
| | Myofascial - dynamic ischemic compression | 1 |
| | Needling | 17 |
| | Stretching - PNF | 100 |
| | Stretching - passive | 5 |

| | | |
|---|---|---|
| Injury status | Acute | 338 |
| | Chronic | 576 |
| Anatomic location of the injury | Head | 1 |
| | Ankle | 53 |
| | Foot | 13 |
| | Shoulder | 23 |
| | Wrist | 12 |
| | Hand | 15 |
| | Thigh - quad | 54 |
| | Thigh - adductors | 26 |
| | Neck | 83 |
| | TFL – ITB | 6 |
| | Thoracic | 81 |
| | Low back | 298 |
| | Ribs | 10 |
| | Hip | 9 |
| | Thigh – hamstring | 96 |
| | Knee | 74 |
| | Leg | 60 |
| Games in tournament | None | 22 |
| | One | 72 |
| | Two | 135 |
| | Three | 170 |
| | Four | 175 |
| | Five | 190 |
| | Six | 91 |
| | Seven | 54 |
| | Eight | 5 |
| Play status of player | Continuation of play | 892 |
| | Reportable - hospital | 10 |
| | Reportable - off field | 5 |
| | Reportable - restricted play | 7 |
| Race of player | White | 703 |
| | African | 44 |
| | Coloured | 144 |
| | Asian | 23 |
| Valid | | 914 |
| Missing | | 0 |
| Total | | 914 |

**Please note that only the significant parametric estimates have been included for the sake of brevity.**

### 4.3.3.1 Model Fitting Information for POSITION

| Model | -2 Log Likelihood | Chi-Square | Df | Sig. |
|---|---|---|---|---|
| Intercept Only | 3752.041 | | | |
| Final | 2165.490 | 1586.552 | 1080 | .000 |

### 4.3.3.1 Pseudo R-Square for POSITION

| | |
|---|---|
| Cox and Snell | .824 |
| Nagelkerke | .837 |
| McFadden | .422 |

### 4.3.3.1 Likelihood Ratio Tests for POSITION

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 319074.368 | .000 | 0 | . |
| AGE | 3635.776 | 1470.287 | 54 | .000 |
| EXPERIEN | 4227.754 | 2062.264 | 63 | .000 |
| GENDER | 3549.697 | 1384.207 | 9 | .000 |
| TRAINING | 3581.534 | 1416.044 | 45 | .000 |
| NPFU | 3287.320 | 1121.830 | 9 | .000 |
| PREVINJ | 4088.613 | 1923.124 | 9 | .000 |
| MECHANIS | 3693.558 | 1528.069 | 135 | .000 |
| CLINICAL | 4176.819 | 2011.329 | 252 | .000 |
| TREATMEN | 4708.424 | 2542.934 | 216 | .000 |
| INJURY | 3312.583 | 1147.093 | 9 | .000 |
| LOCATION | 3403.860 | 1238.370 | 135 | .000 |
| GAMES | 4590.232 | 2424.743 | 72 | .000 |
| PLAYSTAT | 3586.200 | 1420.710 | 27 | .000 |
| RACE | 3577.530 | 1412.040 | 27 | .000 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a The log-likelihood value cannot be further increased after maximum number of step-halving.

b Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

### 4.3.3.1 Parameter Estimates for POSITION

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Position | Association | B | Std Error | Wald | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| | | | | | | | | | |
| Center | Clinical 2 | -13.616 | 4.895 | 7.737 | 1 | .005 | 1.221E-06 | 8.321E-11 | 1.792E-02 |
| | Location 2 | -7.567 | 2.664 | 8.070 | 1 | .005 | 5.173E-04 | 2.795E-06 | 9.574E-02 |
| Striker | Clinical 21 | -22.473 | 6.226 | 12.865 | 1 | .000 | 1.738E-10 | 8.068E-16 | 3.744E-05 |
| Right Wing | Clinical 2 | -13.490 | 5.031 | 7.188 | 1 | .007 | 1.385E-06 | 7.225E-11 | 2.657E-02 |
| | Clinical 14 | -15.321 | 5.549 | 7.624 | 1 | .006 | 2.220E-07 | 4.201E-12 | 1.173E-02 |
| | Clinical 19 | -21.014 | 6.043 | 12.092 | 1 | .001 | 7.474E-10 | 5.365E-15 | 1.041E-04 |
| | Location 2 | -9.362 | 3.075 | 9.270 | 1 | .002 | 8.594E-05 | 2.074E-07 | 3.560E-02 |
| Left Wing | None | None | None | None | 0 | None | None | None | None |
| Sweeper | Location 2 | -11.248 | 3.154 | 12.718 | 1 | .000 | 1.303E-05 | 2.692E-05 | 6.305E-03 |
| | Location 4 | 4.774 | 1.759 | 7.370 | 1 | .007 | 8.445E-03 | 2.690E-04 | 0.265 |
| Back/Defense | Previnj 1 | -4.361 | 1.413 | 9.527 | 1 | .002 | 1.277E-02 | 8.008E-03 | 0.204 |
| | Clinical 2 | -15.720 | 5.088 | 9.544 | 1 | .002 | 1.489E-07 | 6.942E-12 | 3.193E-03 |
| | Clinical 14 | -15.138 | 5.677 | 7.111 | 1 | .008 | 2.666E-07 | 3.924E-12 | 1.811E-02 |
| Goalie | None | None | None | None | 0 | None | None | None | None |
| Utility | None | None | None | None | 0 | None | None | None | None |
| Link (?side) | Clinical 2 | -14.438 | 4.889 | 8.721 | 1 | .003 | 5.369E-07 | 3.702E-11 | 7.785E-03 |
| | Location 2 | -6.782 | 2.406 | 7.945 | 1 | .005 | 1.134E-03 | 1.015E-05 | 0.127 |

### 4.3.3.2 Model Fitting Information for AGE OF PLAYER

| Model | -2 Log Likelihood | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept Only | 2198.804 | | | |
| Final | 1837.284 | 361.520 | 738 | 1.000 |

### 4.3.3.2 Pseudo R-Square for AGE OF PLAYER

| | |
|---|---|
| Cox and Snell | .327 |
| Nagelkerke | .359 |
| McFadden | .164 |

### 4.3.3.2 Likelihood Ratio Tests for AGE OF PLAYER

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 590.548 | .000 | 0 | . |
| POSITION | 2759568.547 | 2757731.262 | 54 | .000 |
| EXPERIEN | 3480.660 | 1643.376 | 42 | .000 |
| RACE | 3547422.596 | 3545585.312 | 18 | .000 |
| GENDER | 2619505.484 | 2617668.199 | 6 | .000 |
| TRAINING | 6612893.301 | 6611056.017 | 30 | .000 |
| NPFU | 2497701.574 | 2495864.289 | 6 | .000 |
| PREVINJ | 2635584.726 | 2633747.442 | 6 | .000 |
| LOCATION | 5294039.742 | 5292202.457 | 90 | .000 |
| MECHANIS | 6986641.396 | 6984804.112 | 90 | .000 |
| INJURY | 2535196.767 | 2533359.483 | 6 | .000 |
| CLINICAL | 995823.805 | 993986.521 | 168 | .000 |
| TREATMEN | 2822333.887 | 2820496.603 | 144 | .000 |
| PLAYSTAT | 2690397.805 | 2688560.520 | 18 | .000 |
| GAMES | 5472752.791 | 5470915.507 | 48 | .000 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

### 4.3.3.2 Parameter Estimates for AGE OF PLAYER

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Age | Association | B | Std Error | Wald . | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| 11 – 15 | None | None | None | None | None | None | None | None | None |
| 16 – 20 | None | None | None | None | None | None | None | None | None |
| 21 – 25 | None | None | None | None | None | None | None | None | None |
| 26 – 30 | None | None | None | None | None | None | None | None | None |
| 31 – 35 | None | None | None | None | None | None | None | None | None |

### 4.3.3.3 Model Fitting Information for EXPERIENCE

| Model | -2 Log Likelihood | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept Only | 2488.758 | | | |
| Final | 2064.630 | 424.128 | 854 | 1.000 |

### 4.3.3.3 Pseudo R-Square for EXPERIENCE

| | |
|---|---|
| Cox and Snell | .371 |
| Nagelkerke | .397 |
| McFadden | .170 |

### 4.3.3.3 Likelihood Ratio Tests for EXPERIENCE

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 3151259.013 | .000 | 0 | . |
| POSITION | 1627653656205.535 | 1627653654140.905 | 63 | .000 |
| TRAINING | 2850054600932.266 | 2850054598867.636 | 35 | .000 |
| NPFU | 1812405100472.951 | 1812405098408.321 | 7 | .000 |
| PREVINJ | 1312670378253.734 | 1312670376189.104 | 7 | .000 |
| LOCATION | 1292980963949.701 | 1292980961885.071 | 105 | .000 |
| MECHANIS | 3761927435582.849 | 3761927433518.219 | 105 | .000 |
| INJURY | 4426392516459.437 | 4426392514394.807 | 7 | .000 |
| CLINICAL | 23158139458865.280 | 23158139456800.650 | 196 | .000 |
| TREATMEN | 329357189230441.900 | 329357189228377.300 | 168 | .000 |
| GENDER | 1694917293052.245 | 1694917290987.615 | 7 | .000 |
| PLAYSTAT | INF | INF | 21 | .500 |
| GAMES | 14802247384520.580 | 14802247382455.950 | 56 | .000 |
| RACE | 1215657214821.958 | 1215657212757.328 | 21 | .000 |
| AGE | 2515.309 | 450.679 | 42 | .000 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a The log-likelihood value cannot be further increased after maximum number of step-halving.

b Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

### 4.3.3.3 Parameter Estimates for EXPERIENCE

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Years Experience | Association | B | Std Error | Wald | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| 0 – 5 | Location 18 | -12.677 | 3.241 | 15.298 | 1 | .000 | 3.121E-06 | 5.437E-09 | 1.792E-03 |
| 6 – 10 | Location 18 | -13.160 | 3.060 | 18.494 | 1 | .000 | 1.926E-06 | 4.784E-09 | 7.752E-04 |
| 11 – 15 | Location 18 | -12.565 | 3.086 | 16.610 | 1 | .000 | 3.456E-06 | 8.168E-09 | 1.462E-03 |
| | Race 4 | -7.290 | 2.174 | 11.245 | 1 | .001 | 6.823E-04 | 9.626E-06 | 4.836E-02 |
| 16 – 20 | Location 18 | -12.266 | 5.146 | 15.205 | 1 | .000 | 4.707E-06 | 9.886E-09 | 2.241E-09 |
| 21 – 25 | Location 18 | -13.039 | 3.931 | 11.000 | 1 | .001 | 2.175E-06 | 9.798E-10 | 4.828E-03 |
| 26 – 30 | None | None | None | None | None | None | None | None | None |
| Unspecified | Location 18 | -9.967 | 3.406 | 8.564 | 1 | .003 | 4.695E-05 | 5.925E-08 | 3.720E-02 |

### 4.3.3.4 Model Fitting Information for RACE

| Model | -2 Log Likelihood | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept Only | 1337.615 | | | |
| Final | 3434.576 | -2096.961 | 378 | 1.000 |

### 4.3.3.4 Pseudo R-Square for RACE

| | |
|---|---|
| Cox and Snell | .000 |
| Nagelkerke | .000 |
| McFadden | .000 |

### 4.3.3.4 Likelihood Ratio Tests for RACE

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 306.115 | .000 | 0 | . |
| POSITION | 24062.725 | 20628.149 | 27 | .000 |
| AGE | 30184.663 | 26750.087 | 18 | .000 |
| LOCATION | 2983.579 | -450.997 | 45 | 1.000 |
| PREVINJ | 4217.387 | 782.811 | 3 | .000 |
| MECHANIS | 16026.142 | 12591.566 | 45 | .000 |
| INJURY | 3602.939 | 168.363 | 3 | .000 |
| CLINICAL | 8320.055 | 4885.479 | 84 | .000 |
| TREATMEN | 1053.065 | -2381.510 | 72 | 1.000 |
| PLAYSTAT | 3544.619 | 110.043 | 9 | .000 |
| GAMES | 6518.197 | 3083.621 | 24 | .000 |
| NPFU | 3309.273 | -125.303 | 3 | 1.000 |
| TRAINING | 4422.092 | 987.516 | 15 | .000 |
| GENDER | 5178.894 | 1744.318 | 3 | .000 |
| EXPERIEN | 56019.444 | 52584.868 | 21 | .000 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

b The log-likelihood value cannot be further increased after maximum number of step-halving.

### 4.3.3.4 Parameter Estimates for RACE

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Race | Association | B | Std Error | Wald. | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| White | Location 1 | -214.036 | 12.693 | 284.364 | 1 | .000 | 1.110E-93 | 1.743-104 | 7.065E-83 |
| | Mechanism 5 | -3.626 | 1.396 | 6.743 | 1 | .009 | 2.663E-02 | 1.725E-03 | 0.411 |
| African | Mechanism 5 | -5.232 | 1.762 | 8.818 | 1 | .003 | 5.343E-03 | 1.690E-04 | 0.169 |
| Coloured | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |
| Asian | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |

### 4.3.3.5 Model Fitting Information for GENDER

| Model | -2 Log Likelihood | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept Only | 432.096 | | | |
| Final | 319.485 | 112.611 | 128 | .832 |

### 4.3.3.5 Pseudo R-Square for GENDER

| | |
|---|---|
| Cox and Snell | .116 |
| Nagelkerke | .308 |
| McFadden | .261 |

### 4.3.3.5 Likelihood Ratio Tests for GENDER

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 42.307 | .000 | 0 | . |
| POSITION | 236.322 | -83.163 | 9 | 1.000 |
| AGE | 50.062 | -269.423 | 6 | 1.000 |
| EXPERIEN | 376.619 | 57.134 | 7 | .000 |
| RACE | 184.970 | -134.515 | 3 | 1.000 |
| TRAINING | 48.031 | -271.454 | 5 | 1.000 |
| NPFU | 316.585 | -2.900 | 1 | 1.000 |
| PREVINJ | 321.591 | 2.106 | 1 | .147 |
| MECHANIS | 2222.570 | 1903.085 | 15 | .000 |
| CLINICAL | 390.729 | 71.245 | 28 | .000 |
| PLAYSTAT | 918.886 | 599.401 | 3 | .000 |
| GAMES | 81.575 | -237.910 | 8 | 1.000 |
| TREATMEN | 279.888 | -39.596 | 24 | 1.000 |
| INJURY | 353.038 | 33.553 | 1 | .000 |
| LOCATION | 26328082.616 | 26327763.131 | 15 | .000 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

b The log-likelihood value cannot be further increased after maximum number of step-halving.

### 4.3.3.5 Parameter Estimates for GENDER

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Gender | Association | B | Std Error | Wald | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| Female | Mechanism 8 | 47.097 | 9.277 | 25.772 | 1 | .000 | 2.8E+20 | 3.6E+12 | 2.2E+28 |
| | Location 8 | 3.359 | 1.183 | 8.066 | 1 | .005 | 28.757 | 2.832 | 292.012 |
| | Location 18 | 8.603 | 2.387 | 11.408 | 1 | .001 | 3173.353 | 29.488 | 341496.1 |

## 4.3.3.6 Model Fitting Information for AVERAGE HOURS OF TRAINING

| Model | -2 Log Likelihood | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept Only | 2137.336 | | | |
| Final | 200467.561 | -198330.225 | 620 | 1.000 |

## 4.3.3.6 Pseudo R-Square for AVERAGE HOURS OF TRAINING

| | |
|---|---|
| Cox and Snell | .000 |
| Nagelkerke | .000 |
| McFadden | .000 |

## 4.3.3.6 Likelihood Ratio Tests for AVERAGE HOURS OF TRAINING

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 14917813.353 | .000 | 0 | . |
| POSITION | 456228.894 | 255761.333 | 45 | .000 |
| AGE | 253346.203 | 52878.642 | 30 | .000 |
| EXPERIEN | 197765.071 | -2702.490 | 35 | 1.000 |
| RACE | 224305.722 | 23838.161 | 15 | .000 |
| GENDER | 201710.715 | 1243.154 | 5 | .000 |
| NPFU | 206474.161 | 6006.599 | 5 | .000 |
| PREVINJ | 201256.546 | 788.985 | 5 | .000 |
| MECHANIS | 622437.773 | 421970.211 | 75 | .000 |
| INJURY | 222290.946 | 21823.384 | 5 | .000 |
| CLINICAL | 28938.905 | -171528.656 | 140 | 1.000 |
| TREATMEN | 1424.088 | -199043.473 | 120 | 1.000 |
| PLAYSTAT | 411985.713 | 211518.152 | 15 | .000 |
| GAMES | 356582.815 | 156115.254 | 40 | .000 |
| LOCATION | 39773389.810 | 39572922.249 | 75 | .000 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

b The log-likelihood value cannot be further increased after maximum number of step-halving.

## 4.3.3.6 Parameter Estimates for AVERAGE HOURS OF TRAINING

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Ave hours training | Association | B | Std Error | Wald. | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| 0 – 5 | Clinical 26 | 23560.516 | 11.394 | 4275979 | 1 | .000 | .[b] | .[b] | .[b] |
| 6 – 10 | Clinical 26 | 3101.778 | 11.370 | 74427.904 | 1 | .000 | .[b] | .[b] | .[b] |
| 11 – 15 | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |
| 16 – 20 | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |
| 21 – 25 | Clinical 26 | -180.971 | 14.022 | 166.566 | 1 | .000 | 2.543E-79 | 2.949E-91 | 2.193E-67 |
| | Play status 2 | 163.880 | 27.980 | 34.306 | 1 | .000 | 1.49E+71 | 2.27E+47 | 9.73E+94 |

### 4.3.3.7 Model Fitting Information for PATIENT STATUS

| Model | -2 Log Likelihood | Chi-Square | Df | Sig. |
|---|---|---|---|---|
| Intercept Only | 902.714 | | | |
| Final | 580.137 | 322.577 | 128 | .000 |

### 4.3.3.7 Pseudo R-Square for PATIENT STATUS

| | |
|---|---|
| Cox and Snell | .297 |
| Nagelkerke | .473 |
| McFadden | .357 |

### 4.3.3.7 Likelihood Ratio Tests for PATIENT STATUS

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 580.137 | .000 | 0 | . |
| POSITION | 586.024 | 5.887 | 9 | .751 |
| AGE | 592.488 | 12.351 | 6 | .055 |
| EXPERIEN | 582.801 | 2.664 | 7 | .914 |
| RACE | 587.099 | 6.962 | 3 | .073 |
| GENDER | 581.447 | 1.310 | 1 | .252 |
| PREVINJ | 581.330 | 1.193 | 1 | .275 |
| MECHANIS | 605.337 | 25.200 | 15 | .047 |
| INJURY | 581.153 | 1.016 | 1 | .314 |
| CLINICAL | 654.633 | 74.496 | 28 | .000 |
| TREATMEN | 683.168 | 103.031 | 24 | .000 |
| PLAYSTAT | 580.685 | .548 | 3 | .908 |
| GAMES | 637.781 | 57.643 | 8 | .000 |
| LOCATION | 613.093 | 32.956 | 15 | .005 |
| TRAINING | 584.332 | 4.194 | 5 | .522 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

### 4.3.3.7 Parameter Estimates for PATIENT STATUS

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Experience | Association | B | Std Error | Wald | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| New patient | Mechanism 3 | -3.300 | 1.236 | 7.134 | 1 | .008 | 3.688E-02 | 3.274E-03 | 0.415 |
| | Mechanism 4 | -2.978 | 0.977 | 8.926 | 1 | .003 | 5.090E-02 | 7.216E-03 | 0.359 |
| Follow-up | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |

### 4.3.3.8 Model Fitting Information for PREVIOUS INJURY

| Model | -2 Log Likelihood | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept Only | 960.446 | | | |
| Final | 251.773 | 708.674 | 128 | .000 |

### 4.3.3.8 Pseudo R-Square for PREVIOUS INJURY

| | |
|---|---|
| Cox and Snell | .539 |
| Nagelkerke | .829 |
| McFadden | .738 |

### 4.3.3.8 Likelihood Ratio Tests for PREVIOUS INJURY

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 251.773 | .000 | 0 | . |
| POSITION | 335.672 | 83.899 | 9 | .000 |
| AGE | 312.946 | 61.174 | 6 | .000 |
| EXPERIEN | 258.880 | 7.107 | 7 | .418 |
| RACE | 263.721 | 11.948 | 3 | .008 |
| GENDER | 253.706 | 1.933 | 1 | .164 |
| MECHANIS | 353.121 | 101.348 | 15 | .000 |
| INJURY | 428.065 | 176.292 | 1 | .000 |
| CLINICAL | 315.536 | 63.763 | 28 | .000 |
| TREATMEN | 276.290 | 24.517 | 24 | .432 |
| PLAYSTAT | 255.366 | 3.593 | 3 | .309 |
| GAMES | 265.926 | 14.153 | 8 | .078 |
| LOCATION | 281.912 | 30.139 | 15 | .011 |
| TRAINING | 262.838 | 11.065 | 5 | .050 |
| NPFU | 255.874 | 4.101 | 1 | .043 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

### 4.3.3.8 Parameter Estimates for PREVIOUS INJURY

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Previous Injury | Association | B | Std Error | Wald | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| Yes to region | Mechanism 3 | 5.560 | 2.031 | 7.498 | 1 | .006 | 259.898 | 4.875 | 13907.591 |
| | Mechanism 4 | 6.784 | 1.642 | 17.074 | 1 | .000 | 884.018 | 35.390 | 22082.303 |
| | Mechanism 5 | 6.393 | 1.305 | 24.009 | 1 | .000 | 507.386 | 46.317 | 7704.868 |
| | Mechanism 6 | 5.972 | 1.359 | 19.305 | 1 | .000 | 392.370 | 27.333 | 5632.572 |
| | Mechanism 10 | 6.787 | 2.371 | 8.191 | 1 | .004 | 886.370 | 8.493 | 92492.315 |
| | Injury Status 1 | -9.181 | 1.202 | 58.308 | 1 | .000 | 1.030E-04 | 9.760E-06 | 1.087E-03 |
| | Clinical 19 | -8.817 | 2.503 | 12.407 | 1 | .000 | 1.482E-04 | 1.097E-06 | 2.002E-02 |
| | Location 8 | 3.422 | 1.138 | 9.042 | 1 | .003 | 3.265E-02 | 3.509E-03 | .304 |
| | Location 18 | 3.477 | 1.246 | 7.787 | 1 | .005 | 3.090E-02 | 2.687E-03 | .355 |
| No to region | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |

### 4.3.3.9 Model Fitting Information for INJURY STATUS

| Model | -2 Log Likelihood | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept Only | 1204.379 | | | |
| Final | 68.571 | 1135.808 | 128 | .000 |

### 4.3.3.9 Pseudo R-Square for INJURY STATUS

| | |
|---|---|
| Cox and Snell | .711 |
| Nagelkerke | .972 |
| McFadden | .943 |

### 4.3.3.9 Likelihood Ratio Tests for INJURY STATUS

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 68.579 | .000 | 0 | . |
| POSITION | 125.258 | 56.687 | 9 | .000 |
| AGE | 133.603 | 65.032 | 6 | .000 |
| EXPERIEN | 102.677 | 34.106 | 7 | .000 |
| RACE | 81.957 | 13.385 | 3 | .004 |
| GENDER | 78.288 | 9.716 | 1 | .002 |
| CLINICAL | 223.367 | 154.796 | 28 | .000 |
| TREATMEN | 115.049 | 46.478 | 24 | .004 |
| PLAYSTAT | 69.237 | .666 | 3 | .881 |
| GAMES | 103.633 | 35.062 | 8 | .000 |
| LOCATION | 123.400 | 54.829 | 15 | .000 |
| TRAINING | 88.329 | 19.758 | 5 | .001 |
| NPFU | 69.720 | 1.149 | 1 | .284 |
| PREVINJ | 263.771 | 195.200 | 1 | .000 |
| MECHANIS | 306.085 | 237.514 | 15 | .000 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

### 4.3.3.9 Parameter Estimates for INJURY STATUS

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Injury Status | Association | B | Std Error | Wald | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| Acute | Clinical 28 | -10.511 | 3.963 | 7.071 | 1 | .008 | 2.724E-05 | 1.177E-08 | 6.305E-02 |
| | Previnj 1 | -31.101 | 8.177 | 14.468 | 1 | .000 | 3.111E-14 | 3.411E-21 | 2.838E-07 |
| | Mechanism 4 | 29.782 | 9.232 | 10.407 | 1 | .001 | 8.6E+12 | 119152.3 | 6.2E+20 |
| | Mechanism 5 | 37.966 | 10.061 | 14.239 | 1 | .000 | 3.1E+16 | 8.4E+07 | 1.1E+25 |
| | Mechanism 6 | 28.238 | 7.766 | 13.221 | 1 | .000 | 1.8E+12 | 449854.2 | 7.5E+18 |
| Chronic | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |

## 4.3.3.10 Model Fitting Information for PLAY STATUS OF PLAYER

| Model | -2 Log Likelihood | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept Only | 254.062 | | | |
| Final | 231.583 | 22.479 | 378 | 1.000 |

## 4.3.3.10 Pseudo R-Square for PLAY STATUS OF PLAYER

| | |
|---|---|
| Cox and Snell | .024 |
| Nagelkerke | .100 |
| McFadden | .088 |

## 4.3.3.10 Likelihood Ratio Tests for PLAY STATUS OF PLAYER

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | .000 | .000 | 0 | . |
| POSITION | 2163124.001 | 2162892.419 | 27 | .000 |
| AGE | 1056744.379 | 1056512.797 | 18 | .000 |
| EXPERIEN | 837746.601 | 837515.018 | 21 | .000 |
| RACE | 1064308.038 | 1064076.456 | 9 | .000 |
| GENDER | 1528881.521 | 1528649.938 | 3 | .000 |
| GAMES | 982932.112 | 982700.530 | 24 | .000 |
| LOCATION | 2486974.764 | 2486743.181 | 45 | .000 |
| TRAINING | 1425895.488 | 1425663.905 | 15 | .000 |
| NPFU | 1070100.177 | 1069868.594 | 3 | .000 |
| PREVINJ | 1039603.666 | 1039372.083 | 3 | .000 |
| MECHANIS | 4754.472 | 4522.890 | 45 | .000 |
| INJURY | 1234275.683 | 1234044.101 | 3 | .000 |
| CLINICAL | 206.214 | -25.369 | 84 | 1.000 |
| TREATMEN | 14.548 | -217.034 | 72 | 1.000 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

b The log-likelihood value cannot be further increased after maximum number of step-halving.

## 4.3.3.10 Parameter Estimates for PLAY STATUS OF PLAYER

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Play status of player | Association | B | Std Error | Wald . | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| Continuation of play | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |
| Restriction – hospital | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |
| Restriction – off field | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |
| Restriction – no return to play | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |

### 4.3.3.11 Model Fitting Information for GAMES IN TOURNAMENT

| Model | -2 Log Likelihood | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept Only | 3254.504 | | | |
| Final | 2750.089 | 504.415 | 968 | 1.000 |

### 4.3.3.11 Pseudo R-Square for GAMES IN TOURNAMENT

| | |
|---|---|
| Cox and Snell | .424 |
| Nagelkerke | .433 |
| McFadden | .141 |

### 4.3.3.11 Likelihood Ratio Tests for GAMES IN TOURNAMENT

| Effect | -2 Log Likelihood of Reduced Model | Chi-Square | df | Sig. |
|---|---|---|---|---|
| Intercept | 507280.322 | .000 | 0 | . |
| POSITION | 17693.538 | 14943.450 | 72 | .000 |
| AGE | 14692.248 | 11942.159 | 48 | .000 |
| EXPERIEN | 1205623.512 | 1202873.423 | 56 | .000 |
| RACE | 11420.437 | 8670.348 | 24 | .000 |
| GENDER | 12786.889 | 10036.800 | 8 | .000 |
| LOCATION | 11928.793 | 9178.704 | 120 | .000 |
| TRAINING | 13952.536 | 11202.447 | 40 | .000 |
| NPFU | 14104.976 | 11354.887 | 8 | .000 |
| PREVINJ | 10735.370 | 7985.281 | 8 | .000 |
| MECHANIS | INF | INF | 120 | .500 |
| INJURY | 11478.054 | 8727.966 | 8 | .000 |
| CLINICAL | 13912.647 | 11162.559 | 224 | .000 |
| TREATMEN | 297884.924 | 295134.835 | 192 | .000 |
| PLAYSTAT | 11241.901 | 8491.812 | 24 | .000 |

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a Unexpected singularities in the Hessian matrix are encountered. There may be a quasi-complete separation in the data. Some parameter estimates will tend to infinity.

## 4.3.3.11 Parameter Estimates for GAMES IN TOURNAMENT

| PARAMETER ESTIMATES FOR ALL INDEPENDENT VARIABLES | | | | | | | | 95% Confidence Interval for ExpB. | |
|---|---|---|---|---|---|---|---|---|---|
| Games in tournament | Association | B | Std Error | Wald | df | Sig. | ExpB. | Lower Bound | Upper Bound |
| None | None | None | None | None | None | None | None | None | None |
| One | Mechanism 3 | -15.221 | 4.439 | 11.575 | 1 | .001 | 2.453E-07 | 4.085E-11 | 1.473E-03 |
| | Treatment 2 | -12.155 | 4.666 | 6.788 | 1 | .009 | 5.260E-06 | 5.619E-10 | 4.925E-02 |
| Two | Mechanism 3 | -13.559 | 4.390 | 9.539 | 1 | .002 | 1.292E-06 | 2.368E-10 | 7.053E-03 |
| | Mechanism 6 | 4.855 | 1.767 | 7.548 | 1 | .006 | 128.361 | 4.021 | 4998.129 |
| | Treatment 5 | -11.310 | 4.323 | 6.846 | 1 | .009 | 1.225E-05 | 2.562E-09 | 5.855E-02 |
| Three | Mechanism 3 | -14.249 | 4.393 | 10.520 | 1 | .001 | 6.485E-07 | 1.182E-10 | 3.559E-03 |
| | Mechanism 4 | -5.649 | 1.993 | 8.034 | 1 | .005 | 3.521E-03 | 7.084E-05 | 0.175 |
| | Mechanism 6 | 4.713 | 1,758 | 7.188 | 1 | .007 | 111.372 | 3.556 | 3491.575 |
| | Clinical impression 2 | 16.884 | 6.638 | 7.029 | 1 | .008 | 2.2E+07 | 81.668 | 5.7E+12 |
| Four | Mechanism 3 | -14.579 | 4.337 | 11.302 | 1 | .001 | 4.658E-07 | 9.480E-11 | 2.289E-03 |
| | Mechanism 4 | -5.417 | 1.832 | 8.741 | 1 | .003 | 4.438E-03 | 1.223E-04 | 0.161 |
| | Clinical impression 2 | 18.089 | 6.321 | 8.198 | 1 | .004 | 7.2E+07 | 301.728 | 1.7E+13 |
| Five | Mechanism 3 | -15.039 | 4.283 | 12.328 | 1 | .000 | 2.942E-07 | 6.649E-11 | 1.302E-03 |
| | Mechanism 4 | -5.487 | 1.828 | 9.012 | 1 | .003 | 4.142E-03 | 1.152E-04 | 0.149 |
| | Clinical impression 2 | 16.519 | 6.346 | 6.775 | 1 | .009 | 1.5E+07 | 59.183 | 3.8E+12 |
| Six | Mechanism 3 | -15.588 | 4.591 | 11.527 | 1 | .001 | 1.699E-07 | 2.100E-11 | 1.375E-03 |
| | Mechanism 4 | -5.689 | 1.785 | 10.154 | 1 | .001 | 3.381E-03 | 1.022E-04 | 0.112 |
| Seven | Mechanism 3 | -12.927 | 4.690 | 7.597 | 1 | .006 | 2.432E-06 | 2.476E-10 | 2.388E-03 |
| Eight | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE | NONE |

## 4.4 THE FOCUS GROUP DISCUSSIONS

### 4.4.1 TRANSCRIPT OF THE TAPE RECORDINGS

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Welcome

The whole idea is for us to get as much depth of understanding of the material, so anything that comes to mind is useful. So there is no arbitrary comment.

Have you got a couple of structured questions that you can throw in from time to time so that we do not stray to far of the topic. Yes.

But besides that I cannot get involved in the research process, because the research is her research and not my research. I hope you understand that bit. I have not been involved with as many of the questionnaires as you guys have been involved with, so that is why you are here. You have the knowledge and you are the best candidates. You're the best candidates.

To start off with what I thought we would do is to go through the questionnaires as it stands..... which is the last page attached to the bundle, that you have got. And for those of you who have worked with it [questionnaires] to give us some insight as to what did work and didn't work, what you found very common that was not on here or ..... stuff that was on here that wasn't very common and then maybe if Dave Carr can put his input in as to things from the sports perspective and the hockey involvement that may not be here that we have missed.

O.K. you need to give the panel a bit of a break there; there are a lot of directives. Choose maybe one directive and go from there.....

First one would be to just scan over the questionnaire and see if there is anything that is not appropriate to the questionnaire.

Race..... why do you say race is not appropriate ?.....Some people getting a raised the eyebrow - they obviously see it as you are filling out the form, because you are sitting in front of them as you are filling it out and they take it as a personal upfront.

The whole new South Africa type of thing – personal correctness..... and the rainbow nation.....

Did any of you, filling it in, have any problems with say for example with years of experience / years experience, ..... ?

I was just about to think that they uh.....You are treating at such a variety of events so it may be a school boy tennis tournament, how many years experience do you have at what – playing school boy tennis ?

When you are playing ..... then you are going to the ..... like that MTN tennis tournament ..... is it many years professional experience have you had ?

Ok so you would prefer it to be more structured ..... or more ..... approach ?

Ya, you need a differential ..... how many years professional experience..... Or ..... you know I have been playing tennis for 10 years, that's fantastic – but I have only been training for two years professionally.

So more a specific directive.....

Can I just digress a second here and just go back to the race question. What we have to do is to find out whether there is an alternative to that way of putting it..... Alternative manner of putting it ..... ethnicity may be important in some instances..... may be important but maybe the change of the word more so than the change of the concept..... That's right.....but why do you want to know that if you are looking at a hockey player or rugby player – why do you want to know what race group they are coming from,..... to see whether there are any conditions..... to see whether there are any conditions that affect one ethnic group more so than another .....in the Indian population diabetes affects them more commonly – that sort of stuff.....

O.K., from a sports management perspective ..... (sorry for interjecting) , but if you want to see if your Bakers Cricket Programme is working and reaching the right subgroup – you know, just as an arbitrary example.....then this would be important.

Number of games participated in was that a problem to any one.....?

Maybe ..... I think what you are trying to say is that..... I here what you are saying, but maybe take the number of games..... don't you want to have records, the way I understand it, if it's the first game of the tournament or the last game ..... maybe what you've got to say.....don't you also want to get information of how many tournaments uh..... games there are, say for example in a hockey tournament – there are normally seven matches in that week. Say he got injured in the fourth of seven. Do you need to know how long the tournament is ??.....Ya that is actually a good idea..... A very good idea ..... the length of the tournament into one

of seven, three of seven..... Number of games participated out of how many possible.....

You could be .....if you have 3 there that could..... might be the end of the tournament or it could be just half way..... and they are still needing to play.....
Its important to know whether he has one more or five more games to play.....what if he has to play five more ?..... ..... just for management times and stuff..... and maybe it will also help in the broader picture this person is coming to the tournament very unfit, because he is not physically in shape ,.....maybe he gets injured in the first game and he gets a muscle strain like a pulled hammie or something like that ..... do you look into why ?

Ya, .....maybe he hasn't been stretching or he hasn't been prepared back home..... Generally in terms of the number of games participated in if they go - right, just give me the number, I can tell from, if say for example the third one from hockey that there are three of seven. In other events or tournaments it may be a problem where they play a different number, but with hockey it is generally a set number.

Like a basketball tournament would be over a weekend they know they will play 4 matches. There you would have to be more specific.

Try to keep it as much as possible to the hockey scene, all right, it helps.

O.K., although this is a generic questionnaire and has general influence, her research is focusing on hockey at the moment.

Then what we possibly should also have, it's not in here, but maybe, the level of the tournament ..... O.k. under 21 or the senior IPT or if it is an international.....does that make any difference ??

Uh..... purely from a lay persons point of view anything that was national or above tended towards the same type of fitness average, so I wasn't too specific, but maybe that's something I should add in to see if there is anything more or less in terms of involvement fitness or something like that.....

I mean if you went to the under 18 tournament generally youngsters are more supple and you don't get as many hammies, the older the guys get the lazier they get, so they don't do their stretching, ..... so you might almost be able to pinpoint types of injuries which could happen at different age groups

In the different age groups.....you're right the event name here is not enough, say it's the SCASO tournament or whatever you call it .....

you still don't.....you still need to have a notice of the range of ages or the age groups involved .....

That could however be implicated or rather implied by the age later..... that doesn't work..... In terms of ? ..... I mean that if you have the whole international softball, 18 – 50 behind it .... .....But you still isolate the age with the injury.....

Ya, but not the general thing like for example the tennis veterans tournament ..... ....you mean the level ?..... ya, you want the level of the tournament.....

I never thought of that one quite so in detail.....

In terms of any more of the demographic data, anything that is missing that would be say relevant in a managerial or from a managerial point of view ?

[Joke]

Sorry.....the position that they play is that the position where they play whether it is the goalkeeper or the forward.....?..... Yes

Maybe I should be more specific there with the position of the player or play position or something like that ? .....I think what you are sitting with .....we're the people filling it in so that shouldn't be a problem.....

Just noticed .....I might digress a little bit..... but for different sports like swimming, that this top little is always there, but position in some sports does not apply all the time and falls away ..... position then is more the specialty for example diver, medley, butterfly..... could be a good idea then to put position / specialty.....

I mean that is just for different ... no, no....

In see that right at the beginning it really is to do with..... with reference to field hockey now you are saying swimming ..... Ya I know that..... I was just digressing a little bit.....

We are trying to keep it narrowed to field hockey, but any other input that might have bearing is also good..... Ya, well then you don't need hockey under the type of sport..... .....O.K.

In terms of location anything there that needs to be more specific ?..... there was something that I found that wasn't in there, but I can't remember what it was..... start from the top..... ya top and work down.....

Buttocks

O.K.

One thing that I am thinking at the moment is maybe adductors..... for hockey that always..... .....because we have an anterior compartment and a posterior compartment but we don't have a medial compartment ?

Listen you go as far as to say forearm..... surely we should just insert for example anterior thigh and posterior thigh..... O.K..... make it more simple ..... ya just boom.....because then in your diagnosis you can be that specific... O.K.

Then you can have adductor strains and that sort of stuff....

So more a location description as opposed to .....for a location description that's what you want..... So that if a patient were to fill it in they would know what it is.....ya.

O.K..... this where the hockey player comes back into it, mechanism of injury is there anything there that could be more specific .....? .... Anything there that could be more of a problem.....

Collision is the one that I didn't enjoy.....because collision with what .....? with stick .....? with ball .....?

I also noticed that you have here practice and during participation, but I found that they never claimed that they got their injuries during practice..... although I did..... Most of them where during play.....

Maybe .....instead of participation - during event or play or competition or during the last game surely, even then ..... its got that here.....

O.K..... during competition

Just looking at this that there practice competition then running, colliding, during previous game..... just tidy up that whole paragraph..... also when looking at running when you think of running on the field or road running..... so be more specific in terms of the running – delineate.....1,2,3...

You see, you look at practice , what do you want to say.....?..... do you want to look at what they do in practice or whether they get injured in practice.....?

[Break]

Did you get that ?

So you are changing.....?

"Training" replaces "practice", another heading "competition" another heading "previous games", .....- all in bold - .....take out "during training". And then you have all your mechanisms underneath that.....

Any mechanisms missing ? Except for the collision with what ?

In hockey I mean colliding with a player, ball or the stick.....those are the three, you want to know how he got cut on the eye, whether it was.....ya.....so maybe you want to tidy that up there .....1,2,3, there.....

Side stepping, .....what do you understand with side stepping ? Just trying to avoid a player ..... twisting injury.....some change of direction..... now we are getting closer to the side stepping, ..... I think.....

If you are talking about twisting an ankle on the dry astro he's running and he would have to stop and turn..... .....on a wet astro there is a little give.....on the dry astro there's nothing and that's where you do your ankle..... so instead of side stepping do you say turning, twisting.....twisting. I see what you are saying as mechanism..., .....its mechanism of injury again..... it's a twisting injury ..... is it important that he was side stepping a player or turning around to get the ball .....?.....that doesn't make a difference, ..... that doesn't make a difference .....just..... what happened at that point in time when the injury occurred.....I would just put it as twisting.....so you want to know during practice how was he injured.....ya O.K..... or during the game..... So, once again, we want the three headings [1,2,3 (when)] that we had before and then the how after that,.....

The patient is more than likely going to come to you saying I twisted my ankle wile I was training..... so maybe put "twisting / turning" .....so twisting and turning..... O.K.

[Joke]
O.K. any more thoughts that come to mind with respect to mechanism of injury ?

[Break]

Then we go down to the next to two questions, obviously with the reference to the comrades does not quite apply,.....not quite part of our.....

Have you injured this area before ..... yes and when ..... you need a time..... ya..... O.K. when ..... time

Do you also need to know what treatment they have had or don't you take that into account.....?

We could but it this questionnaire is aimed at and its purpose is gathering epidemiological data that will may be better / good for the managerial side as opposed to information gathering.....

Even thought it may well affect your treatment .....? You might want to do this or avoid that.....yes I have been to this or done that ..... That is true.....

Have you injured the area before .....Yes .....when ?.....what ? [question on previous injury , when it occurred and what treatment has been received]

Say for if they have been going to a physio who could have hurt him..... ya .....right one of those.....Ha. Ha

The second one..... did the injury prevent you from competing or participating in the tour or tournament? ..... no that's usually .....did this injury cause you to leave the game or prevent you from going back.....?..... well its got here the continuation of play .....ya..... but I mean for the player who came off the field, if he sees you maybe 10 –15 minutes after.....you are asking about past injury here....., so in other words two weeks ago when you injured your thing ..... did it force you to leave the game then.....Past .....

Then we could..... Uhm..... take in practice if they did injure themselves during the training session..... Yes then the question would have to say yes if it is applicable.....

In terms of clinical impressions..... Acute and chronic are pretty self explanatory.....but the rest anything there that .....may need elaboration, or deletion.....?

Costochondral syndrome could be a joint dysfunction.....?....put it in as a joint dysfunction.....I don't think t\you get enough of those to warrant a separate category.....

And I think in myofascial you need to put in more space.....In terms of a the specify out in 2 lines.....

Any injuries that you have come across in terms of hockey that we may not have here purely because this is from a chiropractic slant..... [Joke]..... Supratentorial.....

There were a couple that came in .....that I..... not stuff that came in repetitively that you noticed.....or .....we need an "other".....O.K. ..... I was just thinking there were a couple of times but it didn't happen very often but I suppose you could out that under general muscle tightness, when a guy came in and I just massaged and loosened up .....that kind of thing..... that could be general muscle or fascial tightness..... or something related to a long term or chronic problem that could be diagnosed....

Heat stroke and heat exhaustion .....Do you want one and not both .....?

The other thing I find with hockey players you always get certain players..... once you know the players you can always nominate which players will be the first at the chiro or physio they almost use them..... ....[joke].....you know depends on which .....some guys almost fabricate the injury or are looking for sympathy.....

Maybe they are looking more for a personality perspective or a mindset perspective ..... mind set perspective.....or a strategy.....I don't know.....we've just been to Australia and there was a physio guy - a qualified physio - and every now and again one or two of the players that knew us would come and ask us – wouldn't you look at me and we would say that there is nothing wrong. However he would assess the patient in front of the physio guy and make a show for the patient and not tell the patient that there is something wrong.....I don't know whether this is part of it [questionnaire] .....?

Ya,..... its part of the psychological thing..... Before the guys play or whatever it is ..... Its kind of an edge.....if you know the patient can play and you tell the guy – you are sorted..... you are 100% ..... go out there give it all you have,..... the guy leaves the room and feels fantastic ..... even though there was squat wrong with him [ even if you did, nothing medically for a condition that may not have been there ]

Maybe we go back to supratentorial.....supratentorial means.....is a word that basically is used for the patient made it up .....an anatomical term that means above a structure within the skull.....that's a nice thing to put in.....that is useful..... psychological.....maybe put something in that is not understood by them [patients] ..... in case they see it they are not going to get insulted by it .....if we put supratentorial in with all the other words they might not know what it is... .....ya .....because if you are going to work with a team and you will get to know them it becomes

more apparent and you will know that particular player.....and it will become easier to jot down .....yes and you can retrieve the information.

O.K. enough said, .....Laceration, contusion and puncture..... there's a hell of a lot there.....

Difference between laceration and contusion..... that's the same.....?

Laceration and puncture, I would say, are probably the closest than contusion.....contusion is just a scrape.....contusion could be a bruise, a myositis or a developing myositis those types of things.....then the abrasion ..... the abrasion is the scrape, the erosions and rosties.....

Your abrasion and laceration seem to be alike..... Those two may go together.....There is one word that can leave..... I don't know which one it is..... but one must disappear .....there's just too much there.....

Whereas a puncture being something more like a break .....like a cut or a gash.....or something like that..... maybe write cut after puncture..... perhaps it would be more appropriate to keep the laceration / cut and scratch the abrasion..... in my terms it is a surface injury or a deep tissue injury .....that is really what is of importance.....cut and bruise ..... there we go.....

O.K..... we stick with cut and bruise.....

What about DOMS.....delayed onset muscle stiffness.....that is different to general muscle tightness because it doesn't happen during the game .....it's something that happens later on.....the next day.....or a chronic type problem..... whereas general muscle tightness comes before the game and the muscle stiffness comes after the game.....O.k.

Anything else from the management perspective outside of supratentorial that may be of interest to you ?.....Then in terms of treatment .....

Exercises.... Would you almost like .... Training modification ... I suppose that would come under that.....

G and R [grip and rip] .....myofascial is that referring just to ischaemic ?..... O.k..... so you want a greater explanation of myofascial.....What is myofascial ? Myofascial could be..... you've got your massage,..... you're got your stretching ..... you've got your mobilization .....you haven't got ischaemic, so I assume..... Ischaemic, myofascial release or any of those techniques.....are facial release.... So maybe call it fascial release and

ischaemic as two separate things..... What is fascial release ? What do you understand as fascial release ? That is when you take fascial and you are pulling it apart [stretching] .....spreading it..... Ya fascial release and ischaemic would be better....

Should stretching be made more specific ?.....You can say PNF and static... Static..... you can also have passive....which is where you are stretching the patient for them without having any resisted movement ..... wouldn't that be a static stretch ? With a static stretch you can also have the patient push down against you ..... whereas your PNF is almost like your CRAC technique, where you get the patient to contract relax antagonist contract.....

You were doing for the disinfect and plaster .....could be other.....first aid.... there were a number of times.....but first aid also includes CPR.....bit of a difference of applying the two perceived therapies.....O.K. Disinfect / plaster .... Ya I think that you can come up with a better word..... but the concept of doing that .....

Ahh.... Anything else that from a managing side may be including other professionals.... Would that give you more information about the total play treatment or ..... normally I think - now anyway you either have a chiro or a physio you don't have both, with hockey being relatively small can't afford both and currently the national coach likes chiro.....O.K. that's certainly true for the men's setup for the women I don't know what they do .....In the men's setup you know Mr X has his that friend of his John from Jo'burg, the blond haired guy.... Dr Y.....it comes up with what the national coach and each team coach is happy with – at that point who feels happy with what – there's been a change in thinking

Just in terms of - say for example if you would like to know if the player went off to hospital or the player had other injuries besides what we can treat and record, would that be of use to you ... no I don't think so ..... at the end of the day .....if you have the team and you come to me as the coach and say look he can play tomorrow or he can't play, it is not for me to question on what grounds he has been decided.... You may be able to explain in layman's terms what is wrong with him, but you say that he cannot play..... I may then say that I need him..... and you will say that you can get him so much better..... In this amount if time..... or if you know you have two days to get the player ready for the final

Maybe a note of when he needs to be back, what the agreement is between the coach and the person treating..... Or maybe the state of the tournament ..... if you know we are going to play for ninth and tenth then just treat him and get him better for three months time.....if I am playing in the final tomorrow or two days time and he is my top player then I want you to do anything physically possible to get him to play.....

So basically on this here on this form you have a continuation of play right so in this case write for example, no this person cannot play – but this needs to be made up – you cannot just say no. There has to be a discussion .....qualification.....qualification behind that..... that has to come last honestly on this form.....O.k. so we need to qualify why the player can or cannot play... the student needs to go to the doctor or D.C. on duty and talk to them about it and that person needs than to talk to whatever coach is about it and they have to come up with the continuation of play and then restricted ..... Put there restriction in brackets if any .....that will tell you right 2 hours, 3 days, 5 days, no more ... another qualification

Coming back to your topic level of the level of the team..... would it be easier to maybe stick that with right on top here where the demographics are ... maybe say league a and / or league b, just to indicate the level, put team underneath, behind it or something to indicate whether they are competitive or not so competitive.....
Ya I think you need to indicate something like that....

I just think that you maybe should possibly re look this whole questionnaire on this page.....to me it is too confusing but maybe for you people it is fine... but I mean for easier reading..... Do you now like location circle that or do you tick it or do you cross it.....we generally circle as we go .....so I mean that you don't have little blocks next to each one .... No .... We don't do that.....just circle the thing .....o.k., then that's fine.....

The only thing that you said there..... if you spread this whole thing out - [ clinical impressions], just because this is the part where you want to know details...because if you have an sprain you want to be able to write there left ankle eversion..... so you need more details than that..... so just this [clinical impressions] you need more space..... O.K. then I would have a comments thing next to each one..... a little comments block .....if you can..... all the rest is fine, because all you doing is circles.....location.....no....no..... acute.....abrasion where ? what..... ? what ..... ? what .....?

If you are stuck for space this here..... [new patient block] is too much, ,..... wasted space.... I mean there are only 4 categories... they could all be in one line.....

Ya also for the treatment – we also need to know what manipulation, what ?.... where ....? How .....? L2 what

Also what I was thinking of was a section somewhere on the response to previous treatment just within that tournament at which we are treating at.... Would that be a suggestion..... then you would have to put it in here [ underneath the repeat patient ¼ way down the page].....if it's a repeat patient : previous treatment or response to .....

Also links in with the "have you injured the area before"..... so I think..... but that this here is in the same event..... whereas this is ..... a prior.... Another tournament .....ya.... you want to know how they have reacted to your treatment .....the people I treat will not want to come back again....so I just want to know that

Any other comments in terms of hospital and reportable..... I sometimes find it difficult to know what is reportable..... O.k. define what reportable is..... if there is a restriction then it is reportable..... if they go to hospital it is reportable.....anything where they have been stopped from playing .....stopped from playing.... If there is any restriction on their play and you have to report it.....because you either have to report it to the coach or you have to report to hospital or you have to report to some managerial structure ..... Its having to physically go and report the incident to someone..... so anything that falls into that sphere that is beyond you're your control or means that you are having to inform means to report..... I think that at the beginning of every year whenever you will be giving these things out, to whoever is going to be doing sports events before the first event you need to sit down with them and go through this form .....you know what I am saying .... Workshop type.....ya you have to sit down and say this is what we are after..... because obviously people read things in different ways.....and interpret things differently..... this reportable means such and such that sort of stuff

In any other general comments, o.k. there were layout comments - maybe even right on top here change I mean individual treatment records as a given.... Maybe that doesn't need to be there..... ya this is form is a treatment record....

You see we have like sport with all those things there .... If you are going to use this as a general form / questionnaire then you want to put hockey or swimming o.k. you see here ..... generally within say for example we go to a hockey tournament anyone can come to us for treatment .... So we still have to keep records whether it's a coach an umpire or a medical team member whoever may be involved in supplying the tournament..... so we have to keep those guys there just as a record.....you want ..... so actually sport is not the right word.....not the right word.....well maybe..... under the event name you are going to get the hockey tournament and this and that and the next thing.....it will identify the sport – it could be IPT.....or it shouldn't be there ..... that's correct..... I think you call it position.....you want..... you can't.....the player needs to be specified.....so ya you have got the position , if it is a player then you write there left back.....O.K.? Position you just circle umpire. O.K. Or faculty ?

Do we call this grouping anything [the old position on the questionnaire]..... There is a word I don't know what it is..... Or alternatively you can just leave all

those names across the top..... just there..... and have just one set without a name .....and just leave sport out.....and leave the names out.

Maybe higher up there you could have the name of the tournament..... that is the event name.....oh o.k., and the date ..... those can be circled.....maybe venue could be of interest....to you .....venue could be purely because of whether it is grass, dry astro, or wet astro or astro sand ..... Maritzburg College is sand based..... it's almost turf type.....it is turf type, and you are going to get more abrasions (sand turf) because when you fall it is almost like on .....on sandpaper.....you see so you can work something out there.... When you go to P.E. now and you go on a hockey tour..... if you are on the ice rink it is dangerous to play there, they have actually banned tournaments there, because it is so dangerous..... but anyway at least then you will have an idea..... that needs to come under the event name and its got to be higher up and needs to written on before the event.....ya..... its got be typed in.....its got to be standard for the event.....well eventually you maybe there could be feedback to FIH hockey..... The world hockey.... These are the type of surfaces and these are the type of injuries that are common..... Just purely related to this research, which is something that is maybe pure luck, is that I have got everything on wet astro..... so I can give your feedback once its all done.....in terms of the wet astro.....but now maybe the same thing needs to be done for the other surfaces as well.....just to give a comparison..... what injury types there are and they can be prevented or how management structures can change.....related to it

[Interlude].....In terms of going a step further.....in terms of say for example..... the player.....anything that the player does and / or doesn't do .... Would that be of benefit ? Like say for example hydration, preparation anything that..... They may do that would affect them in any significant way.....?

What have they done to get to this point ? ya say for example they come with general muscle tightness or delayed muscle on muscle stiffness or chronic headaches.... Is there anything more you want to know about the player.....I don't know would .... that be interest to those treating or maybe from a management aspect again what are the players doing that they should or should not be doing ?

I think the main thing is to get them back on the park.....

[Break]

So what you recommend....." E " on the soape note.....
So what you recommend for him to do ..... so that there is some follow up or the ability to follow up with the player and that also you can write in there .... be there to be treated on a set date with the date and stipulations for

treatment.....you can there that the person come back tomorrow, you can write there, advised to come back tomorrow, why and the date.....

I will give you a practical example.....for you as medical guys they guys give you more respect..... all the guys were given energade bottles.....if I would take the energade bottles and lift them I could tell that number seven Clark was drinking and I knew and the others were not ..... as soon as Mr. Z , the physio, he came on , he went and told these guys and they changed straight away..... They took it as me being just the admin guy who knows nothing, but then if it comes from a medical person even though the coach or another person has been telling them, the re-inforcing..... coming from an authority figure..... the recommendation is more re-enforcing for the patient..... well I think that generally speaking hockey players are lazy they hate stretching..... I think most sports players are lazy outside of their specialty .....after the game is over they are supposed to stretch , they are into the shower and do anything but stretch.....go and relax or go and party.....so even from hydration through to stretching needs to be thoroughly advised.....

In terms of management protocols anything else that you would may need to know.....?.....or anything else we could gain in terms of a questionnaire such as this for you as information .....? Anything useful to you ?

Anything that from the textbooks that jumps at you..... Uhm nothing smacking me across the cheeks at the moment [joke].....

Oh ya modalities..... what about modalities.....we have a portable tens for treatments..... maybe just write modalities here..... Ya no.... what could be taken to these events.....tens, sportsmed, lazer and ultrasound is portable.....what about the other lady with the this thing .... The APS lady,..... I would just write modality and in brackets specify.....otherwise you are going to be..... you don't know what will be available at each event..... so its pointless

Another thing things like transact and / or recommendation for pharmaceuticals ..... falls under recommendations ..... Recommendations are just that recommendations..... take a panado and I will see you in the morning.....

I am thinking of something else.... Oh... there should maybe be a gender difference..... that's true there is no gender..... That is generally because I put male and female in the top right hand corner as the it went into the file.... But maybe as a set format ? .....ya you may need that one

That completely by passed me.....put the word in gender, don't' use the word sex or else you will get comments flying out of our ears.....

So as I understand it – going back to the continuation of play.. – the DC signs off on the whole soape note.... And then he also signs off that there is a continuation of play.....or that there is not a continuation of play..... he must agree to the continuation of play if signed and if he doesn't sign or there is a restricted or reportable s/he only signs once he has quantified why..... that's why you want the condition .....that's why you want the conditional and the restriction of play and the signature to be separate and on their own..... O.k. because that's the most important part of the while thing.....its like a PTT and a conditional.....you can't get him to sign twice because that will just be ludicrous..... o.k ..... so with that signature underneath there you have got continuation of play and it needs to be quite ..... Yes or no.....right and the yes you can see it is yes its simple and the no .....then you want to say why.....o.k. and then you have a chat to them and a chat to coach.....

And then you need a restricted next to the hospital and reportable.

More of a block down here.....I think that the area needs to made distinct [ bottom part of the questionnaire] ..... an official portion on the document type of thing.....

Any other comments.....Criticisms

You go back now.....essentially what happens now is what I have done with this already is accumulated about a thousand cases files and put that through in terms of data and then comparing that to the literature..... But to validate this questionnaire I have to see what has and hasn't been put on here in terms of the information that I have got and does it in any way impact on that information... so I'll have one set of information here from the data analysis and another set from what we have here now and then only to compare these to make sure that they are congruent and then from that I can say well this is what my data is lacking and this is how the questionnaire can be used for future data collection.....it is almost more a questionnaire validation more so than data extrapolation....

Don't mind talking English.....

## 4.4.2 THE ANALYSIS OF THE FOCUS GROUP DISCUSSIONS

### 4.4.2.1 THEMES EXTRAPOLATED:

1. Race → Ethnicity
2. Years experience → Specify the type of experience wanted. That is amateur or professional, part-time or full-time.
3. Number of games → compared to the expected number to be played, for improved patient / player management
4. Ages → Notice of the age groups participating in the tournament
5. Position → Play / player position
6. Gender difference
7. Location → inclusion of buttocks
   → adductors, hamstrings, quadriceps to be replaced by medial, posterior and anterior compartments
8. Mechanism → collision with ball, stick, player
   → practice is replaced by training, competition and previous games all highlighted in the beginning of mechanism of injury
9. Previous injury of the area → addition of a time period
   → addition of the type of treatment received for that previous injury
   → did the previous injury cause you to leave the game ?
10. Clinical impressions → costochondral could be a joint dysfunction....leave out
    → addition of an "other"
    → heatstroke – no heat exhaustion
    → Laceration / cut, contusion
    → Delayed Onset Muscle Stiffness – include
11. Treatment → Include grip and rip (soft tissue manipulation), disinfect and plaster
    → Ischemic and fascial release instead of myofascial
    → Specify PNF, static and passive stretches.
11. Prognosis → When does the player need to be better, when can he play again
12. Treatment specificity → Adjustment listing, response to previous treatment (under repeat patient)
13. Reportable – define → flow question ?
14. Recommendation on the questionnaire

#### 4.4.2.2 SUBTHEMES EXTRAPOLATED:

1. Stretching protocols
2. The level of the tournament
3. The level of competitiveness of the team
4. The fitness average
5. Isolation of injury with age
6. Psychological derangement → maybe include supratentorial
7. Turf type
8. Rework the layout of the questionnaire
   → remove individual treatment record
   → remove position

# CHAPTER FIVE

# DISCUSSION

## 5.1 INTRODUCTION

This chapter is dedicated to the discussion of the results and the correlation of those results (within constraints) to the literature.

## 5.2 THE FIRST AND SECOND OBJECTIVES:

The first objective was to interpret the data from cross tabulations, Chi-squared and Multinomial Logistic Regression analysis to assess whether the questionnaire is sensitive and specific enough for use as a tool in data collection, in terms of the literature. The second objective was to use the statistical analysis to critique the epidemiological information gleaned from the Chiropractic Students' Sports Questionnaire in the context of Astroturf hockey, in terms of the current literature.

These two objectives will be addressed together in the interpretation of the data and its comparability to the literature. The use of the questionnaire as a tool will be discussed under the conclusion to this chapter.

## 5.3 THE DEMOGRAPHIC DATA

### 5.3.1 DEMOGRAPHIC DATA – FREQUENCY STATISTICS:

#### 5.3.1.1 Age of Player:

In terms of the hockey players' age, it was found that the majority were between the ages of 21- 25 years of age (47.5 %) , followed by 16 – 20 years of age (28.6%) and 26 – 30 years of age (20.4 %). The age range varied from 11 – 45 years of age. This indicates that the players are on average, younger than their counterparts several years ago and correlates with the impression that the older the player gets, the greater the degree of injury sustained and hence "time out" or retirement from active play (Taylor and Attia, 2000).

The collation of the above assertions would also support the findings by Michaud et al. (2001), in terms of the development of significantly more injuries sustained by the adult population, due to increased exposure to the specific sport. No other literature could be found depicting the age ranges of hockey players at the national and international level.

5.3.1.2 Race of player:

In terms of the presentation of the various ethnic groupings, there was little ability to screen the patients to allow for a homogenous group. This was as a result of the data being collected prior to this investigation.

In terms of the findings for this investigation, it was found that 703 White persons (76.9%), 44 African (4.8%), 144 Coloured (15.8%) and 23 Asians (2.5%) presented over the time period of data collection.

It can therefore be deduced (taking into account the ratios of players per ethnic grouping) that, in the South African context, there is a preponderance of white persons between the ages of 21 – 25 years playing field hockey.

This could be related to ethnic preference of sport, exposure to sport types and preference for seeking treatment options. No correlations could be made as no literature could be found depicting the ethnographic ranges of hockey players at the national and international level.

5.3.1.3 Gender of player:

With respect to the gender of the players, it would seem that there is a dominance in terms of male players (93.7%) as opposed to female players (6.3%) presenting for treatment. This however is not necessarily true of the hockey fraternity within South Africa, as the data collected could not be controlled within the parameters of this study and therefore the data will skew the perception of this reading.

This variable can therefore not be used in determining an accurate picture of the field hockey player. No literature could be found depicting the gender percentile ranges of hockey players at the national and international level.

5.3.1.4 Experience of player:

The data collected as regards the number of years experience in the hockey fraternity (playing hockey at a competitive level – from childhood through to adulthood), indicated that the majority of players (42.1%) had an average of between 6 - 10 years of experience, which correlates well with the peak average age of between 21 – 25 and the bottom end of the range of 11 years of age.

The numbers of players with increasing experience decrease substantially by the time they have accrued between 16 – 20 years of experience, which also correlates with the decreasing number of the players in terms of their age (the oldest being 45 years – with a potential 30 years experience).

The recorded range in terms of the number of years experience is from 0 – 30 years with 10 unspecified and one logged as 24.00 (unknown). No literature could be found depicting the "years experience" ranges of hockey players at the national and international level.

Therefore in terms of the developing demographic picture, it can be deduced (taking into account the ratios of players per ethnic grouping) that, in the South African context, there is a preponderance of white persons between the ages of 21 – 25 years playing field hockey, who receive chiropractic treatment, with an average of between 6 – 10 years of experience at the competitive level (national or international).

5.3.1.5. Position of player:

The players that were most likely to come for assessment and treatment at the this level of competition were, centers (28.7%) followed by wings (cumulative (left and right) 29.2%), and links (13.9%). The least frequent in terms of injuries were the utility players (3.8%) and the strikers (5.5%).

This type of presentation may well be based on the fitness level of each of the respective positions as well as the demands placed on the player in that position. This can be seen as follows:

| | Positional demand | Level of fitness | Level of maintained fitness |
|---|---|---|---|
| Center | High | High – but specific | Low general fitness |
| Wing | Medium | Medium – but specific | Medium general fitness |
| Strikers | Medium | Medium – but specific | Medium general fitness |
| Utility players | Low, because of variance | High – but non-specific | High general fitness |

Therefore, the player that alternates position frequently has a lower chance of injury due to an all-round high general fitness, which is not position dependant and the player with a set position has a greater chance of injury development due to only being positionally fit and under the constant strain of that positional fitness (more prone to chronic injury).

5.3.1.6 Average hours of training in season:

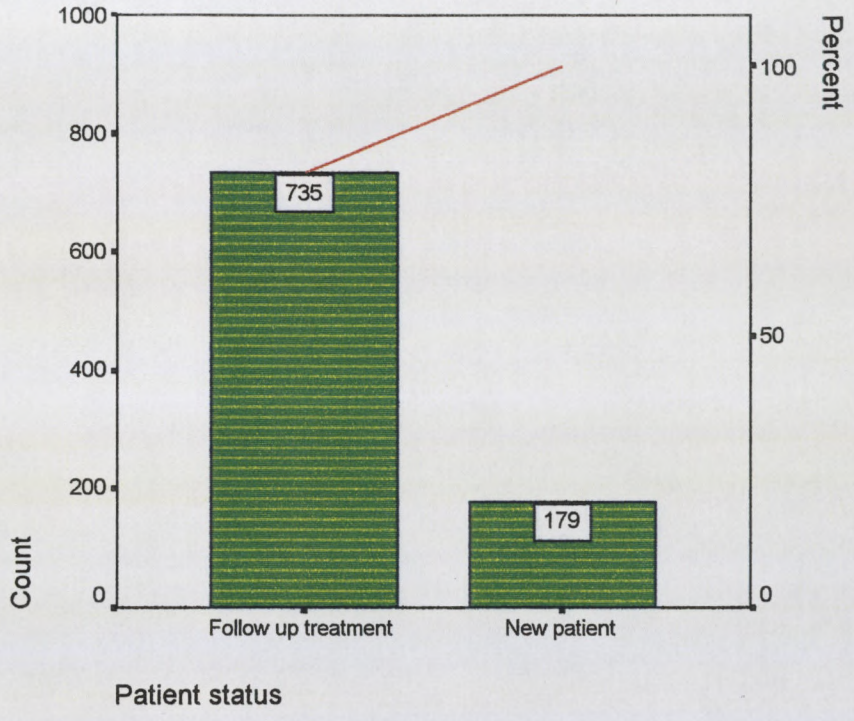
The number of hours of training in season is normally a direct influence of the time available to the player and not the time needed to be fit for play. This can be seen in the range of training times per week ranging from 0 – 25 hours. Those players averaging 20 hours per week, are regarded as the "professional hockey player".

It was found in this study that the majority of the players trained between six and ten hours per week, most often on alternating days (with one 2-3 hour session each day).

No literature could be found depicting the ranges in terms of the average number of training hours per week of players at the national and international level.

5.3.1.7 Patient status:

The patient status showed that in comparison to follow-up care 85.7%, the new patient status was almost 15 %. This would tend to indicate that the majority of players have more chronic injuries, needing longer follow-up as compared to the acute injuries not needing as much follow-up care as perhaps the initial immediate critical care.




No literature could be found depicting new patient versus follow-up treatment presentation and the correlation with chronic injury in term of the hockey players at the national and international level.

5.3.1.8 Previous injury:

In correlation with point 5.2.1.7, where it was seen that the majority of treatments were for follow-up care, most of the players (78.1%) reported a previous injury to the area or a chronic injury that had not healed or persisted in giving problems.

This also tends to indicate that the players, especially those exposed to only one position and high levels of intensity in those positions are more prone to injury and then possibly injury of that particular region (dependant on position), on an ongoing basis.

The number of injuries new to a particular region (more often acute in nature) have a lower frequency. This is in contrast to the literature in which the adult (older than 18) player generally has a higher degree of acute injury to a new region (Kingma and ten Duis (1998), Taylor and Attia (2000), Finch et al. (1998), Stevenson et al. (2000)).

5.3.1.9 Anatomic location of the injury:

The most frequent injury reported was to the lower back (32.6%), followed by the hamstring or posterior compartment (10.5%) and the neck (9.1%), with the least injuries being reported to the head (0.1%), TFL-ITB complex (0.7%) and the hip (1.0%).

The findings of Attia and Taylor (2000) show that the majority of the injuries where localised to the wrist and hand (28%), head and face (22%) and the foot and ankle (18%).

This comparison could indicate that players are unaware of the scope of treatment that was available at treatment centers, or the range of treatment provided by the chiropractic facility.

When these findings are compared to those of Attia and Taylor (2000), one finds that the injuries attended to in this study tend towards regions and injuries of a chronic nature as opposed to those of an acute nature. The reliance on clinic records presupposes that all injured players will attend a clinic center for treatment (Attia and Taylor (2000)).

5.3.1.10 Mechanism of injury:

In this study, the most frequently encountered mechanism of injury that was perceived by the players as being responsible for their injury was that of bending over the stick (or running in a stooped position) for protracted periods of time (28.6%). This was followed by running (22.3%) and twisting (13.5%) as the main perceived mechanisms of injury.

This is in contrast to the results achieved by Attia and Taylor (2000), in which they found that more than 50% of the reported injuries were by contact with a person or object (in the case of field hockey - the ball, the stick or another person). The criticism of the study by Attia and Taylor (2000) is that it is focused mainly on the acute injury presentations to the clinical practice (out-patient) setting.

5.3.1.11 Injury status:

In terms of the injury profile the injuries where graded as either acute or chronic. Acute was defined as that which occurred during the game prior to treatment or within 2 weeks of being seen at the field side treatment venue. Chronic was defined as anything that was of longer duration (more than 2 weeks). These definitions were adopted from the guidelines that accompanied the questionnaire when it was first compiled. The definitions therefore were unchangeable in terms of definition or structure.

In terms of this investigation, it was found that there was a preponderance of chronic injuries (63.0%) as opposed to the acute injuries (37.0%).

In support of the above findings, Backx et al. (1989) and Michaud et al. (2001) state that the current demographic data only represents acute (often severe) injury in a clinical setting and not the unrecorded chronic injuries. The review by Herring and Nilson (1987) and the prospective 12-month study by Baquie and Bruckner (1997) indicate that between 30 - 50 % of injuries encountered in field hockey are due to chronic overuse injuries.

These findings support the findings of this study in that there is a definitive slant in the statistics towards the development of positional-related, chronic injuries.

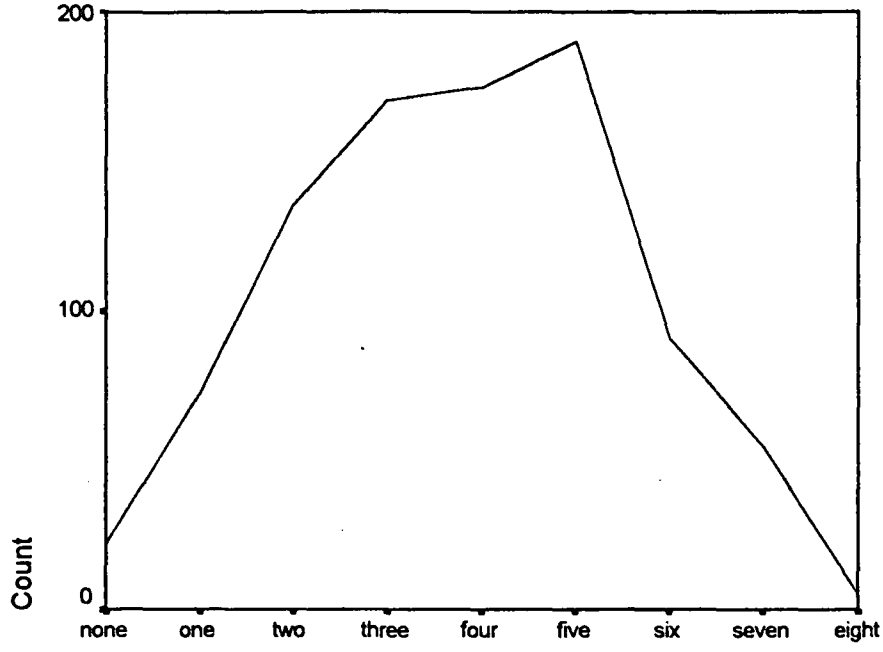
The collation of the above assertions would also support the findings by Michaud et al. (2001), in terms of the development of significantly more injuries sustained by the adult population, due to increased exposure to the specific sport.

This is in opposition to the data collected and analysed by Eggers-Stroder and Hermann (1994), where the degree of injury was interpreted as time away from participation, as opposed to the injury time (or the length of time for which the patient has had the injury). The conclusions reached in their study indicated that, the most injuries necessitated a one-week break from active participation in training or competition and thus the results are perceived as more acute injuries.

However, with data collection at the clinical outpatient interface, the data seems to be biased towards the presentation of more acute injuries.

5.3.1.12 Games in tournament:

The graph below indicates that most of the injuries tend to occur in the earlier stages of the tournament (at least within the first 5 days or 5 games), with the peak of the injuries being on the day of the 5th game.




This trend seems to be consistent with greater persistence of chronic problems, which tend to appear or hassle the players early on in the tournament. Alternatively, the representation of this data means that the players coming into the tournament are not used to such a high intensity of games over the short period of time. Lastly, this could mean that the players have a combination of the two factors – high intensity games for which they are not prepared, as well as chronic injuries that have not been treated adequately.

With no literature available in this regard it is difficult to decide which of the above factors could be contributors to such a presentation. Following the trend thus far through this study, it becomes apparent that chronic injuries do play a large role (63.0% of all injuries). However, one cannot discard the lack of preparation by the players, the fitness levels of the players in terms of their general fitness and position specific fitness and that of the intensity of the games.

5.3.1.13 Clinical impressions:

It was noted by Taylor and Attia (2000) that the spread of injuries indicated that sprains and strains accounted for 32.0% of the injuries, followed by fractures (29.4%), contusions and abrasions (19.3%), and lacerations (9.7%). This type of injury spread is also found in the findings of Eggers-Stroder et al. (1991), however, there is more emphasis on the occurrence of collision type injuries (59%) with contusions, abrasions and lacerations resulting. There was a greater degree of knee (in particular meniscus and collateral ligament injury) (22%) followed by the presence of muscle injury (8%), fractures (6%) and "other" (5%). The follow-up study in 1994 by Eggers-Stroder and Hermann, saw a similar pattern of injuries. There was only a change in the percentage of presentation, indicated as follows:

| | | |
|---|---|---|
| Collision type injuries | - | 25% |
| Knee involvement | - | 25% |
| Muscle injury | - | 23% |
| Lacerations and puncture wounds | - | 11% |

In this study, the following injury presentations were found to be the most frequent in terms of field side presentation:

| | | | |
|---|---|---|---|
| 1. | General muscle tightness | - | 25.9 |
| 2. | Lumbar facet syndrome | - | 11.5 |
| 3. | Sacro-iliac syndrome | - | 10.2 |
| 4. | Muscle strain | - | 9.7 |

These findings contrast highly when compared to those found in the studies by Attia and Taylor (2000), Eggers-Stroder and Hermann (1994) and Eggers-

Stroder et al. (1991). However, they correlate with the mechanism of injury (bending over the stick or running in the stooped position), and twisting, related to the mechanism of injury as perceived by the patient.

The presence of injuries of this nature also tends to support the trend established in the findings of this investigation that the injuries tend to be chronic rather than acute. The injuries that are maintained and become chronic are the type of injury that allow the player to continue without the need for clinical outpatient services. These clinical out-patient services are where most of the literature pertinent to the hockey fraternity originates (Backx et al. 1989, Michaud et al., 2001).

It must however not be forgotten that the data collection process was manned by doctors of chiropractic and chiropractic students. This could have resulted in a disproportionate increase in the number of back related problems, due to the Hawthorne effect (Neuman, 2000). This could be overruled by the "novelty effect" (Smith and Glass, 1987:148) which is that effect which occurs after a novelty or "newness" of a situation or context has worn off. This could well have happened at the tournaments at which the data was collected, as the field-side facility was present throughout the tournaments and as word spread that chiropractors were there, the facility became expected and not something "different".

5.3.1.14 Treatment received:

The treatment received most often by the players was the following:

| | | | |
|---|---|---|---|
| 1. | A combination of massage, stretch and manipulation | - | 35.9% |
| 2. | Ischemic compression and stretch | - | 15.1% |
| 3. | PNF stretching | - | 10.9% |

whereas the referral for x-rays was only (0.4%) and the use of ice, TENS, strapping and the application of topical non-steroidal anti-inflammatory drugs gave an accumulated total of 22.6 %, leaving only individual modalities the remainder of the 27.9%. A general overview of the remaining 27% reveals variations in the strategy to achieve the same increased biomechanical function as the combination of massage, stretch and manipulation.

These results tend to re-affirm the trend seen through this investigation, that hockey players tend to suffer more from chronic injuries as opposed to acute, and that the cause of these injuries lies somewhere between the preparation for the tournaments, the position of the player, the general and specific fitness of the player, and then appropriateness of treatment sought (if any at all).

5.3.1.15 Play status of player:

It was found in this study that the hockey players where able to return to the games they where participating in 97.6% of the time with only 1.1% necessitating the need for hospital or out-patient clinical services for injuries sustained. This is also reflected in the small number of acute injuries sustained by players in this investigation and would be significantly different to all the studies that have collected their information by means of the hospital or out-patient clinical setting (Eggers-Stroder et al. (1991), Eggers-Stroder and Hermann (1994), Kingma and ten Duis (1998), Finch et al. (1998), Stevenson et al. (2000) and Michaud et al. (2001)).

## 5.4 DEMOGRAPHIC DATA – DESCRIPTIVE STATISTICS

### 5.4.1 Descriptive Statistics

The descriptive statistics show that the age range of the players lies between 11 and 45 years, with the mean of 21-25 years of age and a standard deviation of 4.49 years.

In terms of the average hours of training per week, the range is 0 – unspecified with a mean of 6 – 10 hours per week. The standard deviation is 5.4335 hours of training per week.

In terms of the years of experience per hockey player, the minimum was 0 and the maximum was 30 years). The mean is between 0 – 6 years of experience at a competitive level, with a standard deviation of 7.5 years.

The number of games in the tournament ranged from 0 – 8 games, with a mean of 3.7 games and a standard deviation of 1.7 games.

The ranges in terms of the standard deviation are wide and as a result are not accurate enough to be reliable. At most these findings can give an indication of the range one is most likely to be assessing.

## 5.5 CROSS TABULATIONS AND THE CHI-SQUARED TEST ANALYSIS:

The cross tabulations and the use of the Chi-squared was used to identify possible correlations between various factors and to establish the significance of these factors in terms of the main effects demonstrated by the groups represented in the correlation(s). The level of significance was set at 5% ($p<0.005$); confidence interval is 95%.

The following comparisons were found to be of significance, using the Pearson Chi-square analysis:

a. Race of player * Games in tournament
b. Race of player * Average hours of training in season
c. Race of player * Experience of player
d. Race of player * Age of Player
e. Gender of player * Games in tournament
f. Position of player * Games in tournament
g. Position of player * Average hours of training in season
h. Position of player * Experience of player
i. Position of player * Age of Player
j. Patient status * Games in tournament
k. Patient status * Experience of player
l. Patient status * Age of Player
m. Previous injury * Average hours of training in season
n. Previous injury * Age of Player
0. Anatomic location of the injury * Games in tournament
p. Anatomic location of the injury * Average hours of training in season
q. Anatomic location of the injury * Experience of player
r. Anatomic location of the injury * Age of Player
s. Mechanism of injury * Games in tournament
t. Mechanism of injury * Average hours of training in season
u. Mechanism of injury * Experience of player
v. Mechanism of injury * Age of Player
w. Injury status * Games in tournament
x. Injury status * Average hours of training in season

y. Injury status * Experience of player
z. Injury status * Age of Player
aa. Clinical impressions * Games in tournament
ab. Clinical impressions * Average hours of training in season
ac. Clinical impressions * Experience of player
ad. Clinical impressions * Age of Player
ae. Treatment received * Average hours of training in season
af. Treatment received * Experience of player
ag. Play status of player * Games in tournament
ah. Play status of player * Average hours of training in season
ai. Play status of player * Experience of player

The following comparisons were found to be insignificant, using the Pearson Chi-square analysis:

a. Gender of player * Average hours of training in season
b. Gender of player * Experience of player
c. Gender of player * Age of Player
d. Patient status * Average hours of training in season
e. Previous injury * Games in tournament
f. Previous injury * Experience of player
g. Treatment received * Games in tournament
h. Play status of player * Age of Player

## 5.6 THE MULTINOMIAL LOGISTIC REGRESSION ANALYSIS

The multinomial logistic regression analysis was run in order to determine whether there were any specific relationships between the different variables and whether or not such a relationship was significant or not. This relationship is measured by β or the standardized regression co-efficient. The significance of this value is then translated into a significance value with the confidence interval set at 95% ($p<0.005$) in the third last column of the respective tables in chapter 4.

It must be remembered that the level of significance accuracy depends on the level of significance of the model fitting as well. If the level of significance of the model fit is significant, then the level of significance of the standardized regression co-efficient is greater than when compared to the analyses where the model fit is not significant.

Therefore, when analyzing the data the most significant correlations (predictive correlations) were found in those statistics that were:

1. Model fit significant.
2. Standardized regression co-efficient significance (p value <0.05).
3. Negative standardized regression co-efficient value, with a high numerical value.

The significance of the predictive correlations decreases slightly in terms of the presentation of the standardized regression co-efficient if it is a positive value, and its value is high. The predictive correlation significance decreases further if the numeral value becomes zero. However, these correlations will all remain significant in terms of the p value, if the predictability value decreases.

Due to the researcher being unable to locate literature pertinent to these relationships, the data will be discussed with reference to the findings in this investigation and the trends which it has established.

## Significant relationships in terms of model fitting:

### Parameter Estimates for POSITION

The strength of the relationships indicates that all factors are highly significant in terms of the standardized regression co-efficient.

The most significant findings, in descending order - in terms of the level of significance or the p-value - are those of:

1. Striker position presenting with knee pathology.
2. Sweeper position presenting with contusions.
3. Right wing position presenting with general muscle tightness.
4. Back or defensive positions presenting with a previous injury to the particular region in question and contusions during the game.
5. Right wing position presents with regional neck problems.
6. Link (side unspecified) presents with contusions.
7. Centre tends towards presenting with contusions and the most likely region for injury to centres seems to be the neck.
8. Links also seem to have an affinity for the development of problems in the neck region.

Correlations just outside the level of significance are:

1. Predominantly related to the right wing and indicate that they are prone to injury of the lower back with the primary diagnoses being related to symptomatic tendonitis and / or contusions.

2. Back / defense players also seemed prone to the development of a tendonitis.

**Parameter Estimates for PATIENT STATUS**

Here it was found that the only correlation of significance was the fact that new patients had a high frequency of collisions with the stick or ball.
There was no recorded significant factor that could be associated with the follow – up patients.

**Parameter Estimates for PREVIOUS INJURY**

Here it was found that:

1. Only injury to the same region as previously injured (indicated as that region re-injured at the tournament at which the data was collected), had a high correlation to any factor. The new regions having been injured showed no significant correlation.

The significance of the factors in descending order are:

1. Collision with a stick or another player and twisting injuries seemed to be the most common in the regions where injury had previously occurred.

2. Most often the injury was acute in nature and associated with general muscle tightness in the region of the injury.

3. The knee seemed to be the most common region for re-injury and was significantly associated with quadriceps injury or compensation injury. The most commonly associated mechanism of injury was perceived as being abrupt stopping on the slippery Astroturf.

Correlations just outside the level of significance are:

1. The collision with the hockey balls

**Parameter Estimates for INJURY STATUS**

It was found that the following significant correlations existed:

1. Acute injuries were highly correlated to collisions with other players and the hockey ball, as well as twisting injuries.

2. Acute injuries were also found to correlate with the player having had a previous injury to the same region, and a diagnosis of general muscle tightness and myofascial pathology.

3. Chronic injuries did not have any correlations of significance.

## Insignificant relationships in terms of model fitting, but significant in terms of the:

**Parameter Estimates for EXPERIENCE**

It was found that the following significant correlations existed:

1. With all age groups outside of the 26 – 30 year old age group, the most injured region was that of the quadriceps and the hamstring muscles.

2. Between 11 - 15 years of age, the coloured players were the most injured.

3. The age group with 26 – 30 years of age had no correlations.

**Parameter Estimates for RACE**

It was found that the following significant correlations existed:

1. White players had a greater chance of head injuries as a result of colliding with other players.

2. African players also had an increased likelihood of injury by means of collision with another player.

**Parameter Estimates for GENDER**

It was found that the following significant correlations existed:

1. Females were most prone to injuries related to knee pain and quadriceps injury as a result of colliding with objects other than the hockey ball, stick or player (possibly the Astroturf, goals or side perimeters).

2. Males had no significant correlations for any of the factors analyzed.

**Parameter Estimates for AVERAGE HOURS OF TRAINING**

It was found that the following significant correlations existed:

1. If the player trained between 0 – 10 or more than 21 hours per week, they seemed to be more prone to fractures. In the latter instance, the players also suffered more chronic injuries (such as stress fractures).

**Parameter Estimates for GAMES IN TOURNAMENT**

It was found that the following parameters existed:

1. There were no correlations in the "before starting the tournament" and the last game ($8^{th}$).

2. Mechanism 3 – colliding with the ball seemed to maintain a significant presence throughout the other games played.

3. Mechanism 6 – twisting injuries seemed more prevalent in games 2 and 3.

4. Mechanism 4 – colliding with the stick increased from the $4^{th}$ game and was maintained through to the seventh game.

5. Treatment 2 – massage for general muscle tightness occurred mostly in the first treatment, whereas treatment 5 – cross friction and ice occurred mostly in the second treatment.

6. Clinical impression 2 (contusions) occurred in the $3^{rd}$ – $5^{th}$ games.

## No significant relationships found in the following

**Parameter Estimates for PLAY STATUS OF PLAYER**

**Parameter Estimates for AGE OF PLAYER**

## 5.7 THE THIRD OBJECTIVE

The third objective was to establish the face validity of the questionnaire by means of a focus group, including all relevant stakeholders.

### 5.7.1 THE FOCUS GROUP

The focus group discussion revealed that the following aspects of the questionnaire needed to be assessed and possibly changed:

The factors in question that related to clarity of the questionnaire and which may well need refining, were the following:

1. **Race**: the focus group was of the opinion that the word "race" had differing connotations to different ethnic groups and that it could be a disadvantage to include such in a questionnaire. However, to exclude such a concept from the questionnaire would limit the possibility of assessing possible ethnic influence in terms of injury presentation. It was therefore decided that the word "ethnicity" would replace the word "race", so as to decrease the offence caused through connotation.

2. In terms of **years experience**, the focus group felt that it would be of greater significance to include the type of involvement in terms of the years of experience. That would mean defining whether the years experience were of a professional or amateur nature, as well as to define whether the player was involved in hockey full-time or part-time. This suggestion has significance in that it could have influenced the content of the players input into the current questionnaire. However, the more complex a questionnaire, the greater the degree of non-compliance by the player / research participant filling in the form even with personal or face-to-face questionnaires (de Vaus, 1996:111). Having taken cognizance of potential non-compliance, it was decided to include such a differentiation in the new questionnaire.

3. With respect to **position**, it was unanimously agreed that the directive should have been more direct in terms of the definition. The focus group decided that this word be modified by a descriptive noun. Suggestions to this effect were play or player position. This suggestion makes for easier or a more defined guidelines to the questionnaire, however it does not alter the information gleaned from the questionnaire. Therefore has no being in altering the results from the current questionnaire.

4. **Gender difference** is a crucial issue with respect to defining the differences in terms of the health / disease (injury) demographics of the male versus the female player. According to the data gathering process, this information was not part of the structured questionnaire. However, it was entered on the questionnaires by the data collector / researcher. For this investigation, the implications are minimal as the sport type chosen and the events chosen, (by default) had either male or female participants, for example, the Mens' Interprovincial Hockey Tournament. This made the data capturing for each event simpler (as the participants were self defined).

5. When discussing the **location of the injury**, it was felt that the wording be simplified with respect to the medical terminology used, despite the medical terminology being well known in the lay community and especially the sports community. It was therefore suggested that the words "hamstring" be replaced by the words "posterior compartment of the thigh" and "quadriceps" be replaced by the words "anterior compartment of the thigh". Two concepts were found to be lacking in terms of this portion of the questionnaire: the first being that of the "buttocks" region and the second being that of the "medial compartment of the thigh" (or adductor) region. These concepts were previously catered for under "other" in this section. However, with the experience of the focus group it was felt that this would be warranted in terms of these injuries being common-place on the hockey field.

6. The wording accompanying the **mechanism of injury** section on the questionnaire was perceived as confusing by members of the focus group. The recommendations to decrease confusion of the user included the highlighting of 3 concepts pertinent to the timing (the when) of the injury on the questionnaire, and then listing the mechanisms (or the how) below this. The timing concepts were defined as "during training", "during competition" and "during previous games / tournaments" (this is dependant on inter or intra tournament analysis). These changes resulted in minimal change in the concepts on the questionnaire, even though it did highlight a possibility that the information contained in this section may be of limited value and may need to be treated with circumspect until validated or refuted by the user of the updated questionnaire or other related studies.

   Another comment made in this section was that of defining "collision" more accurately on the form. This would mean including extra categories in terms of "collision (ball), collision (stick) and collision (person). This information did not go unrecorded however, as the research participants - by virtue of their training in maintaining medical records - did not omit such detail on the questionnaire. This implies that the information gathered by means of this questionnaire may be slightly skewed with fewer mechanisms of injury being defined accurately. To allow for an accurate reflection in this investigation, any collision which was not

qualified was designated as an "other". The point raised does not go unrecognized as such details should be included in further questionnaires so as to standardize the form and allow for non-medical research participants to complete the questionnaire unaided.

7. **Previous injury of the area** was found to be sufficient in terms of the data collection process. However, for treatment purposes and pertinent patient information, it was found necessary to add:

    → A time period in terms of when the injury or how long ago the injury occurred

    → The type of treatment received for that previous injury

    → The severity of the previous injury in terms of "Did the previous injury cause you to leave the game?"

8. With respect to the **clinical impressions**, it was agreed that the following could be omitted as they are seldom seen and the section "other" caters for the diagnosis when it does occur:

   → costochondral syndrome

   → heat stroke, as heat exhaustion is already present on the questionnaire and that the treatment directive should be avoiding the onset of a heat stroke. If this were to occur, it would be rare and the "other" section would accommodate for this.

   → "Laceration / cut", "contusion" would be maintained and that of "puncture" and "abrasion" be removed, as they were essentially duplications of similar concepts.

   → The point that resulted in the most debate was that of the absence of "Delayed Onset Muscle Stiffness", which was argued as being vitally important in terms of differentiating it from general muscle tightness. In terms of this study the difference between general muscle tightness and delayed onset muscle stiffness cannot be assessed.

9. With respect to the **treatment** given, it was decided in the focus group meeting that there was a need for greater diversity of modalities used and suggestions included the following: "grip and rip" (soft tissue manipulation), "disinfect and plaster", "ischaemic" and "fascial release" instead of myofascial, "PNF", "static" and "passive" stretches in place of the more generic stretching currently on the questionnaire.

10. The focus group decided that the **number of games** played versus the total number of games in the tournament was of importance. This is possibly relevant in terms of clinical management and team management however, it gives little input into the demographic picture of the hockey player. The injury occurrence is already logged on the form when the player identifies the number of games already played. This is particularly true in hockey where the total number of games played is 7 per week and therefore the tournament. The only time when more games are played are when players are needed for teams, when their full complement is lacking due to injuries incurred. Therefore, in terms of this research no information has been lost by the omission of this suggestion and the recommendation to include such for a future questionnaire will not be considered.

11. Again, in terms of information for those persons treating or attending to the players, it was suggested that the **age level of the tournament** be identified. This would allow for greater information for those attending to or treating the patient but would yield no further information for this investigation as the age of the player is the factor of importance.

12. In terms of information for those persons treating or attending to the players, it was suggested that a region on the questionnaire be set aside for **prognosis.** This would - in the researchers opinion - only aid in identifying a chronic from an acute problem that the player may have in terms of the data collection process. This is covered under the section of clinical impressions and would therefore not allow for further data collection. However, for greater clinical efficacy the inclusion of this question / region in the questionnaire would allow for better and more easily co-ordinated treatment for the player, through information for those attending to or treating the player.

13. When the focus group assessed the **treatment** section of the questionnaire, it was noted that there was again a lack of specificity. This was more related to the application of the different treatment modalities. As an example, when adjusting / manipulating a patient, there is a listing associated with that procedure, which specifies the what, how, where and when of the specific procedure applied. This type of information would again be valuable for the person treating the player and such information should be added to such a questionnaire especially if it acts as a record of medical treatment as well. However for the purposes of this study, the information obtained would not be of relevance in determining the demographic picture of the hockey player (with perhaps the exception to the chiropractic doctor).

14. With respect to **reportable**, there seemed to be some confusion. It was decided that presentation should follow a flow diagram schema. This would in the opinion of the researcher be something analogous to the "contingency questions" as reported on by de Vaus (1996). These will be incorporated into the questionnaire to allow for ease of association of different circumstances to that of "reportable".

15. Following along the lines of the prognosis section discussed under 12 above, a section on "recommendations" (i.e. for recommendation to the patient / player) was recommended on the questionnaire.

From the above 15 points, it can be seen that many apply to the functional use of the questionnaire in terms of data recording for clinical purposes. Nonetheless, there are some pertinent points (subthemes) that have been raised with respect to this investigation. These points will all be taken into consideration in drawing up the new questionnaire.

**SUBTHEMES:**

1. **Stretching protocols**

   These will be catered for by the introduction of the "recommendations" section or the definition of the stretching protocols under "treatment" in the questionnaire.

2. **The level of the tournament**

   This will be catered for under the event name. This is significant because to enable accurate assessment of the player profile, the research in question should assess and maintain the level of the competitiveness to allow for comparable standards, unless a comparison between standards is being made.

3. **The level of competitiveness of the team**

   This will be dictated by the level of the tournament.

4. **The fitness average**

   This is difficult to quantify and assess in a questionnaire of this nature. The fitness average would best be assessed in a study measuring physiological parameters in terms of the fitness of the player.

5. **Isolation of injury with age**

   This would become apparent with the analysis of the data collected by means of the questionnaire and it would not serve a purpose to place this as a question on the questionnaire.

6. With the possibility of **psychological overlay**, it was decided that a category named "supratentorial" should be added to the list of variables under clinical impressions.

7. **Turf type** – this would be important in terms of comparing the injuries on different turf types. For this investigation, the point of reference was the wet Astroturf surface.

8. Rework the **layout of the questionnaire**, in terms of the above suggestions.

## 5.7.2 THE RESEARCHER'S INVOLVEMENT IN THE FOCUS GROUP:

Within the focus group the researcher needs to have the following abilities as key attributes according to Merton et al. (1956):

1. Have the ability to distribute the conversation over the topic area.

2. Have the ability to encourage reluctant participants to contribute to the discussions.

3. Must be able to get input in each topic from all participants, so as to get the fullest and most complete coverage of the area of discussion in question.

As well as be able to simultaneously be concerned with the questions and the structure of the questions to be asked and integrating these with the evolving patterns and dynamics that are occurring within the group (Frey and Fontana, 1991).

In terms of the focus group discussion it was found that the participants were all active in the process of contributing to the group discussion. The level of participation was determined largely by the sphere of influence of each of the members of the group, as well as the broadness of the question(s) being discussed.

Initially, the most difficult problem facing the group was that of the type and number of directives that the researcher gave the group; this is due to the lack of experience of the researcher in the focus group dynamic. With moderation from the supervisor and keeping to one section of the questionnaire, the group discussion continued within a systematic evaluation of the questionnaire. Most sections were opened with a brief, yet open question by the researcher and then left to the group to discuss. At intervals the group thought was summarised by the researcher or clarification of the thought process occurring was requested. The only time where no introductory question was phrased by the researcher was when the group naturally flowed from one section to the next or when related topics were brought under discussion by group members.

## 5.8 PROBLEMS AND LIMITATIONS WITH THE INVESTIGATION

The study assumes that the data on the information sheets is accurate and represents the exact happenings at the time of data capturing onto the questionnaire.

The data collected at the sports events over the previous 2 years may be incomplete, in terms of the suggestions and recommendations made by the focus group, which means that the data generated may not reflect the entire hockey player population and generalisations may not be accurate in the assumptions made. The study however, would still represent a better approximation of the true nature of the injuries seen in field hockey players when compared to such studies as those by Eggers-Stroder and Hermann (1994), Jago and Finch (1998) and Finch et al. (1998). This is because the hockey players represented in this study are not only reflective of the acute injuries that are seen away from the field of play.

This is because the use of the qualitative approach generally comes before the piloting of the questionnaire, so as to refine the questionnaire and accurately define its contents and testable concepts (Yeomans, 2000:120). However there are instances where this can be done after the data collection process, according to Denzin and Lincoln (1998). The only compromise in terms of the data collection in the latter approach is that of incomplete data due to exclusion

of variables not included in the questionnaire by the researcher(s) (Denzin and Lincoln, 1998).

Additionally, (by either means) any analysis in terms of a qualitative analytical approach can inherently be biased by the preconceived opinions of the persons participating in the focus group (Dey, 1996) as well as the experience (or lack thereof) by the researcher conducting the focus group (Frey and Fontana, 1991). The latter being particularly apt in terms of this investigation.

## 5.9 PROPOSED NEW QUESTIONNAIRE

## EVENT NAME / LEVEL / AGE GROUPING / TURF TYPE

**DATE(e.g.): June 13 14 15**

NAME: _____ AGE: _____ TEAM: _____

Player Ump Coach Manager Official MedTeam Other: _____

PLAYER POSITION: _____ ETHNICITY: W B IN OTHER: _____

YRS EXPERIENCE: (Professional) _____ (Amateur) _____

NO. OF GAMES PARTICIPATED IN THIS TOURNAMENT: _____

| NEW PATIENT | REPEAT PATIENT | NEW CONDITION | CONTINUATION OF CARE |
|---|---|---|---|

**PREVIOUS TREATEMENT:** _____

_____

**LOCATION:**

| | | |
|---|---|---|
| HEAD/CONCUSSION | ANT THIGH COMPART. | SHOULDER |
| NECK | POST THIGH COMPART. | ELBOW |
| THORACIC | MEDIAL THIGH COMPART. | FOREARM |
| LOW BACK | KNEE | WRIST |
| RIBS | SHIN/CALF | HAND |
| HIP | ANKLE | FINGERS |
| BUTTOCKS | FOOT | |

**MECHANISM OF INJURY:** **DURING**

| **1.PREVIOUS COMPETITION** | **2.PRACTICE** | **3.COMPETITION** |
|---|---|---|
| RUNNING | SPRINTING | SIDE STEPPING |
| COLLIDING(PERSON) | COLLIDING(STICK) | COLLIDING(BALL) |
| SLIDING | TACKLING | |

**HAVE YOU INJURED THE AREA BEFORE ?** **YES** **NO** **WHEN ?** _____

**DID IT CAUSE YOU TO LEAVE THE GAME THEN ?** **YES** **NO**

**DID THE INJURY CAUSE YOU TO LEAVE THE GAME NOW ?** **YES** **NO**

**CLINICAL IMPRESSIONS:**

| | | **ACUTE** | **CHRONIC** |
|---|---|---|---|
| CONTUSION | LACERATION | BLISTER | HEAT EXHAUSTION |
| SPRAIN | STRAIN | DISLOCATION | FRACTURE |

MYOFASCIAL (SPECIFY) _____

_____

| | | | |
|---|---|---|---|
| C/FACET | T/FACET | L/FACET | SI SYNDROME |
| TENDINITIS | PFPS | SYSTEMIC DIS | NEUROLOGICAL |
| CIRCULATORY | DOMS | JOINT DYSFUNCTION: _____ | |
| GENERAL MUSCLE TIGHTNESS | | SUPRATENTORIAL | |

OTHER: _____

**TREATMENT**

| | | | |
|---|---|---|---|
| MASSAGE | MANIPULATION: _____ | | |
| ISCHEMIC COMP. | MOBILISATION: _____ | | |
| STATIC STRETCH | FASCIAL RELEASE | NEEDLING | PNF |
| CROSS FRICTION | STRAPPING | ICE | EXERCISES |
| | MODALITY (SPECIFY): _____ | | |

FOR RECOMMENDATIONS PLEASE SEE REVERSE

**CONTINUATION OF PLAY** ***RESTRICTED:** _____

***HOSPITAL:** YES NO WHY ? _____

HOW LONG ? _____

**REPORTABLE:** YES NO (any * means reportable)

**TREATMENT BY :**

**DC** (SIGN) _____

**DC STUDENT** (NAME) _____

**RECOMMENDATIONS MADE TO THE PLAYER / COACH IN RESPECT OF THE PLAYERS CONDITION:**

# CHAPTER SIX

# CONCLUSIONS AND RECOMMENDATIONS

In conclusion, it can be stated that the results of this investigation lend weight to the arguments of Herring and Nilson (1987) and Baquie and Bruckner (1997), in that there is a tendency towards indicating that hockey players suffer more chronic injury. This can be seen when assessing the 78% response in terms of previous injury and the 63% response in terms of the clinical assessment of the condition as being chronic, as well as the large proportion of visits being follow – up rather than initial (i.e. for a new complaint). In terms of the clinical impressions, based on the diagnostic assessment of the hockey players / patients, general muscle tightness and altered biomechanics, which were treated by massage, stretch (PNF and static), ischaemic compression and manipulation were seen frequently, again indicating a chronic injury.

These indications tend to point to a number of factors that need to be investigated to assess their significance:

1. The degree to which player training affects the player's fitness, in terms of positional fitness or fatigue or general fitness (utility player). This is especially true of stretching protocols pre and post tournaments.

2. Another aspect of the players training is that of the number of hours training that seems to determine the degree of injury, with extremes indicating that injury and often acute injury is highly likely.

3. The degree to which the intensity of the tournament compares with that of the regular training sessions and what effect this has on the player's potential.

4. The specificity of the predisposing factors' relationship to re-injury when the player has already got a previous injury.

However, the presence of specific correlations in terms of acute injuries must not be forgotten, as this is the origin for chronic injury to occur (and without proper care and attention by the relevant player and medical team) to cause predisposition to further injury and the setting up of a cycle of re-injury.

It is therefore mandatory in terms of the development of accurate data collection (through the use of this or other research tools) and the development of accurate demographic profile analyses to investigate the relationships inherent within the hockey and other sporting fraternities, to allow for the development of better management strategies in terms of the players' health maintenance and playing potential.

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# LIST OF APPENDICES

# APPENDIX A
# INITIAL QUESTIONNAIRE
## EVENT NAME
### INDIVIDUAL TREATMENT RECORDS

**DATE (E.g.): JUNE 13 14 15**

NAME:_____ TEAM:_____
SPORT: Player Ump Coach Manager Official MedTeam Other:_____
POSITION:_____ AGE:_____
RACE: W B IN OTHER:_____ YRS EXPERIENCE:_____

**NO. OF GAMES PARTICIPATED IN THIS TOURNAMENT :**_____

| | |
|---|---|
| NEW PATIENT | NEW CONDITION |
| REPEAT PATIENT | CONTINUATION OF CARE |

**LOCATION:**

| | | |
|---|---|---|
| HEAD/CONCUSSION | QUADRICEPS | SHOULDER |
| NECK | HAMSTRINGS | ELBOW |
| THORACIC | KNEE | FOREARM |
| LOW BACK | SHIN/CALF | WRIST |
| RIBS | ANKLE | HAND |
| HIP | FOOT | FINGERS |

| **MECHANISM OF INJURY:** | **PRACTICE** | **DURING PARTICIPATION** |
|---|---|---|
| RUNNING | SPRINTING | SIDE STEPPING |
| COLLIDING | SLIDING | TACKLING |
| DURING PREVIOUS GAME | DURING TRAINING | |

**HAVE YOU INJURED THIS AREA BEFORE ?** YES NO
**DID THIS INJURY PREVENT YOU TO RUNNING COMRADES ?** YES NO

**CLINICAL IMPRESSIONS:** ACUTE CHRONIC

| | | | |
|---|---|---|---|
| ABRASION | CONTUSION | PUNCTURE | LACERATION |
| BLISTER | HEAT EXHAUSTION | HEATSTROKE | SPRAIN |
| STRAIN | DISLOCATION | FRACTURE | MYOFASCIAL (SPECIFY) |
| C/FACET | T/FACET | L/FACET | COSTOCHONDRAL SYN |
| SI SYNDROME | TENDINITIS | PFPS | SYSTEMIC DIS |
| NEUROLOGICAL | CIRCULATORY | JOINT DYSFXN:_____ | |

GENERAL MUSCLE TIGHTNESS

| **TREATMENT:** | | | | |
|---|---|---|---|---|
| | MANIPULATION | MOBILISATION | MASSAGE | MYOFASCIAL |
| NEEDLING | STRETCHING | STRAPPING | ICE | EXERCISES |
| CROSS FRICTION | | | | |

**CONTINUATION OF PLAY** **RESTRICTED**
**HOSPITAL:** YES NO **REPORTABLE:** YES NO

**TREATMENT BY:** DC (SIGN)_____

DC STUDENT(NAME) _____

**APPENDIX B**

**6TH/7TH ALL ARFICA GAMES QUESTIONNAIRE**

# SOUTH AFRICAN SPORTS CHIROPRACTIC ASSOCIATION

## COMPETITOR FOLLOW-UP AND TREATMENT FILE

**EVENT:**

**FOLLOW-UP No:** **DATE:**

| | | | | | |
|---|---|---|---|---|---|
| **COMPETITOR** | | AGE | | REG. NO. | |
| SPORT | | TEAM | | COUNTRY | |

**TEAM FUNCTION:**

| | | | | | |
|---|---|---|---|---|---|
| CURRENT COMPLAINT | | | | OLD | NEW |

**NEW INJURY:**

| | |
|---|---|
| **ASSESSMENT** | |
| **DIAGNOSIS** | |

**TREATMENT PROTOCOL**

| | | | | | |
|---|---|---|---|---|---|
| **SOFT TISSUE** | MASSAGE | ICE MASSAGE | CROSS FRICT. | TRIGGER | ISC. COMP. |
| **MANIPULATION** | ADJUSTMENT | JOINT ADJUST. | S.T. ADJUST. | MOBILIZE | REDUCTION |
| **ADJUNCTIVE** | ICE | HEAT | COMPRESSION | IFC US | NEEDLING |
| **SUPPORTIVE** | STRAP- THER. | STRAP- SUPP. | STRAP-PREV. | SLING | SPLINT-CAST |
| **REHAB.** | EXERCISE | STRETCHES | P.N.F. | PROS. | CONS. |

**COMMENTS:**

| | | | | | |
|---|---|---|---|---|---|
| **DOCTOR** | *PRINT* | | *SIGN* | | DATE |
| **STUDENT** | *PRINT* | | *SIGN* | | DATE |


## COMPETITOR FOLLOW-UP AND TREATMENT FILE

**EVENT:**

**FOLLOW-UP No:** **DATE:**

| | | | | | |
|---|---|---|---|---|---|
| **COMPETITOR** | | AGE | | REG. NO. | |
| SPORT | | TEAM | | COUNTRY | |

**TEAM FUNCTION:**

| | | | | | |
|---|---|---|---|---|---|
| CURRENT COMPLAINT | | | | OLD | NEW |

**NEW INJURY:**

| | |
|---|---|
| **ASSESSMENT** | |
| **DIAGNOSIS** | |

**TREATMENT PROTOCOL**

| | | | | | |
|---|---|---|---|---|---|
| **SOFT TISSUE** | MASSAGE | ICE MASSAGE | CROSS FRICT. | TRIGGER | ISC. COMP. |
| **MANIPULATION** | ADJUSTMENT | JOINT ADJUST. | S.T. ADJUST. | MOBILIZE | REDUCTION |
| **ADJUNCTIVE** | ICE | HEAT | COMPRESSION | IFC US | NEEDLING |
| **SUPPORTIVE** | STRAP- THER. | STRAP- SUPP. | STRAP-PREV. | SLING | SPLINT-CAST |
| **REHAB.** | EXERCISE | STRETCHES | P.N.F. | PROS. | CONS. |

**COMMENTS:**

| | | | | | |
|---|---|---|---|---|---|
| **DOCTOR** | *PRINT* | | *SIGN* | | DATE |
| **STUDENT** | *PRINT* | | *SIGN* | | DATE |

# SOUTH AFRICAN SPORTS CHIROPRACTIC ASSOCIATION

EVENT: THE 6TH ALL AFRICA GAMES
VENUE: JOHANNESBURG - VENUES TO BE AT VARIOUS POINTS
DATE: _____

## DAILY REPORT: CONDITIONS TREATED: DAY DATE :

### UPPER EXTREMITIES

| REGION | CONDITIONS | SIDE L | SIDE R | LOCATION | | | OUTCOME | TOTAL |
|---|---|---|---|---|---|---|---|---|
| SHOULDER | A-C Joint | | | | | | | |
| | Glen-hum. | | | | | | | |
| | Rotator Cuff | | | | | | | |
| | Biceps Tend. | | | | | | | |
| | Triceps Tend. | | | | | | | |
| | Clavicle | | | | | | | |
| | Sterno-Clav. | | | | | | | |
| | Sterno-Costal | | | | | | | |
| | Scapula | | | | | | | |
| | Costo-Vert. | | | | | | | |
| MUSCULAR | | | | | | | | |
| (Specify) | | | | | | | | |
| (Specify) | | | | | | | | |
| BURSITIS | | | | | | | | |
| (Specify) | | | | | | | | |
| UPPER ARM | | | | | | | | |
| ELBOW | Med. Epicond. | | | | | | | |
| | Lat. Epicond. | | | | | | | |
| FORE ARM | | | | | | | | |
| WRIST | Carpal Tunnel | | | | | | | |
| | Sprain\|Strain | | | | | | | |
| HAND | Dislo.\|Fracture | | | | | | | |
| THUMB | | | | | | | | |
| DIGITS | Dislo.\|Fracture | | | | | | | |

### LOWER EXTREMITIES

| REGION | CONDITIONS | SIDE L | SIDE R | LOCATION | | | OUTCOME | TOTAL |
|---|---|---|---|---|---|---|---|---|
| PELVIS | S.I. Joint | | | | | | | |
| | Hip | | | | | | | |
| | Groin | | | | | | | |
| | Inguinal | | | | | | | |
| MUSCULAR | | | | | | | | |
| (Specify) | | | | | | | | |
| (Specify) | | | | | | | | |
| THIGH | H-Strings | | | | | | | |
| | Quads. | | | | | | | |
| | T.F.L. | | | | | | | |
| KNEE | Ligaments | | | MCL | | LCL | | |
| | | | | ACL | | PCL | | |
| | Meniscus | | | Med | | Lat | | |
| | ITB | | | | | | | |
| | Pop. Lig. Att. | | | | | | | |
| PATELLA | Ligaments | | | SUP | | INF | | |
| BURSITIS | | | | | | | | |
| CALF | Shin Splints | | | | | | | |
| | Compart. Syn. | | | | | | | |
| ANKLE | Sprains | | | Ever. | | Inver | | |
| | Achilles Tend. | | | | | | | |
| ARCH | Metatarsalgia | | | | | | | |
| | Plantarfascitis | | | | | | | |
| DIGITS | Dislo.\|Fractures | | | | | | | |

| HEAD | Injury | No. | CERVICALS | Injury | No. | THORACICS | Injury | No. | COSTAL | Injury | No. | LUMBARS | Injury | No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eyes \| Ears | | | H-Aches | | | Sublux: levels | | | Neuralgia: levels | | | Strain | | |
| TMJ | | | Torticollis | | | Pnuemo-thorax | | | Fractures: levels | | | Facet | | |
| DENTAL | | | Whiplash | | | Contusion | | | Luxations: levels | | | Disc | | |

## APPENDIX C: TREATMENT RECORD OR "SOAPE" NOTE

## EVENT NAME

## INDIVIDUAL TREATMENT RECORDS

**DATE(e.g.): June 13 14 15**

NAME: _____ TEAM: _____
SPORT: Player Ump Coach Manager Official MedTeam Other: _____
POSITION: _____ AGE: _____
RACE: W B IN OTHER: _____ YRS EXPERIENCE: _____
NO. OF GAMES PARTICIPATED IN THIS TOURNAMENT: _____

| | |
|---|---|
| NEW PATIENT | NEW CONDITION |
| REPEAT PATIENT | CONTINUATION OF CARE |

**LOCATION:**

| | | |
|---|---|---|
| HEAD/CONCUSSION | QUADRICEPS | SHOULDER |
| NECK | HAMSTRINGS | ELBOW |
| THORACIC | KNEE | FOREARM |
| LOW BACK | SHIN/CALF | WRIST |
| RIBS | ANKLE | HAND |
| HIP | FOOT | FINGERS |

**MECHANISM OF INJURY: PRACTICE DURING PARTICIPATION**

| | | |
|---|---|---|
| RUNNING | SPRINTING | SIDE STEPPING |
| COLLIDING | SLIDING | TACKLING |
| DURING PREVIOUS | GAME DURING TRAINING | |

**HAVE YOU INJURED THE AREA BEFORE ?** **YES NO**
**DID THIS INJURY PREVENT YOU FROM PARTICIPATING IN THE TOURNAMENT ? YES NO**

**CLINICAL IMPRESSIONS ACUTE CHRONIC**

| | | | |
|---|---|---|---|
| ABRASION | CONTUSION | PUNCTURE | LACERATION |
| BLISTER | HEAT EXHAUSTION | HEAT STROKE | SPRAIN |
| STRAIN | DISLOCATION | FRACTURE | MYOFASCIAL (SPECIFY) |
| C/FACET | T/FACET | L/FACET | COSTOCHONDRAL SYN |
| SI SYNDROME | TENDINITIS | PFPS | SYSTEMIC DISEASE |
| NEUROLOGICAL | CIRCULATORY | JOINT DYSFUNCTION: _____ | |
| GENERAL MUSCLE TIGHTNESS | | | |

| | | | |
|---|---|---|---|
| **TREATMENT** | MANIPULATION | MOBILISATION | MASSAGE |
| MYOFASCIAL | NEEDLING | STRETCHING | STRAPPING |
| ICE | EXERCISES | CROSS FRICTION | |

**CONTINUATION OF PLAY** **RESTRICTED:** _____
**HOSPITAL:** YES NO **REPORTABLE:** YES NO

**TREATMENT BY :** **DC (SIGN)** _____

**DC STUDENT (NAME)** _____

## APPENDIX D
## Letter of information

Dear Participant,

I would like to welcome you into the focus group of my study, the title of my research project is:

**A retrospective epidemiological investigation of the Chiropractic Students' Sports Questionnaire, with reference to field hockey : a methodological perspective.**

The purpose of this study is to validate the use of the Chiropractic Students' Sport Questionnaire in terms of gathering information from participants in various sporting events. However due to the limitation of the study, the participants will only be defined as those participating in field hockey.

The validation of the questionnaire is a 2 step process, the first being the collection of data with the unvalidated questionnaire and the second being critical analysis of the information gleaned in terms of what actually happens in the fraternity of field hockey (this is measured by experience and expertise in the field hockey arena).

With discussions will focus on the main trends that have been found through the analysis of the data. You are at any point permitted to disagree with the findings if such is the case, however please give your reasons fro disagreement as this will help in the research process.

Your participation in this study is much appreciated and it is assured that your comments and contributions to the discussions will be kept confidential. The results of the discussion will only be used for research purposes.

If you have any further questions please feel free to contact either myself or my supervisor at the following numbers

Charmaine

# APPENDIX E:
# INFORMED CONSENT FORM

(TO BE COMPLETED BY THE PARTICIPANTS OF THE FOCUS GROUP)

**DATE :** 31ST OCTOBER 2001

**TITLE OF RESEARCH PROJECT :**

A retrospective epidemiological investigation of the Chiropractic Students' Sports Questionnaire, with reference to field hockey : a methodological perspective.

**NAME OF SUPERVISOR :** DR C. MYBURGH

**NAME OF RESEARCH STUDENT :** C. KORPORAAL

**Please circle the appropriate answer:**

| | | | |
|---|---|---|---|
| 1. | Have you read the research information sheet ? | YES | NO |
| 2. | Have you had the opportunity to ask questions regarding this study ? | YES | NO |
| 3. | Have you received satisfactory answers to your questions ? | YES | NO |
| 4. | Have you had an opportunity to discuss the study? | YES | NO |
| 5. | Have you received enough information about the study ? | YES | NO |
| 6. | Do you understand the implications of your involvement in this study ? | YES | NO |
| 7. | Do you understand that you are free to | | |
| | a. Withdraw from the study at any time ? | YES | NO |
| | b. Withdraw from the study at any time, without reasons given ? | YES | NO |
| | c. Withdraw from the study at any time, without affecting your future health care or relationship with the Chiropractic Day Clinic at Technikon Natal ? | YES | NO |
| 8. | Do you agree to participate voluntarily in this study ? | YES | NO |
| 9. | Who have you spoken to regarding this study ? | | |

IF YOU HAVE ANSWERED NO TO ANY OF THE ABOVE, PLEASE OBTAIN THE NECESSARY INFORMATION FROM THE RESEARCHER AND / OR SUPERVISOR BEFORE SIGNING. THANK YOU.

**PLEASE PRINT IN BLOCK LETTERS**

Focus Group Member: _____ Signature: _____

Witness' Name: _____ Signature: _____

Researcher's Name: _____ Signature: _____

Supervisor's Name: _____ Signature: _____

**APPENDIX F**

# Confidentiality Statement

# Declaration

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.

2. The patient files have already been coded and will be kept anonymous, no identification of isolated patient cases will be allowed in the focus group.

3. None of the information shall be communicated to any other individual or organisation outside of this specific focus group as to the decisions of this focus group.

4. The information from this focus group will be made public in terms of a journal publication, which will in no way identify any participants of this research.

Once this form has been read and agreed to, please fill in the appropriate information on the attached sheet and sign to acknowledge agreement

## Important note:

**This form is to be read and filled in by every member participating in the focus group, before the focus group meeting convenes.**

## APPENDIX G:

# Code of Conduct:

**This form needs to be completed by every member of the Focus Group prior to the commencement of the focus group meeting.**

As a member of this committee I agree to abide by the following conditions:

1. All information contained in the research documents and any information discussed during the focus group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.
2. None of the information shall be communicated to any other individual or organisation outside of this specific focus group as to the decisions of this focus group.
3. The information from this focus group will be made public in terms of a journal publication, which will in no way identify any participants of this research.

| | Member Represents | Member's name | Signature | Contact details |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |

# APPENDIX H

## Focus Group Discussion

### Transcript of the tape recordings

Date: The 27th November 2001, 2pm

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Welcome

The whole idea is for us to get as much depth of understanding of the material, so anything that comes to mind is useful. So there is no arbitrary comment.

Have you got a couple of structured questions that you can throw in from time to time so that we do not stray to far of the topic. Yes.

But besides that I cannot get involved in the research process, because the research is her research and not my research. I hope you understand that bit. I have not been involved with as many of the questionnaires as you guys have been involved with, so that is why you are here. You have the knowledge and you are the best candidates. You're the best candidates.

To start off with what I thought we would do is to go through the questionnaires as it stands..... which is the last page attached to the bundle, that you have got. And for those of you who have worked with it [questionnaires] to give us some insight as to what did work and didn't work, what you found very common that was not on here or ..... stuff that was on here that wasn't very common and then maybe if Dave Carr can put his input in as to things from the sports perspective and the hockey involvement that may not be here that we have missed.

O.K. you need to give the panel a bit of a break there; there are a lot of directives. Choose maybe one directive and go from there.....

First one would be to just scan over the questionnaire and see if there is anything that is not appropriate to the questionnaire.

Race..... why do you say race is not appropriate ?.....Some people getting a raised the eyebrow - they obviously see it as you are filling out the form, because you are sitting in front of them as you are filling it out and they take it as a personal upfront.

The whole new South Africa type of thing – personal correctness..... and the rainbow nation.....

Did any of you, filling it in, have any problems with say for example with years of experience / years experience, ..... ?

I was just about to think that they uh.....You are treating at such a variety of events so it may be a school boy tennis tournament, how many years experience do you have at what – playing school boy tennis ?

When you are playing ..... then you are going to the ..... like that MTN tennis tournament ..... is it many years professional experience have you had ?

Ok so you would prefer it to be more structured ..... or more ..... approach ?

Ya, you need a differential ..... how many years professional experience..... Or ..... you know I have been playing tennis for 10 years, that's fantastic – but I have only been training for two years professionally.

So more a specific directive.....

Can I just digress a second here and just go back to the race question. What we have to do is to find out whether there is an alternative to that way of putting it..... Alternative manner of putting it ..... ethnicity may be important in some instances..... may be important but maybe the change of the word more so than the change of the concept..... That's right.....but why do you want to know that if you are looking at a hockey player or rugby player – why do you want to know what race group they are coming from,..... to see whether there are any conditions..... to see whether there are any conditions that affect one ethnic group more so than another .....in the Indian population diabetes affects them more commonly – that sort of stuff.....

O.K., from a sports management perspective ..... (sorry for interjecting) , but if you want to see if your Bakers Cricket Programme is working and reaching the right subgroup – you know, just as an arbitrary example.....then this would be important.

Number of games participated in was that a problem to any one.....?

Maybe ..... I think what you are trying to say is that..... I here what you are saying, but maybe take the number of games..... don't you want to have records, the way I understand it, if it's the first game of the tournament or the last game ..... maybe what you've got to say.....don't you also want to get information of how many tournaments uh..... games there are, say for example in a hockey tournament – there are normally seven matches

in that week. Say he got injured in the fourth of seven. Do you need to know how long the tournament is ??.....Ya that is actually a good idea..... A very good idea ..... the length of the tournament into one of seven, three of seven..... Number of games participated out of how many possible.....

You could be .....if you have 3 there that could..... might be the end of the tournament or it could be just half way..... and they are still needing to play.....

Its important to know whether he has one more or five more games to play.....what if he has to play five more ?..... ..... just for management times and stuff..... and maybe it will also help in the broader picture this person is coming to the tournament very unfit, because he is not physically in shape ,.....maybe he gets injured in the first game and he gets a muscle strain like a pulled hammie or something like that ..... do you look into why ?

Ya, .....maybe he hasn't been stretching or he hasn't been prepared back home..... Generally in terms of the number of games participated in if they go - right, just give me the number, I can tell from, if say for example the third one from hockey that there are three of seven. In other events or tournaments it may be a problem where they play a different number, but with hockey it is generally a set number.

Like a basketball tournament would be over a weekend they know they will play 4 matches. There you would have to be more specific.

Try to keep it as much as possible to the hockey scene, all right, it helps.

O.K., although this is a generic questionnaire and has general influence, her research is focusing on hockey at the moment.

Then what we possibly should also have, it's not in here, but maybe, the level of the tournament ..... O.k. under 21 or the senior IPT or if it is an international.....does that make any difference ??

Uh..... purely from a lay persons point of view anything that was national or above tended towards the same type of fitness average, so I wasn't too specific, but maybe that's something I should add in to see if there is anything more or less in terms of involvement fitness or something like that.....

I mean if you went to the under 18 tournament generally youngsters are more supple and you don't get as many hammies, the older the guys get the lazier they get, so they don't do their stretching, ..... so you might almost be able to pinpoint types of injuries which could happen at different age groups

In the different age groups.....you're right the event name here is not enough, say it's the SCASO tournament or whatever you call it ..... you still don't.....you still need to have a notice of the range of ages or the age groups involved .....

That could however be implicated or rather implied by the age later..... that doesn't work..... In terms of ? ..... I mean that if you have the whole international softball, 18 – 50 behind it .... .....But you still isolate the age with the injury.....

Ya, but not the general thing like for example the tennis veterans tournament ..... ....you mean the level ?..... ya, you want the level of the tournament.....

I never thought of that one quite so in detail.....

In terms of any more of the demographic data, anything that is missing that would be say relevant in a managerial or from a managerial point of view ?

[Joke]

Sorry.....the position that they play is that the position where they play whether it is the goalkeeper or the forward.....?..... Yes

Maybe I should be more specific there with the position of the player or play position or something like that ? .....I think what you are sitting with .....we're the people filling it in so that shouldn't be a problem.....

Just noticed .....I might digress a little bit..... but for different sports like swimming, that this top little is always there, but position in some sports does not apply all the time and falls away ..... position then is more the specialty for example diver, medley, butterfly..... could be a good idea then to put position / specialty.....

I mean that is just for different ... no, no....

In see that right at the beginning it really is to do with..... with reference to field hockey now you are saying swimming ..... Ya I know that..... I was just digressing a little bit.....

We are trying to keep it narrowed to field hockey, but any other input that might have bearing is also good..... Ya, well then you don't need hockey under the type of sport..... .....O.K.

In terms of location anything there that needs to be more specific ?..... there was something that I found that wasn't in there, but I can't remember what it was..... start from the top..... ya top and work down.....

Buttocks

O.K.

One thing that I am thinking at the moment is maybe adductors..... for hockey that always..... .....because we have an anterior compartment and a posterior compartment but we don't have a medial compartment ?

Listen you go as far as to say forearm..... surely we should just insert for example anterior thigh and posterior thigh..... O.K..... make it more simple ..... ya just boom.....because then in your diagnosis you can be that specific... O.K.

Then you can have adductor strains and that sort of stuff....

So more a location description as opposed to .....for a location description that's what you want..... So that if a patient were to fill it in they would know what it is.....ya.

O.K..... this where the hockey player comes back into it, mechanism of injury is there anything there that could be more specific .....? .... Anything there that could be more of a problem.....

Collision is the one that I didn't enjoy.....because collision with what .....? with stick .....? with ball .....?

I also noticed that you have here practice and during participation, but I found that they never claimed that they got their injuries during practice..... although I did..... Most of them where during play.....

Maybe .....instead of participation - during event or play or competition or during the last game surely, even then ..... its got that here.....

O.K..... during competition

Just looking at this that there practice competition then running, colliding, during previous game..... just tidy up that whole paragraph..... also when looking at running when you think of running on the field or road running..... so be more specific in terms of the running – delineate.....1,2,3...

You see, you look at practice, what do you want to say.....?..... do you want to look at what they do in practice or whether they get injured in practice.....?

BREAK

Did you get that ?

So you are changing.....?

"Training" replaces "practice", another heading "competition" another heading "previous games", .....- all in bold - .....take out "during training". And then you have all your mechanisms underneath that.....

Any mechanisms missing ? Except for the collision with what ?

In hockey I mean colliding with a player, ball or the stick.....those are the three, you want to know how he got cut on the eye, whether it was.....ya.....so maybe you want to tidy that up there .....1,2,3, there.....

Side stepping, .....what do you understand with side stepping ? Just trying to avoid a player ..... twisting injury.....some change of direction..... now we are getting closer to the side stepping, ..... I think.....

If you are talking about twisting an ankle on the dry astro he's running and he would have to stop and turn..... .....on a wet astro there is a little give.....on the dry astro there's nothing and that's where you do your ankle..... so instead of side stepping do you say turning, twisting.....twisting. I see what you are saying as mechanism..., .....its mechanism of injury again..... it's a twisting injury ..... is it important that he was side stepping a player or turning around to get the ball .....?.....that doesn't make a difference, ..... that doesn't make a difference .....just..... what happened at that point in time when the injury occurred.....I would just put it as twisting.....so you want to know during practice how was he injured.....ya O.K..... or during the game..... So, once again, we want the three headings [1,2,3 (when)] that we had before and then the how after that,.....

The patient is more than likely going to come to you saying I twisted my ankle wile I was training..... so maybe put "twisting / turning" .....so twisting and turning..... O.K.

[Joke]

O.K. any more thoughts that come to mind with respect to mechanism of injury ?

[Break]

Then we go down to the next to two questions, obviously with the reference to the comrades does not quite apply,.....not quite part of our.....

Have you injured this area before ..... yes and when ..... you need a time..... ya..... O.K. when ..... time

Do you also need to know what treatment they have had or don't you take that into account.....?

We could but it this questionnaire is aimed at and its purpose is gathering epidemiological data that will may be better / good for the managerial side as opposed to information gathering.....

Even thought it may well affect your treatment .....? You might want to do this or avoid that.....yes I have been to this or done that ..... That is true.....

Have you injured the area before .....Yes .....when ?.....what ? [question on previous injury , when it occurred and what treatment has been received]

Say for if they have been going to a physio who could have hurt him..... ya .....right one of those.....Ha. Ha

The second one..... did the injury prevent you from competing or participating in the tour or tournament .....?.....no that's usually .....did this injury cause you to leave the game or prevent you from going back.....?..... well its got here the continuation of play .....ya..... but I mean for the player who came off the field, if he sees you maybe 10 –15 minutes after.....you are asking about past injury here....., so in other words two weeks ago when you injured your thing ..... did it force you to leave the game then.....Past .....

Then we could..... Uhm..... take in practice if they did injure themselves during the training session..... Yes then the question would have to say yes if it is applicable.....

In terms of clinical impressions..... Acute and chronic are pretty self explanatory.....but the rest anything there that .....may need elaboration or deletion.....?

Costochondral syndrome could be a joint dysfunction.....?....put it in as a joint dysfunction.....I don't think there you get enough of those to warrant a separate category.....

And I think in myofascial you need to put in more space.....In terms of a the specify out in 2 lines.....

Any injuries that you have come across in terms of hockey that we may not have here purely because this is from a chiropractic slant..... [Joke]..... Supratentorial.....

There were a couple that came in .....that I..... not stuff that came in repetitively that you noticed.....or .....we need an "other".....O.K. ..... I was just thinking there were a couple of times but it didn't happen very often but I suppose you could out that under general muscle tightness, when a guy came in and I just massaged and loosened up .....that kind of thing..... that could be general muscle or fascial tightness..... or something related to a long term or chronic problem that could be diagnosed....

Heat stroke and heat exhaustion .....Do you want one and not both .....?

The other thing I find with hockey players you always get certain players..... once you know the players you can always nominate which players will be the first at the chiro or physio they almost use them..... ....[joke].....you know depends on which .....some guys almost fabricate the injury or are looking for sympathy.....

Maybe they are looking more for a personality perspective or a mindset perspective ..... mind set perspective.....or a strategy.....I don't know.....we've just been to Australia and there was a physio guy - a qualified physio - and every now and again one or two of the players that knew us would come and ask us – wouldn't you look at me and we would say that there is nothing wrong. However he would assess the patient in front of the physio guy and make a show for the patient and not tell the patient that there is something wrong.....I don't know whether this is part of it [questionnaire] .....?

Ya,..... its part of the psychological thing..... Before the guys play or whatever it is ..... Its kind of an edge.....if you know the patient can play and you tell the guy – you are sorted..... you are 100% ..... go out there give it all you have,..... the guy leaves the room and feels fantastic ..... even though there was squat wrong with him [ even if you did nothing medically for a condition that may not have been there ]

Maybe we go back to supratentorial.....supratentorial means.....is a word that basically is used for the patient made it up .....an anatomical term that means above a structure within the skull.....that's a nice thing to put in.....that is useful..... psychological.....maybe put something

in that is not understood by them [patients] ..... in case they see it they are not going to get insulted by it .....if we put supratentorial in with all the other words they might not know what it is... .....ya .....because if you are going to work with a team and you will get to know them it becomes more apparent and you will know that particular player.....and it will become easier to jot down .....yes and you can retrieve the information.

O.K. enough said, .....Laceration, contusion and puncture..... there's a hell of a lot there.....

Difference between laceration and contusion..... that's the same.....?

Laceration and puncture, I would say, are probably the closest than contusion.....contusion is just a scrape.....contusion could be a bruise, a myositis or a developing myositis those types of things.....then the abrasion ..... the abrasion is the scrape, the erosions and rosties.....

Your abrasion and laceration seem to be alike..... Those two may go together.....There is one word that can leave..... I don't know which one it is..... but one must disappear .....there's just too much there.....

Whereas a puncture being something more like a break .....like a cut or a gash.....or something like that..... maybe write cut after puncture..... perhaps it would be more appropriate to keep the laceration / cut and scratch the abrasion..... in my terms it is a surface injury or a deep tissue injury .....that is really what is of importance.....cut and bruise ..... there we go.....

O.K..... we stick with cut and bruise.....

What about DOMS.....delayed onset muscle stiffness.....that is different to general muscle tightness because it doesn't happen during the game .....it's something that happens later on.....the next day.....or a chronic type problem..... whereas general muscle tightness comes before the game and the muscle stiffness comes after the game.....O.k.

Anything else from the management perspective outside of supratentorial that may be of interest to you ?.....Then in terms of treatment .....

Exercises.... Would you almost like .... Training modification ... I suppose that would come under that.....

G and R [ grip and rip ] .....myofascial is that referring just to ischaemic ?..... O.k..... so you want a greater explanation of myofascial.....What is

myofascial ? Myofascial could be..... you've got your massage,..... you're got your stretching ..... you've got your mobilization .....you haven't got ischaemic, so I assume..... Ischaemic, myofascial release or any of those techniques.....are facial release.... So maybe call it fascial release and ischaemic as two separate things..... What is fascial release ? What do you understand as fascial release ? That is when you take fascial and you are pulling it apart [stretching] .....spreading it..... Ya fascial release and ischaemic would be better....

Should stretching be made more specific ?.....You can say PNF and static... Static..... you can also have passive....which is where you are stretching the patient for them without having any resisted movement ..... wouldn't that be a static stretch ? With a static stretch you can also have the patient push down against you ..... whereas your PNF is almost like your CRAC technique, where you get the patient to contract relax antagonist contract.....

You were doing for the disinfect and plaster .....could be other.....first aid.... there were a number of times.....but first aid also includes CPR.....bit of a difference of applying the two perceived therapies.....O.K. Disinfect / plaster .... Ya I think that you can come up with a better word..... but the concept of doing that .....

Ahh.... Anything else that from a managing side may be including other professionals.... Would that give you more information about the total play treatment or ..... normally I think - now anyway you either have a chiro or a physio you don't have both, with hockey being relatively small can't afford both and currently the national coach likes chiro.....O.K. that's certainly true for the men's setup for the women I don't know what they do .....In the men's setup you know Mr. X has his that friend of his John from Jo'burg, the blond haired guy.... Dr Y....it comes up with what the national coach and each team coach is happy with – at that point who feels happy with what – there's been a change in thinking

Just in terms of - say for example if you would like to know if the player went off to hospital or the player had other injuries besides what we can treat and record, would that be of use to you ... no I don't think so ..... at the end of the day .....if you have the team and you come to me as the coach and say look he can play tomorrow or he can't play, it is not for me to question on what grounds he has been decided.... You may be able to explain in layman's terms what is wrong with him, but you say that he cannot play..... I may then say that I need him..... and you will say that you can get him so much better..... In this amount if time..... or if you know you have two days to get the player ready for the final

Maybe a note of when he needs to be back, what the agreement is between the coach and the person treating..... Or maybe the state of the tournament ..... if you know we are going to play for ninth and tenth then just treat him and get him

better for three months time.....if I am playing in the final tomorrow or two days time and he is my top player then I want you to do anything physically possible to get him to play.....

So basically on this here on this form you have a continuation of play right so in this case write for example, no this person cannot play – but this needs to be made up – you cannot just say no. There has to be a discussion .....qualification.....qualification behind that..... that has to come last honestly on this form.....O.k. so we need to qualify why the player can or cannot play... the student needs to go to the doctor or D.C. on duty and talk to them about it and that person needs than to talk to whatever coach is about it and they have to come up with the continuation of play and then restricted ..... Put there restriction in brackets if any .....that will tell you right 2 hours, 3 days, 5 days, no more ... another qualification

Coming back to your topic level of the level of the team..... would it be easier to maybe stick that with right on top here where the demographics are ... maybe say league a and / or league b, just to indicate the level, put team underneath, behind it or something to indicate whether they are competitive or not so competitive.....
Ya I think you need to indicate something like that....

I just think that you maybe should possibly re look this whole questionnaire on this page.....to me it is too confusing but maybe for you people it is fine... but I mean for easier reading..... Do you now like location circle that or do you tick it or do you cross it.....we generally circle as we go .....so I mean that you don't have little blocks next to each one .... No .... We don't do that.....just circle the thing .....o.k., then that's fine.....

The only thing that you said there..... if you spread this whole thing out

- [clinical impressions], just because this is the part where you want to know details...because if you have an sprain you want to be able to write there left ankle eversion..... so you need more details than that..... so just this [clinical impressions] you need more space..... O.K. then I would have a comments thing next to each one..... a little comments block .....if you can..... all the rest is fine, because all you doing is circles.....location.....no....no..... acute.....abrasion where ? what..... ? what ..... ? what .....?

If you are stuck for space this here..... [new patient block] is too much, ,..... wasted space.... I mean there are only 4 categories... they could all be in one line.....

Ya also for the treatment – we also need to know what manipulation, what ?.... where ....? How .....? L2 what

Also what I was thinking of was a section somewhere on the response to previous treatment just within that tournament at which we are treating at.... Would that be a suggestion..... then you would have to put it in here [ underneath the repeat patient ¼ way down the page].....if it's a repeat patient : previous treatment or response to .....

Also links in with the "have you injured the area before".....so I think.....but that this here is in the same event..... whereas this is ..... a prior.... Another tournament .....ya.... you want to know how they have reacted to your treatment .....the people I treat will not want to come back again....so I just want to know that

Any other comments in terms of hospital and reportable..... I sometimes find it difficult to know what is reportable..... O.k. define what reportable is..... if there is a restriction then it is reportable..... if they go to hospital it is reportable.....anything where they have been stopped from playing .....stopped from playing.... If there is any restriction on their play and you have to report it.....because you either have to report it to the coach or you have to report to hospital or you have to report to some managerial structure ..... Its having to physically go and report the incident to someone..... so anything that falls into that sphere that is beyond you're your control or means that you are having to inform means to report..... I think that at the beginning of every year whenever you will be giving these things out, to whoever is going to be doing sports events before the first event you need to sit down with them and go through this form .....you know what I am saying .... Workshop type.....ya you have to sit down and say this is what we are after..... because obviously people read things in different ways.....and interpret things differently..... this reportable means such and such that sort of stuff

In any other general comments, o.k. there were layout comments - maybe even right on top here change I mean individual treatment records as a given.... Maybe that doesn't need to be there..... ya this is form is a treatment record....

You see we have like sport with all those things there .... If you are going to use this as a general form / questionnaire then you want to put hockey or swimming o.k. you see here ..... generally within say for example we go to a hockey tournament anyone can come to us for treatment .... So we still have to keep records whether it's a coach an umpire or a medical team member whoever may be involved in supplying the tournament..... so we have to keep those guys there just as a record.....you want ..... so actually sport is not the right word.....not the right word.....well maybe..... under the event name you are going to get the hockey tournament and this and that and the next thing.....it will identify the sport – it could be IPT.....or it shouldn't be there ..... that's correct..... I think you call it position.....you want..... you can't.....the player needs to be specified.....so ya you have got the position , if it is a player then you write there left back.....O.K.? Position you just circle umpire. O.K.

Or faculty ?

Do we call this grouping anything [the old position on the questionnaire]..... There is a word I don't know what it is..... Or alternatively you can just leave all those names across the top..... just there..... and have just one set without a name .....and just leave sport out.....and leave the names out.

Maybe higher up there you could have the name of the tournament..... that is the event name.....oh o.k., and the date ..... those can be circled.....maybe venue could be of interest....to you .....venue could be purely because of whether it is grass, dry astro, or wet astro or astro sand ..... Maritzburg College is sand based..... it's almost turf type.....it is turf type, and you are going to get more abrasions (sand turf) because when you fall it is almost like on .....on sandpaper.....you see so you can work something out there.... When you go to P.E. now and you go on a hockey tour..... if you are on the ice rink it is dangerous to play there, they have actually banned tournaments there, because it is so dangerous..... but anyway at least then you will have an idea..... that needs to come under the event name and its got to be higher up and needs to written on before the event.....ya..... its got be typed in.....its got to be standard for the event.....well eventually you maybe there could be feedback to FIH hockey..... The world hockey.... These are the type of surfaces and these are the type of injuries that are common..... Just purely related to this research, which is something that is maybe pure luck, is that I have got everything on wet astro..... so I can give your feedback once its all done.....in terms of the wet astro.....but now maybe the same thing needs to be done for the other surfaces as well.....just to give a comparison..... what injury types there are and they can be prevented or how management structures can change.....related to it

[Interlude].....In terms of going a step further.....in terms of say for example..... the player.....anything that the player does and / or doesn't do .... Would that be of benefit ? Like say for example hydration, preparation anything that..... They may do that would affect them in any significant way.....?

What have they done to get to this point ? ya say for example they come with general muscle tightness or delayed muscle on muscle stiffness or chronic headaches.... Is there anything more you want to know about the player.....I don't know would .... that be interest to those treating or maybe from a management aspect again what are the players doing that they should or should not be doing ?

I think the main thing is to get them back on the park.....

Break

So what you recommend.....” E “ on the soape note.....
So what you recommend for him to do ..... so that there is some follow up or the ability to follow up with the player and that also you can write in there .... be there to be treated on a set date with the date and stipulations for treatment.....you can there that the person come back tomorrow, you can write there, advised to come back tomorrow, why and the date.....

I will give you a practical example.....for you as medical guys they guys give you more respect..... all the guys were given energade bottles.....if I would take the energade bottles and lift them I could tell that number seven Clark was drinking and I knew and the others were not ..... as soon as Mr. Z, the physio, he came on, he went and told these guys and they changed straight away..... They took it as me being just the admin guy who knows nothing, but then if it comes from a medical person even though the coach or another person has been telling them, the re-inforcing..... coming from an authority figure..... the recommendation is more re-enforcing for the patient..... well I think that generally speaking hockey players are lazy they hate stretching..... I think most sports players are lazy outside of their specialty .....after the game is over they are supposed to stretch , they are into the shower and do anything but stretch.....go and relax or go and party.....so even from hydration through to stretching needs to be thoroughly advised.....

In terms of management protocols anything else that you would may need to know.....?.....or anything else we could gain in terms of a questionnaire such as this for you as information .....? Anything useful to you ?

Anything that from the textbooks that jumps at you..... Uhm nothing smacking me across the cheeks at the moment [joke].....

Oh ya modalities..... what about modalities.....we have a portable tens for treatments..... maybe just write modalities here..... Ya no.... what could be taken to these events.....tens, sportsmed, lazer and ultrasound is portable.....what about the other lady with the this thing .... The APS lady,..... I would just write modality and in brackets specify.....otherwise you are going to be..... you don't know what will be available at each event..... so its pointless

Another thing things like transact and / or recommendation for pharmaceuticals ..... falls under recommendations ..... Recommendations are just that recommendations..... take a panado and I will see you in the morning.....

I am thinking of something else.... Oh... there should maybe be a gender difference..... that's true there is no gender..... That is generally because I put male and female in the top right hand corner as it went into the file.... But maybe as a set format ? .....ya you may need that one

That completely by passed me.....put the word in gender, don't' use the word sex or else you will get comments flying out of our ears.....

So as I understand it – going back to the continuation of play.. – the DC signs off on the whole soape note.... And then he also signs off that there is a continuation of play.....or that there is not a continuation of play..... he must agree to the continuation of play if signed and if he doesn't sign or there is a restricted or reportable s/he only signs once he has quantified why..... that's why you want the condition .....that's why you want the conditional and the restriction of play and the signature to be separate and on their own..... O.k. because that's the most important part of the while thing.....its like a PTT and a conditional.....you can't get him to sign twice because that will just be ludicrous..... o.k ..... so with that signature underneath there you have got continuation of play and it needs to be quite ..... Yes or no.....right and the yes you can see it is yes its simple and the no .....then you want to say why.....o.k. and then you have a chat to them and a chat to coach.....

And then you need a restricted next to the hospital and reportable.

More of a block down here.....I think that the area needs to made distinct [ bottom part of the questionnaire] ..... an official portion on the document type of thing.....

Any other comments.....Criticisms

You go back now.....essentially what happens now is what I have done with this already is accumulated about a thousand cases files and put that through in terms of data and then comparing that to the literature..... But to validate this questionnaire I have to see what has and hasn't been put on here in terms of the information that I have got and does it in any way impact on that information... so I'll have one set of information here from the data analysis and another set from what we have here now and then only to compare these to make sure that they are congruent and then from that I can say well this is what my data is lacking and this is how the questionnaire can be used for future data collection.....it is almost more a questionnaire validation more so than data extrapolation....

Don't mind talking English.....