

**Bindura University
of Science Education**



FACULTY OF SCIENCE AND ENGINEERING

DEPARTMENT OF SPORTS SCIENCE

**DEVELOPING INJURY PREVENTION STRATEGIES BASED ON COMMON INJURY
PATTERNS AMONG SECONDARY SCHOOL ATHLETES AGED 13-19 IN MOUNT
DARWIN DISTRICT OF ZIMBABWE**

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**A RESEARCH SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE BSC SPORTS SCIENCE AND MANAGEMENT**

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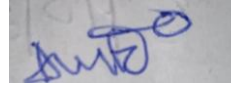


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DEDICATION

This research is dedicated to my family, my husband, and my daughter, whose unwavering support and belief in me made this journey possible.

ABSTRACT

This study identifies the injury prevention strategies among secondary school athletics within the Mount Darwin district, Zimbabwe, emphasizing the need for context-specific approaches to address rural challenges often overlooked in existing literature. Employing a concurrent mixed-methods design, the research integrates quantitative data collected through self-administered questionnaires from 162 athletes (96.3% response rate) and qualitative insights from nine (9) semi-structured interviews with coaches and school administrators. 162 athletes were sampled from a total of 270 using stratified random sampling across six schools. Quantitative data was analyzed using SPSS (Version 21) for statistical patterns, and qualitative data was coded and analyzed thematically using Nvivo 14, with results visually presented to identify prevalent injury types, contributing factors, and effectiveness of current measures. Analysis revealed muscle cramps, muscle strains, and ankle injuries as the most common among athletes, with causes linked to poor facility quality, inappropriate training methods, substandard equipment, nutritional deficits, and coaching factors. Current prevention strategies, primarily nutrition, equipment use, and health education, are found to be largely ineffective, with limited adoption of periodization and safe facility use. Ultimately, the study underscores the importance of organized training methods, access to quality equipment, secure facilities, and qualified medical staff to enhance athlete safety. Educational initiatives emerge as a pivotal component, advocating for the integration of injury prevention workshops into school curricula to improve athlete understanding of safety measures. To preserve the integrity of the study and honor participants, ethical considerations, including obtaining informed consent, guaranteeing confidentiality, and safeguarding participant privacy, were carefully observed during the whole research process. However, limitations like a small, localized sample and cross-sectional design restrict generalizability. Nonetheless, the study provides valuable, context-specific insights and recommendations aimed at informing policy and practice to improve injury prevention in rural secondary school athletic settings like Mount Darwin, Zimbabwe.

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LIST OF ABBREVIATIONS AND SYMBOLS

SEM	Social-Ecological Model
SDT	Social Determinants Theory
IPM	Injury Prevention Model
HPM	Health Promotion Model
IPQ	Injury Prevention Questionnaire
GPS	Global Positioning System
SPSS	Statistical Package for the Social Science

CHAPTER ONE: THE PROBLEM AND ITS SETTING

1.1 INTRODUCTION

Secondary school sports are mandatory for adolescents in Zimbabwe because they foster cooperation, social development, and physical activity (Bahr and Engebretsen, 2019). However, there are serious risks to young athletes' health, happiness, and academic performance from sports-related injuries. This study sought to investigate injury prevention strategies used in secondary school athletics in the Mount Darwin District of Zimbabwe. The study's background, problem statement, research questions, research objectives, significance of the study, delimitations of the study, and study outline are all presented in this chapter.

1.2 BACKGROUND OF STUDY

According to Edouard et al. (2024), track and field athletics is an Olympic sport that is governed at the international level by World Athletics and practiced all over the world. Athletics is composed of several different disciplines, including sprints, hurdles, jumps, throws, and combined events; middle- and long-distance running; and race walking (Edouard et al., 2024). However, in the quest for optimal performance, athletes can be affected by injuries, with potential physical, psychological, and social consequences (Edouard et al., 2024). Yang et al. (2022) note that sports injuries can lead to abnormal physiological or psychological stress responses, which may challenge athletes' ability to continue their sports careers at a competitive level. Acute traumatic sports injuries can harm an athlete's performance based on their perception of the severity of the injury, but this decline in performance and decrease in confidence does not correlate to their desire to leave their sport or their athletic identity (Laurel et al., 2023). Injuries in high-performance athletes can lead to forced suspension of training or competition, preventing performance improvement and decreasing career quality (Sun, 2023).

Preliminary observations by the researcher, along with reports from district and zonal athletics competitions in Mount Darwin District, Zimbabwe, have revealed a high prevalence of injuries among secondary school athletics participants. These injuries range from acute incidents, such as sprains and strains, to more chronic overuse injuries, often affecting the lower limbs. However, although studies by Edouard et al. (2023), Edouard et al. (2024), Sun (2023), Yang et al. (2022), and Hu (2021) have explored the causes, patterns, and prevention strategies of injuries in track and field athletics, there is a general dearth of research focusing on school athletics. The few studies that have been done in schools focus on urban schools. As a result, there remains a huge gap in the literature on the nature, patterns, and prevention measures of athletics-related injuries in marginalized districts such as the Mount Darwin District of Zimbabwe.

A review of the literature has revealed that there is limited literature on athletics-related injuries in Zimbabwe. The few studies that addressed athletic injuries in the country were conducted by Mwisukha et al.(2014) and Chidzambwa and Mlambo (2016), who acknowledge the lack of basic sports infrastructure and coaching expertise in rural schools. However, these studies do not provide systematic data on the nature, frequency, or causes of track and field injuries among learners in rural schools. As a result, very little is known about athletic injuries in secondary schools in the Mount Darwin District.

This has left school coaches, physical education teachers, and sports administrators in the district without clear guidelines for identifying risk factors, managing injuries effectively, or implementing proactive prevention programs. The subject is also not covered in existing literature. This gap in practical intervention and scientific understanding compromises athlete safety and performance and also threatens sustained participation in school athletics. The injuries also cause academic disruptions, which may have a lasting impact on the student's academic performance. Without urgent attention and informed action, the district risks perpetuating a cycle of preventable injuries and missed developmental opportunities in youth sports.

In a bid to bridge these practical and theoretical gaps, this study was conducted to identify injury patterns and examine risk factors among track and field athletes in secondary schools in Mount

Darwin District. The ultimate goal was to develop tailored approaches for injury prevention and management.

1.3 STATEMENT OF THE PROBLEM

Preliminary observations by the researcher, supported by the reports from district and zonal athletics competitions in Mount Darwin District, Zimbabwe, indicate a high prevalence of injuries among secondary school athletics participants. These injuries range from acute incidents, such as sprains and strains, to more chronic overuse injuries, often affecting the lower limbs. Despite the recurring nature and frequency of these injuries during school competitions, there is a notable lack of standardized injury prevention strategies tailored to the local schools' athletics context. Most existing research addresses urban environments, leaving rural districts, school coaches, physical education teachers, and sports administrators in the District without clear guidelines for identifying risk factors, managing injuries effectively, or implementing proactive prevention programs. The absence of localized strategies compromises athlete safety, and performance potential and threatens sustained participation in school sports athletics. Furthermore, injuries often disrupt academic progress, creating long-term consequences for students' educational outcomes. Without urgent attention and tailoring the Mount Darwin context, the district risks perpetuating a cycle of preventable injuries and missed developmental opportunities in youth athletics.

This study aims to create strategies for injury prevention in the Mount Darwin district, Zimbabwe. Objectives include a thorough needs assessment, addressing the fundamental causes of injuries, prioritizing student-athlete safety, developing evidence-based injury prevention programs, assessing their effectiveness, and providing recommendations for policy and practice improvements. Through these efforts, we can promote a healthier lifestyle, reduce injury-related absenteeism, and enhance the overall quality of secondary school athletics in the Mount Darwin District.

1.4 RESEARCH QUESTIONS

1.4.1 Primary Research Question

What injury prevention strategies can be developed for secondary school athletics in the Mount Darwin District of Zimbabwe?

1.4.2 Subsidiary questions

- (a) What types of injuries are prevalent among secondary school athletics participants in Mount Darwin District in Zimbabwe?
- (b) What factors contribute to injuries among secondary school athletics participants in Mount Darwin District in Zimbabwe?
- (c) What strategies are currently being used to prevent injuries among secondary school athletics participants in Mount Darwin District in Zimbabwe?
- (d) How effective are the strategies currently being used to prevent injuries among secondary school athletics participants in Mount Darwin District in Zimbabwe?
- (e) What measures can be developed to prevent injuries among secondary school athletics participants in Mount Darwin District in Zimbabwe?

1.5 RESEARCH OBJECTIVES

1.5.1 Purpose of the Study

To develop injury prevention strategies for secondary school athletics in the Mount Darwin District of Zimbabwe.

1.5.2 Specific Objectives

- (a) To identify the types of injuries that are prevalent among secondary school athletics participants in Mount Darwin District in Zimbabwe.
- (b) To identify the factors that contributes to injuries among secondary school athletics participants in Mount Darwin District in Zimbabwe.
- (c) To identify the strategies currently being used to prevent injuries among secondary school athletics participants in Mount Darwin District in Zimbabwe.
- (d) To measure the effectiveness of the strategies currently being used to prevent injuries among secondary school athletics participants in Mount Darwin District in Zimbabwe.

- (e) To develop effective measures to prevent injuries among secondary school athletics participants in Mount Darwin District in Zimbabwe.

1.6 SIGNIFICANCE OF THE STUDY

For the study to have an impact, the findings can be summarized and shared with all key stakeholders in secondary school athletics in the district. This study is significance because its goal is to improve athlete safety and well-being by lowering the injury rate. Students who participate in sports can do so without endangering their health. The research can also help athletes prepare and compete more effectively, which could lead to better performance results by reducing injuries and promoting better training and competing methods. Moreover, the findings of this research can inform policy and practice, aiding school administrators and policymakers in making decisions based on valuable insights for developing evidence-based policies. The development of coaches, educators, and healthcare professionals' capacity can also improve their abilities to avoid and manage injuries, guaranteeing that all parties involved have the know-how to advance athlete safety. Lastly, there are plans to publish the findings in peer-reviewed journals and add to the existing body of knowledge on sports injuries.

1.7 DELIMITATIONS OF THE STUDY

This research is delimited to six (6) secondary schools in the Mount Darwin district, focusing on athletes aged 13-19, their parents, coaches and physical education teachers. The main objective is to create strategies aimed at preventing sports injuries among secondary school students. The target population includes secondary school athletes, parents, teachers, and coaches in the Mount Darwin district because teenagers (ages 13-19) are more susceptible to sports-related injuries, and the roles of parents, coaches, and teachers are vital in preventing such injuries. The sample will reflect the diverse demographics of the Mount Darwin district. Mixed-method frameworks will be utilized, integrating both quantitative and qualitative data collection analysis.

1.8 STUDY OUTLINE

The study is divided into five different chapters.

Chapter 1: The first chapter consists of background, problem statement; research questions, and objectives, as well as significance and delimitations.

Chapter 2: Literature Review. This chapter provides an overview of the existing strategies, gap analysis, and conceptual framework.

Chapter3: Research methodology; this chapter will go through methodology and processes.

Chapter 4: Results; this chapter will present the findings of the study.

Chapter 5: Summary, conclusions, and recommendations; this last chapter presents the key findings, discusses their implications and limitations, and provides recommendations.

1.9 CHAPTER SUMMARY

In this chapter, the research topic is presented, emphasizing the value of injury prevention techniques in secondary school athletics in the Mount Darwin district, Zimbabwe. It presents the research topic, the study's importance, the research questions, and the objectives in an understandable manner. Along with the stage for the literature review, which will examine previous studies on injury prevention, it also addresses the scope and delimitations, offering a roadmap for the remaining sections of the dissertation.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

This literature review's objective is to assess the body of knowledge regarding injury prevention techniques in secondary school athletics, with particular emphasis on the Mount Darwin district of Zimbabwe. The purpose of this review is to identify factors contributing to injuries among secondary school athletes in the Mount Darwin district. To evaluate injury prevention strategies that are currently being used in secondary school athletics in the Mount Darwin district of Zimbabwe and also to assess how effective the injury prevention strategies currently being used in the district are. Lastly, to identify injury prevention measures that can be developed to improve and modify the current strategies being used to better suit the district's specific needs. This chapter is going to present the conceptual review, the theoretical review, and the thematic review.

2.2 CONCEPTUAL REVIEW

The conceptual review provides the foundation for understanding the key ideas, definition, and relationships that underpin injury prevention in secondary school athletics in mount Darwin district, ensuring that the concepts are not only theoretically sound but also practically relevant to the district's unique challenges.

Key concepts

Injury Prevention: it refers to the systematic strategies and measures designed to minimize both the occurrence and severity of athletic injuries. These strategies must consider intrinsic factors (e.g. athlete's age, fitness level, previous injuries) and extrinsic factors (e.g. training environment, equipment quality, coaching practices). Finch (2016) emphasizes a multi-faced approach combining education where training athletes and coaches should recognize early signs of overtraining and unsafe practices, environmental modifications ensuring safe playing surfaces,

adequate lighting, and proper equipment, and training practices by incorporating warm up routines, strength conditioning, and recovery protocols.

Secondary School Athletics: This term encompasses organized sports programs for students aged 13-19; it includes both track and field events. According to Murphy (2017), secondary school athletics not only promote physical fitness but also enhance social skills and team spirit among students. However, the developmental stage of these athletes makes them more vulnerable to injuries due to ongoing physical growth and hormonal changes, limited technical skill and tactical awareness and also pressure from competitive environments without adequate recovery time. In Mount Darwin, athletics programs often operate in resource –constrained settings, where facilities may be substandard and safety protocols inconsistently applied.

Several factors contribute to injuries, and different scholars agree that injuries among secondary school athletes are caused by a combination of biomechanical factors, environmental factors, and socio-cultural factors, as well as a lack of injury reporting and management. Biomechanical factors, inadequate warm-up and cool-down procedures, poor flexibility and mobility, biomechanical imbalance, and previous injuries and chronic diseases contribute to injuries in secondary school athletics (Soligard, 2016). In rural districts like Mount Darwin, many coaches are volunteers or have limited formal training. This can result in inconsistent application of safety practices, contributing to preventable injuries. Poor playing surface area, extreme weather conditions, inadequate equipment, and limited access to quality training facilities can lead to improper training methods. Murphy (2017) states that inadequate emergency response plans are the environmental factors that contribute to the risk of injury. Medical care is often centralized in urban areas, creating delays in treatment and increasing the risk of chronic injury complications.

Socio-cultural factors like pressure to perform and win from both parents and coaches; cultural attitudes towards injury and pain, with athletes often pushing themselves beyond safe limits due to competitive pressure; and resources also increase the risk of injury for athletes (Hagger et al., 2017). Lastly, according to Small (2018), there are psychological factors also contributing to the risk of injuries, like stress and anxiety, burnout, and overtraining; coaches may lack formal training in injury prevention techniques; and trauma and past events. If the athlete was injured before and didn't get enough rehabilitation services, it may lead to a lack of confidence and self-efficacy, which will result in poor decision-making and can increase the risk of injury.

Some preventative measures and strategies are currently being used in schools, like warm-up and stretching exercises. Some schools implement generic warm-up routines, though these are often not tailored to a specific sport; injury reporting and management; and community-based initiatives involving parents, healthcare professionals, and coaches providing them with first aid training (Hagger, 2017). And there are context-specific strategies tailored to Zimbabwe's resource-constrained setting (Chimusoro, 2019) but scholars debate on the effectiveness of these strategies, and some argue that the existing strategies are insufficient and may not address specific injury risks, and comprehensive injury management training is lacking (Soligard, 2016), and Finch (2017) suggests that proper implementation and enforcement are lacking.

To enhance and modify current strategies, the district needs context-specific injury prevention programs that consider the unique needs of the athletes in Mount Darwin, and injury surveillance systems, a structured method for collecting, analyzing, and reporting injury data, as it helps to identify patterns of injury occurrence, high-risk activities, and effectiveness of prevention measures. In Mount Darwin, the absence of formal surveillance systems means injury trends are often anecdotally reported, leading to gaps in targeted interventions. To add more, educating teachers and coaches is critical for early injury detection and prevention. Effective education programs should cover recognition of overtraining symptoms, proper warm-up and cool-down techniques, safe progression of training loads, and emergency response protocols. Increased access to medical care is essential for both acute injury management and long-term rehabilitation. Increasing qualified sports medicine professionals and physiotherapy services and having first aid resources at training and competition venues are also critical. Advocating for increased funding and resources to ensure that sports facilities and equipment meet safety standards to reduce the risk of injuries is important (Ncube, 2018). This conceptual review highlights the complexities of developing injury prevention strategies in secondary schools in Mount Darwin, Zimbabwe; by integrating these concepts, the researcher can design interventions that are practical, sustainable, and effective.

2.3 THEORETICAL REVIEWS

Injury prevention in athletics, especially among secondary school students, is a vital issue that necessitates a thorough understanding of various influencing factors. The Social-Ecological Model (SEM), Social Determinants Theory (SDT), Injury Prevention Model (IPM), and Health Promotion Model (HPM) are the four theoretical frameworks used in this study. Every paradigm provides a different perspective and a unique insight into the complex relationship between injury risk and prevention strategies. However, these models were not developed in the context of track and field athletics injuries. As a result, they may fail to effectively guide the injury management process in athletics.

2.3.1 Social-Ecological Model (SEM)

SEM was developed by McLeroy et al. (2015), emphasizing that health behaviors, including injury prevention, are influenced by multiple factors, and this model encompasses four levels. Firstly, there is the individual level; this level focuses on the knowledge, attitudes, skills, and behaviors of individuals regarding safety and injury risk. Secondly, there is the interpersonal level, and the level focuses on the relationships with peers, family, and coaches that influence behaviors and attitudes towards injury prevention. The community level is another one in which individuals operate, including schools and sports organizations, which can either support or hinder safety practices. Lastly, broader societal factors such as laws, policies, and cultural norms that shape behaviors and access to resources. It emphasizes environmental and social factors. This model is useful to the current study, as it allows for an exploration of the diverse influences on injury prevention in secondary school athletics. For instance, SEM encourages examining how athletes' personal attitudes towards safety, the influence of coaches and peers, the availability of resources at school, and broader societal norms regarding sports contribute to injury risks, and by applying SEM, the study can pinpoint specific intervention areas across these levels, facilitating a more comprehensive approach to injury prevention. However, it is difficult to apply, it lacks clear guidelines for intervention development, and it has limited empirical evidence in sports injury prevention. It was also not developed in the context of track and field athletics injuries. As a result, it may fail to effectively guide the injury management process in athletics. In Mount Darwin, SEM highlights that injury prevention cannot rely solely on athlete behavior; it must integrate community and institutional support.

2.3.2 Social Determinants Theory (SDT)

SDT emphasizes the impact of social, economic, and environmental factors on health outcomes (Deci and Ryan, 2015). It states that intrinsic motivation for injury prevention behaviors is enhanced when individuals experience autonomy, competence, and relatedness, and it emphasizes psychological needs. For example, an athlete's motivation to prevent injuries increases when they feel in control of their training. This can involve offering choices in training regimens, allowing athletes to set personal goals, and encouraging self-directed learning. Athletes should be challenged with appropriately difficult tasks, allowing them to experience success and enhance competence and confidence in their abilities. Regular assessments and personalized training plans can help track progress. Creating a supportive community among athletes, coaches, and peers enhances motivation. Team-building activities, mentorship programs, and open communication can foster strong relationships, making athletes feel connected and supported in their journey. In Zimbabwe, understanding such socioeconomic status, access to quality training facilities, and educational opportunities is effective in developing effective injury prevention strategies. The current study can utilize SDT to assess how these determinants influence athletes' exposure to injury risks. This assessment can advocate for policies that address these underlying issues, promoting equitable access to safe athletic environments and resources. The model was also not developed in the context of track and field athletics injuries. As a result, it may fail to effectively guide the injury management process in athletics, and in rural Mount Darwin, limited resources and economic constraints increase injury risk. STD complements SEM by identifying structural barriers and that must be addressed for prevention strategies to succeed

2.3.3 Injury Prevention Model (IPM)

IPM integrates factors from various theories to prevent sports injuries, emphasizing the interaction between individual, environmental, social, and organizational factors (Finch et al. 2017). An athlete's injury prevention behaviors are influenced by their knowledge of prevention strategies, school policy, social norms, and availability of resources; it offers a structured framework for identifying and mitigating injury risks. This model's systematic approach aligns well with the study's objectives of creating evidence-based strategies tailored to the specific needs of secondary schools in Zimbabwe. By utilizing IPM, the research can focus on

systematically identifying prevalent injury types, assessing contributing factors, and implementing targeted interventions. This continuous cycle of evaluation and refinement ensures that the strategies remain effective and can adapt to changing needs. In Mount Darwin, IPM ensures that prevention strategies are evidence-based and context-specific, targeting the most common injury causes identified in local schools

2.3.4 Health Promotion Model (HPM)

HPM examines how cognitive, behavioral, and environmental factors interact to influence health-promoting behaviors, including injury prevention (Pender et al. 2015). For example, an athlete's decision to prioritize injury prevention is influenced by their ability to prevent injuries and access to resources like trainers and equipment. This model is relevant to the current study, as it focuses on understanding athletes' motivation, perceived benefits, and barriers to adopting injury prevention strategies. Understanding these barriers will help in designing targeted interventions that address specific concerns like lack of resources, inadequate training, or cultural beliefs that may discourage safe practices. By applying HPM, the research can explore how athletes' self-efficacy and personal beliefs impact their commitment to safety practices. The researcher can assess the individual experiences of secondary school athletes, and this will help identify what motivates them to engage in safe practices and whether they perceive injury prevention measures as beneficial. This insight can guide the development of interventions that enhance athletes' confidence in their ability to follow injury prevention protocols, such as thorough training sessions, workshops, and mentorship programs. This might include creating tailored training schedules and safety protocols that athletes are committed to following. This study can develop comprehensive strategies that not only promote safety but also empower athletes to take an active role in their health and well-being. In Mount Darwin, HPM works alongside SEM and STD to ensure that prevention is not only policy-driven but also behaviorally sustainable

Each framework has its gaps and weaknesses. SEM often lacks guidance on how to implement multi-level interventions; STD can be too broad, making it difficult to pinpoint specific interventions, and it has a limited focus on individual behavior and psychological factors, which

can also influence health outcomes. IPM focuses heavily on systematic processes, potentially overlooking the importance of community engagement, and HPM overemphasizes individual factors and has limited consideration of social and organizational factors. However, each framework offers distinct insights, and by integrating them, they can provide a comprehensive approach to developing injury prevention strategies. For instance, employing SEM to identify multi-level influences on injury prevention can be complemented by SDT's focus on social determinants, leading to a deeper understanding of obstacles athletes face. The systematic nature of IPM can help transform these insights into practical applications, while HPM adds depth by considering individual motivations and beliefs, further guiding the development of effective strategies. The integration of SEM, SDT, IPM, and HPM creates a holistic, context-sensitive injury prevention framework. This approach addresses both behavioral and structural factors, ensuring that strategies are realistic, sustainable, and tailored to the realities of Mount Darwin's secondary school athletics.

2.4 THEMATIC REVIEWS

It is a systematic method for synthesizing and analyzing existing literature on research topics. This approach enables researchers to identify patterns, trends, and gaps in the existing body of knowledge, leading to a more comprehensive understanding of the topic (McLeroy, 2015). It typically involves defining research questions, performing thorough research of relevant literature, categorizing findings into themes, and critically assessing the strengths and weaknesses. It not only highlights major scholarly debates and contradictions but also helps in formulating informed recommendations for future research and practice.

This thematic review aims to explore the factors that contribute to injury, evaluate current prevention strategies, assess their effectiveness, and identify potential improvements tailored to the specific needs of the district.

2.4.1 Common Injuries in Athletics

According to Antekolović et al. (2014), hamstring rupture and strain are predominant in sprint events, while in the jumping disciplines, the most common are ankle sprain, overuse syndrome

and muscle rupture and strain and the dominant injuries in the throwing events were overuse syndrome, nerve injury and muscle rupture and strain. This is echoed by a study by Edouard et al. (2023), which shows that athletes participating in athletics disciplines that require sprinting are more prone to lower limb muscle injuries, particularly hamstring muscle and ankle injuries. In the same vein, Hu (2021) notes that ankle injuries are prevalent in athletics because the ankle joint is the most important weight-bearing joint of the human body, and if the weight of the strong leg does not move when landing, it is easy to sprain the ankle ligament. On the other hand, Rumini et al. (2024) argue that female athletes have higher rates of severe injuries, especially in lower extremities such as the ankle and knee with gender-related anatomic or biomechanical disparities in the anterior cruciate ligament being a major contributor to this trend.

It can be noted that the reviewed literature on the types of injuries is grounded on studies that were done outside Zimbabwe and these may fail to capture the Zimbabwean context given the vast differences in the socio-economic environment and sport ecosystems. It was also based on studies done on elite athletes whose attributes are completely different from those of Zimbabwean rural schools-based athletes.

2.4.2 Causes of Injuries

Firstly, this theme explores the physical demands of the sport, including inadequate training, lack of proper equipment, and insufficient conditioning (Mutedzi, 2017). Chawapiwa et al. (2018), indicate that injuries are common in secondary school athletics, and the most prevalent injuries arise from overuse, where repeated stress on muscles and joints leads to injuries and improper techniques. Inadequate training is another critical factor; athletes who lack proper preparation increase their risk of injury, as noted by Smith (2021). This was echoed by Edouard et al. (2024) who note that coaching was a significant protective factor, as athletes who trained under the supervision of a coach experienced fewer injuries than those who trained independently. Moreover, training load was directly associated with injury risk, with higher and insufficient loads leading to increased injury rates (Edouard et al., 2024).

To add more, environmental factors such as unfavorable weather conditions and poorly maintained facilities can also contribute to the risk of injuries (Johnson, 2020). This is also captured by Edouard et al. (2024), who argue that environmental and equipment-related factors, such as wearing inappropriate spikes and adverse weather conditions, are also contributors to injury occurrence.

Johnson (2020) emphasizes the relationship between diet and recovery, underscoring the importance of proper nutrition in injury prevention. On the other hand, Edouard et al. (2024) identifies multiple interrelated factors contributing to injuries in track and field athletics. Injuries among youth athletes were found to result not solely from individual characteristics but from the complex interplay of various contextual and systemic influences. These included insufficient knowledge regarding athletic development in daily practice, the presence of short-sighted communities of practice, inadequately adapted sports policies for youth, and prevailing societal health behaviours (Edouard et al., 2024).

The study also reported that female athletes are more susceptible to musculoskeletal injuries compared to their male counterparts, largely due to a combination of anatomical, physiological, and participation-related factors (Edouard et al., 2024; Goldring et al., 2016).

According to Edouard et al. (2024), injury prevalence varied by discipline type. The highest injury rates were observed in combined events, marathons, and middle- to long-distance running, while lower rates were noted in other disciplines (Edouard et al., 2024). Age-related differences were also noted, with junior athletes showing a lower prevalence of injuries compared to older athletes (Edouard et al., 2024).

However, these causes of injuries for track and field athletes were identified from studies that were done in developed countries with better equipment and training facilities as well as better injury management practices. As a result, they may not accurately portray the situation in rural secondary schools in Zimbabwe.

2.4.3 Injury Prevention Strategies Being Used Among Athletes

According to Hu (2021), paying attention to warm-up activities and strengthening the protection of vulnerable parts, arranging training content reasonably and making adjustments according to

the athlete's mental and physical state, strengthening medical supervision and institutionalized management, paying attention to fatigue recovery and dietary nutrition and mastering the correct movement technique proficiently during training or competition as the most effective injury prevention strategies in track and field athletics.

According to Edouard et al. (2024), the emerging practice of medicine and public health supported by electronic processes and communication in sports medicine represents an opportunity to develop new injury risk reduction strategies. Artificial intelligence approaches using machine learning techniques make it possible to provide an estimation of the injury risk at the individual level (Edouard et al., 2024).Edouard et al. (2024) also identify neuromuscular exercises as the most effective strategy for injury management in track and field athletics. Health and injury management education of athletes, their entourage, and all stakeholders within Athletics is largely viewed as an injury risk reduction strategy (Edouard et al., 2024). However, in secondary schools in rural areas, those programs are limited (Zhou, 2019). Coaches and athletes are not knowledgeable enough about injury prevention and management (Moyo, 2020), and barriers to injury prevention include inadequate resources, a lack of trained personnel, and cultural factors that worsen the risk of injuries.

This shows that the strategies identified in this review of literature may be appropriate in the Zimbabwean context given the vast differences in the levels of medical and coaching methodology advancement.

2.4.4 The Effectiveness of the Injury Prevention Strategies Being Used In Schools

Studies assessing the effectiveness of existing injury prevention programs reveal mixed results. According to Edouard et al.(2023), there was low adoption of injury risk reduction strategies by athletes because currently, no injury risk reduction strategies with a high level of evidence of effectiveness are available specifically for athletics.

According to Hu (2021), most injury management strategies are ineffective due to the lack of athlete self-protection actions. Lack of self-protection action refers to the athlete's lack of protection awareness (Hu, 2021). Therefore, coaches should also train athletes' self-protection capabilities in a targeted manner to minimize the occurrence of sports injuries (Hu, 2021).

2.4.5 Trends and Gaps in Injury Prevention

The landscape of injury prevention has evolved significantly over the years. Historically, approaches were primarily focused on rest and basic warm-up exercises. The pre-2000s era focused on physical conditioning, technique, and rule-based training. The 2000s and 2010s saw the emergence of sports science, incorporating sports medicine, physiology, and psychology. Currently, technology integration has revolutionized injury prevention. Recent trends advocate for active rehabilitation, which includes tailored exercise programs to enhance recovery and prevent future injuries. The use of data analytics and surveillance systems helps in identifying injury patterns and risk factors. Advances in technology, such as wearable sensors, global positioning system (GPS) tracking, and mobile apps, facilitate real-time monitoring of athletes' performance and contribute to proactive injury prevention strategies. However, gaps remain despite the wealth of research available; there is often a disconnect between findings and their application in real-world settings, particularly in resource-constrained settings like Zimbabwe, where access to advanced training and rehabilitation facilities is limited, inadequate coach education, insufficient athlete support, and inadequate resources. Research on injury prevention is predominantly focused on high-income countries, leaving a significant gap in understanding the unique challenges faced by low-income nations, and this disparity limits the development of tailored interventions that address specific regional needs. Addressing these gaps through interdisciplinary collaboration, research, and policy development will ensure a safer and healthier sports environment. By identifying contributing factors, evaluating current strategies, and proposing tailored improvements, this research aims to develop effective injury prevention strategies that address the specific needs of athletes in the district.

2.5 CONCLUSION

The study concludes that effective prevention of sports-related injuries among secondary school athletes in Mount Darwin district requires a collective, community-driven approach that addresses limited resources, inadequate facilities, and low awareness levels. The literature highlights the growing recognition of tailored, context-specific interventions and the importance of community involvement in injury prevention. However, a critical gap persists because most

existing research focuses on urban settings, overlooking the unique challenges of rural areas like Mount Darwin. By establishing local safety hubs, implementing low-cost digital injury monitoring systems, training coaches, educating parents and athletes, and improving facilities through community participation, schools can develop sustainable and inclusive injury prevention frameworks. Such initiatives not only enhance athletes' safety and participation but also strengthen collaboration among schools, families, and local institutions, fostering safer and more supportive sporting environments in rural communities.

2.6 CHAPTER SUMMARY

This chapter offered a detailed literature review on injury prevention strategies for secondary school athletics, focusing specifically on the Mount Darwin district, Zimbabwe. It identifies the key themes, such as factors contributing to injuries, their effectiveness, and potential areas of improvement and intervention. It also points out significant gaps in the literature, notably the absence of localized studies that address the unique challenges faced by rural athletes. By addressing these gaps, this study aims to provide valuable insights that can inform effective injury prevention measures. The following chapter will present the methodology used in this study. It will outline the research design, participant selection, data collection methods, and analysis techniques employed to assess injury prevention strategies.

CHAPTER THREE: MATERIALS AND METHODS

3.1 INTRODUCTION

This chapter outlines the methodology used to develop injury prevention strategies for secondary school athletes in Mount Darwin, Zimbabwe. It included a detailed description of the methodological approach, time horizons, research strategy, population and sampling procedures, data collection and analysis methods, and the ethical considerations observed throughout the research process. The aim was to ensure that the study was conducted systematically and ethically, providing reliable and valid results to inform effective injury prevention strategies.

3.2 METHODOLOGICAL APPROACH

This study employed a mixed-method approach, which combines both qualitative and quantitative research techniques by employing interviews and questionnaire surveys to collect data on athletic injuries among high school athletes in the Mount Darwin District. The decision to employ mixed methods was informed by Bryman (2021), who notes that both quantitative and qualitative research methods have their own strengths and weaknesses, and combining them allowed the researcher to offset their weaknesses and draw on the strengths of both. This is echoed by Creswell and Piano Clark (2018), who argue that mixed-method research provides a more complete understanding of research problems, and combining qualitative and quantitative methods helps us to understand the full picture of the study and gives us the depth and detail we need. This approach is particularly useful in sports science, where numerical data on injury rates can be enriched with personal experiences from athletes and coaches about their experiences.

In this study, the quantitative approach involved collecting data on injury frequency and type of injuries among high school athletes in Mount Darwin. Surveys and statistical analysis were used to identify patterns and risk factors. The qualitative component consisted of interviews with coaches, athletes, and healthcare providers to gain deeper insights into the contextual factors that influence injuries and the effectiveness of existing prevention strategies. The integration of data helped the researcher develop effective, customized strategies for preventing injuries.

3.3 TIME HORIZONS

This study adopted a cross-sectional time horizon, meaning that all data were gathered at a single point in time. The choice of cross-sectional studies was guided by Collis and Hussey (2014), who argue that cross-sectional studies are done for academic courses under time and resource constraints, as they can allow for conclusions to be reached with a relatively minimal investment of time, money, and other research resources. The current study conforms to this reasoning since it is an academic study that was conducted under time and resource constraints.

A cross-sectional approach is like taking a snapshot of a moment, allowing for the analysis of data from a large population at once without the need to track changes over a long period (Bryman, 2021). In this study, data were collected during a one-week visit to the six schools selected to participate in the study. No attempts were made to track the research problem over a prolonged period of time. This efficient and cost-effective method allowed data to be gathered quickly under resource or time constraints. While a longitudinal study could have been useful for observing changes over time, the study focused on gaining immediate insights, and this helped to quickly develop strategies that can address the current needs and challenges faced by athletes and coaches.

3.4 RESEARCH STRATEGY

For this study, a concurrent mixed-method research design, where quantitative and qualitative data were collected simultaneously, was adopted. Quantitative data were from one hundred and sixty-two (162) athletes using questionnaires and analyzed statistically, while qualitative data were obtained using semi-structured interviews and analyzed thematically. This approach was selected to capture a holistic understanding of the research problem. This was informed by Bryman (2021), who argues that while quantitative research is associated with the researcher's perspective, qualitative research is concerned with seeing the object of study through the eyes of the people being studied. Thus, combining the two allows the researcher to capture both the researcher's and research subjects' perspectives.

3.5 POPULATION AND SAMPLING

3.5.1 Population

According to Saunders et al. (2023), a population is defined as the group from which a sample will be drawn for the study, and this group helps to ensure that the findings are applicable and valid. The population of this study comprised two hundred and seventy (270) athletes drawn from the six (6) participating schools for the quantitative strand of the study. The population for the qualitative strand was made up of eighteen (18) sports administrators, coaches, and team medics drawn from the six (6) participating schools

3.5.2 Sampling Procedure

In studying injury prevention strategies for secondary school athletics in Mount Darwin, Zimbabwe, a mixed-methods approach aims to gather meaningful insights from the athletes, coaches, and staff.

3.5.2.1 Probability Sampling

Probability sampling procedures were employed in the quantitative strand of the study. Stratified random sampling was employed, with the athletes being stratified into six segments of forty-five (45) participants each, according to their schools. Twenty-seven (27) athletes were then randomly selected from each school to participate in the study.

3.5.2.2 Non-Probability Sampling

Purposive sampling was used to select sports administrators, coaches, and team medics to participate in the interviews based on their experience with sports injuries in the case study schools.

3.5.3 Sample Size Determination

The sample size of one hundred and sixty-two (162) participants for the quantitative strand of the study was calculated from a population of two hundred and seventy (270) athletes using an online sample size calculator from <https://www.qualtrics.com/blog/calculating-sample-size/> at a 95% confidence level and a margin of error of 5%. This helped to ensure that the study had sufficient statistical power and accuracy to draw valid conclusions from the data collected.

Theoretical sampling procedures were used to determine the sample size of interview participants in the qualitative strand. The process only ended after nine (9) interviews when no new insights were being obtained.

3.6 DATA COLLECTION PROCEDURES

Researching and developing injury prevention strategies for secondary schools in Mount Darwin involves a systematic approach to data collection, and it starts with listening to the community because athletes deserve a safe and healthy environment to thrive.

3.6.1 Pilot Study

A pilot study was conducted with athletes and coaches drawn from a secondary school in the Bindura urban district. Its purpose was to test run and refine the data collection instruments. The input from the participants and the observations made during the pilot study were used to strengthen the research instruments.

3.6.2 Main Study

The main study sought to gather comprehensive data to inform effective injury prevention strategies. Quantitative data were gathered from one hundred and sixty-two athletes drawn from the six participating schools by means of a self-administered questionnaire survey. The questionnaires were physically distributed and collected during the visits to the schools for interviews. The questionnaire contained predominantly closed Likert scale questions. Where participants were under the age of eighteen (18), permission was sought from their parents to allow them to participate in the survey. Qualitative data were gathered from nine (9) coaches and sports administrators from six participating schools using semi-structured interviews. The interviews took place at the six schools and were audio recorded with permission from the research participants.

3.7 DATA ANALYSIS AND PRESENTATION

To develop effective injury prevention strategies for secondary school athletics in Mount Darwin, analyzing the collected data is a crucial step, and the process involves both quantitative and qualitative methods to ensure a comprehensive understanding. Quantitative data were analyzed using SPSS Version 21, employing descriptive statistical analysis and one-sample t-tests on the data gathered through questionnaires.

Qualitative data were analyzed using NVivo 14, applying word frequency and thematic analysis. Results were presented in tables, charts, and word clouds.

3.8 VALIDITY, RELIABILITY, AND TRUSTWORTHINESS

3.8.1 Validity and Reliability in Quantitative Research

Ensuring the validity and reliability of quantitative data is a key to producing meaningful results, as it assesses whether a research instrument measures what it intends to measure. In this study, construct validity was established by adapting injury prevention questionnaires from established instruments such as the Injury Prevention Questionnaire (IPQ). Content validity was ensured through expert review and pilot testing, confirming survey relevance and clarity. Lastly, there is criterion validity that will evaluate the survey's ability to predict injury prevention outcomes.

Reliability was ensured through test-retest methods to assess consistency. These measures ensure data accurately represents the reality of injury prevention practices and can be consistently reproduced.

3.8.2 Trustworthiness in Qualitative Research

For qualitative research, establishing trustworthiness involves credibility, transferability, dependability, and conformability. Credibility was enhanced through member checking and triangulation. Transferability was addressed by providing detailed contextual descriptions. Dependability was achieved through maintaining an audit trail. Confirmability was ensured through reflexivity. Engaging in self-reflection about your influences adds to the transparency and trustworthiness of the researchers' work.

3.9 ETHICAL CONSIDERATIONS

Adhering to ethical guidelines is fundamental to maintaining the integrity of the research and protecting participants' rights.

3.9.1 Securing Permission

The study obtained approval from relevant school authorities and local educational bodies, ensuring that access to participants was ethically and formally granted by gatekeepers. For participants under the age of 18, permission was sought from their parents and guardians for them to participate in the study.

3.9.2 Informed Consent

The participants completed informed consent forms before they participated in the study. Where the participants were under the age of eighteen (18), the consent was granted by their parents and guardians in case of any issues that may arise.

3.9.3 Anonymity and Confidentiality

Participants' identities were protected through anonymization. The researcher also signed confidentiality agreements with the interview participants to ensure non-disclosure of data to third parties. Data with information that can be linked to its providers was securely stored in a password-controlled laptop that can only be accessed by the researcher.

By implementing these ethical practices, the study not only upholds the dignity and rights of all participants but also enhances the credibility and trustworthiness of the research findings. This comprehensive approach ensured that the study contributed valuable insights into developing effective injury prevention strategies while maintaining the highest standards of research integrity.

3.10 CHAPTER SUMMARY

This research outlined the research methodology employed in this study, focusing on the mixed methods approach. The chapter described the sampling procedures for both quantitative and

qualitative strands, including probability and non-probability sampling techniques. The sample size determination process was discussed, and the chapter addressed the validity, reliability, and trustworthiness measures to ensure research credibility. Ethical considerations were also emphasized, highlighting gatekeeper approval, informed consent, avoiding harm, and maintaining participants' anonymity and confidentiality. Chapter 4 is going to present the data analysis and results, exploring injury prevention strategies in Mount Darwin secondary school athletics through quantitative and qualitative findings.

CHAPTER 4: DATA ANALYSIS AND PRESENTATION

4.1 INTRODUCTION

This Chapter presents the analysis, interpretation, and presentation of data gathered in the study on developing injury prevention strategies in athletics at Mount Darwin secondary schools. Quantitative data collected through questionnaires were analyzed using Statistical Package for the Social Science (SPSS), with results displayed through statistical tables and figures. Qualitative insights from interviews were analyzed using Nvivo to identify emerging themes related to injury patterns and prevention practices. This chapter is structured into three key sections: the study's response rate, the demographic information of respondents, and the analysis of findings in relation to the research questions.

4.2 RESPONSE RATE

This section targeted two main groups of participants; the questionnaires targeted athletes to gather broad insights from their experiences, while the interviews were conducted with coaches and administrators to obtain in-depth perspectives.

Table 4.1

Questionnaire and interview response rate

Research Instruments	Planned	Distributed/ Completed	Spoiled/not returned	Response rate
Questionnaires	162	156	6	96.30%
Interviews	Guided by theoretical sampling principles	9	N/A	N/A

The results presented in Table 4.1 show that the study recorded a high questionnaire response rate of 96.30%, with 156 out of 162 questionnaires successfully returned. This figure is way above the minimum threshold of 60% recommended by the Journal of the American Medical Association as the acceptable response rate for survey-based studies. This suggests a strong level of engagement and cooperation from the participants. The non-response of the remaining 6 questionnaires was primarily due to forms that were not returned from the participants. Despite this, the high return rate enhances the reliability and representativeness of the quantitative data collected.

For the interviews, theoretical sampling, which does not require a predetermined number of participants, was used. Interviews were conducted until theoretical saturation was reached after conducting nine (9) interviews; that is the point at which no new insights emerged from the data (Charmaz, 2014). The data obtained was sufficient for in-depth qualitative analysis and met the methodological requirement for saturation.

4.3 DEMOGRAPHIC DATA

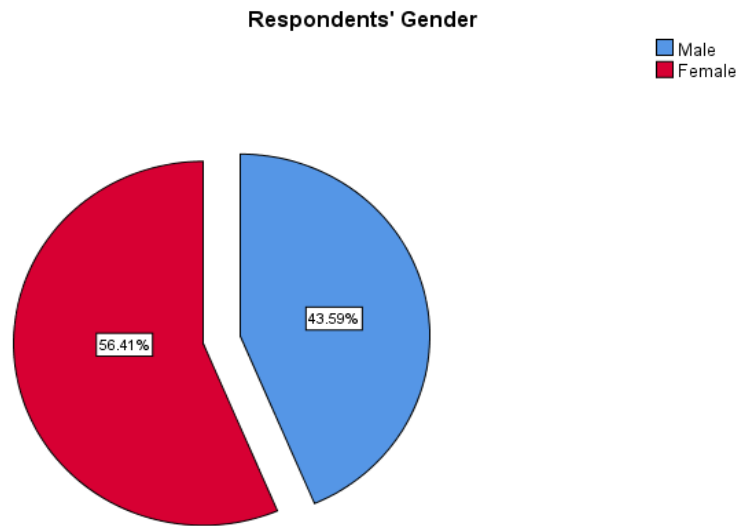
This section presents an analysis of the key participants' demographics, with a focus on gender and age. Understanding these characteristics was essential for profiling the respondents, thereby enhancing the credibility and relevance of the insights they provided.

4.3.1 Gender Respondents

Figure 4.1 presents the gender composition of questionnaire respondents.

Figure 4.1

The Gender Composition of Questionnaire Respondents



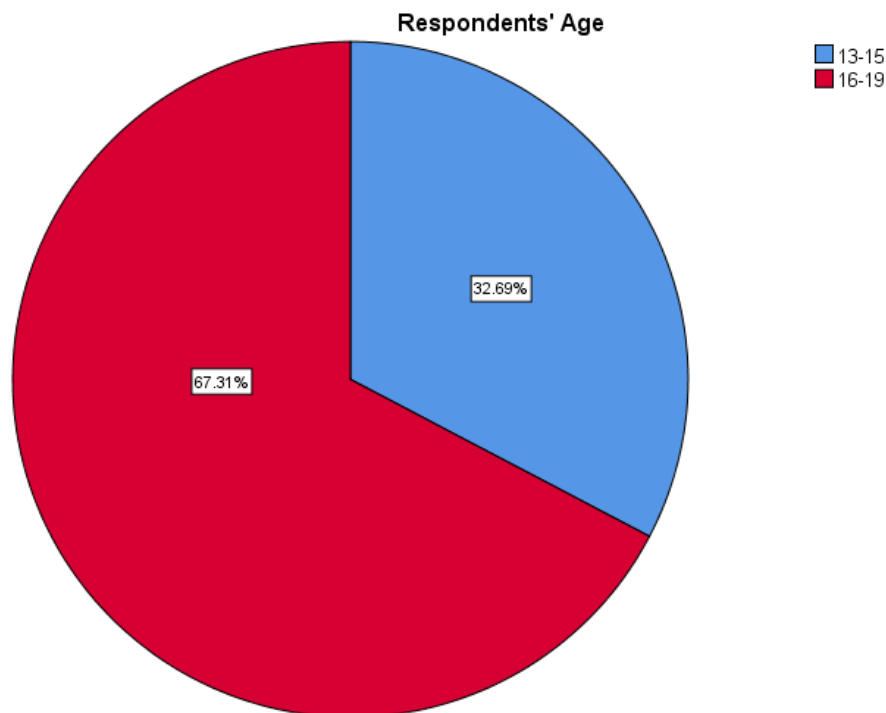
The data presented in Figure 4.1 shows that 43.6% of the respondents were male and 56.4% were female. The sample is highly representative of the population of Zimbabwe since it aligns very well with the gender distribution of the Zimbabwean population which is currently around 47.67 % males to 52.33 % females.

4.3.2 Age of Respondents

The age distribution of the respondents is categorized into two groups, as presented in Figure 4.2.

Figure 4.2

The Age Distribution of the Questionnaire Respondents



The findings presented in Figure 4.2 show that 32.69% of the respondents fell in the 13-15 age group, while 67.3% were in the 16-19 years age group. The majority of the respondents fall into the 16-19 age group. The sample was representative of the population under consideration because it is in tandem with the age distribution of secondary school learners in Zimbabwe.

4.4 ANALYSIS AND PRESENTATION OF DATA LINKED TO RESEARCH QUESTIONS

4.4.1 Reliability test results

The Cronbach's Alpha test was conducted using SPSS to assess the internal consistency of 7 items used to collect data from respondents on the effectiveness of injury prevention strategies in secondary school athletics in Mount Darwin. The primary objective was to evaluate how the consistency of these 7 strategies measured the same underlying construct: the perceived use and effectiveness of injury strategies. The results of the reliability analysis are presented in Table 4.2.

Table 4.2
Reliability test results

Case Processing Summary			
		N	%
Cases	Valid	156	100.0
	Excluded ^a	0	.0
	Total	156	100.0
Reliability Statistics			
Cronbach's Alpha	N of Items		
.759	7		

In this test, a Cronbach's Alpha of 0.759 indicates good reliability of the items. The results suggest that the items have a high level of internal consistency and are likely measuring the same underlying construct effectively.

4.4.2 Research Question 1: What Types of Injuries are Prevalent among Secondary School Athletics in Mount Darwin District?

4.4.2.1 Quantitative Results

In the quantitative strand of the study, questionnaires were used to collect data from 156 participants to determine the prevalence of injuries among athletic students in secondary schools in Mount Darwin District. The data was analyzed using descriptive statistical methods, and the

findings are presented in Table 4.3.A 3-point Likert scale was used to measure responses. In the analysis:

- Mean scores less than 2 indicated that the injury under consideration was not prevalent among athletes in secondary schools in Mount Darwin District.
- Mean scores greater than 2 indicated that the injury was considered prevalent among athletes in secondary schools in Mount Darwin District.
- Mean scores of exactly 2 reflected a neutral stance on whether or not the injury under consideration was prevalent among athletes in secondary schools in Mount Darwin District.

Table 4.3***Injuries Suffered During Training or Competition***

Descriptive Statistics						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Have you suffered shoulder injuries during training or competition	156	1	3	1.53	.815	.664
Have you suffered elbow injuries during training or competition	156	1	3	1.48	.783	.613
Have you suffered knee injuries during training or competition	156	1	3	1.88	.897	.804
Have you suffered ankle injuries during training or competition	156	1	3	2.20	.926	.857
Have you suffered hamstring injuries during training or competition	156	1	3	1.95	.878	.772
Have you suffered groin injuries during training or competition	156	1	3	1.54	.765	.586
Have you suffered shin injuries during training or competition	156	1	3	1.58	.850	.723
Have you suffered stress fracture injuries during training or competition	156	1	3	1.63	.835	.698
Have you suffered Achilles tendonitis injuries during training or competition	156	1	3	1.59	.717	.514
Have you suffered muscle cramp injuries during training or competition	156	1	3	2.63	.737	.543
Valid N (list wise)	156					

The muscle cramp injuries have the highest mean of 2.63, indicating they are the most frequently reported injury type among the listed categories shown in Table 4.3. Ankle injuries have the second-highest mean of 2.20. Hamstring injuries (1.95), knee injuries (1.88), and all other injuries have lower mean values, suggesting they are less frequently reported compared to muscle cramps and ankle injuries

4.4.2.1 Qualitative Results

In the qualitative strand of the study, key informant interview participants were asked about the types of injuries that are prevalent among secondary school athletics in the Mount Darwin district. The Word Frequency Analysis was used to identify the most frequently used words in the interviews using NVivo 14 software, as presented in Figure 4.3.

Figure 4.3

The Types of Injuries that are Prevalent among Secondary School Athletes in Mount Darwin District



The results presented in Figure 4.3 suggest that muscle strain and ankle sprains were the most prevalent injuries among secondary school athletes in Mount Darwin District. Other injuries such as cramps, blisters, shin splints, and shoulder injuries and dizziness were mentioned but occurred less frequently. These findings suggest that muscle strains and ankle sprains are leading injury concerns for secondary school athletics in Mount Darwin District.

Conclusively, a key difference emerges between qualitative and quantitative results: while muscle cramps were the most frequently reported injury in the quantitative analysis results, they were not as prominently mentioned in the qualitative data. Instead, muscle strain (which may conflict with cramps in everyday language) received more attention in interviews. Ankle injuries were consistently highlighted in both strands. This suggests a strong alignment between data sources regarding ankle injuries but also highlights a potential gap in terminology or awareness when it comes to distinguishing muscle cramps from muscle strains in the qualitative strand.

4.4.3 Research Question 2: What Factors are contributing to Injuries among Secondary School Athletics in Mount Darwin District in Zimbabwe?

4.4.3.1 Quantitative results

In the quantitative strand of the study, data was collected from 156 participants to determine the significance of factors contributing to injuries among secondary school athletics in Mount Darwin District. Data was gathered through a structured questionnaire, and the responses were subjected to a one-sample t-test at a significance level (α) of 0.05, using a test value of 3.0, which represented the midpoint of a 5-point Likert-type scale. The results are summarized in Table 4.4

The 5-point Likert scale used in the study was

1. =Strongly Disagree
2. =Disagree
3. =Neutral
4. =Agree
5. =Strongly Agree

In the analysis:

- Any mean score less than 3.0 indicated that the factor under consideration was not perceived as a significant contributor to injuries among secondary school athletics in Mount Darwin District.
- Any mean score greater than 3.0 suggested that the factor was perceived as a significant contributor to injury prevalence among secondary school athletics in Mount Darwin District.
- A mean score equal to 3.0 reflected a neutral view, implying that respondents were indifferent about the factors contributing to the injury prevalence among secondary school athletics in Mount Darwin District.

The findings presented in Table 4.4 provide insights into the perceptions of young athletes regarding the underlying cause of injuries and can help inform future prevention strategies.

Table 4.4

Perceived Causes of Injuries

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Athletics injuries in secondary schools in Mount Darwin are caused by inappropriate training methods	156	4.08	.800	.064
Athletics injuries in secondary schools in Mount Darwin are caused by inappropriate equipment	156	3.93	.836	.067
Athletics injuries in secondary schools in Mount Darwin are caused by inappropriate facilities	156	4.04	.641	.051
Athletics injuries in secondary schools in Mount Darwin are caused by environmental conditions	156	4.01	.811	.065
Athletics injuries in secondary schools in Mount Darwin are caused by fatigue	156	4.06	.702	.056
Athletics injuries in secondary schools in Mount Darwin are caused by poor nutrition	156	4.01	.753	.060

The mean scores in Table 4.4 indicated that the causes of injuries listed are all above the test value of 3, suggesting that respondents tend to agree that these factors contribute to injuries among athletes. For all listed causes of injuries in Table 4.4, the mean values are significantly higher than the test value of 3; they range from 3.93 to 4.08. This indicates that

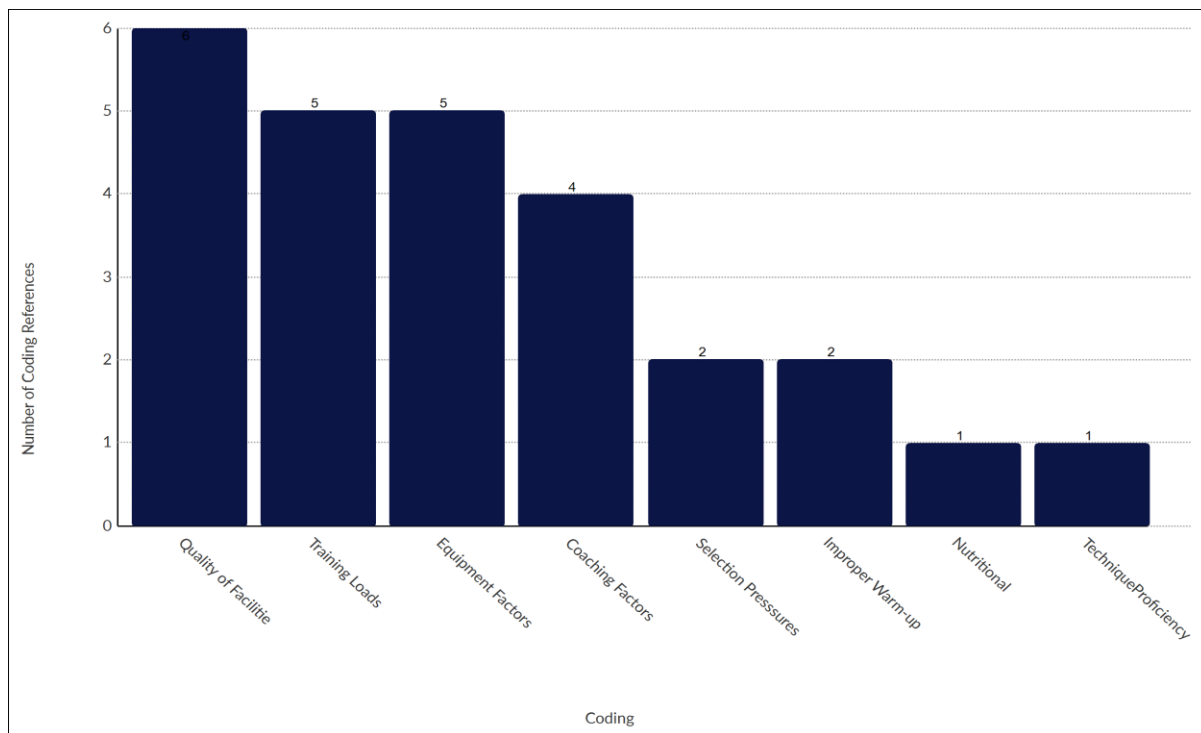
- Inappropriate training methods, facilities, and fatigue have the highest mean scores (4.08, 4.04, and 4.06, respectively), suggesting they are perceived as the most significant causes of injuries.
- Inappropriate equipment, environmental conditions, and poor nutrition also have high mean scores (3.93, 4.01, and 4.01, respectively), indicating they are also considered significant causes.

4.4.3.2 Qualitative Results

In the qualitative strand, nine (9) key informant interview participants were asked about the causes of injuries among secondary school athletes in Mount Darwin District. The resultant data was organized into themes using Nvivo 14 software, as presented in Figure 4.4

Figure 4.4

Causes of Injuries among Secondary School Athletes in Mount Darwin District



The result shown in Figure 4.4 indicates that quality of facilities (6 coding references) is the most frequently cited factor contributing to injuries among secondary schools. Training loads and equipment (5 coding references each) also emerged as significant contributors. In addition, coaching factors (4 coding references) were identified as playing a key role in injury occurrence.

Other contributing factors highlighted by interview participants include selection pressures and inadequate warm-up routines (3 coding references each). Lastly, nutritional issues and technique proficiency were each mentioned once (1 coding reference each), indicating their relative but notable importance in the injury landscape at the secondary school level.

The quantitative and qualitative analyses corroborate strongly in several key areas. Both analyses highlight that the quality of facilities is a critical factor, with high mean factor scores quantitatively (mean=4.04) and the highest frequency of qualitative mentions (6 coding references). Quantitative data identify inappropriate training methods as the highest-rated cause (mean= 4.08), while qualitative data similarly emphasize training loads as a significant factor (5 coding references). This indicates strong corroboration regarding the importance of training practices. Equipment is consistently recognized as a significant factor in both analyses. However, slight discrepancies in the explicit mention of fatigue, nutrition, and coaching factors indicate areas for further exploration in future research. Integrating both data types provides a comprehensive understanding of injury causes, highlighting both broadly recognized and subtly nuanced factors influencing athlete safety and performance.

4.4.4 Research question 3: What Injury Prevention Strategies are currently being used by Secondary Schools in the Mount Darwin District of Zimbabwe?

4.4.4.1 Quantitative Results

In the quantitative strand of the study, data was collected from 156 participants to examine the extent to which the strategies in Table 4.5 are currently used to prevent injuries among secondary school athletics in Mount Darwin District. The data was obtained through structured questionnaires and analyzed using a one-sample t-test at a significance level of $\alpha = 0.05$, with a test value of 3.0, representing a midpoint of a 5-point Likert-type scale. The results are summarized in Table 4.5.

The 5-point Likert scale used was defined as

1. =Never Used
2. =Rarely Used
3. =Neutral
4. =Occasssionaly Used
5. =Always Used

In the analysis:

- Any mean score less than 3.0 indicated that the strategy under consideration was not commonly used to prevent injuries among secondary school athletics in the Mount Darwin District.
- Any mean score greater than 3.0 suggested that the strategy was commonly used to prevent injuries among secondary school athletes in Mount Darwin District.
- A mean score equal to 3.0 reflected a neutral perception of whether or not the strategy being considered was used to prevent injuries among secondary school athletics in Mount Darwin District.

The statistical summary in Table 4.5 provides insights into how frequently current injury prevention strategies are being implemented in Mount Darwin's secondary school athletics.

Table 4.5

Injury prevention strategies that are currently used in secondary schools in Mount Darwin

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
The extent to which nutrition-based strategies are being used to prevent injuries in secondary schools in Mount Darwin	156	3.43	1.330	.106
The extent to which the use of appropriate equipment is being used to prevent injuries in secondary schools in Mount Darwin	156	3.07	1.378	.110
The extent to which the use of appropriate and safe facilities is being used to prevent injuries in secondary schools in Mount Darwin	156	2.56	1.042	.083
The extent to which the use of proper warm-up and cool-down is being used to prevent injuries in secondary schools in Mount Darwin	156	2.50	1.322	.106
The extent to which the use of progressive training and periodisation is being used to prevent injuries in secondary schools in Mount Darwin	156	1.69	1.206	.097
The extent to which the use of adequate rest and recovery is being used to prevent injuries in secondary schools in Mount Darwin	156	2.38	1.110	.089
The extent to which the use of education and supervision is being used to prevent injuries in secondary schools in Mount Darwin	156	2.99	1.312	.105

The results shown in Table 4.5 suggest that nutrition-based strategies (mean=3.43) and appropriate equipment (mean=3.07) are the most frequently used strategies. The strategies that

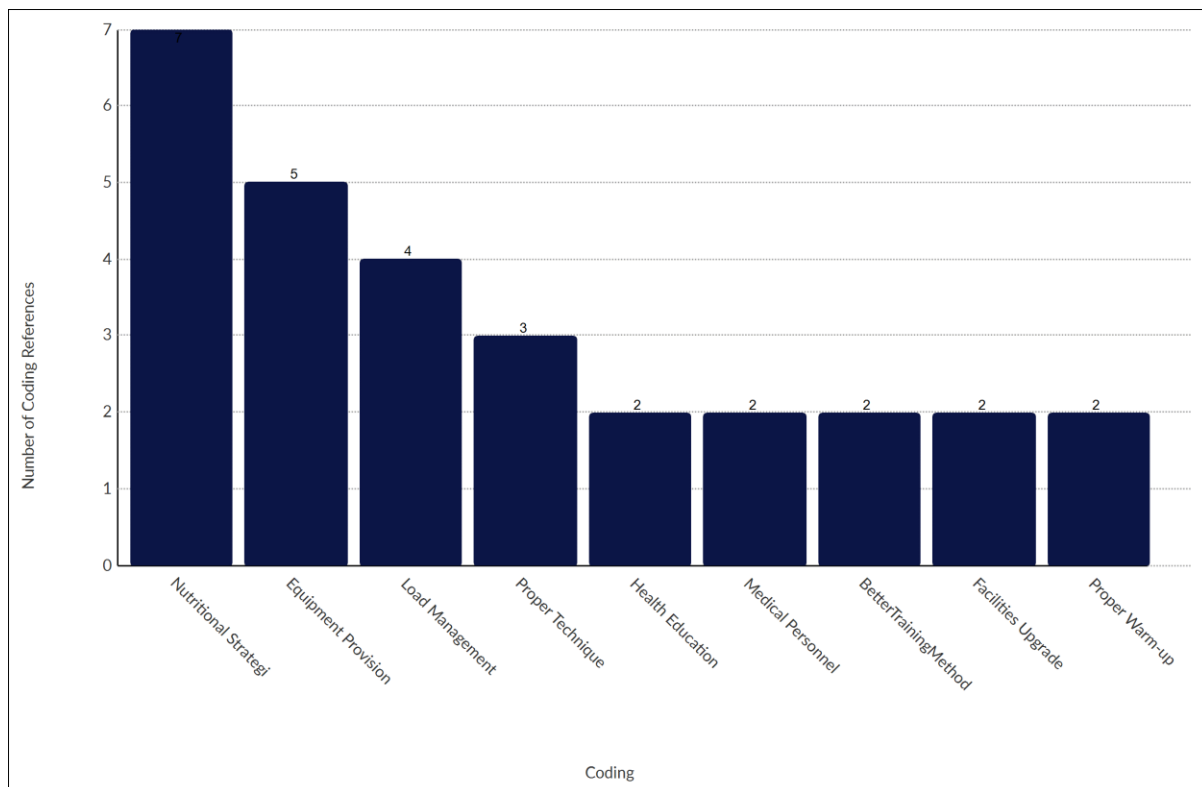
recorded mean scores below the Test Value (3.0) were not being extensively used to prevent injuries among track and field athletes in secondary schools in Mount Darwin District. These include progressive training and periodization, which were perceived as the least utilized strategy, with a significant mean of 1.69. Other underutilized measures included the use of appropriate and safe facilities (mean=2.56), adequate rest and recovery (mean=2.38), and proper warm-up and cool-down (mean=2.50). Education and supervision show no statistical difference from the test value of 3. This suggests that the respondents perceive the use of education and supervision to prevent injuries as being moderately used.

4.4.4.1 Qualitative Results

In the qualitative strand, nine (9) key informant interview participants were asked about the injury prevention strategies currently being used by Secondary School Athletes in the Mount Darwin District. The resultant data was organized into themes using NVivo 14 software as presented in Figure 4.5

Figure 4.5

The Injury Prevention Strategies Currently Being Used by Secondary Schools in Mount Darwin District



These findings suggest that nutritional strategy is the most commonly implemented injury prevention strategy in secondary school athletics in Mount Darwin (7 coding references). This highlights the growing recognition of proper nutrition in supporting athlete health and reducing injury risk, as stated by one of the key informant interview participants:

“We talk to our athletes about eating well and always keeping hydrated and we also make sure our athletes train under the coach’s supervision. We also encourage them to wear proper attire.

This was corroborated by another participant who indicated that,

“We provide health education on injury prevention and nutrition where we encourage our athletes to always keep hydrated and eat healthy food”. For long-distance runners, we encourage facilitators to have water points during competitions.

Provision of appropriate equipment followed closely (5 coding references), emphasizing the importance of safe and sport-specific gear. Load management and emphasis on proper technique (3 coding reference) reflect efforts to balance training intensity and ensure athletes are taught correct movement patterns. Additional strategies identified by participants include health education, access to medical personnel, improved training methods, facility updates, and proper warm-up routines (2 coding references). These findings suggest a multi-faceted approach to injury prevention, though the level of implementation and consistency across schools may vary.

Nutrition-based strategies and appropriate equipment show strong alignment in both quantitative and qualitative data, indicating that they are most frequently implemented. Both datasets agree on the relative underutilization of proper warm-up routines and appropriate facilities. Quantitative data highlight progressive training and periodization as least utilized, but this is less explicitly mentioned qualitatively. Education and supervision show mixed perceptions quantitatively (neutral), while qualitatively they are implicitly recognized through references to health education and supervision. Overall, the quantitative and qualitative largely corroborate, especially on the most and least used strategies. Nutrition and equipment are prioritized. However, some discrepancies exist, particularly for rest and recovery and supervision and education, where qualitative doesn’t fully match statistical scores. Moreover, qualitative data rings out additional themes that suggest broader and more holistic concerns not captured by quantitative tools.

4.4.5 Research Question 4: How Effective are Injury Prevention Strategies that are currently being used by Secondary Schools in the Mount Darwin District of Zimbabwe?

4.4.5.1 Quantitative Results

In the quantitative strand, data was collected through structured questionnaires to determine the effectiveness of the injury prevention strategies that were being used by secondary schools in the Mount Darwin District of Zimbabwe. A one-sample T-test ($\alpha = 0.05$) with a test value of 3.0, indicating the midpoint of a 5-point Likert-type scale, was used to analyze the resultant data as summarized in Table 4.6.

Two hypotheses were generated as follows:

- H_0 (Null Hypothesis): The injury prevention strategies currently used by secondary schools in Mount Darwin District are not effective.
- H_1 (Alternative Hypothesis): The injury prevention strategies currently used by secondary schools in Mount Darwin District are effective.

Table 4.6

Effectiveness of current prevention strategies

One-Sample Test						
	Test Value = 3					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
The injury prevention strategies currently used by secondary schools in Mount Darwin District are not effective.	17.789	155	.000	1.090	.97	1.21

The T value is 17.789 and is greater than the significance level $\alpha = 0.05$; as a result, the null hypothesis that the injury prevention strategies currently used by secondary schools in Mount Darwin District are not effective was accepted and the alternate hypothesis that the injury

prevention strategies currently used by secondary schools in Mount Darwin District are effective was rejected.

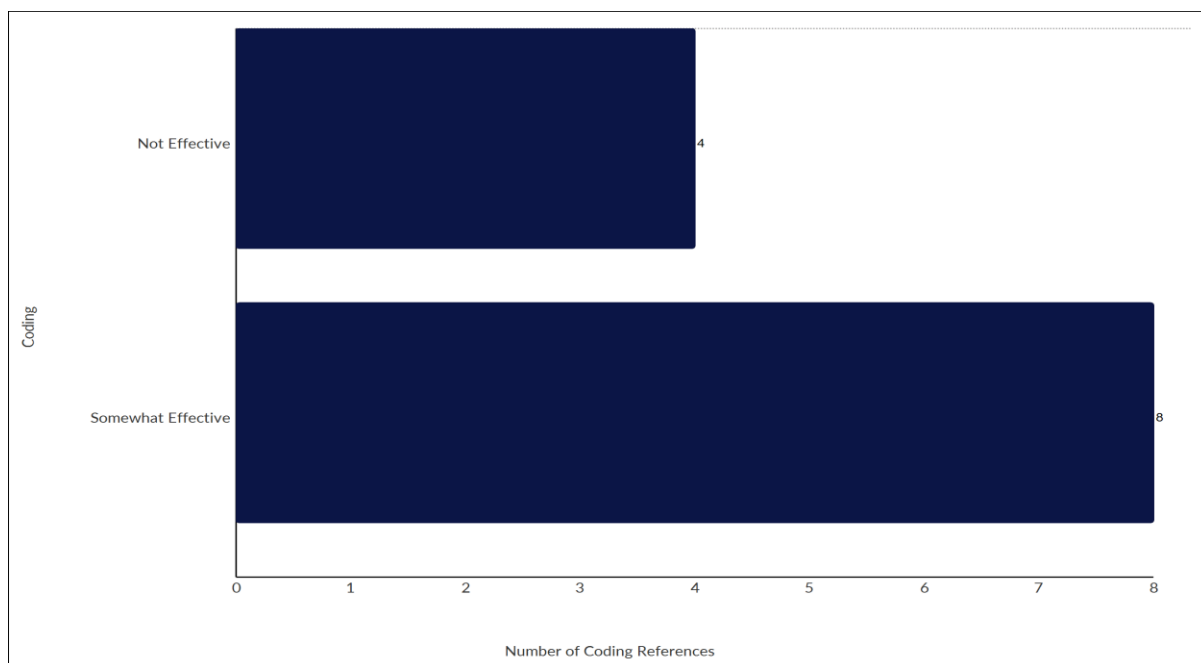
Thus, results suggest that the injury prevention strategies currently used by secondary schools in Mount Darwin District are not effective.

4.4.5.2 Qualitative Results

In the qualitative study, key informant interviews were used to determine the effectiveness of injury prevention strategies currently being used by secondary schools in the Mount Darwin district. The NVivo 14 qualitative data analysis software was used to code the resultant data into themes as presented in Figure 4.6

Figure 4.6

The Effectiveness of Injury Prevention Strategies Currently Being Used by Secondary Schools in Mount Darwin District



From the results presented in Figure 4.6, 8 coding references suggest that the strategies used to prevent injuries among secondary school athletics in Mount Darwin were not effective. This was captured by one of the interviewees as follows:

The strategies are not effective because many athletes don't take these trainings seriously; all they want is to go to competitions

Another interviewee noted that:

Our plans sound good on paper, but it's hard to follow them because sometimes our staffs are just ignorant; they don't do things properly

Whereas 4 coding references suggest that the strategies that were used to reduce injuries were somewhat effective, as noted by one of the participants:

Our strategies help a little because, as much as we try to teach safety, our athletes are still going to train on poor grounds barefoot.

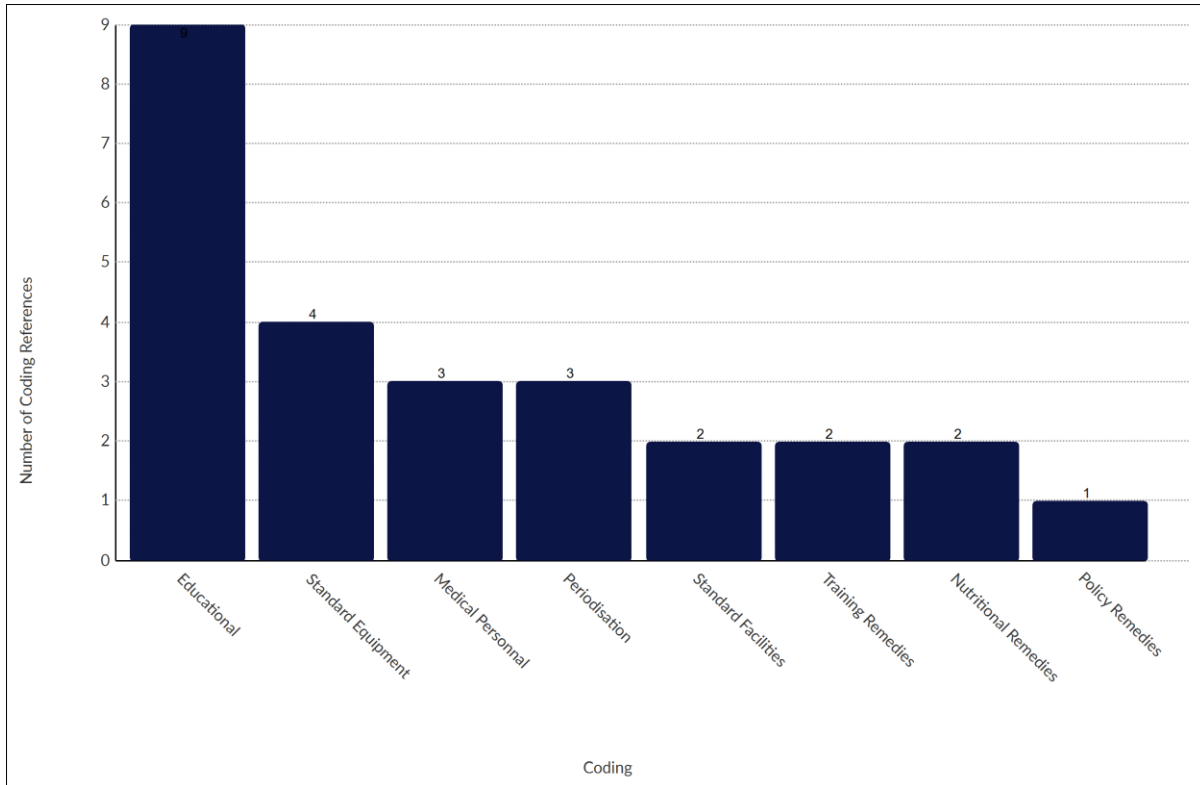
The qualitative and quantitative results strongly corroborate, as both analyses indicate a general perception that current strategies are ineffective. The qualitative insights add depth to the quantitative findings by explaining why the strategies are seen as ineffective. A few qualitative responses highlighted partial effectiveness, suggesting that the strategies may have potential if better implemented.

4.4.6 Research Question 5: What Measures Can Be Developed to Prevent Injuries Among Secondary School Athletics Participants in Mount Darwin District in Zimbabwe?

Key informant interviews were used to determine the effectiveness of injury prevention strategies currently being used by secondary schools in the Mount Darwin district. The NVivo 14 qualitative data analysis software was used to code the resultant data into themes as presented in Figure 4.7.

Figure 4.7

Measures can be developed to Prevent Injuries among Secondary School Athletics Participants in Mount Darwin District.



The findings presented in Figure 4.7 suggest that the most recommended remedy for enhancing the effectiveness of strategies to reduce the prevalence of injuries among secondary school athletics participants in Mount Darwin was the implementation of educational programs, with 9 coding references. These programs should focus on increasing awareness among athletes, coaches, and school authorities about injury prevention, early detection, and safe training facilities, as stated by one of the interviewees:

“We need more workshops on how to prevent injuries, and they should be added to the school program. We should educate our athletes on the importance of doing proper warm-ups and cool-downs and the safe way of handling athletics equipment to avoid injuries”.

Another interview participant noted that:

We need regular workshops on injury prevention, and we also need to have medical personnel on the ground. We also need to advise our athletes to have proper nutrition because a proper diet helps in injury prevention and always keeps them hydrated.

The provision of standard equipment (4 coding references) emerged as a crucial measure. Access to appropriate and well-maintained sporting gear and protective equipment reduces the risk of injuries caused by faulty or substandard tools. This includes proper running shoes, standard hurdles, etc.

The availability of qualified medical personnel (3 coding references) was also emphasized as an essential factor. The presence of trainee physiotherapists and first aid providers during training and competitions ensures timely and effective injury management, which can significantly reduce long-term damage. One of the participants mentioned that:

“I think we need to focus more on strength training to prevent injuries, and we need more training time so that coaches will be able to impart correct techniques”. We also need medical personnel like physiotherapists and medics during training and mostly during competitions.

Another recommended strategy is the incorporation of periodization (3 coding references). This involves structuring training programs to alternate periods of high and low intensity, allowing adequate rest and recovery. Such structured training helps prevent overuse injuries and promotes overall physical development. This was corroborated by a key informant interview participant who asserted that:

We need to have structured training programs to avoid overloading, and we should offer a safe training environment.

The establishment of standard sports facilities (2 coding references) is also vital. Properly designed and maintained tracks and fields contribute to a safe training environment. Training remedies (2 coding references), like strength and conditioning exercises, are important for

preparing athlete bodies to withstand physical demands. The improvement of nutritional support (2 coding references) is another preventative strategy, as it contributes to muscle recovery and energy replenishment. Dietary guidance can play a role in injury prevention.

Lastly, the development and enforcement of policy remedies (1 coding reference), such as injury reporting protocols, safety guidelines, and minimum standards for participation, provide a regulatory framework to ensure athletes' safety is prioritized across all levels of school athletics. One of the interview participants noted that:

“We should introduce some policies that everyone should adhere to, like no event should take place when there is no medical person on the ground, especially during competitions on all levels, from zonal competitions”.

The findings from Figure 4.7 reveal a multifaceted and insightful understanding of the remedies necessary to enhance the effectiveness of strategies aimed at reducing the prevalence of injuries among secondary school athletics participants in Mount Darwin. The results indicate that the most recommended remedy for improving injury prevention strategies in Mount Darwin's secondary school athletics is the implementation of educational programs. These should focus on raising awareness among athletes, coaches, and school authorities about injury prevention, proper training techniques, and the importance of safe facilities. The provision of standard equipment and the presence of qualified medical personnel were also highlighted as crucial factors in reducing injury risks. Other recommended strategies include periodized training programs, improved nutrition, and strength training. Additionally, the development and enforcement of clear safety policies emerged as essential for ensuring athlete protection.

In conclusion, the convergence of these findings points to the need for a holistic, multi-layered approach to injury prevention in school athletics. Educational initiatives must be supported by practical resources, qualified personnel, and a solid policy framework. Through the integration of these elements, effective strategies can be developed to protect and support young athletes in Mount Darwin.

4.5 DISCUSSION

The findings of this study contribute significantly to the existing body of literature on injury prevention strategies in secondary school athletics, particularly within the context of the Mount Darwin district in Zimbabwe. The results reinforce several established theories while also shedding light on gaps in the literature and offering novel insights that can help enhance injury prevention frameworks.

4.5.1 Corroboration with Existing Literature

The study identified muscle cramps, muscle strains, and ankle injuries as the most prevalent types of injuries among secondary school track and field athletes in Mount Darwin District. These findings align with those from a study by Antekolović et al. (2014) which demonstrates that hamstring rupture and strain are predominant in sprint events, while in the jumping disciplines, the most common are ankle sprain, overuse syndrome and muscle rupture and strain and that the dominant injuries in the throwing events were overuse syndrome, nerve injury and muscle rupture and strain. This is echoed by a study by Edouard et al.(2023), which shows that athletes participating in athletics disciplines that require sprinting are more prone to lower limb muscle injuries, particularly hamstring muscle and ankle injuries. In the same vein, Hu (2021) notes that ankle injuries are prevalent in athletics because the ankle joint is the most important weight-bearing joint of the human body, and if the weight of the strong leg does not move when landing, it is easy to sprain the ankle ligament. However, contrary to the findings from a study by Rumini et al. (2024) which showed that female athletes have higher rates of severe injuries, especially in lower extremities such as the ankle and knee with gender-related anatomic or biomechanical disparities in the anterior cruciate ligament being a major contributor to this trend, the results from the current study did not record any significant differences between male and female athletes.

The findings from the current study revealed that athletics-related injuries among secondary school athletes in Mount Darwin District were mainly caused by the poor quality of practice and competition facilities, inappropriate training methods and loads, substandard equipment, nutritional factors and coaching factors. These findings concur with those from a study by Edouard et al., 2024 which established that coaching was a significant factor as athletes who trained under the supervision of a coach experienced fewer injuries than those who trained independently. In addition, Edouard et al. (2024) note that training load was directly associated

with injury risk, with higher or insufficient loads leading to increased injury rates. Edouard et al. (2024) also highlight that environmental and equipment-related factors, such as wearing inappropriate spikes and adverse weather conditions, were also highlighted as contributors to injury occurrence. However, unlike Edouard et al. (2024), who noted that the causes of injuries in track and field athletics vary by type of discipline, the findings of the current study did not align the causes of these injuries with the type of discipline. Edouard et al. (2024) also established that injuries were not considered to be strictly the result of individual factors, but rather the result of the interactions between factors at different levels, including insufficient knowledge of athletic development in daily practice, short-sighted communities of practice and sports policies not adjusted to youth, and societal health behaviour. This was, however, not concurred by the findings from the current study. In the same vein, Goldring et al. (2016) note that female athletes exhibit a higher susceptibility to musculoskeletal injuries compared to their male counterparts due to a combination of anatomical, physiological, and participation-related factors, but this was not confirmed by the findings from the current study.

The results show that schools were mainly using nutrition, equipment and health education-based measures to prevent injuries among track and field athletes. Other measures such as progressive training and periodization, the use of appropriate and safe facilities, adequate rest and recovery, proper warm-up and cool-down and varying training loads according to gender, age and type of event were not being extensively used. These results do not concur with those from a study by Hu (2021) identified paying attention to warm-up activities and strengthening the protection of vulnerable parts, arranging training content reasonably and making adjustments according to the athlete's mental and physical state, strengthening medical supervision and institutionalized management, paying attention to fatigue recovery and dietary nutrition and mastering the correct movement technique proficiently during training or competition as the most effective injury prevention strategies in track and field athletics. They are also not in line with findings from a study by Edouard et al. (2024), which identifies neuromuscular exercises as the most effective strategy for injury management in track and field athletics. These disparities suggest that secondary schools in Mount Darwin District are using inappropriate strategies to prevent and manage injuries in track and field athletics.

The findings show that secondary schools in Mount Darwin District are using ineffective strategies to prevent and manage injuries in track and field athletics. The findings align well with those from a study by Edouard et al.(2023), who note that there was low adoption of injury risk reduction strategies by athletes because currently, no injury risk reduction strategies with a high level of evidence of effectiveness are available specifically for athletics.

The findings point towards a comprehensive approach needed to enhance injury prevention strategies among secondary school athletes in Mount Darwin. The recommended measures include the implementation of educational programs that focus on injury prevention, early detection, and safe training practices, ensuring access to standard, well-maintained sports equipment, employing qualified medical personnel for timely injury management, incorporating periodized training programs, enhancing nutrition support and developing clear policy frameworks. These results align well with those from a study by Hu (2021) identified paying attention to warm-up activities and strengthening the protection of vulnerable parts, arranging training content reasonably and making adjustments according to the athlete's mental and physical state, strengthening medical supervision and institutionalized management, paying attention to fatigue recovery and dietary nutrition and mastering the correct movement technique proficiently during training or competition as the most effective injury prevention strategies in track and field athletics. However, there is no mention of the use of neuromuscular exercises as an injury management strategy in track and field athletics in the current study, which is a departure from the recommendations by Edouard et al. (2024).

4.5.2 Bridging Gaps in the Literature

While existing literature provides valuable insights into factors contributing to athletic injuries, gaps remain, particularly in relation to rural settings like Mount Darwin. Much of the research has centered on urban environments, often overlooking challenges unique to resource-constrained areas. By focusing on Mount Darwin, this study specifically addresses these gaps and demonstrates the pressing need for localized research that informs effective, appropriate strategies.

For instance, the emphasis on educational initiatives within this study highlights a significant gap in the literature, as systematic educational programs tailored to injury prevention have received insufficient attention. The qualitative data underscored the urgency of integrating educational workshops into the school curriculum, promoting performers' understanding of injury prevention measures. This finding acknowledges that enhancing athletes' knowledge and attitudes towards safety is crucial for reducing injury prevalence, as echoed by studies in high-income contexts.

Furthermore, the results highlight the imperative need for policy and infrastructural advancements within school athletics frameworks. The reported need for standardized, well-maintained sports facilities and adequate medical support complements existing recommendations from the literature but emphasizes their critical importance in this specific context, thus bridging significant gaps in the understanding of logistical and systemic requirements for successful injury prevention.

4.5.3 New Insights and Practical Application of Findings

Several new insights emerged from the study's findings that go beyond corroborating existing literature. The identification of specific terms commonly confused in athletic contexts, such as muscle cramps and muscle strains, reflects a nuanced misunderstanding that can impact injury reporting and management strategies. This highlights the need for improved communication and education around injury recognition and terminology.

Moreover, the mixed perceptions of education and supervision, as captured in both quantitative and qualitative analyses, suggest that while there may be general awareness of their importance, actual practices may not align with perceptions of effectiveness. This indicates a gap between knowledge and implementation that needs addressing, particularly through the development of comprehensive training programs for coaches and athletes that align with best practices in injury prevention. Developing injury recognition workshops and distribute visual guides in schools can improve reporting accuracy

4.5.4 Alignment with Established Best Practices and Industry Standards

The study findings align with established best practices and industry standards that advocate for structured warm-up protocols, progressive training regimens, and injury surveillance systems.

The emphasis on the importance of such protocols resonates with international recommendations for injury prevention in sports (Finch et al., 2017). However, the lack of consistent application and customization to address local needs remains a concern. Practically, this research urges the implementation of standardized injury reporting protocols and highlights the necessity for improved infrastructure and resources to support safe athletic environments.

4.5.5 Conclusion: Importance of Findings

In conclusion, this study's findings significantly contribute to the literature on injury prevention in secondary school athletics by corroborating existing knowledge and addressing notable gaps, particularly in rural contexts. By providing new insights into the specific challenges faced by athletes in Mount Darwin, the research underscores the importance of developing context-sensitive strategies that encompass educational initiatives, improved facilities, and institutional support. These adapted strategies are vital to enhancing the safety and well-being of secondary school athletes, ultimately promoting a more equitable and supportive sports environment in Zimbabwe.

4.6 CHAPTER SUMMARY

This chapter detailed the findings of the research, highlighting the significant results and their implications. The next chapter summarizes the key findings from the research, draws conclusions based on the data analysis and provides recommendations.

CHAPTER 5: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter focuses on the summary, conclusions, and recommendations. The conclusions will address the five research questions outlined in Chapter 1. Recommendations for practice and further study are also suggested in the chapter.

5.2 SUMMARY OF MAJOR FINDINGS

This section provides an overview of the major findings based on each research question without delving into statistical specifics. The study identified muscle cramps, muscle strains, and ankle injuries as the most prevalent types of injuries among secondary school track and field athletes in Mount Darwin District. The study also established that athletics-related injuries among secondary school athletes in Mount Darwin District were mainly caused by the poor quality of practice and competition facilities, inappropriate training methods and loads, substandard equipment, nutritional factors, and coaching factors. The results further suggest that schools were mainly using nutrition, equipment, and health education-based measures to prevent injuries among track and field athletes. Other measures such as progressive training and periodization, the use of appropriate and safe facilities, adequate rest and recovery, proper warm-up and cool-down, and varying training loads according to gender, age, and type of event were not being extensively used. In addition, the findings show that secondary schools in Mount Darwin District are using ineffective strategies to prevent and manage injuries in track and field athletics. The findings point towards a comprehensive approach needed to enhance injury prevention strategies among secondary school athletes in Mount Darwin, and the recommended measures include the implementation of educational programs that focus on injury prevention, early detection, and safe training practices; ensuring access to standard, well-maintained sports equipment; employing qualified medical personnel for timely injury management; incorporating periodized training programs; enhancing nutrition support, and developing clear policy frameworks.

5.3 CONCLUSIONS

5.3.1 Research Question 1: What Types of Injuries are Prevalent among Secondary School Athletes in Mount Darwin District in Zimbabwe?

The study identified muscle cramps, muscle strains, and ankle injuries as the most prevalent types of injuries among secondary school track and field athletes in Mount Darwin District.

5.3.2 Research Question 2: What factors contribute to injuries among secondary school athletics participants in Mount Darwin District?

The study also established that athletics-related injuries among secondary school athletes in Mount Darwin District were mainly caused by the poor quality of practice and competition facilities, inappropriate training methods and loads, substandard equipment, nutritional factors, and coaching factors.

5.3.3 Research Question 3: What strategies are currently used to prevent injuries among secondary school athletics participants in the Mount Darwin district in Zimbabwe?

The study established that schools were mainly using nutrition, equipment, and health education-based measures to prevent injuries among track and field athletes. Other measures such as progressive training and periodization, the use of appropriate and safe facilities, adequate rest and recovery, proper warm-up and cool-down, and varying training loads according to gender, age, and type of event were not being extensively used.

5.3.4 Research Question 4: How effective are the strategies currently used to prevent injuries among secondary school athletics participants in the Mount Darwin district?

The study suggests that secondary schools in Mount Darwin District are using ineffective strategies to prevent and manage injuries in track and field athletics.

5.3.5 Research Question 5: What measures can be developed to prevent injuries among secondary school athletics participants in Mount Darwin District in Zimbabwe?

The recommendations for enhancing injury prevention identified from the study included implementing comprehensive educational programs on safe practices, ensuring access to reliable

sports equipment, maintaining safe facilities, and involving qualified medical personnel. The incorporation of periodized training and nutritional support, along with the establishment of regulatory policies, is essential for a successful injury prevention framework.

5.3.6 Overall Conclusion

The convergence of findings from all research questions underscores the necessity for a holistic, multi-layered approach to injury prevention in school athletics. The integration of educational initiatives, practical resources, qualified personnel, environmental improvements, and a solid policy framework is essential for creating effective strategies. By addressing these elements collectively, it will be possible to enhance the safety and support of young athletes in Mount Darwin, fostering a healthier sporting environment.

5.4 LIMITATIONS OF THE STUDY

The study was based on a small sample since it only focused on six secondary schools in the Mount Darwin district. As a result, it may be inappropriate to generalize the findings to secondary schools outside of the Mount Darwin District.

The use of cross-sectional time horizons also limited the study's ability to track the variations of injury over time.

The study was also informed by literature developed from studies done in Europe, North America, and Asia, and this literature may not effectively capture the Zimbabwean context given the vast socio-economic and medical advancement differences.

5.5 IMPLICATIONS/RECOMMENDATIONS

5.5.1 Implications for Practice

The findings of this study suggest several practical measures to address the issues identified:

Enhancing Education Programs: There is a clear need to implement comprehensive educational initiatives for athletes, coaches, and school staff focused on injury prevention. Regular workshops should cover warm-up and cool-down routines, proper hydration, nutrition, safe

training practices, and terminology clarity, especially in distinguishing between similar injuries like muscle cramps and muscle strains.

Improving Equipment Standards: Schools should ensure the availability of high-quality, well-maintained sports equipment, including shoes and training gear. Regular audits of the condition and compliance of sports equipment can help mitigate injury risks.

Qualified Medical Personnel: Secondary schools should prioritize having qualified healthcare providers, such as physiotherapists and sports medics, accessible during training and competitions. This inclusion could facilitate timely injury management and education on safe practices.

Adopting Periodized Training: Coaches should incorporate periodized training programs that balance workloads, allowing for adequate rest, recovery, and conditioning. This method can significantly reduce the risk of overuse injuries.

Facility Maintenance: A commitment to providing safe, well-maintained athletic facilities is essential. Routine inspections and prompt repairs of sports facilities will create a healthier training environment for athletes.

Policy Development: Establishing and enforcing comprehensive safety policies, including mandatory injury reporting and protocols for athlete welfare, is crucial. This framework should ensure accountability and preparedness for emergencies.

5.5.2 Implications for Theory

This research contributes to the existing literature on injury prevention in school athletics by

Bridging Terminology Gaps: By highlighting the discrepancies in how muscle cramps and strains are identified in qualitative vs. quantitative data, the study draws attention to the need for clearer terminology and awareness in sports medicine. This insight can inform future studies and practices concerning injury reporting and prevention strategies.

Highlighting Multifaceted Causes: The strong corroboration between quantitative and qualitative results underlines the complex interplay of factors influencing injuries, like facilities, training

methods, and equipment. This reinforces theories that highlight holistic approaches to injury prevention, emphasizing that factors should not be viewed in isolation.

Contextual Understanding: By focusing on the specific context of Mount Darwin, the study adds a localized perspective to existing research, suggesting that injury prevention strategies need to be tailored to reflect regional practices, resources, and cultural contexts.

5.5.3 Implications for Future Research

Future research should consider the following areas to expand on the findings of this study:

Larger and Diverse Samples: Future studies should aim for larger, more diverse samples to enhance generalizability. Exploring differences in injuries and prevention strategies across various sports, grades, and demographics could yield more comprehensive insights.

Longitudinal Studies: Longitudinal research could provide valuable data on injury prevalence and effectiveness of implemented strategies over time, allowing for assessment of the long-term impact of educational and policy changes.

Investigating Psychological Factors: Further exploration of psychological aspects, such as athletes' attitudes towards injury prevention and the role of motivation in adhering to safety protocols, could deepen the understanding of compliance and engagement.

Comparative Studies: Conducting comparative studies across regions or between different educational settings would help identify successful practices in injury prevention, informing policy and practice on a broader scale.

Impact of Nutrition on Performance and Recovery: Given the limited qualitative discussion on nutrition despite its quantitative significance, future research should explore how nutritional practices specifically affect injury prevention, performance, and recovery patterns among athletes.

Overall, by addressing these areas, future research can significantly enhance the understanding of injury prevention in secondary school athletics and contribute to the development of effective strategies and policies that promote athlete safety and well-being.

5.6 CHAPTER SUMMARY

This research provides a valuable framework for reducing sports injuries among secondary school athletics in Mount Darwin by combining evidence-based strategies with local insights. Its findings have practical implications for schools, coaches, policymakers, and healthcare providers aiming to foster a safer athletic environment.

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APPENDICES

APPENDIX A: CONSENT LETTER

BINDURA UNIVERSITY OF SCIENCE EDUCATION



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CHAIRPERSON DEPARTMENT OF SPORTS SCIENCE

7 April 2025

TO WHOM IT MAY CONCERN.

RE: UNDERGRADUATE DISSERTATION STUDY ACCESS REQUEST.

This is to certify that (Name and Student Number) is a bonafide Bachelor of Science in Sports Science and Management student in the Department of Sports Science at the Bindura University of Science Education. S/He is conducting an action research study entitled: ‘
’.

We are kindly requesting your organization to partner with her/him in the study by participating in the data collection and intervention strategy development process.

Participation in this research is completely voluntary, and you may choose to withdraw from the research at any time. The information from your organization will only be used for academic purposes and be kept private and confidential. Codes will be used to identify

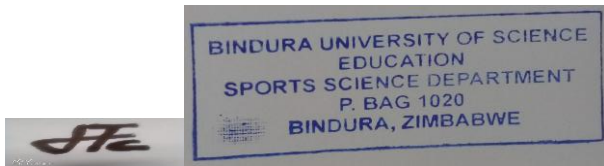
participant organizations. This is meant to ensure that information would not be linked to the providers. Password-protected computers will be used to store any identifiable information that may be obtained from your organization. Data will also be analyzed at the group level to ensure anonymity. You can also sign confidentiality agreements with the researcher.

A copy of the finished work will be provided to your organization after the study. The results of the study are expected to transform practice, and your support will be pivotal to its success.

If you have any queries regarding this project, please feel free to contact us.

We would like to thank you in advance for your support.

Yours Sincerely



Lysias Tapiwanashe Charumbira (Dr.)

APPENDIX B: QUESTIONNAIRE FOR ATHLETES



Questionnaire Questions

Good morning/afternoon. My name is Sabina Muza; I am a fourth year student studying Sports Science and Management at Bindura University. I am conducting a research project on injury prevention strategies in secondary school athletics in Mount Darwin. I have prepared a few questions to gather your insights and experiences, which are very important for my study. Your responses will remain confidential, and I truly appreciate your time and help.

Section A: Demographic Information

Please tick the relevant box

1. Gender: ☐ Male ☐ Female
2. Age: ☐ 13-15 ☐ 16-19

Section B

3. Please indicate if you have suffered any of the following injuries during your training/ competition by ticking in the appropriate column

Type of injury	No	Not Sure	Yes
Shoulder injuries			
Elbow injuries			
Knee injuries			
Ankle sprains			
Hamstring strains			
Groin injuries			
Shin splints			
Stress fracture			
Achilles tendinitis			
Muscle cramps			

4. Please indicate your level of agreement on whether or not the following factors cause injuries among participants in athletics in secondary schools Mount Darwin. Tick the relevant column

Cause	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Inappropriate training methods					
Inappropriate equipment					
Inappropriate facilities					
Environmental					

conditions					
Fatigue					
Poor nutrition					

5. Please indicate the extent to which the following strategies are being used to prevent injuries in secondary schools in Mount Darwin by ticking relevant box

Strategy	Never used	Rarely used	Neutral	Occasssionaly	Always used
Nutrition based strategies					
Use of appropriate equipment					
Use of appropriate facilities					
Appropriate and safe facilities					
Proper warm up and cool down					
Progressive training and periodization					
Adequate rest and recovery					
Education and supervision					

6. Please indicate the level of agreement to the following statement

The strategies that are currently used are not effective	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

7. What injury prevention measures can be developed to improve the current strategies being used in secondary school athletics Mount Darwin?

(Open ended)

APPENDIX C: INTERVIEW GUIDE FOR COACHES AND ADMINISTRATORS



INTRODUCTION

Good morning/afternoon

My name is Sabina Muza; I am a final-year student studying Sports Science and Management at Bindura University. I am conducting a research project on injury prevention strategies in secondary school athletics in Mount Darwin.

I kindly invite you to participate in this research. Your participation is entirely voluntary, and you may withdraw any point without and consequences. The interview is expected to last no longer than 30 minutes. The information gathered will only be used for academic purposes.

To ensure confidentiality, codes will be used to identify participants. During the interview, please do not disclose your name, position, or organization. With your consent, the interview will record and transcribed for analysis.

Demographic Questions

1. What is your role in Athletics?
2. How long have you been working with the athletes?

Main Questions

3. What types of injuries are prevalent among secondary school athletes in Mount Darwin district?
4. What do you think are the main causes of injuries among high school athletes in mount Darwin District?
5. What injury prevention strategies are currently used at your school?
6. How effective do you think your current prevention strategies are?
7. How often do you educate your athletes on injury prevention?
8. Do you think school provides enough facilities/ equipment to minimize injury risks?
9. What are the main challenges you face in preventing injuries?
10. What effects do athletic injuries have on secondary school students in the short and long run?
11. What strategies can be developed to prevent injuries among participants' athletics at your school and other secondary schools in the Mount Darwin district in Zimbabwe?

APPENDIX D: INFORMED CONSENT FOR INTERVIEWS



INFORMED CONSENT FORM

Purpose of Study

You are being asked to participate in a study which seeks to develop injury prevention strategies in secondary school athletics in Mount Darwin district, Zimbabwe.

Conditions for Participation

1. I volunteer to participate in a research project conducted by the Sports Science student of Bindura University of Science Education
2. I understand that I will not be paid for my participation
3. I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind
4. I understand that all information I provide for this study will be treated confidentially
5. I understand that in any report on the results of this research my identity will remain anonymous
6. I understand that disguised extracts from my interview may be quoted in the research report and subsequent publications
7. I agree to my interview being audio- recorded
8. I understand that my identity will be protected
9. By signing this form I am attesting that I have had the purpose and nature of the study explained to me and I have the opportunity to ask questions about the study and fully

understand the nature and character of my involvement in this research and I freely give
my consent to participate in the study

10. I have been given a copy of this consent form

Name of Research Participant..... Signature Date

Name of Investigator..... SignatureDate.....

APPENDIX E: CONSENT FORM FOR ATHLETES



INFORMED CONSENT FORM

I am a fourth-year student at Bindura University; I am conducting a research project focused on injury prevention strategies in secondary school athletics in Mount Darwin. The purpose of this study is to gather valuable insights and experiences regarding injury preventions among young athletes. Your child's participation is crucial for the success of this research, and I assure you that all responses will remain confidential and will only be used for academic purposes. By signing this consent form you agree to allow your child to participate in this study. Participation is entirely voluntary, and your child can withdraw at any time without any consequences.

Consent:

I, the undersigned, consent to my child's participation in this study

Parent/Guardian Signature.....

Date