

The Epidemiology of Soccer-Related Injuries in Adolescent Male Scholars in Ndwedwe District, KwaZulu-Natal

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**I, Nkosikhona Lwazi Dube, do declare that this dissertation is representative of my
own work in both conception and execution (except where acknowledgements
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DEDICATION

I dedicate this dissertation to two special women in my life, Sbongile Evidence Dube and Zandile Pretty Dube. Thank you for everything that you have done for me. I would not have been the person I am today if it were not for your sacrifice, patience, and love. I am truly blessed to have you in my life.

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ABSTRACT

BACKGROUND

Soccer is the most played sport in South African schools, with adolescents actively engaging in the sport. The existing literature highlights a high injury rate related to soccer, with most studies conducted in high-income countries and urban areas. In contrast to these settings, rural areas have fewer resources and limited access to healthcare facilities; therefore, those findings cannot be extrapolated to rural settings. Thus, this study aims to determine the prevalence (point and at 12 months), selected risk factors, and impact of soccer-related injuries in rural adolescent male scholars in Ndwedwe District, KwaZulu-Natal, South Africa, to further enhance literature regarding soccer-related injuries.

METHODS

The study used a descriptive, quantitative, cross-sectional survey design to collect information from rural adolescent male soccer players from the Ndwedwe District, KwaZulu-Natal. A stratified random sampling technique was used to select schools in the district to partake. The questionnaire was hand-delivered and distributed, with a response rate of 82.7% ($n=233$). Data were captured and analysed using IBM SPSS (version 26).

RESULTS

The lifetime prevalence of soccer-related injuries was 70.4%, with a point injury prevalence of 36.1%. Most injuries occurred during matches (71.1%), particularly on hard playing surfaces ($p=0.016$), and predominantly affected the lower limbs, especially the knee and foot (28.8% and 24.5% respectively). A lack of medical support was evident, with 71.3% indicating that no medical personnel were present at the time of injury and 38.4% reporting that they received no treatment. Injuries negatively affected participation, with 62.8% of injured players taking a break from soccer as the injury resulted in a financial burden, of travel and treatment costs, on their families.

CONCLUSION

Soccer-related injuries among rural male adolescent soccer players in Ndwedwe District are common and were associated with environmental and contextual factors and resulted in substantial personal and financial consequences. These findings highlight the need for improved playing surfaces, enhanced access to medical support, and targeted injury-prevention strategies in rural school sports settings.

TABLE OF CONTENTS

DEDICATION	II
ACKNOWLEDGEMENTS	III
ABSTRACT	IV
TABLE OF CONTENTS	V
LIST OF TABLES	X
LIST OF FIGURES	XI
LIST OF APPENDICES	XII
LIST OF ABBREVIATIONS	XIII
LIST OF DEFINITIONS	XIV
CHAPTER ONE INTRODUCTION	1
1.1 INTRODUCTION TO THE CHAPTER	1
1.2 BACKGROUND TO THE STUDY	1
1.3 RESEARCH PROBLEM, STUDY AIM, OBJECTIVES AND HYPOTHESES	2
1.3.1 Research Problem	2
1.3.2 Study Aim, Objectives and Hypotheses	3
1.3.2.1 Aim of the Study	3
1.3.2.2 Objectives of the Study	3
1.3.2.3 Hypotheses of the Study	3
1.4 DELIMITATIONS	4
1.5 RATIONALE FOR THE STUDY	4
1.6 STRUCTURE OF DISSERTATION	5
CHAPTER TWO LITERATURE REVIEW	7
2.1 INTRODUCTION	7
2.2 SOCCER	7

2.2.1 Soccer in the Global Context	7
2.2.2 Benefits of Playing Soccer	7
2.3 SOCCER IN A SOUTH AFRICAN CONTEXT AND THE AREA OF NDWEDWE.....	8
2.4 INJURIES IN SOCCER.....	11
2.4.1 Prevalence of Soccer Injuries	12
2.4.2 Characteristics of Injury	13
2.4.3 Risk Factors of Injuries	15
2.4.3.1 Intrinsic Risk Factors	15
2.4.3.1.1 Nutrition	16
2.4.3.1.2 Sleep	16
2.4.3.1.3 Previous Injury.....	17
2.4.3.1.4 Psychosocial	17
2.4.3.2 Extrinsic Risk Factors	18
2.4.3.2.1 Training Routines	18
2.4.3.2.2 Play Position and Foul Play.....	19
2.4.3.2.3 Equipment	19
2.4.3.2.4 Playing Surface	20
2.4.3.2.5 Level of Activity	21
2.5 IMPACT OF INJURIES IN YOUTH SOCCER PLAYERS	22
2.6 CONCLUSION	23
CHAPTER THREE METHODOLOGY	24
3.1 INTRODUCTION.....	24
3.2 STUDY DESIGN	24
3.3 STUDY POPULATION, LOCATION AND PERMISSION.....	24
3.4 SAMPLING	24

3.4.1 Sample Size.....	24
3.4.2 Sampling Technique	25
3.4.3 Sample Characteristics	25
3.4.3.1 Inclusion and Exclusion Criteria for Schools to Participate	25
3.4.3.2 Inclusion and Exclusion Criteria for Participants	26
3.5 MEASUREMENT TOOL	26
3.5.1 Validity and Reliability of the Survey	27
3.5.1.1 Focus Group.....	27
3.5.1.2 Pilot Testing.....	28
3.5.2 Data Collection	29
3.6 DATA MANAGEMENT	29
3.6.1 Data Reduction	30
3.6.2 Statistical Analysis	30
3.7 ETHICAL CONSIDERATIONS.....	30
3.8 CONCLUSION	31
CHAPTER FOUR RESULTS	32
4.1 INTRODUCTION.....	32
4.2 RESPONSE RATE.....	32
4.3 PARTICIPANTS CHARACTERISTICS	32
4.3.1 Personal Characteristics	32
4.4 RESULTS FOR OBJECTIVE ONE: TO DETERMINE THE POINT AND LIFETIME PREVALENCE OF SOCCER-RELATED INJURIES AND TO REPORT THE INJURY CHARACTERISTICS IN RURAL ADOLESCENT MALE SCHOLARS	33
4.4.1 Injury Prevalence	33
4.4.2 Characteristics of Soccer-related Injuries	34
4.4.2.1 Current Injuries Onset Either from Training or Matches.....	34

4.4.2.2 Area of the Body Injury During the Lifetime of Playing Soccer	34
4.4.2.3 Characteristics of the Most Severe Injury Sustained During a Lifetime of Playing Soccer.....	35
4.4.2.4 Treatment Received for Injuries Sustained During a Lifetime of Playing Soccer	36
4.4.3 Soccer Participation Characteristics	36
4.5 RESULTS FOR OBJECTIVE TWO: TO DETERMINE THE INTRINSIC (BEHAVIOURAL, PSYCHOSOCIAL, AND NUTRITIONA) AND EXTRINSIC (PLAYING SURFACE, EQUIPMENT, AND ACTIVITY PREPERATION) FACTORS ASSOCIATED WITH INJURIES IN RURAL ADOLESCENT MALE SCHOLARS	37
4.5.1 Intrinsic factors: Behavioural, Psychosocial, and Nutritional Factors	37
4.5.2 Extrinsic factors: playing surface, equipment, referees and supporting staff, and activity preparation	39
4.5.2.1 Playing Surface Used by Participants.....	39
4.5.2.2 Equipment Used by Participants.....	39
4.5.2.3 Referees and supporting staff.....	42
4.5.2.4 Activity preparation.....	43
4.8 RESULTS FOR OBJECTIVE THREE: TO DETERMINE THE IMPACT OF SOCCER-RELATED INJURIES ON RURAL ADOLESCENT MALE SCHOLARS.	44
4.8.1 Impact of Soccer Injuries on Players' Personal Life.....	44
4.8.2 Family Impact of Players' Soccer Injuries	45
4.9 CONCLUSION	45
CHAPTER FIVE DISCUSSION.....	46
5.1 INTRODUCTION.....	46
5.2 SOCIODEMOGRAPHIC	46
5.3 PREVALENCE OF SOCCER INJURIES	46

5.4 CHARACTERISTICS OF INJURIES	47
5.5 INTRINSIC RISK FACTORS.....	48
5.6 EXTRINSIC RISK FACTORS.....	49
5.7 IMPACT OF SOCCER INJURIES	52
5.8 CONCLUSION	54
CHAPTER SIX CONCLUSION, , LIMITATIONS AND RECOMMENDATIONS ..	55
6.1 INTRODUCTION.....	55
6.2 CONCLUSION	55
6.3 STUDY LIMITATIONS	56
6.4 RECOMMENDATIONS.....	56
REFERENCES	58
APPENDICES	66

LIST OF TABLES

Table 2.1: Injury incidence summary on youth soccer players	13
Table 3.1: Sample stratification	25
Table 3.2: The sections of the questionnaire and respective references	26
Table 4.1: Participant characteristics ($n=233$)	33
Table 4.2: Characteristics of participants' most severe injuries ($n=164$)	35
Table 4.3: Leg dominance, current team, soccer participation outside school, and sharing of facilities for the school and local club.	37
Table 4.4: Participant behavioural, psychological, and nutritional characteristics ($n=233$).	Error! Bookmark not defined.

LIST OF FIGURES

Figure 2.1: Map of Ndwedwe Local Municipality within iLembe District	11
Figure 4.1: A flow diagram representing the response rate	32
Figure 4.2: The lifetime and point prevalence of soccer-related injury (n=233).....	33
Figure 4.3: Injury occurrence in training and matches (n=84).....	34
Figure 4.4: Body areas injured due to soccer participation (n=164).....	34
Figure 4.5: Treatment utilised by the participants for their soccer injury (n=164).....	36
Figure 4.6: Type of surface used when playing matches and training (n=233).....	39
Figure 4.7: Use of protection gear by the participants (n=233).....	40
Figure 4.8: Replacement of soccer footwear by the participants (n=233).....	40
Figure 4.9: Use of protective gear in training (n=233)	41
Figure 4.10: Scholar use of protective gear in matches (n=233)	41
Figure 4.11: Scholar awareness of soccer referees registration status (n=233)	42
Figure 4.12: Medical personnel presence at matches (n=233).....	42
Figure 4.13: Consistency of doing warm-up and cool down activities (n=233).....	43
Figure 4.14: Consistency of doing warm-up activities prior ro matches (n=233).....	43
Figure 4.15: Time spent on warmup and cooldown activities for matches (n=233).....	44
Figure 4.16: Impact of soccer injuries on the players' personal life (n=164)	44
Figure 4.17: Percentage school days missed due to soccer injury (n=83).....	45
Figure 4.18: Impact of soccer injuries on the players' family lives (n=164).....	45

LIST OF APPENDICES

APPENDIX A: GATEKEEPER PERMISSION FROM DEPARTMENT OF BASIC EDUCATION	66
APPENDIX B: PERMISSION TO CONDUCT THE STUDY FROM NDWEDWE DISTRICT	67
APPENDIX C: A SUPPORT LETTER TO THE SCHOOL PRINCIPALS	68
APPENDIX D: CONSENT FORM	69
APPENDIX E: PERMISSION TO USE QUESTIONNAIRE.....	70
APPENDIX F: RESEARCH QUESTIONNAIRE.....	71
APPENDIX G: DUT FULL ETHICS CLEARANCE	76
APPENDIX H: LETTER OF INFORMATION	78
APPENDIX I: A SUPPORT LETTER TO DEPARTMENT OF EDUCATION.....	81
APPENDIX J: INFORMED CONSENT FORM – FOCUS GROUP	82
APPENDIX K: INFORMED CONSENT FORM – PILOT STUDY.....	84
APPENDIX L: EDITOR’S CERTIFICATE.....	86

LIST OF ABBREVIATIONS

DUT:	Durban University of Technology
IREC:	Institutional Research Ethics Committee
FIFA:	Fédération Internationale de Football Association
PTSD:	Post Traumatic Stress Disorder
BMI:	Body mass index
SPSS:	Statistical Package for the Social Sciences
IDP:	Integrated Development Plan
PPS:	Probability proportional to size

LIST OF DEFINITIONS

Prevalence:	The measure of past or current injuries that occurred within a specific population at a specific point in time or over a defined period (Tenny and Hoffman, 2023)
Incidence:	The rate at which new cases or events occur over a designated time period for the population at risk for the event (Tenny and Boktor, 2023).
Injury:	Physical issues experienced by the player during competitive games or training, resulting in a player being unable to completely take part in future matches or training (Cezarino <i>et al.</i> , 2020).
Intrinsic risk factor:	Intrinsic risk factors are the personal characteristics of an individual that contribute to the injury susceptibility of that individual (Mandorino <i>et al.</i> , 2023)
Extrinsic risk factor:	According to Mandorino <i>et al.</i> , (2023) extrinsic risk factors are external factors that are outside of the player's control and increase the player's susceptibility to injuries.
Injury:	Any physical issues occurring during a soccer match or training resulting in a player being unable to participate in soccer training or matches (Cezarino da Silva Grüninger and Silva, 2020). Players were uninjured when they were able to participate fully in training sessions and matches without complaints or limitations.
Injury severity:	Injury severity is defined according to the number of missed soccer matches or training sessions due to injury.

CHAPTER ONE INTRODUCTION

1.1 INTRODUCTION TO THE CHAPTER

Chapter One provides detailed information on the background and rationale for the study. The chapter highlights the aims and the objectives of the study, the research problem, and the rationale for the study. Chapter One concludes with a summary of the structure of the dissertation.

1.2 BACKGROUND TO THE STUDY

Soccer is the most popular team sport (Cezarino, da Silva Grüninger and Silva, 2020), with over 250 million participants worldwide, making it the most played sport in the world (Owoeye, VanderWey and Pike, 2020). The growth in participation has increased the prevalence of soccer-related injuries, leading it to have one of the highest injury rates among contact sports (Cezarino, da Silva Grüninger and Silva, 2020) and other team sports (Mandorino *et al.*, 2023). The study by Cezarino, da Silva Grüninger and Silva, (2020) reported an incidence rate of 1.86 per 1000 hours of exposure and a higher incidence of injuries during competitive matches when compared to training. According to Watson *et al.* (2019), the estimated number of children and adolescents who have participated in soccer between 2000 and 2014 was over 3.9 million, with FIFA reporting over 1.3 million male youth players registered with Brazil football association (Cezarino, da Silva Grüninger and Silva, 2020).

Playing soccer can be dangerous, despite it having many health benefits (Mandorino *et al.*, 2023). The growth in soccer participation is believed to be behind the increase in the prevalence of soccer-related injuries (Watson *et al.*, 2019). The health benefits from playing soccer include improved cardiovascular, bone and mental health, which could enhance academic performance (Owoeye, VanderWey and Pike, 2020). While soccer promotes health, injuries can have negative effects on players' well-being (Owoeye, VanderWey and Pike, 2020). The high-speed combined with full contact nature of the sport during football matches and practice are associated to injury (Lakshakar *et al.*, 2022). Soccer is a demanding sport which requires a combination of endurance, fitness, running and discontinuous sprinting (Sentsomedi and Puckree, 2016).

Efforts have been made to reduce the risk of injuries in youthful soccer players, but despite those efforts, injury rates are increasing and higher in comparison to other sports (Watson *et al.*, 2019). A Canadian study revealed a higher rate of injuries among competitive young soccer players, ranging between 9 and 48 injuries per 1000 hours (Owoeye, VanderWey

and Pike, 2020). Studies by Lee, Jeong and Lee, (2020) and Ruf *et al.*, (2022) paint a consistent picture of the risks young soccer players face. Similarly, Indian research indicated a substantial range of youth football injuries, ranging from 0.5 to 45 injuries per 1000 hours of practice and games, echoing similar findings to those of the Canadian study (Lakshakar *et al.*, 2022).

Soccer is associated with intrinsic and extrinsic risk factors. Intrinsic factors are those related to the player, such as neuromuscular control, psychological factors and tactical skills of the player (Mandorino *et al.*, 2023). Whereas extrinsic risk factors are related to the environment, such as game level, soccer surfaces (Lakshakar *et al.*, 2022), and include footwear, workload, player position and sport specialisation (Mandorino *et al.*, 2023).

While minor school sport injuries are linked to limited physical or social disruption, and these injuries are associated with unnecessary school absence, major injuries cause significant disruption to school and have serious implications for the wider family through parental time off from work, and the arranging of childcare (Abernethy and MacAuley, (2003); Podlog, Wagnsson and Wadey, 2024).

In South African local communities and schools, soccer is mostly played on gravel/soil fields, without the presence of medical staff or first aid. matches are frequently officiated by unregistered referees, and players often do not use the correct protective equipment (Giampiccoli and Nauright, 2017). The Ndwedwe Local Municipality within the iLembe District Municipality, KwaZulu-Natal Province, is located approximately 20 km inland from the coast and borders, east of the KwaDukuza Local Municipality and the north of Maphumulo Local Municipality. The Ndwedwe area predominantly consists of sugar cane, which is produced to combat issues of socio-economic status and economic disparity between Ndwedwe and nearby areas such as Tongaat (Zulu, Sibanda and Tlali, 2019).

1.3 RESEARCH PROBLEM, STUDY AIM, OBJECTIVES AND HYPOTHESES

1.3.1 Research Problem

Playing soccer can result in injury, as it is a contact sport and has a higher injury rate than other contact sports. It is the most played sport in South African schools, with adolescent soccer players being at high risk of injury (Sentsomedi and Puckree, 2016; Watson *et al.*, 2019), with these injuries resulting in an economic burden to the health care system (Watson *et al.*, 2019). The studies assessing soccer-related injuries in adolescents have reported a high injury rate, with most studies having been conducted in high-income countries and in urban areas (Cezarino, da Silva Grüninger and Silva, 2020). Rural areas

have fewer resources and limited access to health care facilities (Giampiccoli and Nauright, 2017). The Ndwedwe Local Municipality within iLembe District, KwaZulu-Natal, is a rural area with low socio-economic status and widespread poverty (Zulu, Sibanda and Tlali, 2019). Thus, this study aims to add to the body of literature about prevalence, selected risk factors, and impact of soccer-related injuries on rural adolescent male scholars residing in rural areas of South Africa.

1.3.2 Study Aim, Objectives and Hypotheses

1.3.2.1 Aim of the Study

This study aimed to determine the prevalence (point and at 12 months), selected risk factors, and impact of soccer-related injuries in rural adolescent male scholars in Ndwedwe District, KwaZulu-Natal.

1.3.2.2 Objectives of the Study

Objective One:

To determine the point and 12-month prevalence of soccer-related injuries in rural adolescent male scholars and to describe the anatomical location, type and severity of these injuries.

Objective Two:

To determine the intrinsic (behavioural, psychosocial and nutritional) and extrinsic (playing surface, equipment and activity preparation) factors associated with injuries in rural adolescent male scholars.

Objective Three:

To determine the impact of soccer-related injuries on rural adolescent male scholars.

1.3.2.3 Hypotheses of the Study

The alternative hypothesis (Ha) for the study is:

1. Ha: Soccer-related injuries will be prevalent among rural adolescent male soccer players in the Ndwedwe District.
2. Ha: Intrinsic factors (e.g., psychological stress) and extrinsic factors (e.g., playing surface conditions and equipment quality) are significantly associated with the occurrence of soccer-related injuries among rural adolescent male soccer players.
3. Ha: Soccer-related injuries have a negative impact on the scholars.

1.4 DELIMITATIONS

This study focused only on male adolescent soccer players; thus, these results do not apply to female athletes or participants from other sporting codes or age groups. The findings are specific to rural high school scholars in the Ndwedwe District of KwaZulu-Natal and cannot be generalised to urban populations or professional athletes. Only selected risk factors nutrition, psychosocial variables, playing surfaces and equipment were investigated in this study and their association with injury. This was due to feasibility and data collection constraints. Consequently, the impact of other factors on injury occurrence was not explored. The study employed a cross-sectional design, using a hand-delivered survey, meaning that participants relied on recall of injury history related to soccer participation and that injuries were not track over a period of time.

1.5 RATIONALE FOR THE STUDY

Many people across the globe appreciate that soccer is an excellent way for children to develop skills and fitness, resulting in increased levels of participation in high school sports activities (Nshimiyimana and Frantz, 2012). It is estimated that 3,9 million children and adolescents play soccer in the United States alone. In South Africa, school sports is a compulsory activity (Pule *et al.*, 2014), with many scholars electing to play soccer due to its popularity (Owoeye, VanderWey and Pike, 2020). Despite the documented health benefits of participating in sports such as soccer, there is a high prevalence of injuries, a rate that is often greater than that of any other contact sport (Watson *et al.*, 2019; Koutures *et al.*, 2010). In Korea, soccer-related injuries in youth were found to be high at 60.2% (Lee, Jong and Lee, 2020). Similarly, in African youth, international players' injuries were found to be at 78% (Jacobs and Berg, 2012).

This contrasts with the study by Sentsomedi and Puckree, (2016) in the province of KwaZulu-Natal, South Africa, which found that the prevalence rate of injuries to be 36.5%. The difference between the studies was that this study was conducted with female soccer players.

Soccer-related injuries are associated with several risk factors, one of which is gender. The incidence of injuries has been reported as higher among men compared to women because male soccer games involve intense situations and the level of competition is higher (Owoeye, VanderWey and Pike, 2020). Other risk factors include the type of playing surfaces, where hard or dry surfaces are associated with a greater incidence of injuries. Furthermore, a lack of basic protective equipment can increase the risk of soccer-related

injury incidence (Nshimiyimana and Frantz, 2012). The study area of Ndwedwe consists mainly of sugar cane, which is used in villages to combat issues of socio-economic status and economic disparity in Ndwedwe and nearby areas such as Tongaat (Zulu, Sibanda and Tlali, 2019). The low socio-economic status in the Ndwedwe area is evident from its poor infrastructure, including its sports facilities.

A wealth of international literature documenting soccer-related injuries is available from various population groups (Watson and Mjaanes, 2019; Owoeye, VanderWey and Pike, 2020; Mandirino *et al.*, 2023), with a few studies having been conducted in South Africa (Sentsomedi and Puckree, 2016; Bayne *et al.*, 2018). Varying population characteristics and local contextual issues make extrapolating international data to local contexts impossible. The study by Sentsomedi and Puckree, (2016) was conducted with women, and the study by Bayne *et al.*, (2018) was conducted in urban settings, and the participants were professional soccer players.

Sport-related injuries are often associated with mental health issues such as Post Traumatic Stress Syndrome (PTSD) and depression in youth (Haraldsdottir and Watson, 2021), and depression and anxiety harm scholars' academic performance (Agnafors, Barmark and Sydsjö, 2021). Minor school sport injuries are associated with limited physical or social disruption, and these injuries correlate with unnecessary school absence. Major injuries are linked to significant disruptions to school and have important implications for the wider family through parental time off from work and arranging childcare (Abernethy and McAuley, 2003, Podlog, Wagnsson and Wadey, 2024). Limited literature exists on the epidemiology, associated factors, and impact of soccer-related injuries among rural school learners in South Africa, as most studies focus on urban populations.

This study provides data pertaining to the risk factors that are associated with injuries in rural scholars, which the Department of Basic Education and individual School Boards can use to implement protective measures related to rural soccer-related injuries.

1.6 STRUCTURE OF DISSERTATION

The structure of the dissertation will be as follows:

Chapter One presented an introduction to the study, the study's aim, objectives, hypotheses, delimitations, background to the study, research problem, and the rationale for the study.

Chapter Two presents a literature review on soccer-related injuries and the prevalence among rural male high school scholars in Ndwedwe District. This is followed by highlighting

the risk factors that are associated with Ndwedwe District high school scholars to soccer-related injuries and the impact of soccer-related injuries on high school scholars' lives.

Chapter Three discusses the methodology used for this study in detail, per the study's aims and objectives. The study design, data collection tool, and study procedures are explained thoroughly.

Chapter Four focuses on the results of this study.

Chapter Five provides a thorough discussion of the study results with respect to the literature.

Chapter Six provides the conclusion, limitations, and recommendations for this study.

CHAPTER TWO LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides a review of the current literature regarding soccer and related injuries, discussing the prevalence, risk factors, and impact of these injuries on male high school scholars. It will highlight soccer-related injuries in South Africa with a focus on rural areas.

2.2 SOCCER

2.2.1 Soccer in the Global Context

Soccer is regarded as the most popular spectator sport in the world (Cezarino, da Silva Grüninger and Silva, 2020), with it being played by millions globally each year (Owoeye, VanderWey and Pike, 2020). According to Pulici *et al.*, (2024), soccer has 38 million registered players, with 22 million of those players under the age of 18 years, highlighting the high participation rate at the youth level. Children and adolescents' participation in organised soccer tournaments has increased substantially due to the relative simplicity of the game, accessibility to play and the belief that soccer is safer for children and adolescents to play (Ellapen *et al.*, 2014; Watson *et al.*, 2019). The popularity of soccer in high schools has increased in recent decades, with more high school scholars participating in the sport (Giampiccoli and Nauright, 2017).

2.2.2 Benefits of Playing Soccer

Playing soccer has many health benefits, such as improved cardiovascular, bone and mental health, which could enhance academic performance (Owoeye, VanderWey and Pike, 2020). According to Haraldsdottir and Watson, (2021), the physical activity that soccer provides has tremendous physical and mental health benefits in childhood and adulthood, and physically active adolescents tend to be more active throughout their lives, and have a lower chance of acquiring health conditions associated with a sedentary lifestyle. Education intensity has also increased, when compared to previous years, with children spending less time on physical education, and consequently, organised sports have become the main avenue through which children and adolescents achieve the recommended levels of physical activity for both physical and psychosocial health benefits (Haraldsdottir and Watson, 2021). In a South African study, it stated that sport plays a vital role in distracting children from accessible electronics, which are known to be the largest contributing factor to an adolescent's sedentary lifestyle, leading in turn, to an increased prevalence of obesity (Sentsomedi and Puckree, 2016).

Adolescent participation in sport is known to have a positive correlation with many physical health indicators, such as optimal Body Mass Index (BMI) and blood pressure, decreased anger, increased sleep, and a more varied diet (Haraldsdottir and Watson, 2021).

Participating in sport as an adolescent is known to result in physiological, psychological and social benefits (Prieto-González *et al.*, 2021). Moreover, adolescent participation in organised sport, such as soccer, has a positive impact on their mental health with a beneficial effect on symptoms associated with depression, hopelessness and suicidality, stress and competency-based self-esteem (Guddal *et al.*, 2019). Sport participation is regarded as a valuable social activity for adolescents, as it encourages the development of time management skills by requiring them to balance homework, sports, and other commitments, thereby reducing opportunities for procrastination (Haraldsdottir and Watson, 2021).

According to Adetunji and Akindutire, (2017), sports require learning and memory skills that help with schoolwork and help athletes to do better academically. The same authors found that youth participating in sports were less likely to drop out of school, or be involved in illegal activities such as crime, drugs, or alcohol abuse. They further elaborated that sport participation helps youth develop self-discipline, improve self-esteem and self-actualisation, which is the highest level of human development. They added that sport participation develops positive qualities such as sportsmanship, cooperative attitudes, leadership, and acceptance of leadership roles, leading to a sense of personal accomplishment, learning how to handle adult roles in general, and dealing with competitive relationships.

2.3 SOCCER IN A SOUTH AFRICAN CONTEXT AND THE AREA OF NDWEDWE

Youth soccer players in Leibo County, China, reported significant deficiencies in rural soccer infrastructure, including grassless fields, limited equipment, and a shortage of coaches for student players (Song, 2023). The study further revealed that there is still a large amount of work to do in order to make soccer more prominent in rural areas. This is noted in the research study, as it showed a lack of soccer fields in rural areas.

Poor economic developments in rural areas have imposed serious constraints on the progress of poverty eradication, and sports for poverty alleviation have received limited support. Facilities and educational resources play a huge role in the smooth development of football education, while rural areas are in dire need of football equipment and improvement of infrastructure (Song, 2023).

In South Africa, soccer is the most widely played sport and is especially popular among youth (Sentsomedi and Puckree, 2016). It is one of the leading contact sports in the country, with the highest rate of injuries, which has resulted in growing concerns about the physical and mental demands these injuries place on young players (Cezarino, da Silva Grüninger and Silva, 2020).

In 2010, South Africa hosted the prestigious football competition “Fédération Internationale de Football Association (FIFA) World Cup,” which was widely considered as a move to increase football popularity, not only in South Africa, but throughout the African continent, as it was the first time an African nation had hosted this competition (Grønlund, 2021). Hosting the 2010 FIFA World Cup highlighted South Africa as one of the leading soccer powerhouses on the African continent. This resulted in increased popularity of soccer in South Africa, with more young people participating in soccer across all corners of the country, including rural areas. The 2010 FIFA World Cup boosted sport development programmes and community-based projects, which may have influenced positive long-term effects on the development of the game at grassroots level. Football development programmes for youth have also expanded nationwide to meet the growing demand for cultivating young soccer talent (Ellapen *et al.*, 2014). However, these opinions are in contrast to Grønlund, (2021), who stated that hosting the 2010 FIFA World Cup did not help to improve the conditions of grassroots football in the country, because the government did not focus on developing the football game at grassroots level, instead it focussed on the development of large-scale infrastructure and showcasing the country’s capabilities on a global stage.

In South African schools, sport and physical activity is compulsory, to combat increased prevalence of obesity in school children (Sentsomedi and Puckree, 2016). Participation in soccer is an effective way for the youth to increase their level of physical activity and overall fitness (Haraldsdottir and Watson, 2021), while electronics, such as PlayStation devices and mobile phones, are easily accessible these days and distract youth from taking part in physical activity. Soccer provides a perfect platform for adolescents to focus on fun and enjoyment while burning calories (Sentsomedi and Puckree, 2016). In South Africa, school soccer leagues serve as a reservoir for young soccer talent, from which the provincial selectors derive their provincial teams (Ellapen *et al.*, 2014). Informal playing spaces across townships are indicative of the general underdevelopment of sporting facilities (Grønlund, 2021), which increases the risks of injuries across South African informal playing surfaces.

Located northwest of Durban, the Ndwedwe Local Municipality can be found within the iLembe District in KwaZulu-Natal. It is the largest of four municipalities in the iLembe District (**Figure 2.1**) borders KwaDukuza on the east, and Maphumulo in the North. In the south,

Ndwedwe abuts the eThekweni Municipality and, in the west, the uMshwathi Municipality. The Ndwedwe Local Municipality consists mainly of poor black communities, and relies mainly on farming as its main source of income (Zulu, Sibanda and Tlali, 2019). Even though Ndwedwe is close to major urban and economic developments, this area remains underdeveloped, disadvantaged, and poor. According to the Ndwedwe Local Municipality Integrated Development Plan (IDP) (2016/2017), external access and internal linkages are limited to east-west roads, while the remaining roads are of poor quality. Additionally, 40% of the Ndwedwe population is economically active, and only 33% of the economically active population have employment (Ndwedwe Local Municipality IDP, 2016/2017). The IDP of 2023/2024 states that poverty remains widespread, with a high number of indigent households (Ndwedwe Local Municipality IDP, 2023/2024). This makes it difficult for parents who cannot afford to buy the necessary equipment for their children. Soccer equipment's such as shin guards and soccer boots are compulsory to wear during soccer matches, because failure to use this equipment significantly increases the risk of injuries (Watson and Mjaanes, 2019).

According to the Ndwedwe Local Municipality IDP (2023/2024), soccer infrastructure is underdeveloped and underfunded, and this is a significant environmental risk factor for injuries, contrasting with well-maintained infrastructure found in urban areas. According to the Ndwedwe the Department of Basic Education's Circuit Office, there are more than 30 high schools located under Ndwedwe local municipality, and these schools have soccer teams. The population of Ndwedwe is deprived of essential services, including clean running water, adequate roads, basic infrastructure, and many other facilities crucial for a decent standard of living (Breed *et al.*, 2023). In remote areas of Ndwedwe village, there are small sports fields, but there is also a major challenge in acquiring adequate funding for the sustainability of these sports fields (Ndwedwe Local Municipality IDP, 2016/2017). Many soccer teams around Ndwedwe village train and play on soccer fields that are not sustainable, and most teams consist of adolescent scholars. There is an association between playing surfaces and soccer-related injuries, with poor playing surfaces associated with a high incidence of injuries (Nawasreh *et al.*, 2022).

Adolescents residing in rural areas are more likely to be physically inactive when compared to youth living in urban areas, and the reasons behind this include intra-personal (lack of time or interest), inter-personal (lack of social support), and structural (lack of facilities) constraints to physical activity participation (Edwards *et al.*, 2014). Rural environments pose unique barriers to physical activity participation, such as high concentrations of poverty, lower income levels, social isolation and a lack of public transportation (Edwards *et al.*, 2014). Furthermore, research is often not conducted in these areas due to difficulty in

accessibility, and in soccer injury literature, there is under-representation of information on scholars residing in these areas.



Figure 2.1: Map of Ndwedwe Local Municipality within iLembe District
(Ndwedwe Local Municipality IDP, 2016/2017)

2.4 INJURIES IN SOCCER

According to Mandorino *et al.*, 2023, soccer is one of the most physiologically demanding sports, with players needing to have flexibility, adequate muscle strength, endurance and be adaptive to aerobic and anaerobic activity. Sport participation is inherently associated with the risk of injury, which poses a threat to the short-term and long-term health of the athlete (Haraldsdottir and Watson, 2021). According to Robles-Palazón *et al.*, (2022), soccer-related injuries are common among adolescents, as it is a period of rapid changes in growth and maturation. Injuries sustained by these athletes do not only cause pain and disability, but if severe, can result in time lost from sport, school and other important activities during adolescence (Haraldsdottir and Watson, 2021). Soccer-related injuries may diminish the benefits of sport participation in youth, especially if adolescents are unable to continue with sport participation due to the residual effects of injury (Robles-Palazón *et al.*, 2022). According to Owoeye, VanderWey and Pike, (2020), soccer-related injuries have a paradoxical effect on soccer players, and injuries place huge pressure on the socioeconomic and healthcare systems.

2.4.1 Prevalence of Soccer Injuries

Despite efforts being implemented to reduce the risk of injury in youth from sports, injury rates among young soccer players are increasing, and are higher in comparison to other sports (Watson *et al.*, 2019). Robles-Palazón *et al.*, (2022) reported that high-intensity situations that occur in football, alongside regular collision exposure, and physical contact, are associated with a high increase in injury risk in comparison to other sports. A Canadian study revealed the incidence of injuries ranged between 9 to 48 injuries per 1000 hours among competitive young footballers, and 2.5 to 8.7 injuries per 1000 hours among male professional players, highlighting the high incidence in Canadian youth soccer players (Owoeye, VanderWey and Pike, 2020).

Similarly, an Indian study indicated a substantial range of youth football injuries in this population, ranging from 0.5 to 45 injuries per 1000 hours of practice and games; these findings echoed similar findings to those of the Canadian study by Lakshakar *et al.*, (2022). An Italian study on youth soccer players highlighted a similarly high injury incidence, ranging from 2.84 to 47.7 during competitive matches, and 0.9 to 11.4 during training (Mandorino *et al.*, 2023). A recent systematic review reported that in the American landscape, injury rates among adolescent male soccer players range between 3.7 and 11.1 per 1000 hours in training, escalating to between 9.5 and 48.7 in matches (Watson *et al.*, 2019). Korean youth (12 to 15 years) were found to have a soccer-related injury rate of 60.2% over the course of one season (Lee, Jeong and Lee, 2020). A German study by Ruf *et al.*, (2022), revealed an overall incidence of 42.2 per squad season across all age groups, with the under 15 age group experiencing the highest rate at 67.7 per 1000 hours of exposure. Elite male African youth soccer players revealed an overall high injury incidence rate of 78%, and the study was conducted on eleven junior international teams (Jacobs and Berg, 2012).

A South African study by Bayne *et al.*, (2018) on soccer-related injuries, revealed an overall injury incidence rate of 2.2 per 1000 hours of exposure, and in training, the injury rate was 0.9 per 1000 hours of exposure, while in matches it was 24.8 per 1000 hours of exposure. This was extremely low when compared to other international studies (Ruf *et al.*, (2020), Lakshakar *et al.*, (2022), and Watson *et al.*, (2019). The study by Sentsomedi and Puckree (2016) stated that the majority of soccer players reported no injuries over the course of one season, and the overall prevalence rate of injuries was 36.5%.

In a Brazilian study analysing injury profiles of youth soccer players across different age groups and levels, Cezarino, da Silva Grüninger, and Silva, (2020) found that players under 16 and under 18 faced a higher risk of injuries during matches compared to training sessions. The study revealed an overall injury incidence rate of 1.86 per 1000 hours of

exposure, with a greater than six-fold higher incidence reported during match play in relation to training (Cezarino, da Silva Grüninger and Silva, 2020). The same study revealed that the under 20-year age group had a higher incidence of injuries during matches, followed by the under-17-year age group.

The number of soccer-related injuries among youth has significantly increased in the past decades, due to the sport's growing popularity (Watson *et al.*, 2019). Moreover, male players experienced the highest rates of injury, often attributed to the increased competition among them, compared to female players (Watson *et al.*, 2019) and (Prieto-González *et al.*, 2021). The low incidence of injuries in South Africa, when compared to international studies, is due to the competition level in South African football, which could be driven by economic challenges local soccer clubs experience (Moganjane, Du Plessis and Slabbert, 2019). The injury incidence is reflected in **Table 2.1**.

Table 2.1: Injury incidence summary on youth soccer players

Author (Year)	Population	Injury incidence per 1000 hours of training (Incidence %)		
		Training	Matches	Overall
Owoeye, Vanderwey and Pike, (2020)	Youth		9.5 to 48,7	
Lakshakar <i>et al.</i> , (2022)		0.5 to 0.45	0.45 to 0.45	
Mandorino <i>et al.</i> , (2023)	Youth	0.9 to 11.4	2.84 to 47.7	0.51 to 18.4
Robles-Palazon <i>et al.</i> , (2023)	Male youth	2.27	14.43	5.70
Cezarino <i>et al.</i> , (2022)	Youth	8.14	1.41	1.86
Watson and Mjaanes, (2019)		3.7 to 11.1	9.5 to 48.7	2 to 19.4
Lee, Jeong and Lee, (2020)	12-15 years n=618			60.2%
Koutures and Gregory, (2010)	Youth			

Collectively, these international studies demonstrate that youth soccer injury incidence is consistently higher during competitive matches than training, with reported rates varying widely depending on age, level of play, and methodological differences. These findings provide a comparative benchmark against which injury prevalence in rural South African school settings can be interpreted.

2.4.2 Characteristics of Injury

Characteristics of soccer-related injuries involve the severity of the injury, the anatomical part of the injury and the type of injury sustained by the soccer player. A study by Lee, Jeong

and Lee, (2020) of Korean youth soccer players, reported that most (56.3%) injuries occurred in matches, when compared to injuries that occurred in training (43.7%). The same study reported that the severity of injuries sustained by the youth soccer players was mostly moderate (29%), followed by severe (23%), and mild (20%). The majority of injuries in youth players occur in the lower extremity (76.8%), upper extremity (13.7%), and the least injuries occur in head and trunk (9.5%) (Lee, Jeong and Lee, 2020). According to Watson *et al.* (2019) many youth soccer-related injuries are acute events resulting from player-to-player contact, and a greater portion of these injuries occurs during competitive matches than during training.

Matches have a high incidence of severe injuries when compared to training, and most injuries occur in the lower extremity (Watson *et al.*, 2019). The result from the study by Mandorino *et al.*, (2023) revealed that the prevalence of injuries in lower extremity injuries among young footballers was high with the age ranging between 52% to 90%, and most of these injuries were from player-to-player contact.

A study by Lee, Jeong and Lee, (2020) reported ankle, knee, thigh, foot, and wrist as the most injured body parts in youth soccer players. Most injuries in young footballers occur in the knees and lower legs (Watson *et al.*, 2019). The study by Lee, Jeong and Lee, (2020) found that ligament sprain was the most common injury in youth soccer, followed by contusion, fracture, muscle strain, and ligament rupture. Watson *et al.*, 2019 found that bone fractures were high among adolescent soccer players. A study by Robles-Palazón *et al.*, (2022) found that muscles and tendon injuries are common among male youth soccer players. The same study also found that fractures and stress bone injuries are also common, and these injuries were due to unique stress placed on bones and growth plates.

In a study by Robles-Palazón *et al.*, (2022) of male young football players, it was reported that the majority of injuries were classified as moderate in severity, followed by mild and severe injuries. The same study also reported that young players experienced more than 15 days of lost playing time per injury, with an overall injury burden of 96 injury incidents per 1000 hours of exposure to football. The study by Pulici *et al.*, (2024) of a youth football academy revealed that 4.7 injuries occur during training per 1000 hours of exposure and 12.4 of injuries occur in matches per 1000 hours of exposure, highlighting that injuries are more common in competitive matches due to the intensity required in these matches compared to training. The same study also showed that moderate injuries, which were defined as injuries resulting in eight to 28 days of loss, were more common across all age groups, and the lower limb was the most affected body part.

2.4.3 Risk Factors of Injuries

It is not easy to understand the cause of injury, and risk factors must be clearly defined before interventions for injuries are planned (Nshimiyimana and Frantz, 2012). Mandorino *et al.*, (2023) stated that injury is a multifaceted phenomenon, influenced by several factors that affect a person's likelihood of suffering an injury. These factors may be classified as either intrinsic or extrinsic risk factors (Lakshakar *et al.*, 2022). Risk factors for soccer-related injuries are commonly categorised into intrinsic and extrinsic factors. This distinction is particularly relevant to the present study, which examines both individual characteristics (e.g. previous injury) and environmental conditions (e.g. playing surface) within a rural school context.

2.4.3.1 Intrinsic Risk Factors

Intrinsic risk factors are defined as personal characteristics of an individual that contribute to the injury susceptibility of that individual (Mandorino *et al.*, 2023). Brito *et al.*, (2012) and Lakshakar *et al.*, (2022) reported age to be an injury risk factor for young soccer players. Risk of injuries in young soccer players is emphasised by the process of maturation marked by changes in body shape, size and hormone secretion (Mandorino *et al.*, 2023). Other intrinsic risk factors that have been linked to youth soccer-related injuries include neuromuscular control, physiological and psychosocial influences, biological risk factors, anthropometric risk elements, previous injuries, and tactical technical abilities (Mandorino *et al.*, 2023), (Lakshakar *et al.*, 2022).

The study by Owoeye, VanderWey and Pike, (2020) found hamstring/ quadricep ratio to be one of the important factors for hamstring muscle injury, with decreased hamstring strength in relation to increased quadricep strength posing an increased risk for knee ligamentous injuries in youth soccer players. Testing lower extremities to assess power, strength, and range of motion is very important because the muscle groups (hamstring, quadriceps, rectus femoris) play a very important role in generating and absorbing high forces during acceleration, slowdown, jump, changes in direction and other movements during soccer matches (Lakshakar *et al.*, 2022). Several neuromuscular imbalances have been suggested to be soccer injury risk factors, including quadriceps dominance, leg dominance, dynamic instability and neuromuscular activation patterns (Watson *et al.*, 2019). Complete or adequate rehabilitation and proprioceptive training are used to minimise the possibilities of injuries in soccer players (Lakshakar *et al.*, 2022).

Physiological and biological risk factors for soccer-related injuries include age, gender, previous injury history, and physical characteristics such as muscle imbalances and limb asymmetry (Owoeye, VanderWey and Pike, 2020). The biomechanics of a player, such as

limb dominance and joint stability, significantly influence injury susceptibility (Kolodziej *et al.*, 2022). These intrinsic factors are associated with injury to an athlete to injury, especially when combined with other factors. Anthropometric risk factors are associated with the players' body composition and physical dimension; these include body weight, body height and BMI (Kemper *et al.*, 2015). Rapid growth during adolescence significantly increases injury susceptibility due to temporary muscle imbalances and reduces coordination.

2.4.3.1.1 Nutrition

The adolescent period is characterised by rapid physical, cognitive, and emotional development (Everett, 2025). Youth and adolescent athletes are prone to musculoskeletal-related injuries due to their rapid growth and development (Alcock *et al.*, 2024). Insufficient dietary intake, low food literacy, and limited nutrition knowledge increase the risk of injuries due to inadequate nutrient intake (Alcock *et al.*, 2024). Adequate nutrition is important during rehabilitation as it ensures that the necessary nutrients are available to support tissue repair (Alcock *et al.*, 2024). Adequate nutrition also supports important physiological systems such as cardiovascular fitness, musculoskeletal growth, development of the neurological system, and function of the immune system, all of which are vital during adolescence and sport participation (Everett, 2025). During adolescence, adequate caloric intake is not only important for athletic performance but also to maintain normal growth and development (Everett, 2025).

2.4.3.1.2 Sleep

Sleep is an essential component required for optimum health and human performance (Singh *et al.*, 2022). Sleep acts as a regulatory process and facilitates proper brain function and cognitive performance while also maintaining other physiological functions such as immune function, cardiovascular function, appetite, endocrine function, and energy metabolism (Mason *et al.*, 2023). Sleep is not only good for recovery and athletic performance but also for every aspect of psychological and physiological health (Singh *et al.*, 2022). Sleep health is also an integral component for a healthy lifestyle and recovery in athletes, and Insufficient sleep is a risk factor for adverse health, recovery and injury risk in athletes (Mason *et al.*, 2023). The American Academy of Sleep Medicine reported that adolescent requires 8-10 hours of sleep for optimal health (Singh *et al.*, 2022). It has been suggested that athletes may need 9 to 10 hours of sleep for optimum recovery from injuries, intense training, and competition. National Sleep Foundation's recommendations for adolescent athletes get between 8 and 10 hours. The relationship between sleep and recovery in athletes can be viewed in terms of sleep duration, sleep quality, and sleep phase (Mason *et al.*, 2023).

2.4.3.1.3 Previous Injury

Mandorino *et al.*, (2023) stated that previous injuries are the common risk factor that exposes young soccer players to injuries. A previous injury affects the player's current physical state, and is associated to weakened tissues, altered biomechanics, or reduced stability in the affected area (Fulton *et al.*, 2014). Lakshakar *et al.*, (2022) reported that previous injuries appear to be one of the most important risk factors for subsequent injuries, with 42% of injured players having sustained an injury of the same type and in the same location during the previous year. The same author stated that 30% of sprains and strain-related soccer-related injuries were of the same type and location. According to Owoeye, VanderWey and Pike, (2020) history associated with previous injury is the most important risk factor and usually occurs in specific injuries such as hamstring, Anterior Cruciate Ligament (ACL), and ankle sprain injuries.

2.4.3.1.4 Psychosocial

Lakshakar *et al.*, (2022) stated that sports such as soccer involve physical challenges, including intense training and injuries, which adds to psychological challenges in players, affecting their cognitive and emotional behaviour. In addition, football players have to contend with personal challenges such as difficulties in relationships or traumatic life events, and these non-sport stressors negatively affect players' performances and training, as the increased psychological stress associated with life events has been shown to raise the risk of sport-related injuries (Lakshakar *et al.*, 2022). A study by Mandorino *et al.*, (2023) in youth soccer players found that elevated levels of stress (academic pressure), high emphasis on acquiring skills and development (performance goals/ progress) and high life changes or stressors (death of a family member) were psychological risk factors for soccer-related injuries.

The results of the study by Clement *et al.*, (2022) stated that the presence of high levels of life event stresses was associated with increased risk of sport-related injuries. The same authors stated that anxiety is also known to be associated with the increased risk of an individual being injured. According to Tranaeus, Martin and Ivarsson, (2022), psychosocial stress reduces muscle recovery after resistance training. Psychophysiological stressors such as negative life event stress (death of loved one or moving to new place) and physical training are believed to influence the autonomic nervous system, which in turn influences recovery and behavioural mechanisms and these changes increase the risk of overuse injuries because they are associated with imbalances between sympathetic and parasympathetic nervous system and this impairs the body's ability to repair and rebuild

muscle tissue, reduce inflammation, and restore physiological balance (Tranaeus, Martin and Ivarsson, 2022).

The three most important variables for Andersen and Williams' stress and injury model include personality factors, history of stress factors, and coping resources, and these variables either act alone or in combination with one another, thereby affecting the stress response and ultimately injury infliction (Şenışık *et al.*, 2021). The increased intensity of the stress response puts people at greater risk of injury, and studies have suggested that psychosocial factors are effective in the incidence of injuries (Şenışık *et al.*, 2021). The results of the same study showed that levels of anxiety were higher, and coping resources were lower in injured athletes. High social support protects athletes from injury; however, low social support exacerbates the harmful effects of life stress and thus increases the susceptibility to injury significantly. The study further revealed that high coping resources in athletes may help reduce the risk of injury by mitigating the stress response. Although psychosocial variables were not directly measured in this study, the model supports the inclusion of contextual stressors when interpreting injury prevalence in rural school soccer players. In the context of rural adolescents, such as those in the Ndwedwe area, this model illustrates how environmental and social stressors compound physical risk. For these youth, a history of stress may include the daily challenges of poor socio-economic status and long commutes to school. When these stressors are combined with limited coping resources, such as a lack of organised sports facilities or restricted access to healthcare, the adolescent's physiological stress response is heightened.

2.4.3.2 Extrinsic Risk Factors

According to Mandorino *et al.*, (2023), extrinsic risk factors are external factors that are outside of the player's control and increase the player's susceptibility to injuries. These factors include the type of surface, equipment used, sport specialisation, and playing position (Mandorino *et al.*, 2023). Lakshakar *et al.*, (2022) stated that extrinsic risk factors of soccer-related injuries in youth players include pitch condition, level of play, training routines, play position, foul play, equipment, rules, and fair play.

2.4.3.2.1 Training Routines

Soccer players are required to perform physically demanding drills that require repetitive sudden accelerations and decelerations, quick changes in directions, jumping and landing, and many situations involving heavy tackles (Robles-Palazón *et al.*, 2022). Lakshakar *et al.*, (2022) reported that about 80% of soccer-related injuries are traumatic due to direct contact between soccer players when competing for the ball, while the remaining 20% are overuse injuries due to biomechanical abnormalities, decreased rest, or faulty playing

technique. According to Mandorino *et al.*, (2023), modern day soccer requires higher intensity and effort than before and more intensive training is required to match the demands of improved physical efforts. Thus, young soccer players are more likely to acquire injuries than adult players.

2.4.3.2.2 Play Position and Foul Play

According to Owoeye, VanderWey and Pike, (2020), goalkeepers are known to have the least injury risk in comparison to outfield players, and strikers have the most injury risk among outfield players during football matches. Fair play or actions that violate rules of the game have been associated with increased incidence of injuries in many sports, including soccer (Watson *et al.*, 2019). The same authors stated that in soccer players, foul play was found to be involved in 13% to 37% of all injuries. Limiting foul play, penalising dangerous plays, and properly enforcing the rules is believed to reduce the risk of injuries, and referees have a responsibility to advocate for fair play (Watson *et al.*, 2019). According to the study by Bizzini and Dvorak, (2015), dangerous play is linked to a higher incidence of injuries when missed by the referee during football matches because players usually feel they can get away with it. The study by Shanley *et al.*, (2019) showed that having a medical professional on-site significantly reduces the risk and severity of injuries. The most common mechanism of injuries in soccer is direct contact with another player, and this is mainly during unfair or foul play by the player, and 44% to 74% of injuries are traumatic injuries, which are also known as collision injuries due to players' direct contact with one another (Lakshakar *et al.*, 2022).

2.4.3.2.3 Equipment

Protective equipment in sport is used to decrease injuries, and in soccer, which includes shoes, shin guards, and gloves. The results of the study by Khodaei, Fetters and Gorenflo, (2011), on youth soccer safety use, revealed that shin guards were the most used equipment, with over 97% of participants using them and it being mandatory for youth soccer players. The same study reported that 8% of children used mouthguards in matches, with the %age dropping to 6.6% in training. Less than 2.5% of children used other safety equipment, including goggles, headgear, jockstraps or a chest protector (Khodaei, Fetters and Gorenflo, 2011).

According to Watson *et al.*, (2019) shin guards are mandatory protective equipment to wear when playing soccer under FIFA rules. The same authors stated that the evidence suggests that shin guards significantly dissipate forces and strain on the tibia that could result in a fracture of the bone, and soccer shoes are required to be worn in soccer matches. Study by Omojofodun and Henry, (2024) indicated that shoes with bladed cleats improve

performance during change in direction; however, they may increase torque and rotational movements on the ankles and knee joints, potentially leading to injuries. The same study found that improper boot use on various surfaces plays a huge role in soccer-related injuries, and the most common injuries occurred in the lower limb due to improper boot use. It must be noted that most studies suggest no increased rate of injury when comparing cleat types (Mandorino *et al.*, 2023). One study revealed that soccer accounts for about 7% of all ocular trauma, and approximately 90% of serious eye injuries are preventable through the use of appropriate protective eyewear (Watson *et al.*, 2019).

2.4.3.2.4 Playing Surface

According to Watson *et al.*, (2019), coaches and referees may consider checking the condition of the field before playing to identify potential hazards, remove any debris or holes and assess for areas of poor water drainage. The results of the study by Lakshakar *et al.*, (2022) on soccer-related injuries found that about 24% of soccer-related injuries are due to poor or unsatisfactory playing pitches, and the most common injuries that affect soccer players occur due to a combination of poor playing surface and other factors such as muscle tightness, joint instability and dehydration. Natural turf is associated with increased risk of injury when compared to artificial turf in youth football players (Mandorino *et al.*, 2023). Outdoor turf is associated with an increased incidence of injuries when compared to indoor turf (Mandorino *et al.*, 2023). The same study found that when cleats are worn on natural turf have a greater risk of injuries than on artificial turf.

According to the study by Nawasreh *et al.*, (2022) playing surfaces are associated with soccer-related injuries and explained that one-third of the soccer injury variances due to the higher rate of injury in natural grass than synthetic surfaces. The same study showed that soccer players who play on natural grass were more than ten times likely to acquire injuries while playing soccer than those who play on synthetic surfaces. Even under harsh weather conditions such as cold, hot and wet weather, synthetic surfaces were still more favourable than natural grass, and synthetic surfaces have shown to be associated with an increased incidence of low back pain in adolescent soccer players in comparison to those playing in natural grass (Nawasreh *et al.*, 2022). Nowadays, synthetic surfaces are known to be third and fourth-generation synthetic surfaces, designed to optimise and enhance sport participation and injury prevention. This contributes to lower injury rates on these surfaces when compared to natural surfaces (Nawasreh *et al.*, 2022).

According to the study by Kuitunen *et al.*, (2023), the incidence of injuries is usually lower when soccer is played on artificial turf rather than when it is played on natural grass. Non-

contact injuries, pelvic injuries, thigh injuries, knee injuries, and muscle strains are less common on artificial turfs. Artificial turf offers a flat and homogenous surface, which helps to prevent injuries and thus reduce the use of resources and related healthcare costs (Kuitunen *et al.*, 2023). The study further revealed that players' preference for natural grass is more about cognitive bias rather than physical differences between artificial grass and natural grass (Kuitunen *et al.*, 2023). It is also reported that players are less likely to execute slide tackles and tend to favour shorter passes when playing on artificial grass, and soccer players are widely known to hold negative sentiments towards the use of artificial surfaces (Kuitunen *et al.*, 2023).

2.4.3.2.5 Level of Activity

Brito *et al.*, (2012) reported that players under the 13-year age category usually have fewer matches or overall exposure than under-19 soccer players, and the reduced exposure might underlie a lack of difference in the incidence of injuries in training and matches among under-13 soccer players. Match intensity and aggressiveness increase with the age of soccer players, and that might underlie the differences in the incidence of injury between training and matches observed among the under 15, under-17, and under-19-year age categories, with the highest incidence of severe injury being observed among the under-19 soccer players (Brito *et al.*, 2012). The same author reported that sub-elite youth soccer players usually train and play less and at a lower intensity when compared to elite youth players, and this counteracts poor technical skills as a factor in increased predisposition to injury. A study by Owoeye, VanderWey and Pike, (2020) in Canadian youth soccer players reported that injuries were significantly higher during games or matches than training sessions.

Results of the study by Robles-Palazón *et al.*, (2022) on Spanish youth soccer players, which divided the level of play into elite and sub-elite, reported overall 4.77 injuries per 1000 hours of exposure, 2.83 injuries per 1000 hours of exposure in training and 10.63 injuries per 1000 hours of exposure in competitive matches for sub-elite youth male soccer players. The same study reported an overall 6.19 injuries per 1000 hours of exposure, 2.68 injuries per 1000 hours of exposure in training and 17.91 injuries per 1000 hours of exposure in competitive matches for elite youth soccer players. These results showed that an increased level of activity is associated with more injuries, as more injuries were found in elite youth soccer players and more injuries were recorded in competitive matches than in training. Elite skilled players who possess great soccer skills usually have more ball possessions, and as such, they are exposed to more tackling and contact situations (Robles-Palazón *et al.*, 2022). The same author stated that sometimes the skilled young footballers must

compete in teams that have older players and are, therefore, exposed to playing with mature and physically big players, which may increase their risk of injuries.

According to Barguerias-Martínez *et al.*, (2023), competitive matches have the highest data on injury incidence and injury burden when compared to training matches, and these are due to collisions and an elevated number of high-intensity situations associated with player action, which may induce neuromuscular fatigue and motor control damage that may trigger injury occurrence. The prevalence of soccer-related injuries among adolescent players has significantly increased due to the level of competition (Ellapen *et al.*, 2014; Watson *et al.*, 2019).

2.5 IMPACT OF INJURIES IN YOUTH SOCCER PLAYERS

Athletic injuries are concerning not only due to the pain and disability associated with them. More severe injuries can result in time lost from school, sport participation, and other important activities for adolescents (Haraldsdottir and Watson, 2021). Sustaining injuries not only limits players' availability but it also has a detrimental effect on future performance through affecting factors such as flexibility, strength, aerobic fitness and sprint performance (Pulici *et al.*, 2024). The same authors stated that youth soccer-related injuries have a negative impact on player development and future career opportunities, especially considering the known risks of subsequent injuries in soccer players with a history of previous injuries (Pulici *et al.*, 2024).

According to Watson *et al.*, (2019), more than 21 days are lost due to injuries sustained during competitive matches. The study by Pulici *et al.*, (2024) on youth soccer players revealed that 47% of injuries sustained resulted in the players missing between eight and 28 days of playing time. A study on elite soccer academies revealed that time loss injury was associated with an average of 137 days lost per 1000 hours of exposure on the field (Veith *et al.*, 2024).

Psychological responses following injury include fear of injury, lack of confidence, negative emotions, mood disturbance, and depression (Haraldsdottir and Watson, 2021). Depression and anxiety negatively impact scholars' academic performance due to neglect (Agnafors, Barmark and Sydsjö, 2021). Soccer-related injuries have a huge impact on the player's academics, and on the families and the national healthcare system (Watson *et al.*, 2019). Minor school sport injuries are associated with limited physical or social disruption, and these injuries are linked to unnecessary school absence. Major injuries have a significant disruption to school and have important implications for the wider family through parental time off from work and arranging childcare (Abernethy and MacAuley, 2003; Podlog, Wagnsson and Wadey, 2024).

Sport-related injuries are complex and are often associated with health-related consequences for the network of family, friends, teammates, coaching staff and even larger communities (Podlog, Wagnsson and Wadey, 2024). The same author stated that parents have a significant influence on young athletes' recovery and are a pivotal source of support for the injured adolescents through providing various forms of support, because they recognise injury as a stressful event for their children (Podlog, Wagnsson and Wadey, 2024). While it is evident that parents are aware of the psychological toll of injury on their children and attempt to provide support, it is also evident that injury strains parent-child interactions, increasing the likelihood of divergent views emerging and the potential for interpersonal conflict and adolescent injury have a potential to increase tension among family members (Podlog, Wagnsson and Wadey, 2024). The same authors stated that injury can also provide an opportunity to strengthen parent-child interactions.

The study by Battaglia and Kerr, (2024) revealed that athletes can experience significant social isolation due to absence from training and competition following an injury. Coaches and peers play an important role in youth development and their decision-making regarding sport participation, including return to play after an injury (Battaglia and Kerr, 2024). Fear of re-injury is a common psychological response following a sports injury, which can negatively affect recovery and return to play (Hsu *et al.*, 2017).

2.6 CONCLUSION

In Chapter Two, soccer in South Africa and global participation among youth is unpacked, as well as the benefits and negatives of sport participation in youth. This is followed by a thorough discussion on soccer-related injuries among youth, where the prevalence of soccer-related injuries was reported, and soccer risk factors, including both intrinsic and extrinsic risk factors, were reported. The impact of injuries in youth soccer players was reported in the literature. Importantly, the review highlighted the unique vulnerabilities associated with rural settings, thereby providing a strong rationale for this study being conducted in Ndwedwe.

Chapter Three discusses and highlights the methodological processes used in this study.

CHAPTER THREE METHODOLOGY

3.1 INTRODUCTION

Chapter Three describes the research methodology used in this study. It will detail the study design, population and sampling techniques, the research instruments, procedures, and data analysis. The ethical considerations of the study are discussed.

3.2 STUDY DESIGN

A descriptive, cross-sectional survey design was used in this study. A descriptive design allows for the collection of information about the phenomenon without changing the environment or manipulating any of the variables. It includes cross-sectional surveys, where data are collected at one point in time, using a questionnaire (Baker, 2017). A cross-sectional design is characterised by the collection of relevant data at a given point in time and is mostly relevant when assessing the prevalence of disease or trait, attitude and knowledge (Kesmodel, 2018). These design characteristics were appropriate for this study investigating the prevalence, risk factors, and impact of soccer-related injuries in adolescent male scholars in Ndwedwe District.

3.3 STUDY POPULATION, LOCATION AND PERMISSION

The study population were adolescent male scholars (11 to 19 years) in Ndwedwe District, who played soccer for their respective schools. The study took place at the selected high schools in the Ndwedwe District following gaining approval from the Department of Basic Education (Appendix A), Ndwedwe District (Appendix B), Principals of the schools (Appendix C), the scholars and parental consent for those under 18 years of age (Appendix D).

3.4 SAMPLING

3.4.1 Sample Size

The sample size was calculated using the standard sample size determination formula, where variability is 0.5, a confidence level of 95% and a 5% sampling error (Adhikari, 2021). In an email communication on 06 August 2025, the biostatistician calculated that based on a population size of 588, a sample size of 233 will be needed for generalisation (Hendry, Biostatistician).

3.4.2 Sampling Technique

A stratified random sampling technique was applied in this study. This entails dividing the population into smaller groups, known as strata, and in the case of this study, are the Ndwedwe District wards. A random sample was taken from each stratum, in proportion to the stratum's size, when compared to the population (Makwana *et al.*, 2023). This sampling technique aims to reduce the potential human bias in the selection of cases and to provide a sample that is highly representative of the population being studied (Sharma, 2017). The stratified sampling technique allows for generalisations to be made from the sample to the population (Sharma, 2017).

The number of high schools in Ndwedwe District was obtained from the Department of Basic Education ($n=42$). Each school was separated into the Ndwedwe ward where the school is located. **Table 3.1** demonstrates how the sample was determined per school and overall. probability proportional to size (PPS) was used as the number of participating schools in each ward was chosen based on the total number of schools in the wards.

Table 3.1: Sample stratification

Ward	No of schools	No of soccer players	Proportion invited to participate (%)
Ndwedwe	6	84	14
Ozwatini	13	182	31
Insuze	10	140	24
Ubhaqa	7	98	17
Umdloti	6	84	14
Total sample size: 233			

3.4.3 Sample Characteristics

3.4.3.1 Inclusion and Exclusion Criteria for Schools to Participate

Schools were required to meet the following criteria:

Inclusion criteria:

- Be a registered high school within Ndwedwe area
- Have at least one soccer team

Exclusion criteria:

- When the school denied access to the scholars.

3.4.3.2 Inclusion and Exclusion Criteria for Participants

Scholars had to meet the following criteria:

Inclusion criteria:

- Registered high school soccer player at their respective school.
- Learner who is between the 11 and 19 years old.
- Provide assent/informed consent to partake.

Exclusion criteria:

- Soccer player who was sick/absent on the day that the survey was administered.
- A scholar who refused to participate.

3.5 MEASUREMENT TOOL

The survey utilised in the study to obtain the data was originally developed by Nshimiyimana and Frantz, (2012) and was used after obtaining the following formal permission (Appendix E). The questionnaire (Appendix F) was then adapted to meet the study's aim and objectives. Other parts of the questionnaire were adapted from articles on youth soccer-related injuries (Watson *et al.*, 2019; Podlog, Wagnsson and Wadey, 2024; Haraldsdottir and Watson, 2021). The questionnaire consisted of five sections, as detailed in **Table 3.2**.

Table 3.2: The sections of the questionnaire and respective references

Section from the questionnaire	Author
Section A - Personal information	Nshimiyamana and Frantz, (2012)
Section B - Playing conditions, support staff and equipment	Nshimiyamana and Frantz, (2012)
Section C - Playing and training sessions	Nshimiyamana and Frantz, (2012)
Section D - Injury history	Nshimiyamana and Frantz, (2012)
Section E - Impact of injuries	Watson <i>et al.</i> , 2019; Haraldsdottir and Watson, 2021; Podlog, Wagnsson and Wadey, 2024

3.5.1 Validity and Reliability of the Survey

3.5.1.1 Focus Group

An instrument or tool is valid if it measures what it is intended to measure (Vu, 2021). A focus group serves the purpose of assessing the validity of the measurement tool. To check the validity of the questionnaire, a focus group meeting was organised, and changes made in the questionnaire concerning its understanding and clarity.

The focus group consisted of:

- Researcher.
- Research supervisor/co-supervisor.
- Two chiropractic department staff members.
- A student who was registered for a Master of Health Sciences: Chiropractic programme, who had quantitative survey experience.
- Two male scholars who play soccer from the Ndwedwe District.

To be eligible to partake in the focus group, the following criteria were required:

Inclusion criteria for the focus group

- Male scholars who play soccer
- Under the age of 19 years.

Exclusion criteria for the focus group

- Scholars who were not willing to sign the informed consent and confidentiality form.

The focus group was conducted in the following manner:

- The meeting took place on Microsoft Teams, with the researcher reading out each question from the questionnaire aloud, and discussions occurred after each question among members of the group. The discussion was relevant to the questions per the aims and objectives of the study.
- The focus group contributed significantly to identifying key areas that need to be addressed in the questionnaire.
- After discussing all the questions of the questionnaire, the members of the focus group were thanked, and the meeting ended.
- The meeting was recorded for future reference and was only accessible by the researcher and supervisors.

- The post-focus group questionnaire was developed after finishing the corrections discussed during the focus group.

3.5.1.2 Pilot Testing

A pilot test was implemented to assess whether the scholars understood the questions asked on the questionnaire and how long it would take to complete the questionnaire. The pilot test was used to check the effectiveness of the questionnaires, and the scholars in the pilot study will be excluded from the main study. According to Lowe, (2019), the main purpose of the pilot testing is to prevent the researchers from launching a full-scale study without adequate knowledge of the study, and it helps to determine issues that may be encountered during the study.

The criteria for scholars to partake in the pilot test of the study instrument were:

Inclusion criteria for pilot study

- Two male high school scholars registered at the school in Ndwedwe District.
- Play soccer at the registered school.
- Under the age of 19 years.

Exclusion criteria for pilot study

- Scholars not willing to sign the informed consent form.

The pilot study was conducted in the following manner:

- The researcher travelled into Ndwedwe District. The researcher provided a thorough explanation of the study to the high school scholars. The researcher then randomly chose four high school scholars to participate in the pilot study.
- The chosen high school scholars were given a letter of information and a letter of consent to get signatures from parents or legal guardians.
- The high school scholars completed their consent, signed by their parents or legal guardians.
- The male high school scholars were given hardcopies of the questionnaire to complete. The questionnaire had comment boxes at the end so that the scholars could make any suggestions.
- Any problem associated with the questionnaire, and issues related to completing the questionnaire, were noted in the comment section. These scholars were excluded from the main study.

- The comments and feedback from the pilot study were used to finalise the questionnaire for the main study.

3.5.2 Data Collection

Upon receiving ethical approval from the Durban University of Technology (DUT) Institutional Research Ethics Committee (Appendix G), data collection occurred as follows:

- Scholars' recruitment took place once consent from the Department of Basic Education (Appendix A), Ndwedwe District (Appendix B), and school Principals (Appendix C) was obtained.
- The researcher travelled to each participating school and discussed the study with the school's team, coaches, or teachers responsible for school teams, sometimes, with the scholars themselves. The letter of information (Appendix H), together with the parental consent and scholar consent (Appendix D), as well as the questionnaire (Appendix F), were distributed to the scholars by the researcher.
- The scholars had three to five days to get the consent forms signed and the questionnaire completed. Reminders were sent through the coach/teacher a day before the researcher returned.
- The scholars had three to five days to complete the surveys and consent forms.
- The researcher returned with a ballot box that the surveys and consent forms were posted into, if complete.
- Once the questionnaires had been completed and placed on the ballot, the researcher left the school.
- The completed forms and surveys were kept safe, private, and confidential, during the process of data capture, analysis, and reporting. Only the researcher and supervisors had access to the consent forms and survey.

3.6 DATA MANAGEMENT

The researcher placed a ballot box in the participating school. The ballot box was allocated for the collection of the signed informed consent forms and for the completed questionnaires. Once completed, the questionnaires were placed in the ballot box, and the researcher left the school. The informed consent forms and questionnaires were kept in the same ballot box, and the researcher ensured that the ballot box remained sealed at all times during the data collection process. The documents were safe at the DUT Department of Chiropractic after the dissertation was submitted, post-examination.

3.6.1 Data Reduction

Questionnaires were screened, and incomplete questionnaires were discarded, with 5% (13 of 248) of the questionnaires getting discarded. Consent forms were screened for errors, and forms without all the signatures were removed. The researcher verified that each scholar's data was entered only once using a code to prevent duplicate entries. Point prevalence was based on injuries reported at the time of the survey.

3.6.2 Statistical Analysis

Descriptive statistics, in the form of tables and graphs, were used to describe the data graphically. To evaluate for significant trends in the data, inferential statistics were applied. The included Pearson's correlation, t-tests, ANOVA, and chi-square tests. Where conditions were not met for the application of these tests, non-parametric equivalent tests, or exact tests, where applicable, were used. A *p*-value of 0.05 was used to indicate significance. The analysis was conducted using IBM SPSS (version 26) (Hendry, 2025).

3.7 ETHICAL CONSIDERATIONS

The ethical considerations of this study included autonomy, beneficence, non-maleficence, confidentiality, and justice.

Autonomy

Warner, (2022) stated that autonomy is when individuals have the freedom to make choices for themselves without external influence. Autonomy was ensured, as scholars were not coerced into participating in the study, and were provided with a comprehensive letter of information (Appendix H) to make an informed decision regarding their involvement. Opportunities to ask questions were afforded to the scholars while completing the questionnaire.

Beneficence

Beneficence is defined as an act of kindness with a strong connotation of doing good to others, including a moral obligation (Jain and Appelbaum, 2018). The information provided by the scholars was used to determine the epidemiology of soccer-related injuries, associated risk factors, and the impact of these injuries on high school scholars. The school's governing body can use this information to determine preventive measures for the scholars and benefit the study population because the researcher will publish the study.

Non-Maleficence

Non-maleficence is based on the Hippocratic Oath and emphasises the obligation to do no harm while seeking beneficial outcomes (Warner, 2022). The study was voluntary, and therefore, scholars were allowed to withdraw at any point without fear of harm or consequences. The questions were not invasive and did not bring any distress, thus maintaining non-maleficence. During the study, no sensitive information was collected during the study, and the surveys were coded to ensure that no scholar's names were revealed.

Justice

Justice is ensuring that all study participants are treated equally and with respect (Warner, 2022). This study's participants were treated equally, with no prejudice in terms of race, colour, or creed, and given a similar timeline to complete the survey and submit signed informed consent.

Confidentiality

Confidentiality was maintained as scholars did not have to provide their identity details, and completed questionnaires were placed in a ballot box to ensure anonymity. Coding was used to make sure no person's name was visible in the results.

The study was conducted after full ethical clearance was obtained from DUT (Appendix G) and permission to conduct the study was granted by the Department of Basic Education (Appendix A). Data was taken straight to the DUT Department of Chiropractic storage, after the dissertation was submitted, post examination. Data is kept safe at the DUT Department of Chiropractic storage and stored for a period of five years. After a period of five years, the surveys and consent forms are shredded and disposed of.

3.8 CONCLUSION

Chapter Three highlighted the methodological processes used in this study. The chapter included study design, study population, location, and permission. The chapter also included the sampling technique used, the research procedure and explained the process of developing a data collection tool. This chapter concluded with all the ethical considerations considered. Chapter Four presents the results of the study.

CHAPTER FOUR RESULTS

4.1 INTRODUCTION

Chapter Four reports the results of the statistical analysis from the data collected using the questionnaire (Appendix F). The results are presented in written narratives, tables, and figures.

4.2 RESPONSE RATE

Figure 4.1 shows the number of questionnaires distributed and those returned by the scholars. The response rate was 82.7%.

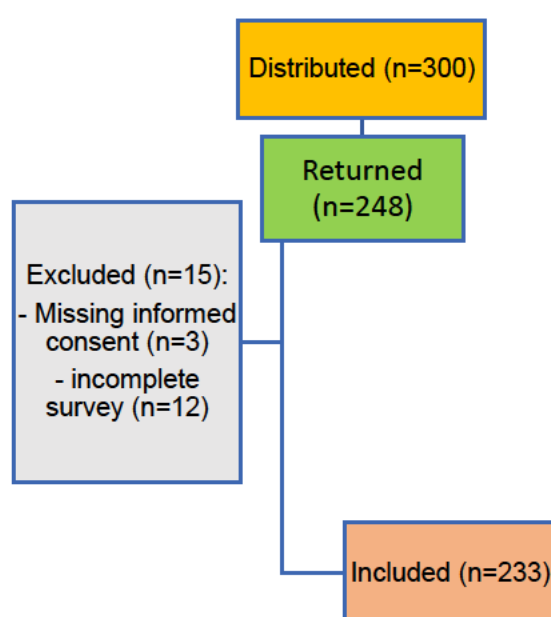


Figure 4.1: A flow diagram representing the response rate

4.3 PARTICIPANTS CHARACTERISTICS

4.3.1 Personal Characteristics

Table 4.1 presents the scholars' age, race, and schooling grade. The respondents had a mean age of 16.0 (± 1.8), ranging from 12 to 19 years of age. The scholars were from various high school grades and predominantly from the Black African race group (99.1%, $n=231$).

Table 4.1: Participant characteristics (n=233)

Characteristic	n (%)
Age	
12-15	81(34.8)
16-19	152(65.2)
Grade	
8	54 (23.2)
9	30 (12.9)
10	46 (19.7)
11	74 (41.8)
12	29 (12.4)
Race	
Black	231 (99.1)
Coloured	1(0.4)
Indian	1 (0.4)
White	0 (0)
Medical aid	
Yes	19 (8.2)
No	214 (91.8)

4.4 RESULTS FOR OBJECTIVE ONE: TO DETERMINE THE POINT AND LIFETIME PREVALENCE OF SOCCER-RELATED INJURIES AND TO REPORT THE INJURY CHARACTERISTICS IN RURAL ADOLESCENT MALE SCHOLARS

4.4.1 Injury Prevalence

Figure 4.2 illustrates that 70.4% ($n=164$) of the players had experienced a soccer-related injury in their lifetime, with 36.1% ($n=84$) reporting a current injury.

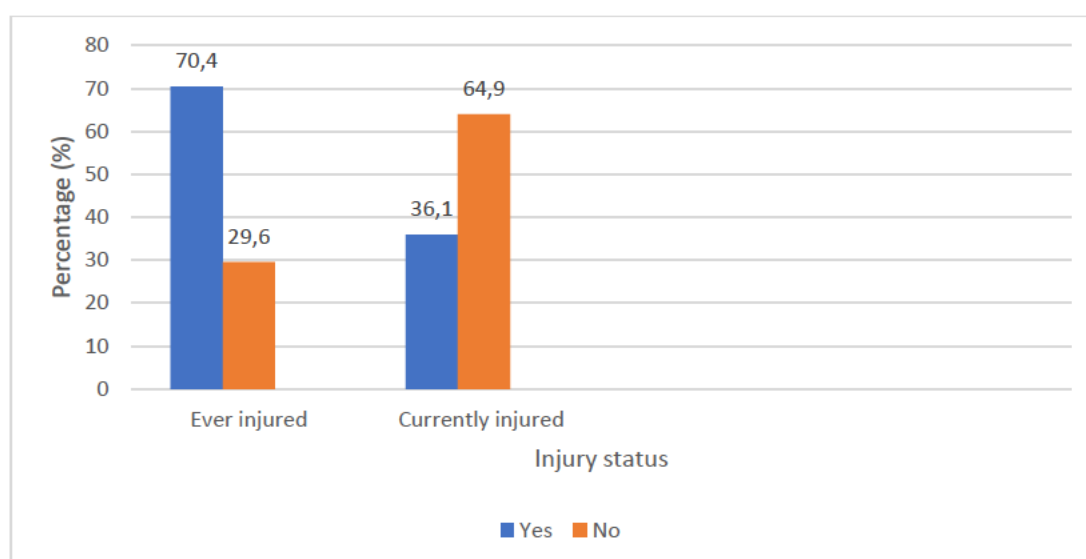


Figure 4.2: The lifetime and point prevalence of soccer-related injury (n=233)

4.4.2 Characteristics of Soccer-related Injuries

4.4.2.1 Current Injuries Onset Either from Training or Matches

The Binomial test revealed that from those reporting a current soccer-related injury ($n=84$), a significantly higher number of injuries occurred while playing matches (71.1%) as opposed to during training ($p<0.001$), as seen in **Figure 4.3**.

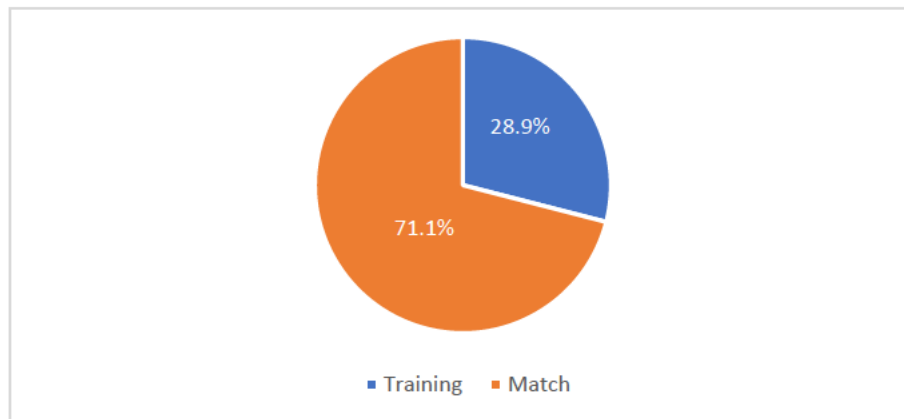


Figure 4.3: Injury occurrence in training and matches ($n=84$)

4.4.2.2 Area of the Body Injury During the Lifetime of Playing Soccer

Figure 4.4 shows that respondents who had experienced a lifetime soccer-related injury ($n=164$) reported that the lower body, especially the knee (24.5%) and foot (28.8%), were the most frequently injured areas. The head, neck, and upper extremity showed low injury rates.

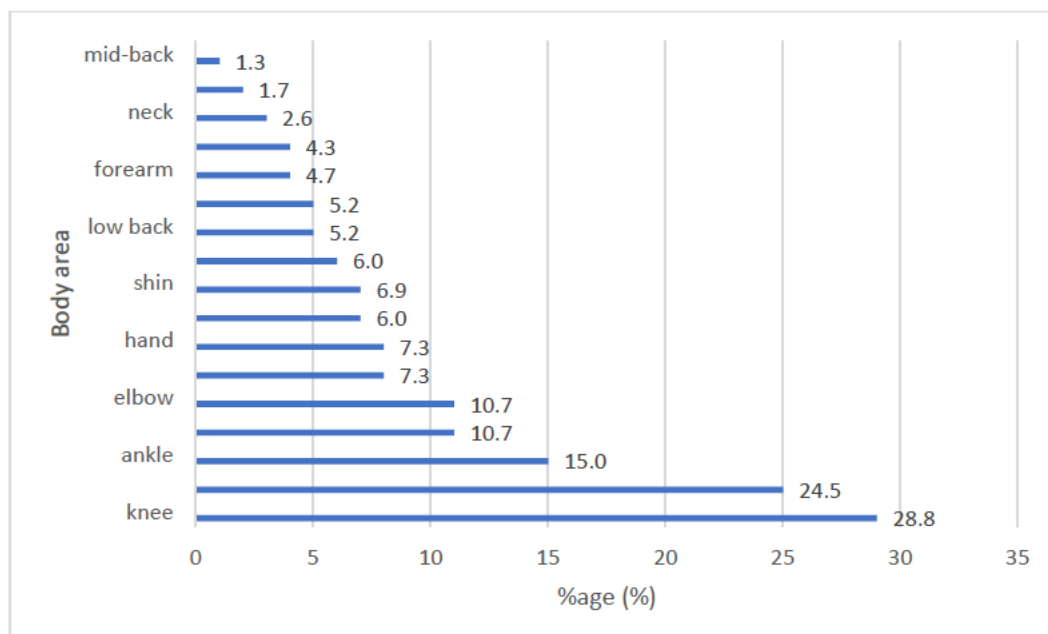


Figure 4.4: Body areas injured due to soccer participation ($n=164$)

4.4.2.3 Characteristics of the Most Severe Injury Sustained During a Lifetime of Playing Soccer

Respondents reported that most severe injuries involved bone (44.8%) and muscle tissue (42.9%), occurring when the playing surface was dry (68.3%), and resulting in time off from playing soccer (62.8%), as shown in **Table 4.2**. Medical personnel were mostly not present when the injury occurred (71.3%), and the respondents were not medically cleared to return to play following their severe injuries (69.8%).

Table 4.2: Characteristics of participants' most severe injuries (n=164)

Description of the most severe	n (%)
Body structure injured	
Bone	73 (44.8)
Muscle	70 (42.9)
Tendon	11 (6.7)
Ligament	9 (5.5)
Surface condition when injury occurred	
Wet	50 (31)
Dry	112 (69)
Did the injury result in time off from soccer	
Yes	103 (63)
No	61 (37)
Medical clearance after injury	
Yes	66 (40)
No	98 (60)
Were medical personnel present when the injury occurred	
Yes	47 (29)
No	117 (71)

4.4.2.4 Treatment Received for Injuries Sustained During a Lifetime of Playing Soccer

Most respondent received no treatment (38.4%) for their injury, with very few requiring surgical intervention, as seen in **Figure 4.5**.

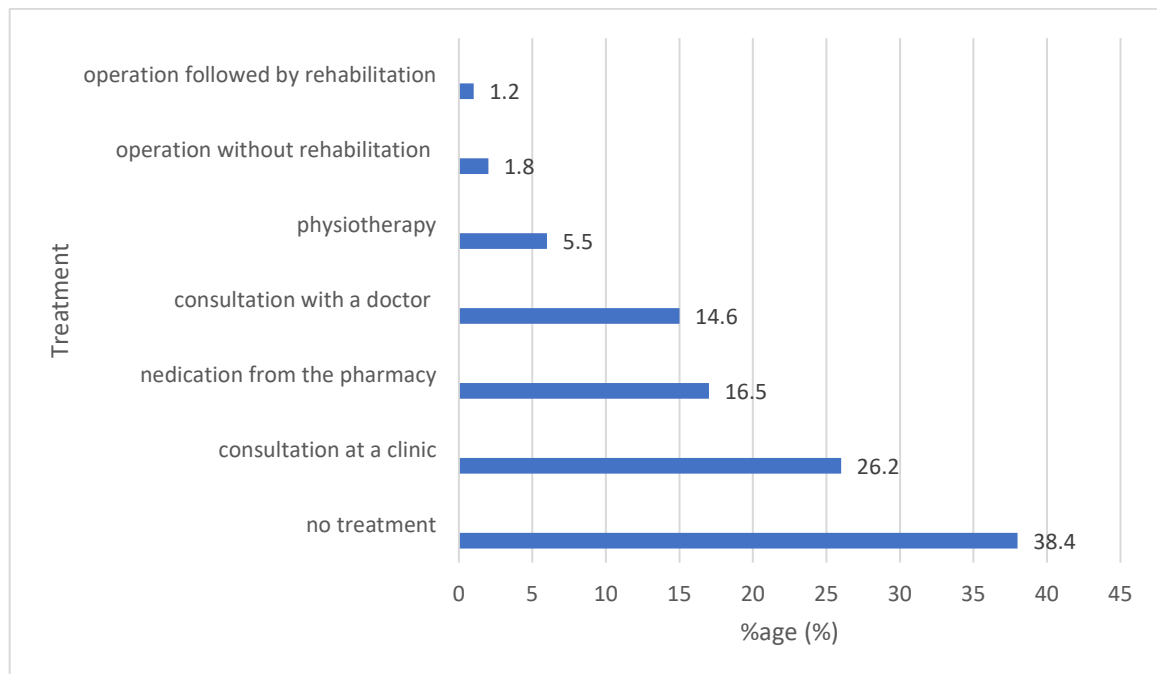


Figure 4.5: Treatment utilised by the participants for their soccer injury (n=164)

4.4.3 Soccer Participation Characteristics

The mean age at which the respondents started playing soccer was 10.8 (± 2.57), ranging from 3 to 18 years of age. Most respondents reported being right leg dominant (78.8%), playing for the first team (56.2%) and engaging in soccer playing outside of school (94.0%) as seen on **Table 4.3**. The respondents mostly indicated that their school and local club shared the same facilities (60.5%).

Table 4.3: Leg dominance, current team, soccer participation outside school, and sharing of facilities for the school and local club (n=233)

Participation characteristic	n (%)
Dominant leg	
Left	49 (21.2)
Right	182 (78.8)
Current team	
1 st team	131 (56.2)
2 nd team	65 (27.9)
Lower team	37 (15.9)
Soccer outside school	
Yes	219 (94.0)
No	14 (6.0)
Does school and local club share facilities	
Yes	141 (60.5)
No	92 (39.5)

4.5 RESULTS FOR OBJECTIVE TWO: TO DETERMINE THE INTRINSIC (BEHAVIOURAL, PSYCHOSOCIAL, AND NUTRITIONAL) AND EXTRINSIC (PLAYING SURFACE, EQUIPMENT AND ACTIVITY PREPERATION) FACTORS ASSOCIATED WITH INJURIES IN RURAL ADOLESCENT MALE SCHOLARS

4.5.1 Intrinsic factors: Behavioural, Psychosocial, and Nutritional Factors

Table 4.4 shows the scholars' behavioural, psychological, and nutritional characteristics. The participants slept on average 7.9 (± 1.5) hours per night, ranging from four to 12 hours. Most respondents reported that their sleep quality was good (86.3%). Less than 6% of the respondents smoked or drank alcohol. Several respondents reported that they had not been diagnosed with depression (95.3%) or anxiety (94.4%). Most scholars reported having three meals a day (61.8%), which was sometimes a healthy meal (69.5%) and sometimes included fruit (53.2%). Chi-square tests revealed no relationship between the intrinsic factors of behavioural, psychosocial, and nutritional factors and injury status in male, soccer-players ($p > 0.05$).

**Table 4.4: Participant behavioural, psychological, and nutritional characteristics
(*n*=233)**

Characteristic	n (%)
Behavioural	
Hours of sleep per night	
4-6	25 (10.7)
7-9	187 (80.2)
10-12	21 (9.1)
Quality of sleep (self-rating)	
Good	201 (86.3)
Average	31 (13.3)
Poor	1 (0.4)
Smoking status	
Yes	10 (4.3)
No	223 (95.7)
Alcohol status	
Yes	15 (6.4)
No	218 (93.6)
Psychosocial	
Depression status	
Yes	11 (4.7)
No	222 (95.3)
Anxiety status	
Yes	13 (5.6)
No	220 (94.4)
Nutritional characteristics	
Meals per day	
1	11 (4.7)
2	55 (23.6)
3	144 (61.8)
>3	23 (9.9)
Eating healthy meal	
Rarely	3 (1.3)
Sometimes	162 (69.5)
Often	21 (9.0)
Always	47 (20.2)
Eat fruit	
Never	1 (0.4)
Rarely	9 (3.9)
Sometimes	124 (53.2)
Often	30 (12.9)
Always	69 (29.6)

4.5.2 Extrinsic factors: playing surface, equipment, referees and supporting staff, and activity preparation

4.5.2.1 Playing Surface Used by Participants

Figure 4.6 shows that the grass surface was most often used during training (52.8%) and in matches (66.5%). Pearson chi-square and Fisher's exact test revealed no relationship found between playing on gravel ($p=0.717$), grass ($p=0.978$), hard ($p=0.105$) and artificial surfaces ($p=0.137$) and injury during training. Fischer's exact test revealed that playing on a hard surface ($p=0.016$) was associated with injury during matches. Pearson chi-square and Fischer's exact test revealed no relationship found between playing on grass ($p=0.564$), gravel ($p=0.593$) and artificial ($p=0.669$) surfaces and injury occurrence during matches.

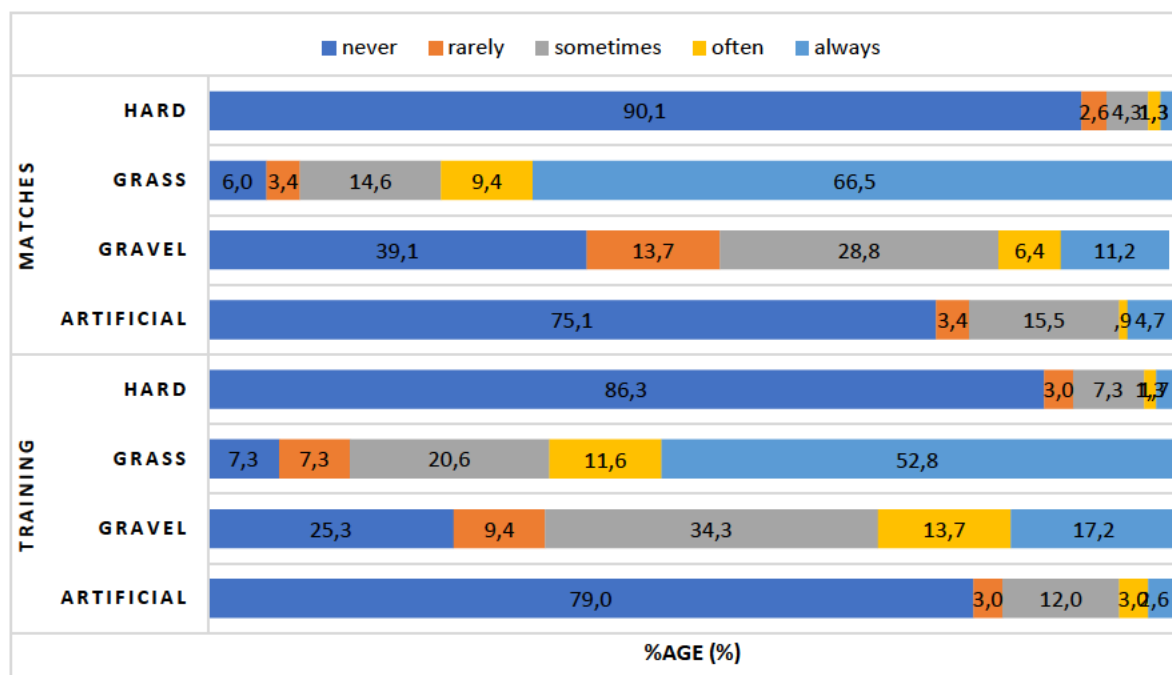


Figure 4.6: Type of surface used when playing matches and training (n=233)

4.5.2.2 Equipment Used by Participants

Figure 4.7 shows that most respondents wore protective gear (76.0%, $n=177$), with more than half owning their own gear (57.9%, $n=135$), which they wore during training and matches (40.3%, $n=94$). Pearson chi-square revealed no correlation between wearing protective gear ($p=0.716$) and injury status. No relationship was found between owning protective gear ($p>0.05$) and injury status.

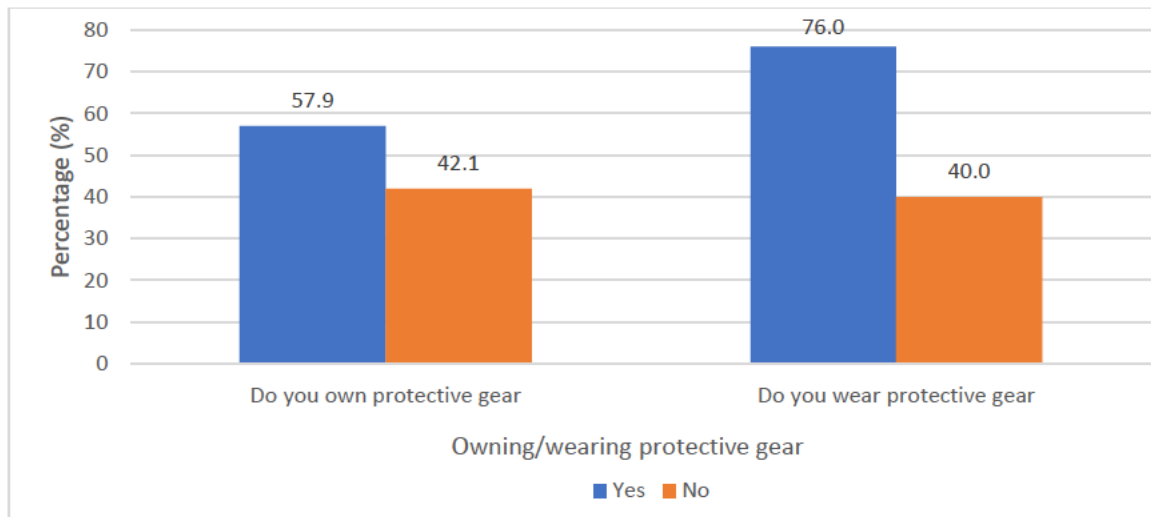


Figure 4.7: Use of protection gear by the participants (n=233)

Most participants reported replacing their soccer footwear every year (39.5%, $n=92$) to two years (38.2%, $n=89$) as seen in **Figure 4.8**. Pearson chi-square revealed no relationship between the replacement of soccer footwear and injury status ($p=0.514$).

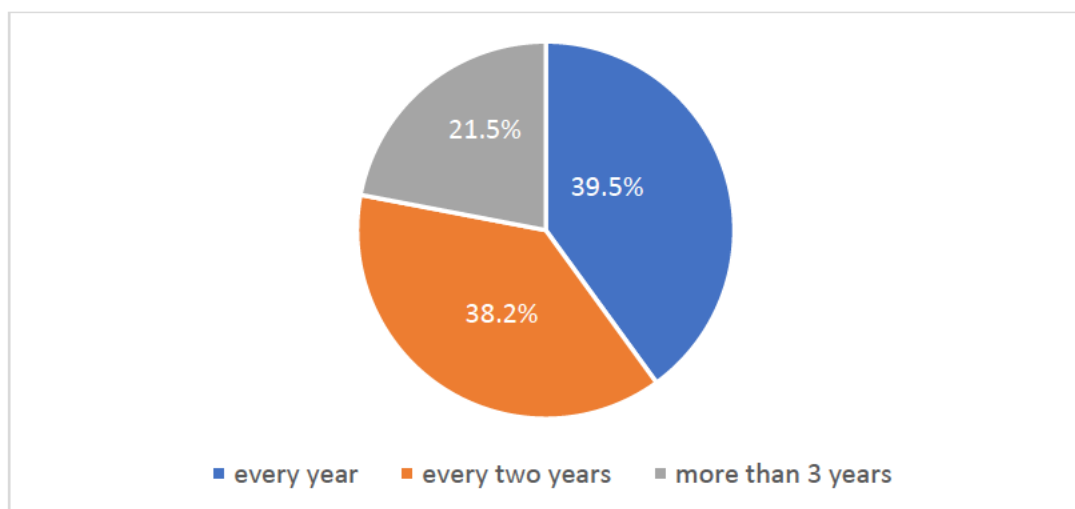


Figure 4.8: Replacement of soccer footwear by the participants (n=233)

In terms of using protective gear when training, it was found respondents wore soccer boots (63.9%) and never used shin guards (33.9%), with ankle/wrist protection being the least utilised gear during training, as seen in **Figure 4.9**. Pearson chi-square and Fischer's exact test revealed no relationships found between the use of shin guards ($p=0.264$), soccer boots ($p=0.840$), other footwear ($p=0.302$), ankle/wrist protection ($p=0.838$) in training and injury status.

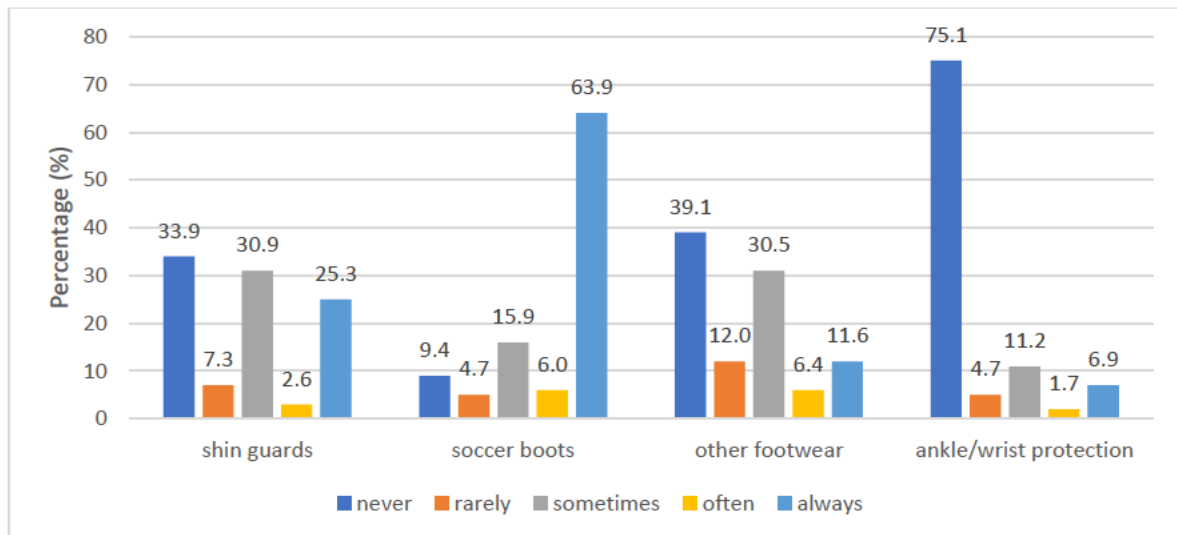


Figure 4.9: Use of protective gear in training (n=233)

Figure 4.10 shows that during matches, most respondents used soccer boots (76.8%), with fewer using shin guards (39.1%), and ankle/wrist never being used (64.8%). Pearson chi-square and Fischer's exact test revealed no relationship found between the use of shin guards ($p=0.933$), soccer boots ($p=0.553$), other footwear ($p=0.084$), ankle/wrist protection ($p=0.304$) in matches and injury status.

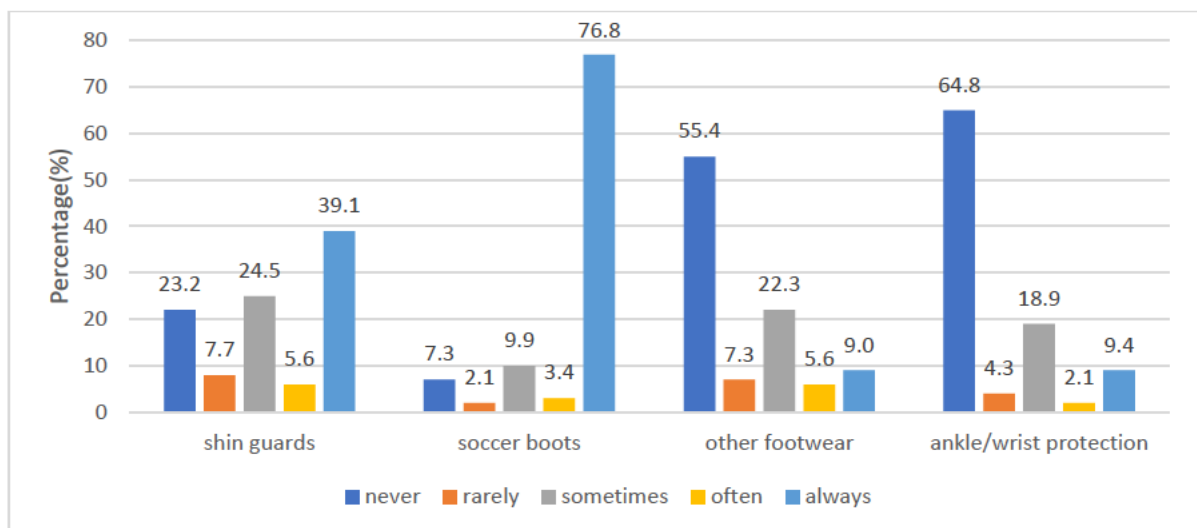


Figure 4.10: Scholar use of protective gear in matches (n=233)

4.5.2.3 Referees and supporting staff

- **Referees**

A third of respondents reported that referees not registered with local associations (39.9%) ($p=0.036$) as demonstrated in **Figure 4.11**. No relationship was found between referees' registration and injury status.

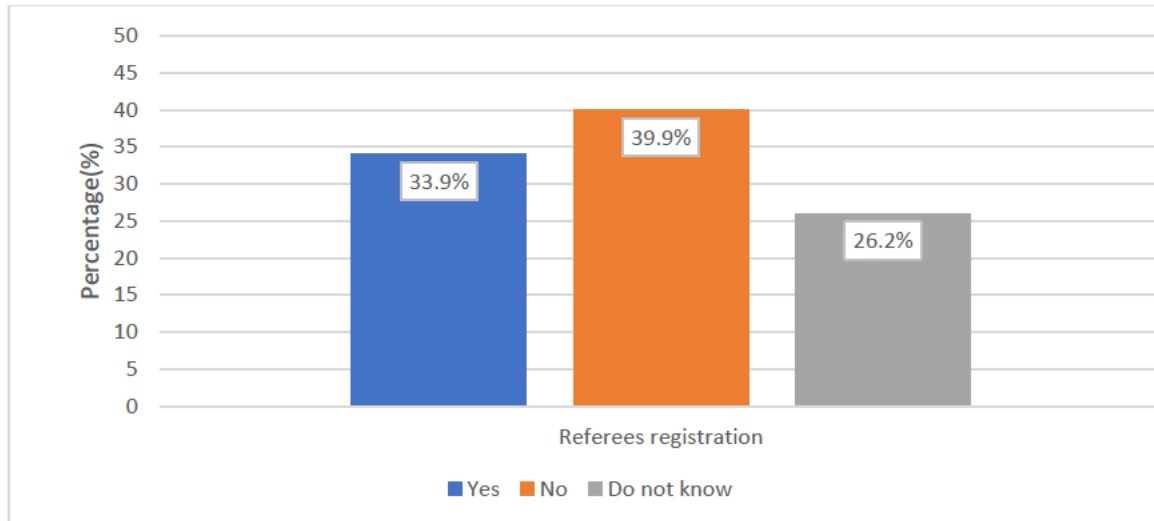


Figure 4.11: Scholar awareness of soccer referees registration status (n=233)

- **Medical Personnel**

Figure 4.12 shows that several respondents expressed that medical personnel were not present at matches 57.5% ($n=134$). No relationship was found between the presence of medical personnel in matches and injury status ($p>0.05$).

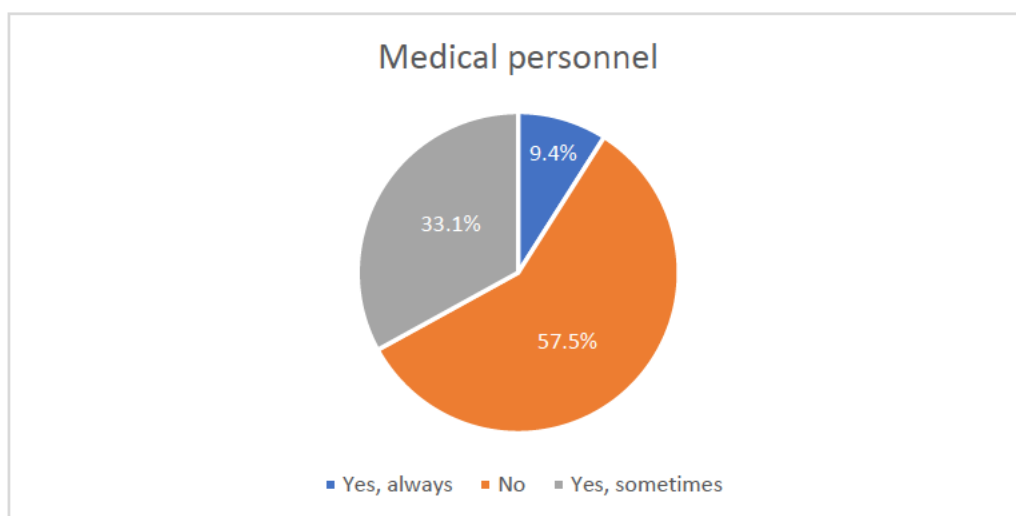


Figure 4.12: The presence of medical personnel at matches (n=233)

4.5.2.4 Activity preparation

- **Warming up and cooling down at training and matches**

Most respondents reported engaging in warming up and cooldown at training and matches, as illustrated in **Figure 4.13**. Pearson chi-square and Fischer's exact test revealed that Injury status was not related to the use of warmups in training ($p=0.492$), cooldown in training ($p=0.588$), warmups in matches ($p=0.268$), cooldown in matches ($p=0.145$), or in either training or matches.

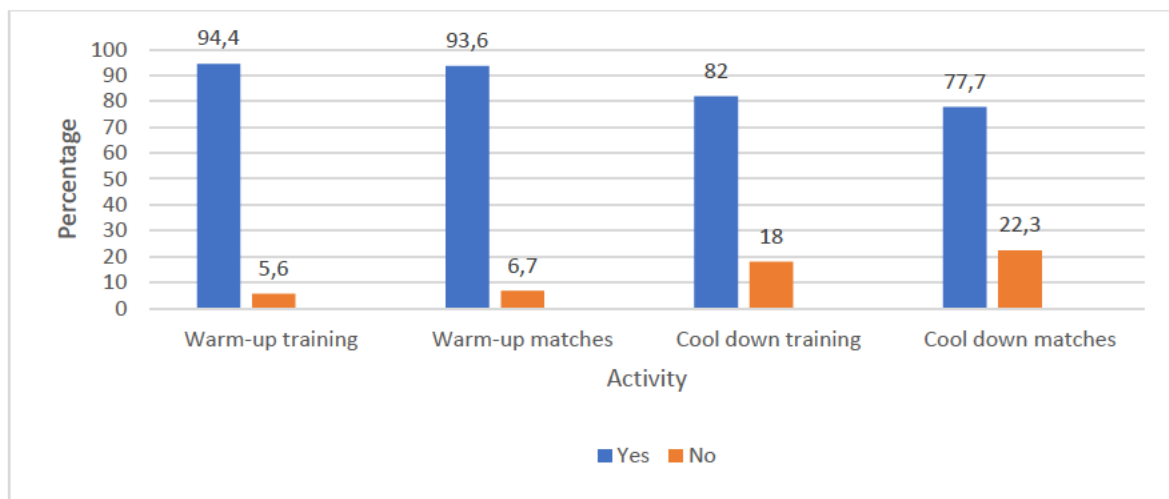


Figure 4.13: Consistency of doing warm-up and cool down activities (n=233)

Figure 4.14 illustrates that most participants included jogging (80.7 %), running (76.0%), stretching (79.0%), and soccer drills (68.7%) in their warmups. Pearson chi-square revealed no relationship was found between doing jogging ($p=0.134$), running ($p=0.690$), stretching ($p=0.614$), soccer drills ($p=0.696$) during warm-up and injury status.

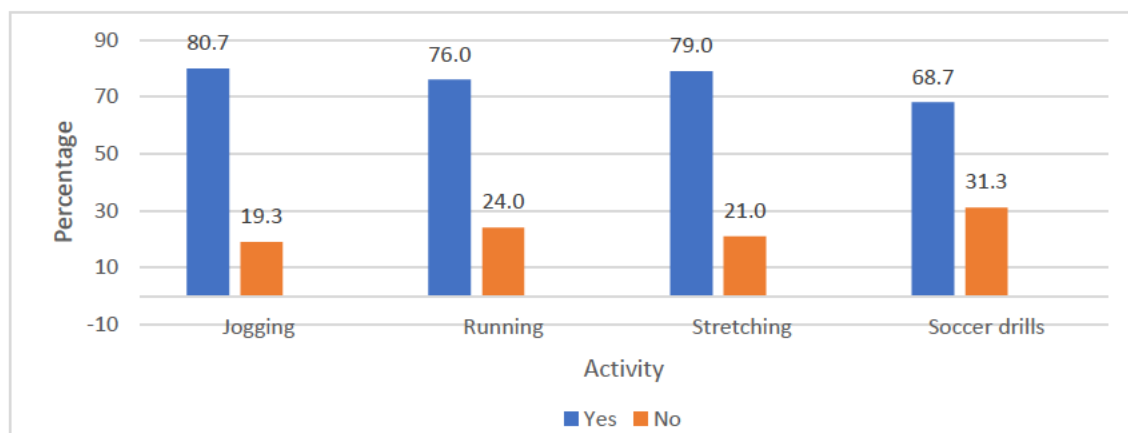


Figure 4.14: Consistency of various warmup activities prior to matches (n=233)

Most respondents spent approximately 15 minutes on warming up and cooldown activities for matches, as demonstrated in **Figure 4.15**. Pearson chi-square revealed no relationship between the time spent on warmup or cooldown and injury status ($p=0.256$).

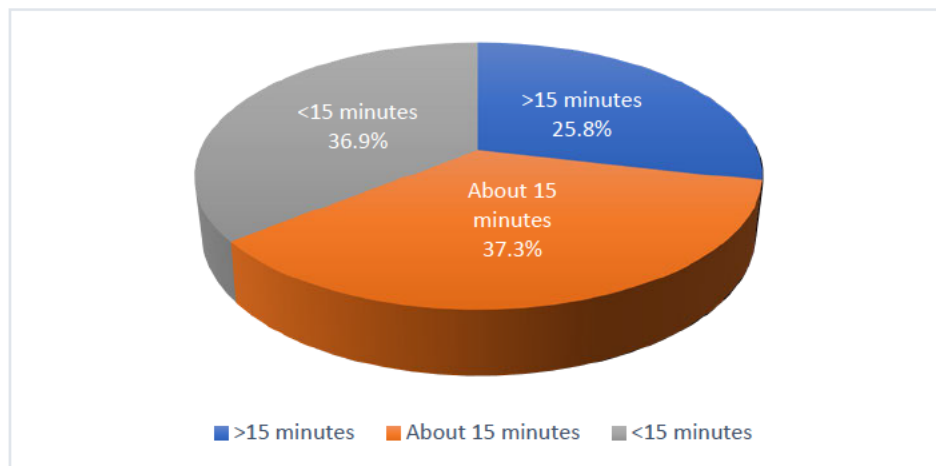


Figure 4.15: Time spent on warmup and cooldown activities for matches (n=233)

4.8 RESULTS FOR OBJECTIVE THREE: TO DETERMINE THE IMPACT OF SOCCER-RELATED INJURIES ON RURAL ADOLESCENT MALE SCHOLARS.

4.8.1 Impact of Soccer Injuries on Players' Personal Life

Figure 4.16 shows that most respondents reported not to suffer with depression (81.7%) or anxiety (86.0%) because of soccer-related injuries. Most respondents did not fear returning to play (72.0%) or avoiding interacting with their peers (71.3%). Half of the respondents missed school due to a soccer injury (50.6%), with **Figure 4.17** detailing the number of days missed by the respondents.

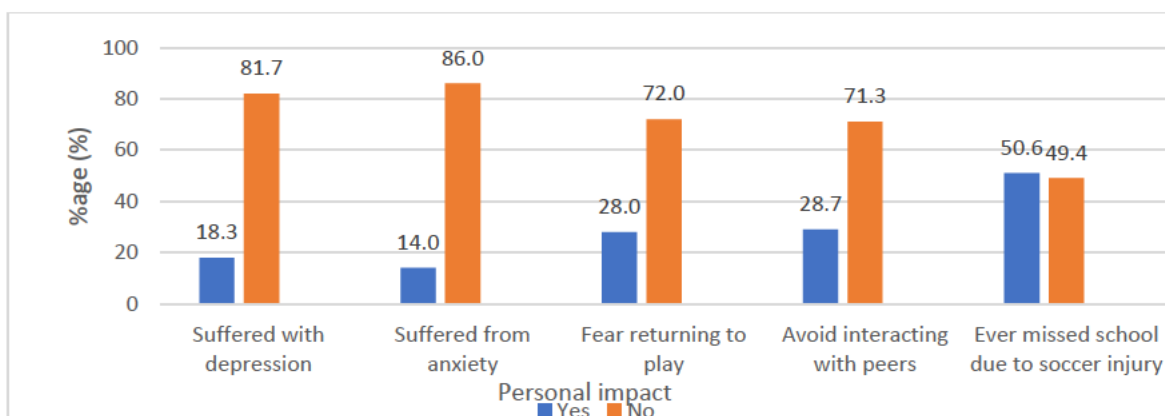


Figure 4.16: The impact of soccer injuries on the players' personal life (n=164)

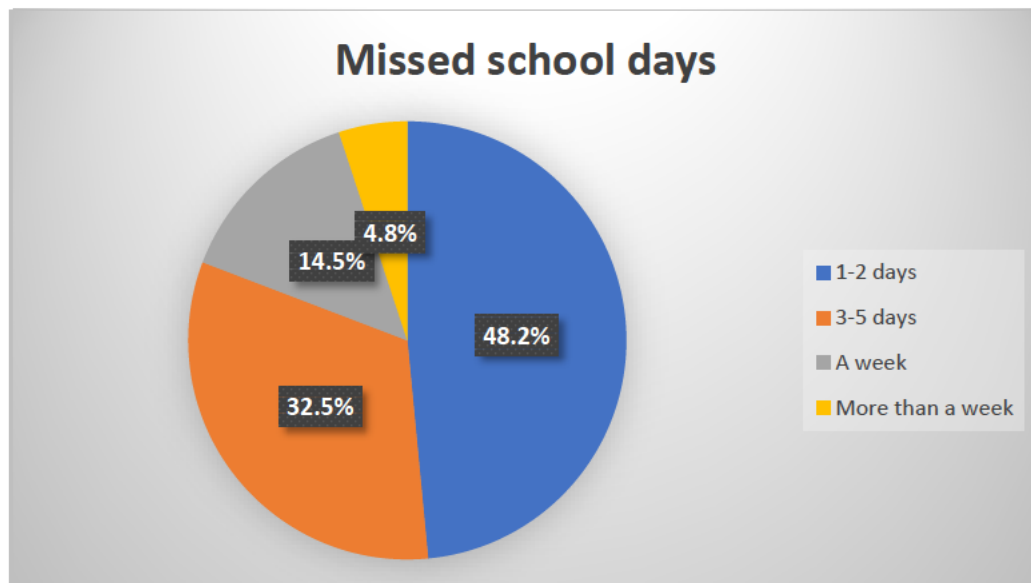


Figure 4.17: Percentage of school days missed due to soccer injury (n=83)

4.8.2 Family Impact of Players' Soccer Injuries

Figure 4.18 shows that some participants reported that their parents had to take time off work (27.3%) and pay for the treatment for their soccer-related injury (39.9%).

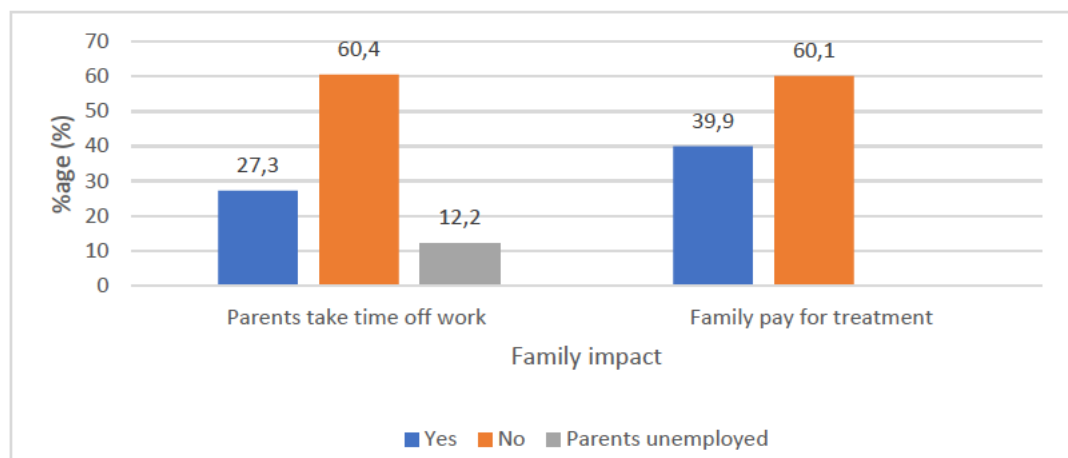


Figure 4.18: Impact of soccer injuries on the players' family lives (n=164)

4.9 CONCLUSION

This study investigated the prevalence, selected risk factors, and impact of soccer-related injuries in rural adolescent male scholars in Ndwedwe District, KwaZulu-Natal. The results depicted a high prevalence of soccer-related injuries ($p < 0.001$). The results also demonstrated that a hard playing surface was associated with soccer-related injuries during matches. Soccer-related injuries were found to have an impact on both players' personal life and their families.

CHAPTER FIVE DISCUSSION

5.1 INTRODUCTION

Chapter Five contextualises the results obtained in the current study in relation to the broader literature on soccer-related injuries. The discussion will focus on the prevalence, investigated risk factors and impact of soccer-related injuries on the adolescent soccer players in the Ndwedwe District, KwaZulu-Natal.

5.2 SOCIODEMOGRAPHIC

Ndwedwe Local Municipality is a rural community consisting predominantly of a black African populace (Zulu, Sibanda and Tlali, 2019), which is estimated to make up 90% of the people in the area (Statistics South Africa). In this study, the scholars were mostly Black Africans (99.1%, $n=231$), aged 12 to 19 years, which is the high school-going age group. This age range corresponds with respondents from other South African studies undertaken in youth soccer players (Dawood, Mostert and Bester, 2021; Sentsomedi and Puckree, 2016). It is estimated that approximately 40% of the population in Ndwedwe is economically inactive (Ndwedwe Local Municipality IDP, 2016/2017). Poverty remains widespread, with a high number of indigent households (Zulu, Sibanda and Tlali, 2019).

According to Nordling, (2018) about 10% of black South Africans have access to private health care through health insurance, which could be seen in this study, where 91.8% of the scholars reported that they do not have medical aid. The public healthcare sector in South Africa is struggling to adequately provide services to the country due to the stress put upon it (Narain and Mathye, 2023). This limits access to treatment for sport-related injuries. Limited access to private care may place the economic burden of sports injuries on families. In this study, scholars indicated that their parents sometimes must take time off work and pay out-of-pocket for the medical expenses associated with soccer-related injuries.

5.3 PREVALENCE OF SOCCER INJURIES

This study revealed that 70.4% of male adolescent soccer players in Ndwedwe District has been injured as a result of playing soccer, at least once in their lifetime. These findings were consistent with the regional literature (Jacobs and Berg, 2012), which reported a prevalence of 78% among male youth soccer players. These findings also contrast with studies completed in South Africa by Bayne *et al.*, (2018) and Sentsomedi and Puckree, (2016). This discrepancy may be due to the observation that these contrasting South African studies were primarily conducted in urban areas, while this study was conducted in the rural area

of Ndwedwe, suggesting that factors related to geographic or socioeconomic settings may influence injury prevalence. The discrepancy may also be because the study by Bayne *et al.*, (2018) was conducted with professional soccer players and Sentsomedi and Puckree, (2016) was conducted with female soccer players. This study also revealed that the current prevalence of soccer-related injuries in male adolescent scholars to be 36.1%

Comparison with international literature is hindered as most studies assessed injury incidence rather than prevalence. Although this study did not measure exposure time, international data such as Lakshakar *et al.*, (2022), who reported rates of 0.5 to 45 injuries per 1000 hours, and Owoeye, VanderWey, and Pike (2020), who found rates between 9.5 and 48.7 per 1000 hours suggest that soccer-related injuries remain a global burden. Similarly, Watson *et al.*, (2019) in Canada and Ruf *et al.*, (2022) in Germany documented significant injury clusters among youth players. Despite these international settings often offering more advanced football infrastructure and specialized healthcare systems for injury management, injuries remain highly prevalent and continue to exert a negative impact on player development worldwide. This study contributes knowledge to the field by addressing the current paucity of literature capturing the injury profile within a rural South African context, where limited resources and infrastructure may further exacerbate the prevalence and impact of these injuries.

5.4 CHARACTERISTICS OF INJURIES

Characteristics of soccer-related injuries involve the severity of the injury, the part of the body injured, and the type of injury sustained by the soccer player. In this study, most injuries occurred in the lower limbs. Specifically, the lower limb accounted for most reported injuries, with the knee (28.8%) and foot (24.5%) being the most frequently injured sites. The occurrence of ankle injuries was also relatively high, at 15.0% of reported injuries. Conversely, the torso and head were the least affected regions, with the mid-back having the lowest reported incidence (1.3%) of injuries.

A Korean study revealed similar results, reporting that the most common location of soccer-related injuries in youth players was the lower extremity (76.8%), followed by the upper extremity (13.7%), and the head and trunk (9.5%), (Lee, Jeong and Lee, 2020). Results from the study by Mandorino *et al.*, (2023), also aligned with this study, as it revealed that the prevalence of lower extremity injuries among male youth soccer players was high, with the percentage ranging between 52% and 90 %. The American study also aligned with this study, with knees and lower legs reported as the most common locations of injury in youth soccer players (Watson *et al.*, 2019). This wide baseline accommodates the findings of this

study, confirming that regardless of differing training methodologies, the lower limbs remain the primary site of athletic trauma.

A study by Robles-Palazón *et al.*, (2022) found that muscles /tendon injuries, fractures and stress fractures are common among male youth soccer players. This was due to the stress placed on the musculoskeletal system that is not fully developed. The results of this study coincide with the literature regarding the high prevalence of certain injury types, as bone-associated injuries and muscle-associated injuries accounted for most of the worst-reported injuries, at 44.8 and 42.9 %, respectively. Conversely, ligament-associated injuries (5.5%) and tendon-associated injuries (6.7%) were the least reported types of injury.

5.5 INTRINSIC RISK FACTORS

Sleep health is an integral component of a healthy lifestyle and recovery. Insufficient sleep is a risk factor for adverse health, recovery and injury risk in athletes (Mason *et al.*, 2023). The National Sleep Foundation's recommendations for adolescent athletes' hours of sleep are between eight and 10 hours. The relationship between sleep and recovery in athletes can be viewed in terms of sleep duration, sleep quality, and sleep phase (Mason *et al.*, 2023). The results of this study coincide with the recommendation for hours of sleep, as the hours of sleep average for the scholars was 7.9 (± 1.5) hours per night, and most scholars (80.2%, $n=187$) reported having 7-9 hours of sleep per night. The majority of scholars reported having a good quality of sleep, with 86.3% ($n=201$). Mason *et al.*, (2023) reported that adolescent athletes who experience an average of less than eight hours of sleep were more likely to sustain an injury. In this study, no relationship was found between the hours of sleep or the quality of sleep and injury occurrence, most likely because the majority were getting enough sleep hours and reported having a good quality of sleep.

It is important during adolescence that focus is given to supporting growth and development while simultaneously managing the demands of engagement with sport (Alcock *et al.*, 2024). Insufficient dietary intake to fully support growth and development during adolescence can increase the risk of injury due to inadequate nutritional support (Alcock *et al.*, 2024). In the current study, most scholars reported having two (23.6%; $n=55$) to three (61.8%; $n=144$), meals per day. Some scholars were only having one meal per day (4.7%; $n=11$). In addition, only 20.2% ($n=47$) indicated that their meals were always nutritious, sometimes including fruit (53.2%; $n=124$). Despite this, no correlation was found between nutrition and injury status, whilst 40% of the Ndwedwe population are economically inactive and poverty being a widespread issue (Ndwedwe Local Municipality IDP, 2016/2017; Zulu, Sibanda and Tlali, 2019). This may suggest a lack of finances to provide lunch for the

scholars, with schools only providing one meal per day, which could be one of the meals the scholars indicated having.

Previous injuries are a common risk factor that exposes young male soccer players to re-injuries (Mandorino *et al.*, 2023). A previous injury affects the player's current physical state and is associated to weakened tissues, altered biomechanics, and/or reduced stability in the affected area (Fulton *et al.*, 2014). Lakshakar *et al.*, (2022) reported that previous injuries appear to be one of the most key factors for injuries, with 42% of injured players having an injury of the same type and location during the previous year. This study reveals practices that significantly elevate the risk of re-injury, which is consistent with the established role of previous injury as a risk factor in the examined literature. In this study, a substantial number of scholars had previously been injured, and 38.4% reported receiving no treatment for their severe injury, which directly increases their chances of sustaining a subsequent injury. Furthermore, most injured scholars (60.3%) in this study reported not being medically cleared to play, a critical oversight that further escalates the risk of re-injury.

Sports such as soccer have physical challenges, such as intense training and injuries that are linked to psychological challenges in soccer players (Lakshakar *et al.*, 2022). A study by Mandorino *et al.*, (2023) in youth male soccer players found that high levels of perceived stress (academic pressure) and life event stress (death of a family member) were psychological risk factors for soccer-related injuries. The presence of high levels of life event stress was associated with increased risk of sport-related injuries, and anxiety is also known to be associated with the increased risk of an individual being injured (Clement *et al.*, 2022). Levels of anxiety have also been found to be high in injured athletes, and where fewer coping resources are available (Şenışık *et al.*, 2021). No significant correlation was found between psychological factors and injury occurrence in this study. This was supported by the fact that most scholars (95.3%) had no history of diagnosed depression (95.3%, $n=222$) or anxiety (94.4%, $n=220$).

5.6 EXTRINSIC RISK FACTORS

Protective equipment in sports is used to decrease injuries, and in soccer, that includes shoes, shin guards, and gloves (Watson *et al.*, 2019). The study by Khodaei, Fatters and Gorenflo, (2011), on youth soccer safety use, revealed that shin guards were the most used equipment, with over 97% of participants using them. According to Watson *et al.*, (2019) shin guards are mandatory protective equipment to be worn when playing soccer under FIFA rules, because the evidence shows that shin guards significantly dissipate forces and strain on the tibia that could result in a fracture of the bone. FIFA rules are applied globally for every soccer event, including youth soccer events.

This contrasts in this study, as during training, a large proportion of scholars reported inconsistent usage of shin guards, with the majority (33.9%, $n=79$) reported never using shin guards, followed by those who sometimes used them (30.9%, $n=72$), and only a minority (25.3%, $n=59$) reported always using them. While shin guard usage was better during competitive matches, it still fell below mandatory requirements, with 24.5% ($n=57$) sometimes using them, and 23.2% ($n=54$) never using them. These results indicated a low level of constant shin guard use among the scholars, in training and matches, representing poor adherence to standard safety rules when compared to other international studies (Watson *et al.*, 2019; Khodaei, Fettes and Gorenflo, 2011). Soccer shoes are required to be worn in soccer matches, as soccer boots improve performance, especially when changing direction (Watson *et al.*, 2019). Improper boot use on various surfaces plays a key role in soccer-related injuries, particularly to the lower limb (Omojofodun and Henry, 2024). In this study, inconsistent use of proper soccer boots in both training and matches was found, with 50.8% ($n=123$) not wearing correct footwear. This may be associated with injuries, as inadequate use of soccer boots is linked to the development of injuries in the literature. Only 40% of the Ndwedwe population is economically active, and poverty is a widespread issue in the area. This financial burden may result in scholars being unable to afford necessary protective soccer equipment, such as shin guards and boots.

The study in India found that about 24.0% of soccer-related injuries are due to poor or unsatisfactory playing pitches, and the most common injuries that affect soccer players occur due to a combination of poor playing surface and other factors (Lakshakar *et al.*, 2022). This study's findings suggest that playing surface conditions may contribute to injury risk, consistent with the literature. A significant proportion of scholars (60.5%) reported that their schools and local clubs share football facilities. This shared usage could lead to the playing surface becoming unsatisfactory due to regular use. Supporting this concern, the study also revealed issues with pitch maintenance, with 58.8% of scholars reporting that the pitch/field is sometimes cleaned and maintained. The poor condition of these pitches is supported by the fact that the Ndwedwe Local Municipality IDP report identified inadequate sports infrastructure in the area.

A study of youth soccer players reported a higher risk of injury when playing on natural turf than artificial turf, and a higher incidence of injuries on outdoor turf when compared to indoor turf (Mandorino *et al.*, 2023). The incidence of injuries is usually lower when soccer is played on artificial turf rather than when it is played on natural grass (Kuitunen *et al.*, 2023). Athletes who play on natural grass were 11 times more likely to sustain injuries while playing soccer than those who play on synthetic surfaces (Nawasreh *et al.*, 2022).

This study's findings regarding playing surface usage align with the examined literature. Most scholars played soccer on natural grass, in training (52.8%, $n=123$), and matches (66.5%, $n=155$). Furthermore, a substantial number of scholars sometimes played on gravel surfaces in training (34.3%, $n=80$) and matches (28.8%, $n=67$). Conversely, a significant majority never used artificial turf in training (79.0%, $n=184$) or matches (75.1%, $n=175$). The significance of these results is that the high reliance on natural grass and the use of gravel, with the near absence of artificial turf use, suggests an environmental factor that may be linked to the increased injury incidence associated with natural and suboptimal surfaces, as highlighted by (Mandorino *et al.*, 2023) and (Nawasreh *et al.*, 2022). The study also found a significant correlation between hard surface and occurrence of injuries, with a significant proportion of those who 'always' play matches on a hard surface are currently injured, while a significant proportion of those who 'sometimes' play matches on a hard surface are not currently injured ($p=0.016$).

A Canadian study of youth soccer players reported that injuries were significantly higher during games or matches than during training sessions (Owoeye, VanderWey and Pike, 2020). This is similar to the Spanish study on youth soccer players, which divided the level of players into elite and sub-elite. The study reported overall 4.77 injuries per 1 000 hours of exposure, 2.83 injuries per 1000 hours of exposure in training, and 10.63 injuries per 1000 hours of exposure in competitive matches for sub-elite youth male soccer players, suggesting high injury occurrence in matches (Robles-Palazón *et al.*, 2022). Competitive matches have the highest data on injury incidence and injury burden when compared to training matches, and these are due to collisions and an elevated number of high-intensity situations associated with player action, which may induce neuromuscular fatigue and motor control damage that may trigger injury occurrence (Barguerias-Martínez *et al.*, 2023).

The findings of this study are consistent with literature, indicating a higher risk during competitive matches. As illustrated in **Figure 4.3**, most current injuries (71.1%) occurred during competitive matches. This high incidence of match-related injury is likely related to the scholars' level of play and exposure; 94.0% ($n=219$) of scholars played competitive soccer for their local clubs, indicating a significant volume of high-intensity activity, often associated with increased injury risk. Furthermore, most scholars (56.2%, $n=131$) played for their school's first teams, followed by the second team (27.9%, $n=65$), with only 15.9% ($n=37$) playing for lower teams. This suggests that most scholars play soccer at a relatively highly competitive level, which aligns with the literature reporting elevated injury rates in competitive match play.

Referees play a crucial role in soccer matches by limiting fouls, penalising dangerous plays, and properly enforcing rules, which is believed to reduce the risk of injuries to players

(Watson *et al.*, 2019). When dangerous play is missed by the referee during matches, the players usually feel they can get away with it, and this is linked to a higher incidence of injuries (Bizzini and Dvorak, 2015). Having a medical professional on-site significantly reduces the risk and severity of injuries (Shanley *et al.*, 2019). This study's results indicate deficits in safety measures that could contribute to injury risk, consistent with the literature. Regarding referee quality, **Figure 4.11** demonstrates that a substantial proportion of scholars (39.9%, $n=93$) reported that match referees were not registered with a local association, and an additional 26.2% ($n=61$) were uncertain of the referees' registration status. This lack of registered, and thus likely properly trained, officials suggests poor refereeing quality, which may potentially increase the risk of injuries, as indicated by (Bizzini and Dvorak, 2015). Furthermore, medical personnel's presence during matches was found to be inadequate; with the majority of scholars (57.4%, $n=134$) reporting that medical personnel were never present at their soccer matches, with 33.0% ($n=77$) reporting that they were only sometimes present, and a small minority (9.4%, $n=22$) reporting they were always present. This poor on-site medical coverage increases the risk and severity of injuries, as indicated by (Shanley *et al.*, 2019).

5.7 IMPACT OF SOCCER INJURIES

Athletic injuries are concerning, not only due to the pain and disability associated, but also because they can result in time lost from school, sports participation, and other important activities for adolescents (Haraldsdottir and Watson, 2021). According to Watson *et al.*, (2019), more than 21 days of time loss occurred due to injuries sustained during competitive matches. The study by Pulici *et al.*, (2024), on youth soccer players, revealed that sustaining injuries limits players' availability, and 47% of injuries sustained, resulted in players missing between eight and 28 days of playing time.

The results of this study correlate with literature concerning time loss from sport, with 63% ($n=103$) of the injured youth soccer players reporting having to take a break from participation. Regarding the duration of this time loss, most of these players (64.1%) took a break, lasting one to three weeks, and a further 27.2% were sidelined for four to seven weeks, after sustaining an injury.

Psychological responses following injury included fear of injury, lack of confidence, negative emotions, mood disturbance, and depression (Haraldsdottir and Watson, 2021). The results of the study by Gonzales, Young and Valasek, (2022) showed that injured youth soccer players experienced symptoms of anxiety and depression. The study by Battaglia and Kerr, (2024) revealed that athletes can experience significant social isolation due to absence from training and competition, following an injury. Coaches and peers play an important role in

youth development and their decision-making regarding sport participation, including returning to play after an injury (Battaglia and Kerr, 2024). Fear of re-injury is a common psychological response following a sports injury, which can negatively affect recovery and return to play (Hsu *et al.*, 2017).

The results of this study contrast with prior research regarding post-injury psychological distress. A significant number of scholars (81.7%, $n=134$) reported never having experienced depression because of a soccer injury. Similarly, 86.0% ($n=141$) of scholars reported never having experienced anxiety related to playing soccer. Furthermore, contradicting literary data, the study showed that 71% ($n=117$) of scholars did not avoid interacting with their teammates or peers after their injury, and 72% ($n=118$) did not fear returning to playing soccer after injury, suggesting the presence of significant social support.

The study by Podlog, Wagnsson and Wadey, (2024) reported that sport-related injuries are complex, and often associated with health-related consequences for the network of family, friends, teammates, coaching staff, and even larger communities. Similarly, many studies revealed a wide range of injury impact on the scholars' personal and family life, with the study by Watson *et al.*, (2019) finding that youth soccer-related injuries have a huge impact on players' families and the national health system. Another study by Podlog, Wagnsson and Wadey, (2024) revealed that youth soccer-related injuries disrupt the family schedules because of rehabilitation appointments, doctor's visits, and receiving emotional support. The results of the study by Turnbull *et al.*, (2024) revealed that families are responsible for co-payments, and any other costs are not covered by medical plans, as well as over-the-counter pain medication, which is an additional expense for parents or guardians. Podlog, Wagnsson and Wadey, (2024) reported that parents often take time off work to transport their child to and from doctors' appointments, and other treatments and injuries may require travel to clinics or hospitals, leading to travel expenses.

The results from this study found similarities with literature regarding the burden placed on the family unit. Specifically, 27.4% ($n=45$) of scholars reported that their parents had taken time off work due to their soccer-related injuries. Furthermore, 39.9% ($n=65$) of scholars reported that their families were responsible for paying for their injury-related treatment. The requirement for parents/guardians to incur travel and consultation expenses is highlighted by the treatment sought, where by 14.6% of scholars reported a consultation with a doctor as a form of treatment, and 26.2% of scholars reported a consultation at a clinic. These findings collectively underscore the financial and time costs borne by the families of injured athletes, consistent with the literature on the societal impact of youth sport injuries. The financial impact of sports-related injuries is confirmed by the fact that most scholars (91.8%) reported not having a medical aid.

5.8 CONCLUSION

In Chapter Five, the results were compared and discussed in relation to other studies that had similar aims and objectives. The study concluded that soccer injuries highly prevalent among Ndwedwe's male adolescent scholars, there are selected risk factors associated with soccer-related injuries, and these injuries have a wide impact on scholars' lives. Chapter Six presents the conclusion, limitations, and recommendations for this study.

CHAPTER SIX CONCLUSION, LIMITATIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

Chapter Six serves to present and discuss the conclusion of this study, highlighting the limitations of the research and providing recommendations for future research.

6.2 CONCLUSION

Soccer is the most popular sport in the world and has one of the highest injury rates among contact sports. Injuries among youth are common and associated with various risk factors. In South African schools, soccer is the most played sport. In this study, a random stratified sampling technique was used, and 233 rural adolescent male scholars from Ndwedwe participated. The study highlighted a high injury occurrence during competitive matches and a high prevalence of injuries in lower limbs and exposed a concerning lack of medical support and access to treatment. This study also shed light on the significant burden of soccer-related injuries among rural adolescent male players in Ndwedwe District, KwaZulu-Natal. Specifically, the study reported a high prevalence rate (70.4%) of soccer-related injuries among rural adolescent male players in Ndwedwe District, KwaZulu-Natal. Furthermore, the study found a significant correlation between injury occurrence and a hard playing surface.

The findings of this study also revealed the substantial impact of these injuries on sport participation, with the majority (63%) of players who were injured reporting that they took a break from sport for a while. In addition, the family financial impact was highlighted, with more than 60% of players reporting that parents took time off work and pay for the treatment of their soccer-related injuries. The findings suggest the need for improving field conditions, strengthening safety practices, ensuring consistent access to trained medical or first-aid personnel, and promoting adherence to protective equipment use. Schools and local municipalities should prioritise injury-prevention strategies focusing on rural contexts, such as maintenance of playing fields, coach education on safe training practices, and community-supported first-aid initiatives.

6.3 STUDY LIMITATIONS

The findings of this study should be taken in the context of the following limitations:

- The study was conducted on male adolescent scholars residing in a rural area. Thus, the results will not apply to females, those residing in urban or peri-urban areas or scholars who are not in high school. In addition, only those scholars who were able to obtain signed consent forms from their parents or guardians were able to participate in the study. This could impact the recording of injuries in this population.
- A cross-sectional survey design was utilised in this study. This design limits the ability to determine causal relationship, as soccer players were not tracked over time to determine injury incidence. This design also required that participants self-reported their injuries and were required to rely on memory recall. This makes the results susceptible to recall bias, as scholars may not accurately remember past injuries, their severity, and the circumstances surrounding them. Self-reported injuries may also suffer from misclassification of injury type and severity, as there was no way to confirm this.
- Question 46 of the questionnaire asked about the treatment used by the scholars for their soccer-related injuries but did not include the option of utilising traditional medicine for their soccer-related injuries.

6.4 RECOMMENDATIONS

1. Recommendations to the Department of Basic Education and soccer players in Ndwedwe
 - The Department of Basic Education should ensure that school fields and pitches are maintained, and medical personnel are present to school's tournaments and friendly matches.
 - The Department of Basic Education should ensure that all local leagues and school games are officiated by referees registered with local associations.
 - Soccer players should consistently use appropriate protective gear, such as proper soccer boots and shin guards, during both training sessions and competitive matches.
2. Recommendation for future research

- Future research should adopt longitudinal designs to better understand injury trajectories, recurrence patterns, and long-term outcomes among rural youth soccer players.
- Future research should expand to include qualitative perspectives from coaches, parents, and healthcare workers. This would provide a more comprehensive understanding of the multifactorial nature of soccer-related injuries in South African school settings.
- Future research should verify injuries through clinical assessment, and collect information on participants' current medical conditions, height, weight, and BMI to further analyse important intrinsic risk factors.
- Future research should compare the prevalence of soccer-related injuries and associated risk factors in rural versus urban areas to determine the difference between these two settings.
- Future research should investigate the use of traditional medicine for sports-related injuries within rural settings.

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APPENDICES

APPENDIX A: GATEKEEPER PERMISSION FROM DEPARTMENT OF BASIC EDUCATION



KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE HEAD OF DEPARTMENT

Private Bag X 9137, Pietermaritzburg, 3200

Antes Lekaba Building, 347 Oliver Street, Pietermaritzburg, 3204

P.O. BOX 955

Executive: Mr. Phindile Duma

Email: phindile.duma@kzndoe.gov.za

Tel: 033 305 4000

Mr. Nkosikhona Lwazi Dube
Maqokomela Primary School
Private Bag X518
Ndwendwe
4342

Dear Mr., Dube

PERMISSION TO CONDUCT RESEARCH IN THE KZN DOE INSTITUTIONS

Your application to conduct research entitled: **“THE EPIDEMIOLOGY OF SOCCER RELATED INJURIES IN ADOLESCENT MALE SCHOLARS IN NDWENDWE DISTRICT KWAZULU-NATAL”** Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the Intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 28 July 2025 to 31 July 2027.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Phindile Duma at the contact numbers above.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report/dissertation/thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

ILEMBE DISTRICT

✓

Mr. GN Ngcobo
Head of Department: Education
Date: 29 July 2025

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APPENDIX B: PERMISSION TO CONDUCT THE STUDY FROM NDWEDWE DISTRICT

Ndwedwe District

Date:

Details of addressee:

Supporting Letter Request for Permission to Conduct Research

Dear Sir/Madam

To Whom it may concern.

My name is Nkosikhona Lwazi Dube, I am a Chiropractic Masters student at the Durban University of Technology. The research I wish to conduct for my master's dissertation involves the epidemiology of soccer-related injuries in rural adolescent male scholars in the Ndwedwe District of KwaZulu Natal.

I am hereby seeking your consent to collect data from selected high school soccer players within the Ndwedwe District of KwaZulu Natal.

I have provided you with a copy of my proposal which includes copies of the data collection tools and consent and/ or assent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me 0606307639 nkosikhonalwazi98@gmail.com (email). Thank you for your time and consideration in this matter.

Yours sincerely,

Nkosikhona Lwazi Dube

Durban University of Technology

APPENDIX C: A SUPPORT LETTER TO THE SCHOOL PRINCIPALS

Date:

Details of addressee:

Request for Permission to Conduct Research

Dear Sir/Madam

To Whom it may concern.

My name is Nkosikhona Lwazi Dube, I am a Chiropractic Masters student at the Durban University of Technology. The research I wish to conduct for my master's dissertation involves the epidemiology of soccer-related injuries in rural adolescent male scholars in the Ndwedwe District of KwaZulu-Natal.

I am hereby seeking your consent to collect data from adolescent soccer players within your high school.

The participant recruitment procedure will be as follows:

The researcher will go to the data collection sites (schools) to provide advertisements and explain the study to the scholars. Those who are interested will be given consent forms and advertisements for parents or legal guardians. After getting consent signed by parents or legal guardians, they will place it on the sealed ballot left at the school office. The researcher will allocate a specific day to come to the school with questionnaires, which the participants will need to fill out and put on a separate sealed ballot.

I have provided you with a copy of my proposal which includes copies of the data collection tools and consent and/ or assent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me 0606307639 or nkosikhonalwazi98@gmail.com (email). Thank you for your time and consideration in this matter.

Yours sincerely,

Nkosikhona Lwazi Dube
Durban University of Technology

APPENDIX D: CONSENT FORM



CONSENT

Full Title of the Study: The epidemiology of soccer related injuries in adolescent male scholars in Ndwedwe District KwaZulu-Natal.

Names of Researcher/s: Nkosikhona Lwazi Dube

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nkosikhona Dube, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: 116/25,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant
Right Thumbprint

Date

Time

Signature

I, Nkosikhona Dube herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher

Date

Signature

Full Name of Witness

Date

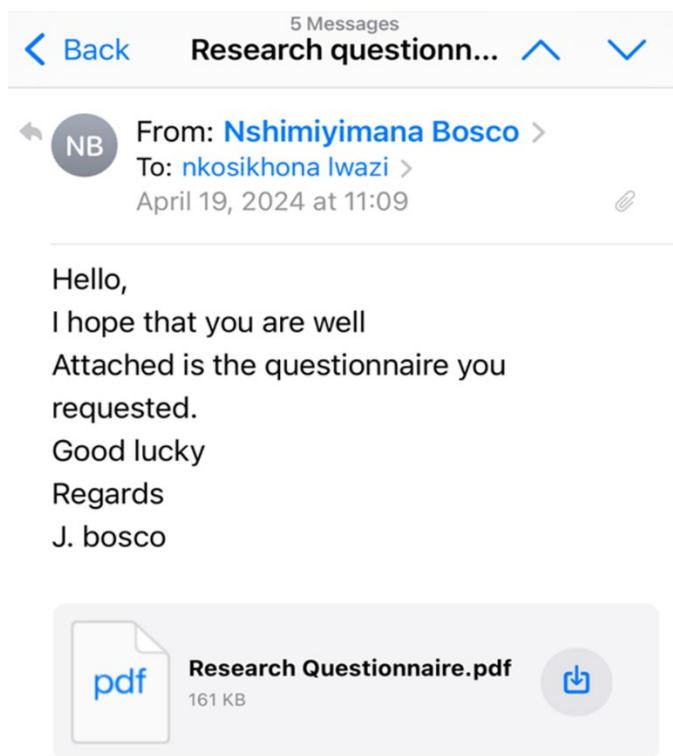
Signature

Full Name of Legal Guardian **Date**

9 June 2022

Signature

APPENDIX E: PERMISSION TO USE QUESTIONNAIRE



APPENDIX F: RESEARCH QUESTIONNAIRE

Thank you for taking the time to complete this survey.

Please complete all questions as honest and clearly as possible.

Please use a tick (X) in the appropriate block.

Section A: Personal Information.

What is your age?		_____ Years			
What grade are you currently in?					
What is your race?	Black	Coloured	Indian	White	Other, please specify _____
My dominant hand is		Left		Right	
On average, how many hours of sleep do you get each night?				_____ hours	
Describe the quality of your sleep?	Good: I feel refreshed when I wake up		Average: I do not always sleep well		Poor: I do not sleep well
Do you have medical aid?	Yes	No			
Do you smoke?	Yes	No			
If yes, what do you smoke?	Cigarette	Vaping	Cannabis	Other: please specify _____	
If yes, how many times per day _____					
Do you consume alcohol?	Yes	No	If yes, how many times per month _____		
Have you been diagnosed with depression?			Yes		No
Have you been diagnosed with anxiety?			Yes		No
How many meals do you eat per day?	0	1	2	3	>3
How often do you eat a healthy meal that includes meat and vegetables?	Never	Rarely	Sometimes	Often	Always
How often do you eat fruit?	Never	Rarely	Sometimes	Often	Always
The following questions relate to soccer:					
When playing soccer, which is your dominant leg?			Left		Right
Which soccer team are you currently playing for?			1 st team	2 nd team	Lower team
Do you play competitive soccer outside of school?			Yes		No
At what age did you start playing competitive soccer for a team?			_____ years		

SECTION B: Playing conditions, support staff and equipment.					
Does your school and local club share facilities?	Yes	No			
Indicate how often you play on the following types of surfaces when training :	Never	Rarely	Sometimes	Often	Always
Artificial:					
Gravel:					
Grass:					
Hard (e.g. concrete, tar etc.):					
Indicate how often you play on the following types of surfaces when playing matches :	Never	Rarely	Sometimes	Often	Always
Artificial:					
Gravel:					
Grass:					
Hard (e.g. concrete, tar etc.):					
Is the pitch/field on which you play well maintained and cleaned?	No	Yes, sometimes		Yes, always	
Do you wear any protective gear?	No	Yes			
Do you own the protective gear?	No	Yes			
Indicate how often you wear the following gear when training :	Never	Rarely	Sometimes	Often	Always
Shin guards:					
Soccer boots:					
Other footwear (not meant for soccer):					
Ankle/wrist protection:					
Indicate how often you wear the following gear when playing matches :	Never	Rarely	Sometimes	Often	Always
Shin guards:					
Soccer boots:					
Other footwear (not meant for soccer):					
Ankle/wrist protection:					

Do you use the same footwear for training and matches?	No	Yes	Sometimes		
How often do you replace your soccer footwear?	Every year	Every 1-2 years	Every more than 3 years		
Do your soccer coaches have the necessary coaching qualifications?	No	Yes	Do not know		
Are the referees registered with local soccer associations?	No	Yes	Do not know		
Are medical personnel present at your matches?	No	Yes, sometimes	Yes, always		
Section C: Playing and training sessions					
Indicate whether you do a warmup and/or cool down at the following sessions:	Training		Matches		
Warm up before	No	Yes	No	Yes	
Cool down after	No	Yes	No	Yes	
If YES , indicate time spent on warmup and cool down activities	Training		Matches		
Less than 15 min					
About 15 min					
More than 15 min					
Indicate which of the following activities you included in your warmup:	No		Yes		
Jogging:					
Running:					
Stretching:					
Soccer drills:					
Other please specify:					
Do you participate in other sports apart from soccer?	No	Yes	If yes, please specify_____		
Section D: Injury history					
Have you ever sustained an injury from playing soccer?	No	Yes			
If you said no, thank you for participating you have reached the end of the questionnaire. If you choose yes, please continue to the next question.					

Are you currently injured as a result of playing soccer?		No	Yes	If yes, when did you sustain injury		
				Training	Match	
Have you ever been injured as a result of playing soccer in the last 12 months?					No	Yes
Indicate which of the following parts of the body you have <u>injured in the last 12 months while playing soccer</u> (tick all that apply)						
Yes	Body area			Body area	Yes	
	Chest			Head		
	Groin			Neck		
	Thigh			Shoulder		
	Knee			Mid-back		
	Shin			Upper Arm		
	Ankle			Elbow		
	Foot			Forearm		
				Wrist		
				Hand		
		Low back				
		Calf				

PLEASE ANSWER THE FOLLOWING QUESTIONS IN THIS SECTION WITH REGARD TO THE WORST INJURY YOU SUSTAINED AT SOCCER					
What was the injury?	Bone	Muscle	Tendon	Ligament	
Which area of the body did the injury occur in? _____					
Please respond yes/no on what happened after injury:				No	Yes
A. Were you able to continue with the game/training session without any medical treatment?					
B. Were you able to continue with the game/training session after you had received first aid or rest?					
C. Did the injury result in you requiring medical care after the training session or match?					
D. Did the injury result in you having to take a break from the sport for a while?					
If you responded YES to D, indicate how long you were unable to train or partake in matches?		1-3 weeks	4-7 weeks	2-3 months	>3 months
Indicate which of the following treatments, if any, you received for your injury (tick all that apply)		Physiotherapy			
		Medication from the pharmacy			
		Consultation with a doctor			
		Consultation at a clinic			
		Operation without rehabilitation			
		Operation followed by rehabilitation			
		No treatment			
		Self/parent managed			
Other: please specify _____					
Did you wait to be medically cleared before returning to play?				No	Yes
When the injury occurred, were medical personnel present at the game/practice?				No	Yes
What was the condition of the playing surface at the time of the injury?				Wet	Dry
Were you able to access the medical care you needed after your injury?				No	Yes
Section E: Impact of injuries					
Have you ever missed school as a result of a soccer injury?				No	Yes
If YES, how many school days have you missed due to a soccer injury?		1-2 days	3-5 days	A week	More than a week
Does your family pay for treatment related to your soccer injuries?				No	Yes
Have your parents ever had to take time off work as a result of your soccer injuries?			No	Yes	My parents do not work
Have you ever suffered with depression as a result of a soccer injury in the past?				No	Yes
Do you suffer from anxiety as a result of a soccer injury?				No	Yes
Do you fear returning to playing soccer after your injury?				No	Yes
Did you avoid interacting with your teammates or peers after injury?				No	Yes
THANK YOU FOR YOUR TIME					

APPENDIX G: DUT FULL ETHICS CLEARANCE



Institutional Research Ethics Committee

Research and Postgraduate Support Directorate
2nd Floor, Berwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology
P O Box 1334, Durban, South Africa, 4001
Tel: 031 373 2375
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutionalresearch_ethics
www.dut.ac.za
04 August 2025

Mr N L Dube
Maqokomela Primary School
Private Bag X518
Ndwendwe
4342

Dear Mr Dube

The epidemiology of soccer related injuries in adolescent male scholars in Ndwedwe District KwaZulu-Natal

Ethical Clearance number IREC 116/25

The DUT-Institutional Research Ethics Committee acknowledges receipt of your notification regarding the piloting of your data collection tool.

Kindly ensure that participants used for the pilot study are not part of the main study.

In addition, the DUT-IREC acknowledges receipt of your gatekeeper permission letters.

Please note that **FULL APPROVAL** is granted to your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the DUT-IREC according to the DUT-IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the DUT-IREC as outlined in the DUT-IREC SOP's.

It is compulsory for a student or researcher to apply for recertification on an annual basis. The failure to do so will result in withdrawal of ethics clearance. It is the responsibility of the researcher and the supervisor to apply for recertification.

Please note that you are required to submit a Notification of Completion of Study form together with an abstract to the DUT-IREC office on completion of your study.

Yours Sincerely

Prof. P Mashau
Chairperson: DUT – IREC

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fairness • professionalism • commitment • compassion • excellence



APPENDIX H: LETTER OF INFORMATION



LETTER OF INFORMATION

Title of the Research Study: The epidemiology of soccer related injuries in adolescent male scholars in Ndwedwe District KwaZulu-Natal.

Principal Investigator/s/researcher: Nkosikhona Lwazi Dube, Master of Health science in Chiropractic.

Co-Investigator/s/supervisor/s: Dr Desiree Varatharajullu and Dr Laura O'Connor

Brief Introduction and Purpose of the Study:

Dear participant,

Welcome to my study. My name is Nkosikhona Lwazi Dube and I am a senior Chiropractic student at the Durban University of Technology (DUT) doing research for my master's degree in health science. I would kindly like to invite you to participate in my research.

What is Research

Research is a process of systematic investigation to establish facts or get new knowledge about a particular phenomenon. This knowledge can be either the development of new concepts or the advancement of existing knowledge and theories, leading to a new understanding that was not previously known.

The purpose/aim of my research is to determine the epidemiology of soccer-related injuries in adolescent male soccer players in the Ndwedwe District KwaZulu Natal and to explore the specific risk factors that are associated with soccer-related injuries as well as the impact it has on scholars.

You are more than welcome to ask as many questions as you want to help you fully understand my research. Since you're under 18 years old, you will be provided with a copy of the letter of information to discuss with your parents or legal guardians, who will need to sign the consent form if they don't have an issue for you to participate in the study.

Outline of the Procedures:

Aim:

The aim of this study is to determine the prevalence (point and 12 months), selected risk factors and impact of soccer-related injuries in rural adolescent male scholars in the Ndwedwe District, KwaZulu-Natal.

Objectives:

- I. To determine the point and 12 months period prevalence of injuries in rural adolescent male scholars.
- II. To determine the intrinsic (characteristics of injury, psychosocial and behavioural) and extrinsic (equipment, playing surface and level of activity) factors associated with injuries in rural adolescent male scholars.
- III. To determine impact of soccer related injuries on rural adolescent male scholars.

Procedures

If you are interested in the study, you will be given hard copies of consent form and letter of information to get the signature from parents or legal guardians. You will also be given a questionnaire which you will complete after getting the signature from parents or legal guardian. You will be given 4 days to return the signed consent form and completed questionnaire. You will place both documents on the sealed ballot. I (researcher) will allocate a specific day (4TH) to come to your school and collect the ballot.

School inclusion criteria

- High school within Ndwedwe District
- Have a soccer team

School exclusion criteria

- Not located within Ndwedwe District
- Does not have a soccer team
- Access to scholars denied

Participants Inclusion criteria

- Registered high school player at their respective school
- Player with the signed informed consent
- Player aged between 11 to 19 years old

Participants exclusion criteria

- Player who is sick
- Player who is not a learner at the respective school
- Player without signed informed consent by parent or legal guardian.
- Scholar denied participation

Measurement tool:

The questionnaires consist of 5 sections (namely Section A to Section E). Section A is based on personal information. Section B is based on Playing conditions, support staff and equipment. Section C is based on Playing and training sessions. Section D is based on injury history. Section E is based on impact of injuries. The questionnaire should take you on an average of 25 minutes to complete. The approximate number of participants in this study is 201 high scholars.

Risks or Discomforts to the Participant:

There are no risks or risk of discomfort to you during this study.

Explain to the participant the reasons he/she may be withdraw from the Study:

If you are non-compliant and have not completed at least 80% of the questionnaire, you will be withdrawn from the study.

AS A VOLUNTARY PARTICIPANT IN THIS RESEARCH STUDY, YOU ARE FREE TO WITHDRAW FROM THE STUDY AT ANY GIVEN TIME, WITHOUT GIVING A REASON FOR WITHDRAWING AND WITHOUT CONSEQUENCE.

Benefits:

Your contribution to this study by volunteering to partake will help get more knowledge on soccer-related injuries in rural areas. This will benefit you as a soccer player in rural settings, as we will be able to provide you with more effective health care and preventive measures in the future as a sufferer from soccer related injuries. This study will give you a better understanding of specific risk factors and the impact that it has on your daily life.

Remuneration:

You will not be receiving any monetary or other type of remuneration for participation in this study.

Costs of the Study:

You will not be expected to cover any costs towards the study.

(Will the participant be expected to cover any costs towards the study, including treatment.)

Confidentiality:

All your information is confidential and will remain on the sealed ballot. The results of this study will be used for research purposes only. Only individuals that are directly involved in this study (Dr D Varatharajullu and Dr L O'Connor) and me will be allowed to access these records.

Results:

The results of the study will be written up in the form of my dissertation, which will be in the form of a hardbound copy as well as an online copy. Other potential results output includes a publication in a peer reviewed accredited journal.

Research-related Injury:

As stated previously under “**Risks or Discomforts to the Participant**”, you are at no risk of injury or discomfort during the research procedure as you are only required to answer a questionnaire.

Storage of all electronic and hard copies including tape recordings

All completed informed consent letters and completed questionnaires will be placed on a sealed ballot box. This will ensure safeguard and confidentiality of your responses.

In addition, a tracking log sheet will be attached to each box which will track the progress of the questionnaire administration. The boxes will remain sealed until all data has been collected, and the documents will be kept safe in storage at the DUT Chiropractic department during the process of data capture, recording, analysis and reporting.

The only individuals who have access to all of these data include my supervisors (Dr D Varatharajullu and Dr L O'Connor) and myself. All data generated from this study, will be kept for five years in a secure location at DUT and thereafter will be destroyed.

Persons to contact in the Event of Any Problems or Queries:

Should you have any questions, please feel free to contact my supervisors on the following numbers
Dr D

Varatharajullu (Tel: (031 373 2533) and Dr L O'Connor (031 373 2923) or you can contact myself (060 630 7639). If you are not satisfied with a particular area of this study, please feel free to forward any concerns to the DUT-Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the Acting Director: Research and Postgraduate Support on researchdirector@dut.ac.za

APPENDIX I: A SUPPORT LETTER TO DEPARTMENT OF EDUCATION

Department of Basic Education

Date: 26 June 2025

Request for Permission to Conduct Research

Dear Sir/Madam

To Whom it may concern.

My name is Nkosikhona Lwazi Dube, I am a Chiropractic Masters student at the Durban University of Technology. The research I wish to conduct for my master's dissertation involves the epidemiology of soccer-related injuries in rural adolescent male scholars in the Ndwedwe District of KwaZulu Natal.

I am hereby seeking your consent to collect data from adolescent soccer players within your high schools.

The participant recruitment procedure will be as follows:

The researcher will go to the data collection sites (selected schools) to provide advertisements and explain the study to the scholars. Those who are interested will be given consent forms and advertisements for parents or legal guardians and questionnaire. After getting consent signed by parents or legal guardians, they will complete the questionnaire. The researcher will allocate a specific day, which will be communicated with the participants to collect informed consents and questionnaires.

I have provided you with a copy of my proposal which includes copies of the data collection tools and consent and/or assent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me 0606307639 or nkosikhonalwazi98@gmail.com (email). Thank you for your time and consideration in this matter.

Yours sincerely,

Nkosikhona Lwazi Dube

Durban University of Technology

APPENDIX J: INFORMED CONSENT FORM – FOCUS GROUP



CONSENT -FOCUS GROUP

Full Title of the Study: The epidemiology of soccer related injuries in adolescent male scholars in Ndwedwe District KwaZulu-Natal.

Names of Researcher/s: Nkosikhona Lwazi Dube

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nkosikhona Dube , about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: 116/25,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during this research which may relate to my participation will be made available to me.

Full Name of Participant	Date	Time	Signature /	Right
Thumbprint				

I, Nkosikhona Dube herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher

Date

Signature

Full Name of Witness

Date

Signature

Full Name of Legal Guardian

Date

Signature

9 June 2022

APPENDIX K: INFORMED CONSENT FORM – PILOT STUDY



CONSENT-PILOT STUDY

Full Title of the Study: The epidemiology of soccer related injuries in adolescent male scholars in Ndwedwe District KwaZulu-Natal.

Names of Researcher/s: Nkosikhona Lwazi Dube

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nkosikhona Dube, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: 116/25,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during this research which may relate to my participation will be made available to me.

Full Name of Participant	Date	Time	Signature / Right Thumbprint
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I, Nkosikhona Dube herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Full Name of Researcher

Date

Signature

Full Name of Witness

Date

Signature

Full Name of Legal Guardian **Date**

Signature

9 June 2022

APPENDIX L: EDITOR'S CERTIFICATE



Helen Bond
IMPELA EDITING SERVICES
impelaediting@gmail.com
079 395 5873

03 February 2026

CERTIFICATE

Nkosikhona Lwazi Dube

Dear Nkosikhona

Thank you for using Impela Editing Services to edit your Master's thesis entitled "*The epidemiology of soccer related injuries in adolescent male scholars in Ndwedwe District KwaZulu-Natal*".

I have proofread for errors of grammar, punctuation, spelling, syntax and typing mistakes. I have formatted your work and checked the references according to the guidelines of DUT Harvard referencing.

Please note that Impela Editing accepts no responsibility for work changed after issuing this certificate.

Kind regards


Helen Bond (Bachelor of Arts, HDE)