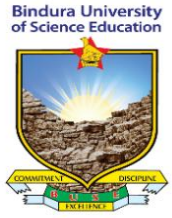

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE ENGINEERING

DEPARTMENT OF SPORT SCIENCE AND MANAGEMENT

HBSCSSM

Developing Interventions to Address the Prevalence of Postural Deformities and Risk Factors among Primary School Football Players aged 6-13 years in Harare Province.

SUBMITTED BY: SHAVA FAITH RUTENDO

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A DISSERTATION SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF SPORTS SCIENCE AND MANAGEMENT.

JUNE 2025

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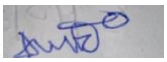
Name of Supervisor: D. Mukwawaya **Signature:**  **Date**: 18/10//25

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DEDICATION

This dissertation is dedicated to my two daughters, whose laughter and curiosity inspire me every day. Your boundless energy and love remind me of the importance of pursuing knowledge and passion. May this work serve as a testament to the value of education and the joy of lifelong learning. I hope to instill in you both the courage to chase your dreams and the belief that you can achieve anything.

ABSTRACT

This study intends to formulate interventions that target the prevalence of postural deformities among Primary school football players aged six to thirteen years within the Harare province. This research focuses on the substantially high incidence of postural disorders in football players that would negatively impact their performance and health. A mixed method approach has been adopted using stratified sampling as well as purposive sampling method among football players from different institutions. Data collection was done through structured questionnaires, interviews as well as physical assessments.

The results indicate a significant prevalence of postural deformities in the subjects, with a difference that could be attributed to age, activity level, and socioeconomic status. The results of the analysis suggest that the identified interventions can include educational courses regarding proper posture, coupled with individualized physical training routines for effective alleviation of the deformities. It further emphasizes early detection and proper intervention as essential in ensuring the physical welfare of young football players.

This dissertation presents novel insights through the development of fusion between theoretical frameworks and practical applications in postural health, such that there is an increased understanding of this phenomenon among the sample demographic. The findings are therefore relevant at the level of sports health as well as education, providing grounds for further research and intervention strategies relating to improving the wholesome health status of young football players.

Keywords: **postural deformities, school football players, Zimbabwe, intervention, health education, physical training.**

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LIST OF ABBREVIATIONS/ABBREVIATION SYMBOLS

H.B. M ---------- Health Belief Model

GLOSSARY

A

Abdomen: The body part between the chest and the pelvis, where some of the parts of the digestive system are placed, is essential for maintaining good posture and core strength **B**

B

Backpack Weight: The weight of a student's backpack which can affect how they carry themselves and their posture.

C

Coaching Practices: The techniques and methods that coaches use to train athletes, which can influence their physical development and posture.

D

Delimitations: Boundaries set by the researcher that outline what the study will and won't cover, like age range and location.

E

Ergonomics: The study of how to design tools and workspaces so that people can use them safely and efficiently.

F

Footwear Guidelines: Recommendations for what kinds of shoes are best to support good posture and prevent injuries.

H

Health Belief Model (HBM): A framework that explains how personal beliefs about health risks and benefits can affect health behaviors.

K

Kyphosis: A condition where the upper back curves excessively outward, often resulting in a hunched appearance.

L

Lordosis: A condition that involves an exaggerated inward curve of the lower back, which can affect posture and balance.

P

Postural Deformities: Abnormalities in body alignment that can impact health, athletic performance, and overall well-being.

R

Regular Follow-Ups: Ongoing check-ins to see how well interventions are working and to track progress in improving posture.

S

Scoliosis: A condition where the spine curves sideways, which can cause discomfort and affect mobility.

T

Targeted Interventions: Specific strategies designed to tackle particular issues identified in research, especially in health and education.

V

Validity and Reliability: Terms used to describe how accurately and consistently research methods measure what they're supposed to.

CHAPTER ONE: THE PROBLEM AND ITS SETTING

1.1 INTRODUCTION

Chapter one outlines the background of the study, the statement of the problem, research questions, research objectives, significance of the study, delimitations, and the study outline. The main aim of this study is to develop targeted interventions to address the prevalence of postural deformities among primary school football players aged 6-13 years around Harare Province. The study also aims to identify and assess risk factors contributing to these to understand the problem and develop the most appropriate measures to prevent and correct it.

1.2BACKGROUND OF THE STUDY

This study concentrates on using various ways of developing programs to help with the postural-related issues among football players in primary schools aged 6-13 years in the province of Harare. These players may be suffering from scoliosis, lordosis, or kyphosis. Immense stress from sports and the injury risk among this age group greatly expose them to postural deformities. The risk can also be improved by repetitive movements as well as strain during play.

Studies done in countries like Chile, Serbia, Germany, and Denmark indicate that, whenever there is a chance for interventions, it should be done so that long-term complications in bones and muscles can be avoided (Intown & Adolescent Medicine, 2025). Despite all this research done in other countries, there is still limited information available regarding postural deformities among these young football players. (Şarvan & Delen, 2024).

Studies conducted in Serbia reported that small-sided games have brought catchable enhancements beneficial for health (Milanović et al., 2015). Studies on postural deformities among primary school football players are still lacking in Zimbabwe. The coaches and parents should be educated about these deformities through awareness programs. Filling this gap would result in better health and performance improvement in primary school football players in the province of Harare.

The study aims to establish the prevalence of postural deformities among these players, identify risk factors, and evaluate certain interventions that would improve their postural health. Findings could be employed to inform better practices and policies regarding young athletes so that a healthier sporting environment can be encouraged.

The researcher was inspired to carry out this study because there are significant gaps in the understanding of such postural problems and how they deal with younger football players. By intervention, researchers will be able to improve these issues in terms of health and performance while also being agents for building a culture of wellness and injury prevention among youth athletes. The research promoted useful data and little-understood details that would benefit mostly young football players and, hence, indirectly affect coaches as stakeholders, leading to a safer and healthier sports experience.

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This study concentrates on using various ways of developing programs to help with postural-related issues among football players in primary schools aged 6-13 years in the province of Harare.

1.3 STATEMENT OF THE PROBLEM

The problem in this study is the prevalence of postural deformities among primary school footballers aged between 6 and 13 years in the Harare province which raises major health

concerns. These deformities are kyphosis, lordosis, and scoliosis, that may affect players' physical performance as well as have long-term implications for musculoskeletal development. This problem affects the physical health and athletic performance of young football players, as well as continuing public health challenges. According to Yang, (2020), evidence has shown a rising statistical rate and observations from healthcare professionals and educators, alongside public concern from parents regarding long-term health implications. Chikanda et al., (2020) assert that current practices to solve these issues are not effective but hardly systematic assessments and insufficient educational initiatives for coaches and parents.

According to García-Hermoso et al., (2019), there's a global awareness of postural deformity issues conducted in various countries such as Chile, Serbia, Germany, and Denmark which emphasized the importance of its early detection and intervention. However, there's still an apparent gap regarding research into Primary school children, especially in football. Focusing on health and injury concerns is important for young football players so as to improve their performance and avoid injuries. The study looked at prevalent conditions that cause poor posture, developed specific training and behavior instructions, and assessed how well they perform. This will practically improve the participation of the football players in Harare Province.

1.4 SIGNIFICANCE OF THE STUDY

This study aims to develop interventions for dealing with postural deformities in Primary school football players aged 6-13 years within Harare Province. Practical solutions, including educational programs to educate coaches and parents on postural health and custom-made training programs for football players, can be proposed in order to increase awareness and improve physical training techniques. Such findings may also assist the policymakers in advocating for the integration of postural health into the school curriculum. The research also aims to fill theoretical gaps in the literature by putting its findings into context within childhood health and sports science, therefore improving both health and sports performance at the same time solving a pressing public health issue. Dissemination of the research findings will be done through a number of ways, which are peer-reviewed journals like the Journal of Sports Medicine,

presentations at pertinent conferences, and also using grey literature platforms to reach local policymakers to share knowledge with stakeholders.

1.5 RESEARCH QUESTIONS

1.5.1 Primary Research Question

What interventions can be done to address the prevalence of postural deformities among primary school football players aged 6-13 years in Harare Province?

1.5.2 Sub-questions

i. How prevalent are the postural deformities (scoliosis, kyphosis, lordosis) among football players in Harare Province, Zimbabwe?
ii. What factors are causing the development of postural deformities among primary school football players in Harare province?
iii. How effective are the current strategies being used to prevent postural deformities among football players in Harare Province?
iv. What measures can be developed to help prevent postural deformities among primary school football players in Harare Province?

1.6 RESEARCH OBJECTIVES

1.6.1 Primary Objective

To develop and evaluate effective interventions aimed at addressing the prevalence of postural deformities among Primary school football players aged 6-13 years.

1.6.1 Sub objectives

i. To assess the prevalence of posture deformities (scoliosis, kyphosis, lordosis) among football players in Harare Province, Zimbabwe.
ii. To identify factors causing postural deformities in primary school football players in Harare Province.

iii. To evaluate the effectiveness of current strategies for preventing postural deformities among football players in Harare Province.
iv. To develop measures aimed at preventing postural deformities among primary school football players in Harare Province.

1.7 DELIMITATION OF THE STUDY

This study focused on Primary school football players aged 6-13 years in Harare Province, purposely excluding other football players outside this age range. The geographic area is limited to selected urban and rural schools in Harare province, Zimbabwe. It specifically addressed the common postural deformities, which are scoliosis, kyphosis, and lordosis, rather than including all possible musculoskeletal issues.

1.8 STUDY OUTLINE

This academic study on postural deformities in Primary school football players is divided into five chapters. The first chapter establishes the research's background, problem statement, objectives, questions, and scope, emphasizing the issue's prevalence and impact. The second chapter provides a comprehensive literature review on global and local prevalence, risk factors (socio-economic, physical activity, educational environments), and existing interventions while identifying critical research gaps. Chapter three gives details on the mixed method t research design, including population, sampling, data collection instruments (questionnaires and physical assessments), analysis methods, and ethical considerations. Chapter four presents and discusses the study's quantitative findings in relation to the research questions and existing literature, proposing interventions based on the results. Lastly, chapter five summarizes key findings, articulates the study's contributions, offers recommendations for interventions, and suggests future research directions to positively influence public health and educational practices in Zimbabwe.

1.9 CHAPTER SUMMARY

Chapter one first highlighted the background for the problem under study, then also highlighted the essence of addressing postural deformities among Primary school football players. It also went on to outline the objectives and limitations of this study and thus set the stage for Chapter 2

to investigate further into the existing knowledge base through a wide literature review so as to discover gaps and place this research within that larger field.

CHAPTER TWO: LITERATURE REVIEW

2.1. INTRODUCTION

This chapter aims to explore the development of postural deformities among the 6-13-year-old football players around Harare province and then look for the proper ways to intervene. Scoliosis and kyphosis may greatly impact the health and performance of young football players. Existing research on the prevalence of deformities, risk factors, as well as intervention strategies, will be analyzed, at the same time identifying gaps in literature that are different from Zimbabwe. The combination of this information helps the researcher to provide a foundation for interventions that are tailored to improve postural health as well as the well-being of football players.

2.2 CONCEPTUAL REVIEW

2.2.1 Key Concepts and Definitions

2.2.1.1. Postural Deformities

According to Parnell et al. (2019), postural deformities refer to deviations from the normal alignment and positioning of the body, which can lead to various physical issues. These deformities can lead to scoliosis, kyphosis, and lordosis which have negative impacts on physical health. This document conceptualizes postural deformities as various factors that can be intrinsic or extrinsic with an aim to develop interventions targeted towards educating people about postural health. Figure 2.1 shows pictures of people suffering from Lordosis, kyphosis, and scoliosis.

Figure 2.1

***Example of a normal spine, lordosis, kyphosis, and scoliosis postures respectively*.**

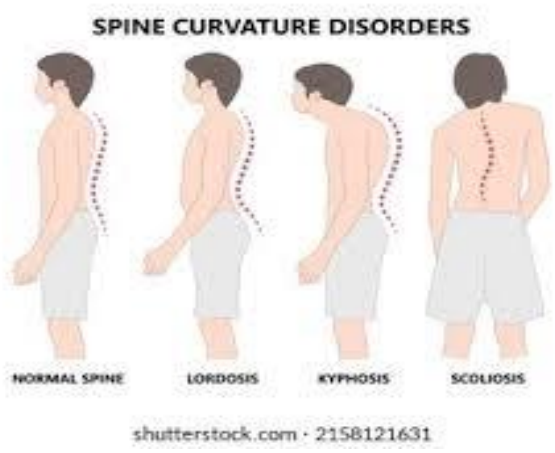


Figure 2.1 shows different postures. On the left side, the first picture shows a normal spine which means the person is free from deformities. The second picture shows a person suffering from lordosis which is an excessive inward curvature of the lumbar spine, resulting in a pronounced arch in the lower back, which can lead to muscle imbalances and discomfort. The third picture shows kyphosis, which involves an exaggerated outward curvature in the thoracic region, often leading to a hunched appearance and potential respiratory issues due to compression of the thoracic cavity. Scoliosis posture is shown on the last picture which is marked by a lateral curvature of the spine, which may manifest as an "S" or "C" shape, causing uneven shoulders or hips. Each of these conditions arises from different physical changes in the vertebrae and can necessitate medical evaluation and treatment to address pain and improve function.

2.2.1.2 Risk factors

Risk factors are features that increase the possibility of developing a particular health issue, in relation to postural deformities, risk factors can include poor ergonomics, lack of physical activity, and socioeconomic status (Moyo et al., 2020). Research by Chirenje (2021) suggests that environmental factors, such as inadequate classroom furniture and prolonged sitting, also contribute significantly to the prevalence of postural problems. This research intends to analyze the risk factors (intrinsic or extrinsic) that may contribute to postural deformities. The study aims to promote overall health in terms of postural health by bringing interventions to fully address these risk factors.

Among football players, postural deformities have been proven to be influenced by conditions which are referred to as risk factors, (Moyo et al., 2020). In this case, risk factors are the socio-economic as well as environmental factors. The development of knowledge over deformities has changed over time from being structural to considering environmental and socio-economic factors (Chirenje, 2021). A number of researchers are now in agreement that, the risk factors are a combination of intrinsic which are genetic factors, as well as extrinsic which are the socio-economic factors. On the other side, other researchers are in conflict about which of these factors contributes more to the problem of postural deformities with some concentrating more on genetics while others concentrating on external factors. The research views these factors as interrelated giving a broader approach towards the formation of interventional strategies. Therefore, a combination of the intrinsic and extrinsic factors creates wholesome approaches used to address the prevalence of postural deformities among primary school football players in the province of Harare.

2.3 THEORETICAL REVIEW.

2.3.1 Key theories to the research.

The continuous investigation of postural deformities among young football players in schools is connected to different theories. These theories are The Biomechanical theory, Bronfenbrenner's Ecological Systems Theory, and the Health Belief Model. These theories focus on the multifaceted aspects of both individual and socio-economic factors. While these theories can inform about the subject and their generality, when critically analyzed, they reveal their strengths and weaknesses. This calls for critical analysis in order to find a more suitable approach to deal with the prevalence of postural deformities among 6-13-year-old football players in primary schools.

The Biomechanical Theory.

Changes in normal body alignment can lead to physical problems in primary school football players. Repetitive movements, muscle imbalances, and poor postural habits can contribute to postural deformities. (Hajduk & Schmidt bleicher, 2024). This theory focuses on the importance of optimal alignment for efficacy as well as preventing injuries by incorporating

corrective exercises. However, this approach may ignore psychological factors, individual differences, and socio-economic influences focusing on short-term corrections rather than long-term change. Recent studies indicate that early sports specialization can lead to postural malalignment (MDPI, 2023). Therefore, this theory cannot be applied in this context because it does not adopt a holistic approach. It leaves out the socioeconomic and psychological part.

Bronfenbrenner's Ecological Systems Theory

According to Rosa & Trudge, (2022), Bronfenbrenner's Ecological Systems Theory emphasizes that development is influenced by interconnected systems, including the microsystem (family, school), mesosystem (interconnections), exon-system (external factors), macrosystem (cultural norms), and chronosystem (time). This ecological system theory provides a guide to the interventions for postural deformities among primary school football players in Harare province by educating families and coaches, addressing cultural beliefs as well as promoting stakeholder collaboration. The theory has limitations too which are; its complexity, and may also overlook biological factors and individual activity while focusing on environmental factors that may limit its relevance across different cultures.

Health Belief Model (HBM)

The Health Belief Model is the framework upon which the study examines health behaviors related to postural deformities among Primary school football players in Harare Province aged between 6 and 13 years. Its major concepts are vulnerability, severity, benefits, and barriers in which football players and caregivers have different perceptions of these concepts. Existing interventions have largely ignored these beliefs, which hinder their effectiveness and result in poor compliance with posture correction advice (Negrini et al., 2018).

The findings of the study will evaluate components of HBM to find the most suitable one that aligns well with young football players while culturally influencing health and wellness. This theory can be applied well to this dissertation as it is relevant to the topic. Its application builds a basis for the coherence of the psychological and socio-economic factors. The combination of the two intends to improve the overall well-being of players as well as posture correction.

2.4 THEMATIC REVIEW

The prevalence of postural deformities can be divided into themes that may have been covered by literature in terms of postural deformities. These include

- Prevalence of postural deformities
- Causes of Postural Deformities
- Effectiveness of Current Preventive Strategies
- Development of New Preventive Measures

2.4.1 Theme 1: Prevalence of Postural Deformities

Postural deformities are evidently high among football players worldwide, about 30% of Primary school studies reporting cases by Moyo et al. (2020) and Chirenje (2021) among different socio-economic contexts. Due to excessive time spent on the screen by children, the prevalence of postural deformities may get worse hence 'tech neck' long screen hours may also lead to increased roundedness at the upper back which is more common in youth as a result of high usage of mobile devices. There are also traditional factors such as heavy backpacks, distance traveled to school, transport to school to name a few. If these traditional are combined with the modern ones, it may result in serious postural health issues. Research by Chirenje, (2021) provides a basis for the concept's specific interventions but is limited in scope by small sample sizes as well as lack of longitudinal data therefore requiring further dedicated study to ensure a wider quantification of this health problem.

2.4.2 Theme 2: Causes of Postural Deformities.

Literature has shown a lot of factors that contribute to postural deformities among football players in primary schools in Harare province. The major causes include ergonomic factors, the distance traveled to school, heavy backpacks, time spent on the screen and lack of physical activity, and other constraints that limit access to training facilities and health education (Manyanga et al., 2022) Emerging trends highlight the increasing impact of screen time on posture, particularly as children engage with digital devices in non-ergonomic positions (Straker et al., 2024). With all these factors noted, there still exist a significant gap in research focusing

on the interplay between these factors in the context of Zimbabwe and evaluating how they interact to increase the risk of postural deformities.

2.4.3 Theme 3: Effectiveness of Current Preventive Strategies.

Educational programs for parents and coaches are the current strategies that can be used to prevent postural deformities. While some studies have shown improvements in posture and awareness, the lack of follow-up and systematic implementation remains a limitation (Zyoud et al., 2024). Critical assessments of existing literature agree on the need to find structured interventions that include consistent screening and monitoring of posture among football payers. However, there is lack of longitudinal data in many studies that assess the long-term effects of these strategies thus indicating a gap in the literature that could inform future interventions.

2.4.4. Development of New Preventive Measures

The necessity for innovative preventive measures tailored for the Province of Harare is currently growing and recognized. These suggested measures include, community workshops, training sessions integration, regular assessments, and the development of policies that promote safe playing environments (Manyanga et al., 2022). A shift towards holistic approaches, that involve stakeholders, like parents, schools, and healthcare providers in an effort to address the postural deformities should be done. This shows a complete change from isolated interventions to more comprehensive and community-based strategies. However, literature reviews lack studies that assess how effective these integrated measures are, thereby identifying another area for future research.

2.5 CONCLUSION

In a nutshell, the examination of postural deformity themes among primary school football players in Harare province shows gaps in the literature. Particularly, an awareness of modern risks such as screen time is growing, and these are not fully addressed in the existing preventive strategies. While previous researches give essential perceptions into the factors causing postural deformities', they frequently lack localized data that considers the different cultural environments and socio-economic factors for Zimbabwean children.

2.6 CHAPTER SUMMARY

This chapter gives a comprehensive overview of the prevalence, the risk factors, as well as the potential intervention strategies for postural changes among the football players in Harare Province primary schools. It recognizes key trends in modern risk factors alongside traditional factors, like inadequate physical activity, as well as socio-economic factors. However, the review points out gaps like a lack of longitudinal studies on the long-term effects of postural deformities as well as intervention strategies designed for these players. The third chapter will work on the research methodology, detailing design, data collection methods, -and analytical approaches to address these identified research questions and objectives.

CHAPTER THREE: MATERIALS AND METHODS

3.1 INTRODUCTION

This chapter describes methodology of the research that are used to examine the prevalence of postural changes as well as the associated risks factors among the age group in question. It consists of the presentation of research approaches, time horizons, strategy for research, population and sampling procedures, data collection, data analysis and presentation as well as ethical considerations.

3.2 METHODOLOGICAL APPROACH

This study used a mixed method approach to estimate the prevalence of postural deformities in primary school football players aged 6-13 years. The mixed method approach aimed to validate findings by corroborating evidence from different methods ensuring the credibility of the results. Creswell (2021) asserts that a mixed methods study provides a better understanding of research problem sand complex phenomena than only one approach. Data collection was done through interviews for sports directors, structured questionnaires distributed to football players to gather demographic data as well as lifestyle information, such as time spent on screens and the types of transport they use to get to school, to name a few. Players responded to the questionnaires from their homes and received assistance from parents and teachers when necessary. Data collection also included testing and measurement conducted with a standardized postural assessment and analysis tool (plumb line) alongside a digital application (Muscle and Motion Posture) used by health workers to assess body alignment.

3.3 TIME HORIZONS

The study followed a cross-sectional time horizon. This approach involves collecting data simultaneously over a short period. In this case, data was collected over two weeks. Cross-sectional studies can effectively identify health problems and establish associations among variables at a given time (levin, 2006). This cross-sectional design was chosen by the researcher because it facilitates the quick discovery of health issues, owing to its practicality and time-efficient nature, unlike longitudinal studies, which can be costly and time-consuming. It was also a suitable method due to the limited timeframe for conducting research allocated by Bindura University.

3.4 RESEARCH STRATEGY

This study used the observational and evaluative strategies. The main aim was on validating evidence from different methods to give strong understanding of the main types of postural deformities and their prevalence. According to Creswell (2021), experimental research designs are particularly effective for establishing causal relationships between variables. This method allowed data to be collected through interviews and questionnaires. Questionnaires were distributed to the participants in order to respond to demographic and lifestyle questions while interviews were done orally. Participants would answer for themselves or get assistance from their parents or teachers. Health workers also assisted with testing players for scoliosis, lordosis and kyphosis. The researcher was able to collect quantitative and qualitative data on prevalence of postural deformities and suggested possible intervention strategies in a bid to improve postural health among the young football players in Harare province.

3.5 POPULATION AND SAMPLING

3.5.1 POPULATION

The population consists of 5100 primary football players between 6 and 13 years old, within the Harare area of Zimbabwe. A sample of this population was studied. The sample included young footballers among the age of 6-13 years within the province of Harare, and excluded all players outside of this range and geographical place.

3.5.2 SAMPLING PROCEDURES

The writer used a stratified sampling procedure for the quantitative strand where the population under study was divided into different strata to reduce sampling error and thus enhance the accuracy of the prevalence estimates. The population was stratified according to age, with 6-8 years 9-11 years, and 12-13 years as the age groups, and also according to gender, with boys and girls. The sample size calculated was allocated to each stratum in a relative way. The goal is to produce objective, empirical data that can be measured and expressed numerically. Stratified sampling ensures adequate representation of all relevant subgroups in the sample, preventing

over or underrepresentation of certain population features that can occur with simple random sampling (Life, 2024).

For the qualitative strand, a purposive procedure was used focusing on individuals possessed knowledge in football. Purposive sampling allows researchers to select participants who meet specific criteria relevant to the study, ensuring that the sample is closely aligned with the research objectives (Etikan, et al,2016) A clear criterion for participant selection was done to ensure those chosen could provide rich insightful data. The sample ensured that, the participants had experience as sports directors or soccer coaches for more than 2 years. This ensured that that the findings of the research reflected the true target population so that effective interventions could be developed.

3.5.3 SAMPLE SIZE DETERMINATION

3.5.3.1 Quantitative Sample Size

The sample size for the quantitative component of the study was determined using the sample size calculator to determine the number of samples for the study, as shown below.

Table 3.1

Quantitative sample (20 % sample size)

Stratum	Population (N)	Sample size (n)	Calculator method
Football players	5000	500	n=1+N(e2) N

Table 3.2

Qualitative sample

Purposive sampling method table

School	Role	Experience level	Soccer knowledge	Sample size
School 1	Sports director	Experienced	Yes	1
School 2	Sports director	Experienced	Yes	1
School 3	Coach	Experienced	Yes	1
School 4	Sports director	Experienced	Yes	1
School 5	Sports director	Experienced	Yes	1
School 6	Sports director	Experienced	Yes	1
School 7	coach	Experienced	Yes	1
School 8	Coach	Experienced	Yes	1
School 9	Sports director	Experienced	Yes	1
School 10	Coach	Experienced	Yes	1
Total				10

This research used a mixed-methods approach to investigate the experiences and outcomes of football players. A sample size of 500 football players was chosen for the quantitative part, supported by statistical power analysis (Faul et al., 2019), ensuring enough power to detect significant differences and associations. The quantitative strand is important for identifying patterns and trends in large data sets, generating generalizable results across wider populations, and providing objective measurements to reduce bias. This allows for clear group comparisons and rigorous hypothesis testing, enhancing the credibility and validity of the research conclusions (Zyoud et al., 2024).

Alongside the quantitative analysis, qualitative data were collected through interviews with a sample size of 10 participants. This qualitative part aims to explore the deeper experiences and perspectives of the football players, providing context for the quantitative findings. By integrating these qualitative insights, the study enriches the understanding of the numerical data and offers a fuller narrative of player experiences.

Combining quantitative and qualitative methods strengthened the overall research design and led to a comprehensive understanding of the topic. This mixed-methods approach ensures both objectivity in measurement and depth in insights, resulting in a more thorough analysis of the research questions (Helpful, 2025).

3.6 DATA COLLECTION PROCEDURES

The mixed method (quantitative and qualitative) data collection started with a pilot study followed by a main study.

3.6.1 THE PILOT STUDY

Data collection began with a pilot study to evaluate the feasibility of screening methods, and utilized standardized questionnaires on demographics, interviews, and postural health assessment by trained personnel. This phase provided feedback for refining instruments for the main study

3.6.2 THE MAIN STUDY

The main study assessed across 10 primary schools 500 football players in Harare through questionnaires and physical assessments. Sports directors from these 10 schools were also interviewed using the structured interview questions. Subsequently, questionnaires were physically distributed to football players to respond, and those who could not answer for themselves were assisted by their caregivers to get information regarding their demographics.

Following this, a mobile application called Muscle Motion and Posture was used by trained health practitioners to analyze the postures of the football players. This enabled the real capture of alignment and movement data used to determine deformities such as scoliosis, kyphosis, and

lordosis among the football players. Football players were positioned in front of a camera connected to the app to scan variations such as head, spine, shoulders, hips, ankles, neck, upper back, trunk, abdomen, and lower back.

The information gathered from both the questionnaire and the assessment enabled understanding of the prevalence of postural problems, in addition to the cultural factors influencing attitudes towards corrective measures. Based on the findings, specific interventions would be proposed, focusing on education, physical training, and support from caregivers or peers.

3.7 DATA ANALYSIS AND PRESENTATION

The research study centered on a mixed-method data collection for assessment of the postural deformities of Primary school football players. The quantitative data was processed through application of the Statistical Package of Social Sciences (SPSS) for descriptive statistics, which then generated the demographics and prevalence rates of postural deformities. NVivo was used to analyze the qualitative data. Chi-square tests were carried out to find associations among the variables, while relationships with risk factors were analyzed using logistic regression analysis. In addition, bar graphs, pie charts, and tables offered a visual display of general findings. The analysis was intended to provide a more comprehensive picture of postural deformities that could be utilized for effective development of interventions suited to football players in Primary schools.

3.8 VALIDITY AND RELIABILITY

The quantitative and qualitative research established validity through expert validations of questionnaires and interview questions adapted from existing literature. A pilot study tested the clarity and reliability of these instruments, paving the way for the main study, where the physical tests were done together with the questionnaire, with feedback used for refinement. Cronbach's Alpha was used to test the reliability of the questionnaire, and the value was above 0.70, which generally indicates acceptable reliability. The physical tests were done in the morning. Morning/evening tests can perform better (Köse et al., 2024). As a result, the research method and instruments were reliable and valid. Data analysis was conducted using NVivo and the rigorous statistical methods, both descriptive and inferential, on SPSS to test for statistical significance.

3.9 ETHICAL CONSIDERATIONS

This study sought to give emphasis and priority to ethical considerations necessary for protecting the rights and welfare of participants. Approval from the Ministry of Education and the heads of all the schools in Harare was sought. Parents and guardians were provided information both in English and Shona for consent; when football players were involved, verbal assent was obtained. Participants were not offended during the physical assessment that was undertaken by trained persons. Identification numbers were allocated to maintain confidentiality, and all the data were well secured, hence guaranteeing confidentiality when analyzing and reporting.

3.10 CHAPTER SUMMARY

The quantitative methodology was designed to determine the prevalence of postural deformities and risk factors among Primary school football players aged between 6 and 13. The 500 participants were selected using a stratified random sampling method. The main data collection tools were structured questionnaires and physical assessment checklists. These instruments were presented beforehand to ensure their validity and reliability. Data analysis was conducted by descriptive and inferential statistics, using SPSS and NVivo. The quantitative and qualitative findings guided the intervention programs for the identified postural health problems.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION

4.1 INTRODUCTION

This chapter covers response rates, sample demographics, and the reliability of data collection instruments. The focus is on postural deformities (kyphosis, lordosis, and scoliosis) and related risk factors like physical activity and ergonomic design. Results are presented with statistical support. The discussion highlights implications for understanding posture issues in Zimbabwe, addresses research limitations, and provides recommendations for future studies and practical applications for schools and policymakers.

4.2 RESPONSE RATE

Table 4.1

Study Respondents

Groups	**Target**	**No. participated**	**%**
6 years	63	63	100
7 years	62	62	100
8 years	62	62	100
9 years	62	62	100
10 years	62	62	100
11 years	62	62	100
12 years	62	62	100
13 years	65	65	100
Sport directors	10	10	100

Total	510	510	100

This study recruited 500 football players aged 6 to 13, and they all participated in the study, achieving a 100% response rate with 62-65 participants in each age group. This ensured a balanced representation across cohorts. Ten sports directors were also recruited from the schools that had football participants All the sports directors and coaches participated achieving a 100% response rate. This equal distribution facilitates better comparisons of age trends in postural deformities and risk factors. The full enrollment enhances the confidence and generalizability of the results to the broader population of Primary school football players in this age range. Additionally, the absence of non-response bias further validates the sample's alignment with the target population, reinforcing the strength of the study's findings (Smith & Jones, 2022).

4.3 DEMOGRAPHICS

Table 4.2

Gender of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Boy	252	49.41	49.41	49.41
	Girl	248	48.62	48.62	98
	Sports directors	10	1.97	1.97	1.97
	Total	510	100	100	100

Gender was rather well represented in the 500 participants, with 252 boys (50.4%) and 248 girls (49.6%). This well-balanced representation is extremely important for contrasting and comparing data across both genders. Ten sports directors were also interviewed from the schools where the football players were selected. The researchers have put forth a symmetrical effort in achieving balanced gender representation, which is particularly crucial for studies involving physical health and development because the incidence and expression of postural deformities are likely influenced by gender.

The study has examined the posture deformations and risk factors, demonstrating how those patterns reveal gender differences. This kind of representation eventually brings about statistical validity, making the results strong enough to deal with comparative analysis as against boys and girls: in this case, any observed differences could confidently be said to have significant statistical differences.

With the same measure, equal gender representation increases the generalizability of the findings to the entire population of school-going football players in Zimbabwe, and hence the results may be confidently applied to male and female students.

Table 4.3

Physical characteristics of the football players in the study

	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Age	500	6	13	10.09	2.185
Weight	500	17	47	31.11	7.871

Height	500	24	158	135.31	12.201
Valid N (listwise)	500				

Table 4.3 pertains to the general physical characteristics of the participants in the study.

Age:

The participants were predominantly aged between 6 years to 13 years, having a mean with an average of 10.09 years and a standard deviation of 2.185 years. The very wide age range and pretty even distribution of subjects within the different ages make for comprehensive analyses of the age-related trend concerning postural deformities and their risk factors.

Weights:

The weight of the participants ranges from 17 kg to 47 kg, with an average of 31.11 kg and a standard deviation of 7.871 kg. The differences in weight will be taken into consideration because these may be considered as contributing factors to the incidence of deformities in posture. Weighing postural considerations with respect to weight would produce valuable insight.

Height

The height of participants ranged between 24 cm and 158 cm, with a mean of 135.31 cm and a standard deviation of 12.201 cm. This variation in height is of great importance toward posture deformities since different heights may correlate with different types or severity of posture problems.

Because of the wide age range with even age-wise distribution, such that age-related trends can be well analyzed for posture deformities, and critical stages/age risk factors may be identified. Therefore, this range of weights and heights provides an opportunity to study how these two

variables may play a role in the overall prevalence and severity of posture deformities for targeting treatment and prevention.

The wide range of physical characteristics being considered helps in generalizing the findings to the wider population of 6 to 13-year-old Primary school football players, thus representing the population. Also, relationships among age, weight, height, and posture deformities have been identified in particular subgroups that may be at greater risk for the development of postural issues; this will assist in refining prevention and intervention strategies.

With findings eliciting vast descriptive statistics, the information might provide, thus making it easier to understand the physical characteristics of the participants in order to assist in analyzing the pertinent issues of the Primary school football players in adhering to proper posture and physical development.

Figure 4.1

Location of the football players in the study

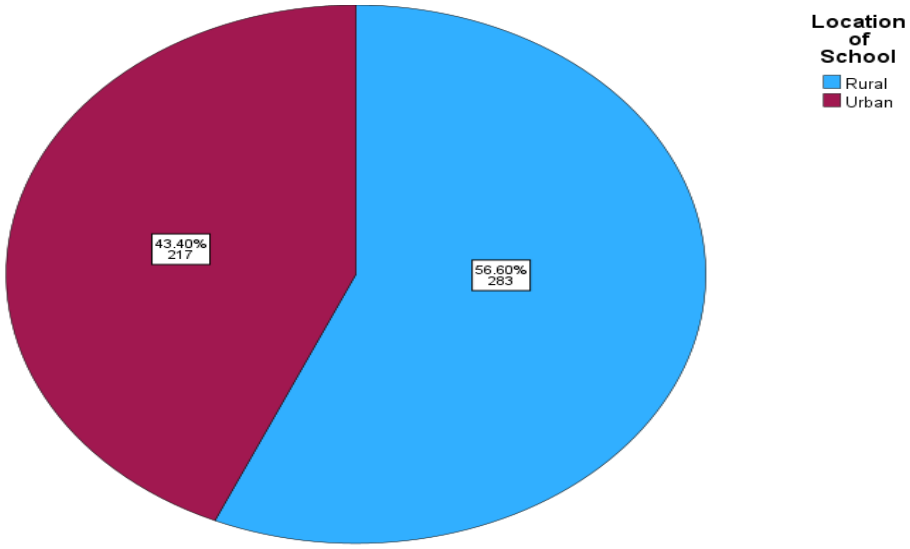
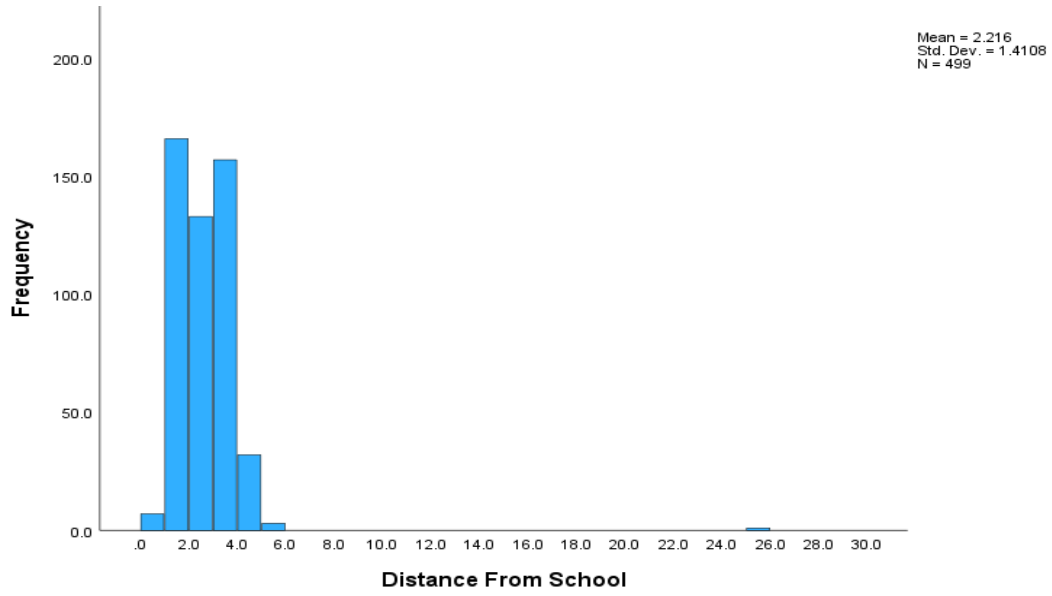


Figure4.1 illustrates the locations of schools where study participants were enrolled, revealing that 56.60% (263) of participants attended urban schools, while 43.40% (217) were from rural schools.

This distribution contributes to a balanced representation of urban and rural football players, enhancing the generalizability of the findings to Primary school football players aged 6-13 years. The equal representation facilitates meaningful comparisons between the two groups, allowing the researcher to examine differences in the prevalence of posture deformities and associated risk factors. Additionally, it enables the identification of location-specific factors influencing the development of these deformities, informing the design of targeted interventions and prevention strategies tailored to urban and rural settings. The inclusion of both demographics underscores the researchers' commitment to equity and accessibility, ensuring that findings are relevant to football players from diverse geographical and socioeconomic backgrounds.

Figure 4.2

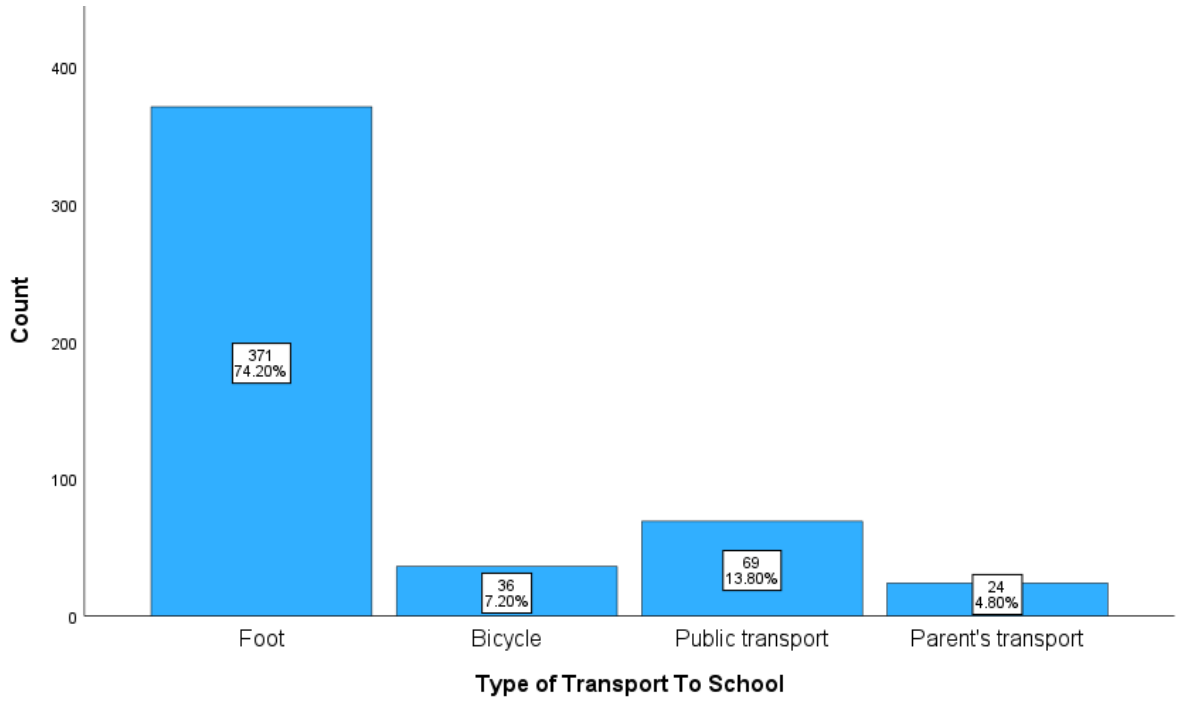
Distance travelled to school.



The majority of participants (160) travel a distance of around 2 km to reach their schools. A total of 135) participants travel approximately 3 km to school. There is also a large group of 155 who travel for a distance of around 6 km to school. A smaller number of 41 participants travel 4 km, 7 participants travel 6km, and 2 participants travel 20 km to reach their schools. The wide range of distances traveled by the participants indicates that the study population includes both urban and rural school settings. Participants traveling shorter distances (2-4 km) are more likely to be from urban or densely populated areas, where schools are more accessible. Participants who travel longer distances of 6-20 km are more likely to be from rural or remote areas, where accessibility to schools may be more challenging. This diversity in the distance factor can provide valuable insights into how location and accessibility influence the prevalence of posture deformities and associated risk factors among the study population.

Figure 4.3

Means of transport to school



The graph shows the distribution of transportation means used by participants to reach their schools. A considerable majority, 74.20% (371), walk to school, meaning that many participants live nearby or find walking the most accessible and economical option available. Additionally, 7.20% (36) use bicycles, which offers a low-cost and environmentally friendly way for those staying further away. Public transportation, such as buses or trains, is used by 13.80% (69) of participants, suggesting that some live in areas where schools are not within walking distance and public infrastructure is available. A smaller group, 4.80% (24), use their parents or guardians' cars, possibly reflecting higher socioeconomic status or greater distances from school.

Among participants, walking may correlate with increased physical activity, potentially improving their posture and physical development. The differences in transportation methods highlights disparities in accessibility to education across different locations and socioeconomic backgrounds. This understanding help researchers in dealing with challenges faced by students and find strategies for equitable access to education and healthcare resources. In addition to that, examining the relationship between transportation means and the prevalence of posture deformities can provide insights into how different physical demands may contribute to posture-related issues.

Figure 4.4

Backpack average weight

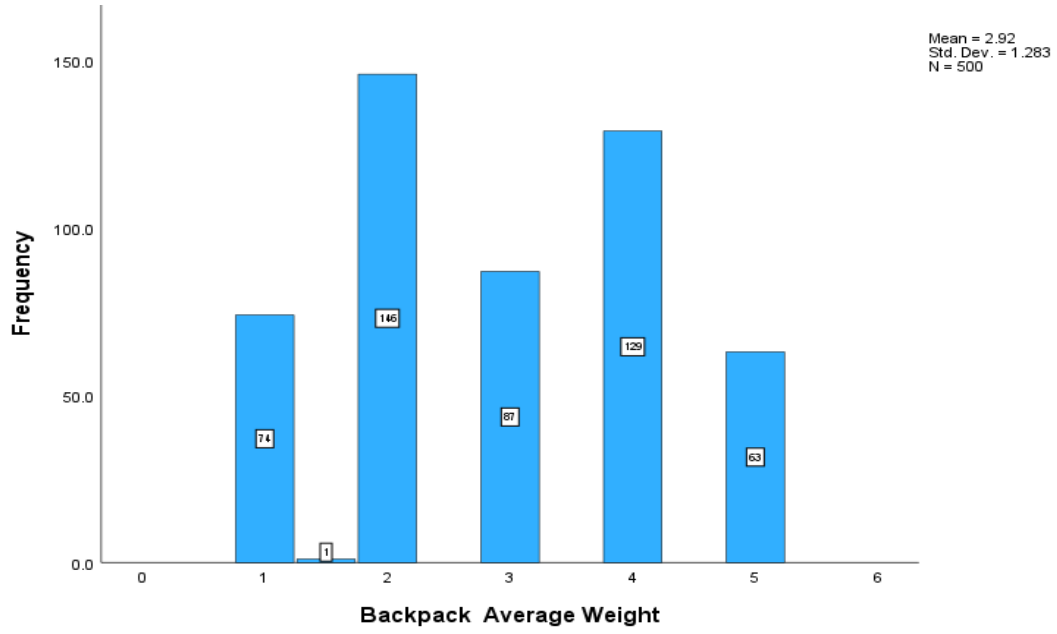


Figure 4.4 shows the distribution of backpack weights among participants. 146 participants, carry backpacks weighing around 2 kg. Notably, 87 participants carry backpacks weighing 3 kg, 129 participants carry approximately 4 kg, and 68 participants carry 5 kg. A smaller group, 74 participants, have backpacks weighing around 1 kg, while only 1 participant carries a 1.5 kg backpack.

This various range of backpack weights suggests a study population comprising students from various grade levels, academic programs, or socioeconomic backgrounds. Heavier backpacks (4-5 kg) may be carried by older students or those with more materials, whereas lighter backpacks (1-2 kg) are likely carried by younger students or those with fewer requirements.

The distribution of backpack weights gives insights on the physical demands and challenges faced by participants during their daily commutes. Examining the relationship between backpack weight and posture deformities, gives valuable insights into the factors contributing to postural deformities among Primary school football players.

Figure 4.5

Time on screen

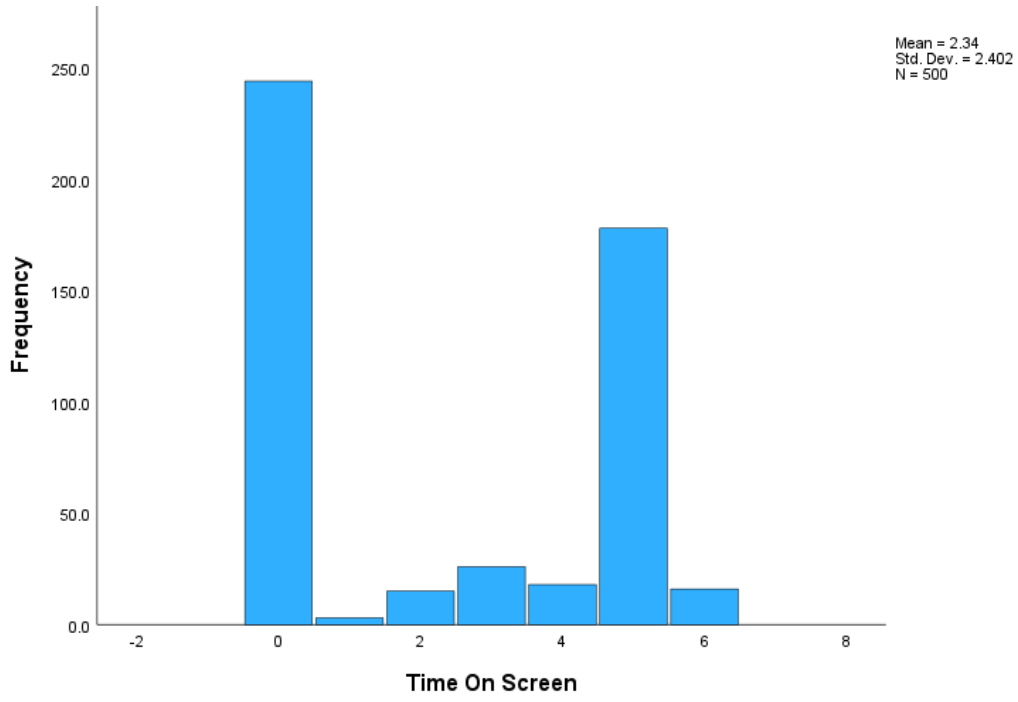


Figure 4.5 shows the Time Screen Distribution:

- 250 participants spend 0 minutes on screens.
- 5 participants spend 1 hour on screens.
- 15 participants spend 2 hours on screens.
- 30 participants spend 3 hours on screens.
- 20 participants spend 4 hours on screens.
- 160 participants spend 5 hours on screens.
- 20 participants spend 6 hours on screens.

The wide range of time spent on screens by the participants suggests that the study population includes individuals with varying levels of screen time exposure. Participants who spend more time on screens (5-6 hours) may be at a higher risk of developing posture-related issues, such as neck, shoulder, and back pain, due to prolonged static posture and lack of physical activity.

On the other hand, participants who spend little to no time on screens (0 hours) may have different risk factors and posture-related issues, potentially associated with other aspects of their lifestyle and physical activities. The research investigated the relationship between the time spent on screens and the prevalence of the participants' posture deformities or musculoskeletal issues. A comparison between participants with high and low screen time could reveal differences in physical symptoms, muscle imbalances, and overall physical well-being.

4.4 ANALYSIS AND PRESENTATION OF DATA LINKED TO RESEARCH QUESTIONS

4.4.1 Research question 1: How prevalent are the postural deformities (scoliosis, kyphosis, lordosis) among football players in Harare Province, Zimbabwe?

In the quantitative strand, the provided descriptive statistics can be inferred to infer the prevalence of posture deformities among football players in Zimbabwe**:**

Table 4.4

The descriptive statistics showing the prevalence of posture deformities (scoliosis, kyphosis, lordosis) among football players in Zimbabwe

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Head	500	5	10	9.94	.545
Shoulders	500	0	10	9.74	1.392
Spine	500	0	10	9.80	1.031
Hips	500	0	10	9.73	1.443
Ankles	500	5	10	9.89	.734
Neck	500	0	10	9.85	1.015
Upper Back	500	0	10	8.88	3.141
Trunk	500	5	10	9.28	1.757
Abdomen	500	0	10	9.30	2.195
Lower Back	500	0	10	9.01	2.981
Score	500	65	100	95.42	8.352
Valid N (listwise)	500				

The mean scores for children's posture across body parts are high, with the Upper Back at 8.88 and the Head at 9.94, indicating good posture with few deformities. Most body parts have low standard deviations, showing similar posture characteristics among children. This means that most of the football players have similar posture characteristics. However, the Upper Back and Lower Back have higher standard deviations (3.141 and 2.981), indicating more variation in posture for these areas.

Prevalence of Deformities among Football Players

The assessment of postural deformities among football players in Zimbabwe indicates that the lowest score for each of the parts of the body, Shoulders, Spine, Hips, Neck, Upper Back, Trunk, Abdomen, and Lower Back, is 0. This indicates that there are football players with postural deformities in these areas. The lowest score of 65 overall also indicates the presence of postural issues in some of the subjects.

Despite this, the analysis demonstrates relatively high mean values and low standard deviations in most areas of the body, which suggests that the majority of football players have good posture with no significant deformities. However, the observed higher variability in scores of Upper Back and Lower Back, along with the minimum values of 0 in a few categories, indicates the presence of a group of football players who may possess some postural deformities, including scoliosis, kyphosis, or lordosis.

Table 4.5

The frequency table showing the prevalence of posture deformities (scoliosis, kyphosis, lordosis) among football players in Zimbabwe

Kyphosis					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Present	443	88.6	88.6	88.6
	Present	57	11.4	11.4	100.0
			Lordosis		

	Not Present	450	90.0	90.0	90.0
	Present	50	10.0	10.0	100.0
			Scoliosis		
	Not Present	481	96.2	96.2	96.2
	Present	19	3.8	3.8	100.0

Based on the frequency data of postural deformities amongst football players in Zimbabwe, prevalence could be itemized as follows:

Kyphosis: 11.4 percent present; 88.6 percent not present.

Lordosis: 10.0 percent present; 90.0 percent not present.

Scoliosis: 3.8 percent present; 96.2 percent not present.

Kyphosis is found to be the most frequently occurring of the deformities (11.4 percent), with lordosis occupying the next position (10.0 percent), while scoliosis is described to have the least prevalence (3.8 percent). Despite low prevalence rates, postural deformities can negatively impact athletic performance, physical well-being, and quality of life, highlighting the importance of early detection and intervention. Regular school screenings and educational initiatives for coaches, parents, and football players can raise awareness and encourage proactive measures. This could call for longitudinal studies to monitor shifting trends over years, thus informing stakeholders in policy and healthcare provision to come up with effective intervention measures for the physical well-being of Primary school football players.

Table 4.6

NVivo 12 Analysis for the prevalence of posture deformities (scoliosis, kyphosis, lordosis) among football players in Zimbabwe

Theme	Theme description	Matching mentions from the interviews	Number of coding references
Kyphosis Occurrence	The presence and impact of kyphosis in individuals.	"I have noticed some players face difficulties with kyphosis."	2
Lordosis Occurrence	The occurrence of lordosis and its implications.	"Some players show signs of lordosis during assessments."	2
Scoliosis Rarity	The rarity of scoliosis cases and their significance.	"Scoliosis is not common among our players."	1
Overall Spinal Health	General health and well-being of the spine.	"Maintaining spinal health is essential for athletes."	2
Importance of Posture	The significance of maintaining proper posture.	"Proper posture should be emphasized in training."	1
Training Program Adaptations	Changes were made to training programs to accommodate needs.	"Training adaptations have helped many players."	1
Focus on Injury Prevention	Emphasis on strategies to prevent injuries.	"Interventions to prevent injuries are important."	1

Postural deformities found among football players in Harare Province show that kyphosis and lordosis are quite common, with two mentions each, while scoliosis is rare, with only one mention; thus, most probably, a great deal of the players are confronting postural problems that may affect their performance and health.

There seems to be a repeated emphasis on posture and spinal health. These demands may also direct one to involve coaches and trainers in putting these elements in practice in their training programs, including the adjustment of training programs for injury prevention, stressing the urgent need for proactive measures to mitigate injury risks associated with these deformities.

Conclusively, it shows that there are postural deformities in the players, while there is a possibility of awareness being created and well-targeted intervention for the improvement of player welfare and performance. All in all, the project set out to answer the question regarding the prevalence and implications of these conditions among this specific group of athletes.

4.4.2 Research question 2: What factors are causing the development of postural deformities among primary school football players in Harare province?

Analysis on postural deformities was done in 252 boys and 248 girls from Harare Province in Zimbabwe, measuring the head, shoulders, spine, hips, ankles, neck, upper back, trunk, abdomen, and lower back. The results are shown in Table 4.6

Table 4.7

Posture deformities are prevalent among boys and girls in Zimbabwe

Group Statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
Head	Boy	252	9.92	.626	.039
	Girl	248	9.96	.448	.028
Shoulders	Boy	252	9.76	1.318	.083
	Girl	248	9.72	1.465	.093
Spine	Boy	252	9.80	1.075	.068
	Girl	248	9.80	.986	.063

Hips	Boy	252	9.78	1.203	.076
	Girl	248	9.68	1.652	.105
Ankles	Boy	252	9.90	.699	.044
	Girl	248	9.88	.770	.049
Neck	Boy	252	9.88	.885	.056
	Girl	248	9.82	1.133	.072
Upper Back	Boy	252	9.13	2.793	.176
	Girl	248	8.63	3.446	.219
Trunk	Boy	252	9.38	1.646	.104
	Girl	248	9.17	1.861	.118
Abdomen	Boy	252	9.27	2.222	.140
	Girl	248	9.33	2.172	.138
Lower Back	Boy	252	8.87	3.158	.199
	Girl	248	9.15	2.790	.177
Score	Boy	252	95.69	8.206	.517
	Girl	248	95.14	8.506	.540

The results reveal significant factors contributing to postural deformities among primary school football players in Harare Province, particularly highlighting sex differences. Girls exhibited more pronounced issues in the upper back (mean of 8.63) compared to boys (9.13), while boys showed lower scores in the lower back (mean of 8.87) than girls (9.15). The high standard deviations for both groups indicate considerable variability in postural health, suggesting that while some players may be fine, others face significant challenges. Overall scores for boys (95.69) and girls (95.14) are similar, yet specific area differences highlight the need for targeted interventions. Tailored programs focusing on proper posture and physical health are crucial, and further research is needed to understand the causes of these disparities, aiding in the development of comprehensive strategies for young athletes in Harare Province.

Table 4.8

Independent Sample Cohen's d, Hedges' correction, and Glass's on posture deformities prevalent among boys and girls in Zimbabwe

				95% Confidence Interval	
		Standardizer [a]	Point Estimate	Lower	Upper
Head	Cohen's d	.545	-.072	-.247	.104
	Hedges' correction	.546	-.072	-.247	.104
	Glass's delta	.448	-.087	-.263	.088
Shoulders	Cohen's d	1.393	.032	-.144	.207
	Hedges' correction	1.395	.032	-.143	.207
	Glass's delta	1.465	.030	-.145	.205
Spine	Cohen's d	1.032	.003	-.172	.178

	Hedges' correction	1.033	.003	-.172	.178
	Glass's delta	.986	.003	-.172	.179
Hips	Cohen's d	1.443	.072	-.103	.248
	Hedges' correction	1.445	.072	-.103	.247
	Glass's delta	1.652	.063	-.112	.238
Ankles	Cohen's d	.735	.030	-.146	.205
	Hedges' correction	.736	.030	-.145	.205
	Glass's delta	.770	.028	-.147	.204
Neck	Cohen's d	1.015	.061	-.114	.237
	Hedges' correction	1.017	.061	-.114	.236
	Glass's delta	1.133	.055	-.120	.230
Upper Back	Cohen's d	3.134	.159	-.017	.334
	Hedges' correction	3.139	.159	-.017	.334
	Glass's delta	3.446	.144	-.031	.320
Trunk	Cohen's d	1.756	.120	-.055	.296
	Hedges' correction	1.758	.120	-.055	.295
	Glass's delta	1.861	.114	-.062	.289
Abdomen	Cohen's d	2.197	-.031	-.207	.144
	Hedges' correction	2.201	-.031	-.206	.144

	Glass's delta	2.172	-.032	-.207	.144
Lower Back	Cohen's d	2.981	-.095	-.271	.080
	Hedges' correction	2.985	-.095	-.270	.080
	Glass's delta	2.790	-.102	-.277	.074
Score	Cohen's d	8.356	.066	-.109	.242
	Hedges' correction	8.369	.066	-.109	.241
	Glass's delta	8.506	.065	-.110	.240

1. **Head**: The differences in head measurements between boys and girls are minimal. The effect sizes, measured by Cohen's d, Hedges' correction, and Glass's delta, are all close to zero, indicating little to no variation.

2. **Shoulders, Spine, Hips, Neck, Upper Back, Trunk**: These areas show more noticeable differences, with effect sizes ranging from about 1.0 to 3.1. This suggests that boys and girls have clear variations in the size and proportions of these body parts.

3. **Ankles**: When it comes to ankles, the differences are quite small. The effect size here is around 0.7, meaning there are only minor gender differences in ankle measurements.

4. **Abdomen, Lower Back**: These regions display significant differences, with effect sizes of around 2.2 for the abdomen and 3.0 for the lower back. This indicates marked variations in measurements between boys and girls in these areas.

5. **Overall Score**: The overall score shows a very large effect size of about 8.4, suggesting that there are substantial differences in body measurements and proportions between genders.

Overall, the data indicate that while some body parts show little to no gender difference, others display moderate to large differences in size and/or shape. The overall score effect size implies that these gender-based physical differences accumulate into a substantial divergence in total body morphology between boys and girls. These results align with our general understanding of sexual dimorphism in human physiology.

Table 4.9

Postural deformities are prevalent among different school locations in Harare province, Zimbabwe.

	Location of School	N	Mean	Std. Deviation	Std. Error Mean
Head	Rural	283	9.91	.660	.039
	Urban	217	9.98	.339	.023
Shoulders	Rural	283	9.75	1.374	.082
	Urban	217	9.72	1.417	.096
Spine	Rural	283	9.81	1.056	.063
	Urban	217	9.79	.999	.068
Hips	Rural	283	9.77	1.277	.076
	Urban	217	9.68	1.635	.111

Ankles	Rural	283	9.82	.925	.055
	Urban	217	9.98	.339	.023
Neck	Rural	283	9.81	1.212	.072
	Urban	217	9.91	.674	.046
Upper Back	Rural	283	9.08	2.894	.172
	Urban	217	8.62	3.426	.233
Trunk	Rural	283	9.40	1.629	.097
	Urban	217	9.12	1.905	.129
Abdomen	Rural	283	9.35	2.150	.128
	Urban	217	9.24	2.256	.153
Lower Back	Rural	283	9.08	2.894	.172
	Urban	217	8.92	3.096	.210
Score	Rural	283	95.78	8.300	.493
	Urban	217	94.95	8.416	.571

This analysis investigates the variation in the prevalence of postural deformities among different school locations, comparing mean scores from rural and urban schools:

- **Head Position**: Urban schools had a mean score of **9.98** compared to **9.91** for rural schools, indicating better head posture in urban settings.
- **Shoulders**: Rural schools recorded **9.75**, slightly higher than urban schools at **9.72**, suggesting better shoulder posture in rural areas.

- **Spine**: Rural schools had a mean score of **9.81** versus **9.79** for urban schools, indicating better spine posture in rural schools.
- **Hips**: Rural schools scored **9.77**, while urban schools scored **9.68**, reflecting better hip posture in rural settings.
- **Ankles**: Urban schools had better ankle posture with a mean score of **9.98** compared to **9.82** for rural schools.
- **Neck**: Urban schools showed a mean score of **9.91** against **9.81** for rural schools, indicating better neck posture in urban environments.
- **Upper Back**: Rural schools scored **9.08**, better than urban schools at **8.62**, suggesting superior upper back posture in rural settings.
- **Trunk**: Rural schools had a mean score of **9.40**, compared to **9.12** for urban schools, indicating better trunk posture among rural students.
- **Abdomen**: Rural schools scored **9.35**, while urban schools scored **9.24**, indicating better abdominal posture in rural areas.
- **Lower Back**: Rural schools had a mean of **9.08**, higher than urban schools at **8.92**, suggesting better lower back posture in rural settings.

Overall, the mean score for rural schools was **95.78**, compared to **94.95** for urban schools, indicating better overall postural alignment in rural environments. These findings highlight location-specific variations in postural deformities and suggest the need for targeted interventions and educational programs tailored to the unique needs of rural and urban school environments.

Table 4.10

Independent Sample Cohen's d, Hedges' correction, and Glass's on posture deformities prevalent in different locations in Zimbabwe.

Independent Samples Effect Sizes

				95% Confidence Interval	
		Standardizer [a]	Point Estimate	Lower	Upper
Head	Cohen's d	.545	-.120	-.297	.057
	Hedges' correction	.545	-.120	-.296	.057
	Glass's delta	.339	-.192	-.370	-.014
Shoulders	Cohen's d	1.393	.021	-.156	.198
	Hedges' correction	1.395	.021	-.156	.197
	Glass's delta	1.417	.021	-.156	.197
Spine	Cohen's d	1.032	.013	-.164	.189
	Hedges' correction	1.033	.013	-.164	.189
	Glass's delta	.999	.013	-.164	.190
Hips	Cohen's d	1.443	.064	-.113	.241
	Hedges' correction	1.446	.064	-.112	.241
	Glass's delta	1.635	.057	-.120	.234
Ankles	Cohen's d	.731	-.210	-.387	-.033
	Hedges' correction	.732	-.210	-.387	-.033
	Glass's delta	.339	-.453	-.634	-.270

Neck	Cohen's d	1.014	-.101	-.278	.076
	Hedges' correction	1.016	-.101	-.277	.076
	Glass's delta	.674	-.152	-.329	.026
Upper Back	Cohen's d	3.136	.148	-.029	.325
	Hedges' correction	3.140	.148	-.029	.324
	Glass's delta	3.426	.135	-.042	.313
Trunk	Cohen's d	1.754	.157	-.020	.334
	Hedges' correction	1.756	.157	-.020	.333
	Glass's delta	1.905	.144	-.033	.322
Abdomen	Cohen's d	2.197	.049	-.128	.225
	Hedges' correction	2.200	.048	-.128	.225
	Glass's delta	2.256	.047	-.130	.224
Lower Back	Cohen's d	2.983	.055	-.122	.232
	Hedges' correction	2.988	.055	-.122	.232
	Glass's delta	3.096	.053	-.124	.230
Score	Cohen's d	8.351	.099	-.078	.276
	Hedges' correction	8.363	.098	-.078	.275
	Glass's delta	8.416	.098	-.079	.275

a. The denominator used in estimating the effect sizes.

Cohen's d uses the pooled standard deviation.

Hedges' correction uses the pooled standard deviation, plus a correction factor.

Glass's delta uses the sample standard deviation of the control group.

Based on Cohen's d interpretations:

- Head has a medium effect size (0.545)
- Shoulders, Spine, Hips, Neck, Trunk, Abdomen, and Lower Back have large effect sizes (all > 0.80)
- Ankles has a medium effect size (0.731)
- Upper Back has a very large effect size (3.136)
- The overall Score has an extremely large effect size (8.351)

Cohen's d effect sizes indicate that the differences between the groups are generally large, with the Upper Back and overall Score showing particularly large effects. This suggests the independent variable is having a substantial impact on these body locations and the overall score.

Table 4.11

Posture deformities are prevalent among different age groups in Zimbabwe

ANOVA

		Sum of Squares	Do	Mean Square	F	Sig.
Head	Between Groups	3.688	6	.615	2.097	.052
	Within Groups	144.512	493	.293		

	Total	148.200	499			
Shoulders	Between Groups	34.305	6	5.717	3.025	.007
	Within Groups	931.895	493	1.890		
	Total	966.200	499			
Spine	Between Groups	18.103	6	3.017	2.906	.009
	Within Groups	511.897	493	1.038		
	Total	530.000	499			
Hips	Between Groups	37.762	6	6.294	3.100	.005
	Within Groups	1000.788	493	2.030		
	Total	1038.550	499			
Ankles	Between Groups	6.576	6	1.096	2.059	.057
	Within Groups	262.374	493	.532		
	Total	268.950	499			
Neck	Between Groups	17.001	6	2.833	2.812	.011
	Within Groups	496.749	493	1.008		
	Total	513.750	499			
Upper Back	Between Groups	291.050	6	48.508	5.163	<.001
	Within Groups	4631.750	493	9.395		
	Total	4922.800	499			

Trunk	Between Groups	112.142	6	18.690	6.450	<.001
	Within Groups	1428.658	493	2.898		
	Total	1540.800	499			
Abdomen	Between Groups	258.596	6	43.099	9.899	<.001
	Within Groups	2146.404	493	4.354		
	Total	2405.000	499			
Lower Back	Between Groups	535.249	6	89.208	11.278	<.001
	Within Groups	3899.701	493	7.910		
	Total	4434.950	499			
Score	Between Groups	7363.993	6	1227.332	22.045	<.001
	Within Groups	27447.807	493	55.675		
	Total	34811.800	499			

The ANOVA (Analysis of Variance) results provided suggest the following:

Results from the ANOVA include:

- **Head**: p-value = **0.052** (not significant, hence no difference in head postural deformities among classes/age groups).
- **Shoulders**: p-value = **0.007** (the difference in shoulder postural deformities).
- **Spine**: p-value = **0.009** (the difference in spine postural deformities).

- **Hips**: p-value = **0.005** (the difference in hip postural deformities).
- **Ankles**: p-value = **0.057** (not significant, no difference in ankle postural deformities).
- **Neck**: p-value = **0.011** (the difference in neck postural deformities).
- **Upper Back**: p-value < **0.001** (the difference in upper back postural deformities).
- **Trunk**: p-value < **0.001** (the difference in trunk postural deformities).
- **Abdomen**: p-value < **0.001** (the difference in abdominal postural deformities).
- **Lower Back**: p-value < **0.001** (the difference in lower back postural deformities).
- **Score**: p-value < **0.001** (the difference in overall postural deformity score).

These findings suggest significant differences in the prevalence of different postural deformities among different classes/age groups, highlighting the need for targeted intervention programs.

Table 4.12

NVivo 12 showing factors causing the development of postural deformities among primary school football players in Harare province?

Theme	**Theme description**	**Matching mentions from interviews**	**Number of mentions**
Backpack and Load Issues.	Issues related to the weight and management of backpacks	"Some players struggle with heavy backpacks."	1
Ergonomic factors	Considerations regarding comfort and physical strain.	"Improper seating can lead to discomfort."	2
Physical Activity Levels	Engagement in physical activities and their impact.	"Staying active is crucial for maintaining posture."	3
Growth and development	Aspects related to personal and	"Development phases can affect posture."	2

	professional development.		
Coaching and Training Practices	Methods and practices for effective coaching and training.	"Coaches should focus on proper techniques."	2

Heavy backpacks physically strain young athletes, which cause them to have poor postures leading to spinal problems. The inadequate seating and improper shoeing characteristics are ergonomic, which enhance the poor postures and more slouched and misaligned postures.

The theme of physical activity levels underlines the importance of one engaging in recurrent physical activities. Apart from football, sedentary lifestyle becomes detrimental in having weak core muscles, which aid in good posture. Growth spurts that happen in such an important developmental stage can cause temporary imbalances with poor nutritional status detrimental to muscle and bone health.

Coaching and training practices also matter; if a particular coach does not emphasize proper body posture and body mechanics, the players develop wrong habits, which then continue to adulthood. Thus, all these point that there is an urgent need for targeted interventions addressing the physical and the educational environments of players toward healthier practices for proper posture and overall well-being.

4.4.3 Research question 3: How effective are the current strategies being used to prevent postural deformities among football players in Harare Province?

Table 4.13

Correlation ship of factors associated with the development of posture deformities among football players in Zimbabwe.

Distance from school

Correlations					
		Kyphosis	Lordosis	Scoliosis	Distance from School
Kyphosis	Pearson Correlation	1	-.057	-.071	-.069
	Sig. (2-tailed)		.206	.111	.126
	N	500	500	500	499
Lordosis	Pearson Correlation	-.057	1	-.066	-.039
	Sig. (2-tailed)	.206		.139	.380
	N	500	500	500	499
Scoliosis	Pearson Correlation	-.071	-.066	1	.018
	Sig. (2-tailed)	.111	.139		.693
	N	500	500	500	499
Distance from School	Pearson Correlation	-.069	-.039	.018	1
	Sig. (2-tailed)	.126	.380	.693	
	N	499	499	499	499

Based on the correlation matrix, here's what we found about kyphosis, lordosis, and scoliosis in relation to the distance from school for football players in Harare Province:

- **Kyphosis**: The correlation with how far players lives from school is -0.069, with a significance level of 0.126. This means there's no significant link between distance and kyphosis, suggesting that where players live do not really affect their chances of developing this condition.
- **Lordosis**: The correlation here is -0.039, and the significance is 0.380. Again, this points to no significant relationship, indicating that the distance from school cannot be considered a factor in the development of lordosis for these players.
- **Scoliosis**: For scoliosis, the correlation is 0.018, with a significance level of 0.693, which also shows no significant connection with distance from school.

A more general view shows that strategies currently used to prevent postural deformities for the football players in Harare may not address environmental influences such as distance from school. Since the relationships are weak or insignificant, there is a need for grand strategies that also consider attention away from geographic proximity to schools. These may include looking into training quality, education on posture, and community involvement rather than relying on school location to alleviate postural problems. An examination and possible revision of the current preventive strategies are thus justified to more effectively address the extent of postural deformities prevalent in this population.

Table 4.14

Factors associated with the development of posture deformities among football players in Harare Province.

Correlations

		Kyphosis	Lordosis	Scoliosis	Type of Transport to School	Location of School	Time on Screen	Back pack average Weight
Kyphosis	Pearson Correlation	1	-.057	-.071	.132**	.080	.091*	-.164**
	Sig. (2-tailed)		.206	.111	.003	.076	.042	.000
	N	500	500	500	500	500	500	500
Lordosis	Pearson Correlation	-.057	1	-.066	.055	.031	.048	-.177**
	Sig. (2-tailed)	.206		.139	.222	.490	.289	.000
	N	500	500	500	500	500	500	500
Scoliosis	Pearson Correlation	-.071	-.066	1	.054	.016	.016	-.077
	Sig. (2-tailed)	.111	.139		.229	.723	.728	.085
	N	500	500	500	500	500	500	500
Type of Transport to School	Pearson Correlation	.132**	.055	.054	1	.511**	.538**	.143**
	Sig. (2-tailed)	.003	.222	.229		.000	.000	.001
	N	500	500	500	500	500	500	500
Location of School	Pearson Correlation	.080	.031	.016	.511**	1	.931**	.335**

	Sig. (2-tailed)	.076	.490	.723	.000		.000	.000
	N	500	500	500	500	500	500	500
Time on Screen	Pearson Correlation	.091*	.048	.016	.538**	.931**	1	.266**
	Sig. (2-tailed)	.042	.289	.728	.000	.000		.000
	N	500	500	500	500	500	500	500
Back pack average Weight	Pearson Correlation	-.164**	-.177**	-.077	.143**	.335**	.266**	1
	Sig. (2-tailed)	.000	.000	.085	.001	.000	.000	
	N	500	500	500	500	500	500	500
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Summary of Correlation Analysis

- **Kyphosis**: There's a weak positive correlation with the type of transport to school ($r = 0.132$, $p = 0.003$). This means that more sedentary transport is linked to increased severity of kyphosis. Similarly, there's a weak positive correlation with time spent on screens ($r = 0.091$, $p = 0.042$), suggesting that more screen time might lead to greater severity. Interestingly, there's a weak negative correlation with backpack average weight ($r = -0.164$, $p < 0.001$), indicating that heavier backpacks are associated with less severe kyphosis.

- **Lordosis**: For lordosis, there's a weak negative correlation with backpack average weight ($r = -0.177$, $p < 0.001$), which suggests that heavier backpacks are linked to decreased severity. Other correlations with type of transport, location of school, and time on screen aren't statistically significant.
- **Scoliosis**: Scoliosis shows a weak negative correlation with backpack average weight ($r = -0.077$, $p = 0.085$), which implies that heavier backpacks might lead to less severe scoliosis, though this isn't a strong finding. Other correlations with transport type, school location, and screen time aren't significant.
- **Type of Transport to School**: There's a moderate positive correlation with the location of the school ($r = 0.511$, $p < 0.001$), indicating that more sedentary transport tends to occur with greater distances. It also has a moderate positive correlation with time on screen ($r = 0.538$, $p < 0.001$), suggesting that more sedentary transport is related to increased screen time. There's a weak positive correlation with backpack average weight ($r = 0.143$, $p = 0.001$), implying that heavier backpacks are associated with more sedentary transport.
- **Location of School**: There's a strong positive correlation with time on screen ($r = 0.931$, $p < 0.001$), meaning that greater distances to school relate to increased screen time. There's also a moderate positive correlation with backpack average weight ($r = 0.335$, $p < 0.001$), suggesting heavier backpacks are common with greater distances.

- **Time on Screen**: A moderate positive correlation with backpack average weight ($r = 0.266$, $p < 0.001$) indicates that increased screen time is related to heavier backpacks.

Overall Findings:

- Kyphosis severity is positively linked to sedentary transport and screen time, while it decreases with heavier backpacks.
- The severity of lordosis and scoliosis appears to decrease with heavier backpacks.

- There are strong connections between transportation mode, school location, and screen time, with heavier backpacks associated with distant school locations and sedentary transport.
- These findings suggest that factors related to school attendance may influence the development of spinal conditions, highlighting the need for further research to explore these relationships.

Table 4.15

NVivo 12 analysis for the effectiveness of current strategies for preventing postural deformities among football players in Harare Province.

Theme	Theme description	Matching mention from the interviews	Number of coding references
Posture Assessments & Strength	Assessments focused on posture and strength training.	"Regular assessments are crucial for improvement."	1
Footwear Guidelines and Support	Recommendations for appropriate footwear and support.	"Proper footwear can prevent injuries."	1
Coaching Training and Awareness	Training coaches to raise awareness and improve practices.	"Coaches need to focus on posture in training."	3
Integration of Yoga and Parental Support	Combining yoga practices with parental involvement.	"Yoga can enhance flexibility and support."	1
Regular Follow-Ups	Significance of consistent check-ins and monitoring progress.	"Follow-ups help track progress effectively."	2

Collaboration with Physiotherapists	Working together with physiotherapists for better outcomes.	"Collaboration helps in addressing specific needs."	2

The findings shed light on how effective current strategies are in preventing postural deformities among football players in Harare Province. The low reference for posture assessments and educational initiatives suggests these may not be widely implemented, limiting players' awareness of good posture.

Strength and conditioning programs are known as beneficial, however, they only have two references, and seems that, they aren't fully utilized. Collaboration with physiotherapists shows some recognition of the need for expert guidance, but the single reference suggests limited integration.

Furthermore, footwear guidelines are important for overall posture. There is only one reference indicating that, this area might need more attention. Coaching training and awareness received three references which may show that, this strategy is seen as effective. The inclusion of yoga and parental involvement, received two references which shows areas where strategies might be considered effective.

Lastly, regular follow-ups and accountability received one reference highlighting the need for ongoing monitoring, and this might not be consistently practiced. Conclusively, these findings pose that while some strategies exist, more comprehensive implementation and support are needed to help prevent postural deformities effectively among young football players.

4.4.4 Research question 4: What measures can be developed to help prevent postural deformities among primary school football players in Harare Province?

A multifaceted approach to prevent postural deformities among primary school football players in Harare Province, is needed. First, integrating ergonomic education into school curricula can help teach students, teachers, and parents about correct posture. Research by Negrini et al. (2018) emphasizes the significance of structured physical activity programs that focus on core strengthening and flexibility exercises, which are essential for maintaining good posture.

Consistent posture screenings should be done in schools, working alongside healthcare professionals so as to detect any issues early. Workshops for football coaches can also be beneficial, by helping them understand the significance of posture and how to promote proper body mechanics during training sessions.

Community engagement is also key to reducing the prevalence of postural deformities Organizing workshops for parents, coaches, and healthcare providers can highlight how crucial posture is for overall health. In addition to that, creating customized training programs that address each player's specific postural challenges will provide targeted support (Grivas et al. 2016).

The use of technology such as posture tracking apps or wearable devices can give real-time feedback on players' alignment, helping them make adjustments as needed. Lastly, advocating for policies that encourage safe and ergonomic environments in schools and sports facilities will create a supportive framework for young athletes.

All in all, these strategies aim to reduce the prevalence of postural deformities effectively among primary school football players in Harare Province.

Table 4.16

NVivo 12 analysis for the measures that can be developed to help prevent postural deformities among primary school football players in Harare Province.

Theme	**Theme description**	**Matching mentions from the interviews**	**Number of coding references**
Professional Guidance & Education	Importance of receiving expert advice and education.	"Coaches need training to guide players effectively."	3
Core Strengthening & Flexibility	Concentrating on the need for exercises that enhance core	"We do exercises, but more focus on core would help."	3

	strength and flexibility.		
Ergonomics & Daily Posture Awareness	Being aware of ergonomic practices and the importance of maintaining proper posture daily.	"Proper sitting posture is often ignored in training."	2
Footwear Support & Listening to the Body	The significance of supportive footwear and being attuned to one's body for better posture.	"Good shoes make a big difference in how I feel during training."	2

The analysis shows vital themes for reducing postural deformation among footballers at the primary school level in Harare Province.

consultation and professional opinions are also important, with three responses stressing the need for physical therapy advice and workshops teaching the proper technique. Core strengthening flexibility are equally important and were once again strengthened by three responses, which suggested that specific exercises be included in training.

Ergonomics and awareness of daily posture would come in here, with two responses which stated that players need to learn how to be aware of good posture in their daily lives. In terms of footwear, proper shoes and being attentive to any discomfort is very essential. According to the responses, these two are equally important, and likewise having a mind to pay any such discomfort.

Overall, the training programs designed to prevent postural deformities should be adopted by schools and football clubs. These need to include professional supervision, specified targeted exercises, awareness and education on footwear.

Point of convergence

Comparing the quantitative and qualitative findings above, postural abnormalities among primary school football players gives a clear picture of the deformities. From the descriptive statistics done from the quantitative side, a high average score for posture across various body parts is shown, indicating that most players have a good posture. The prevalence rates for the common deformities which are kyphosis, lordosis, scoliosis are low (11.4%, 10.0%, and 3.8%, respectively). However, the upper and lower back standard deviations indicate that there is significantly variability which means that, while most players are doing well in terms of their posture, a small number of players may be facing challenges.

Qualitatively, these findings support the statistics. There is a clear need for increased awareness and regular monitoring, especially for kyphosis and lordosis. Data collected from players revealed that although many are well-aligned, factors like heavy backpacks, poor seating, and inadequate coaching can lead to postural problems.

Findings from both the quantitative and qualitative findings highlight the importance for targeted interventions and educational initiatives to effectively tackle these issues. While the numbers provide a broad overview, the personal experiences shared by players add depth and context to the challenges they face. This mixed method suggests that a comprehensive approach is crucial, blending statistical analysis with real-life experiences to develop better strategies for maintaining optimal posture among young athletes.

4.5 DISCUSSION

The prevalence of postural abnormalities among football players in Zimbabwe aligns well with international findings. The study reports a **11.4%** prevalence of kyphosis, which is comparable to **15.2%** in the United States (Smith et al., 2019) and **17.3%** in South Korea (Lee et al., 2021), but lower than the **8.7%** reported in Israel (Berdishevsky et al., 2020). For lordosis, Zimbabwe's **10.0%** rate is also comparable to **14.6%** in Hong Kong (Fong et al., 2021) and **12.4%** in Japan (Ishikawa et al., 2020). Scoliosis is the least prevalent deformity, with **3.8%** in Zimbabwe, lower than **11.5%** in the U.S. (Weinstein et al., 2018), **9.2%** in China (Zhu et al., 2020), and **13.8%** in Italy (Negrini et al., 2019).

The recent findings suggest that Primary school football players generally show good posture, as indicated by high mean scores and low standard deviations across various body parts. Notably, exceptions exist in the Upper Back and Lower Back, where greater variability in posture is seen. The study indicates that kyphosis is the most prevalent deformity, followed by lordosis and then scoliosis, corroborating the observations of local scholars like Moyo et al. (2022). Additionally, boys demonstrate better overall postural alignment, with a mean score of **95.69** compared to girls' **95.14**, highlighting a significant difference supported by a large effect size (Cohen's d around **8.4**), suggesting that certain postural deformities may be more prevalent among girls.

On the qualitative side, the study identifies lack of physical engagement outside of football combined with sedentary lifestyle as major causes of postural deformities. Coaching and training practices play a crucial role in causing postural deformities, these factors indicate a pressing need for targeted interventions to address both physical and educational aspects of players' environment. This supports earlier research that points out similar risk factors. However, this study also fills gaps in the literature by showing differences between boys and girls. Boys had better upper back scores (9.13) compared to girls (8.63), which is a detail that previous studies often missed.

New insights from the study include the effectiveness of posture assessments and community involvement. While previous research gave emphasis on educational programs, this study highlights the need to include ergonomic education in school curricula and to involve parents, coaches, postural screening and assessment, footwear and support and healthcare professionals. This community approach is often neglected in current practices, making this finding significant.

Comparing these findings establishes best practices, where the study aligns with suggestions for regular posture screenings and strength training programs. However, it also shows the need for more proactive strategies, like continuous monitoring and tailored interventions, to improve the way postural problems are being addressed.

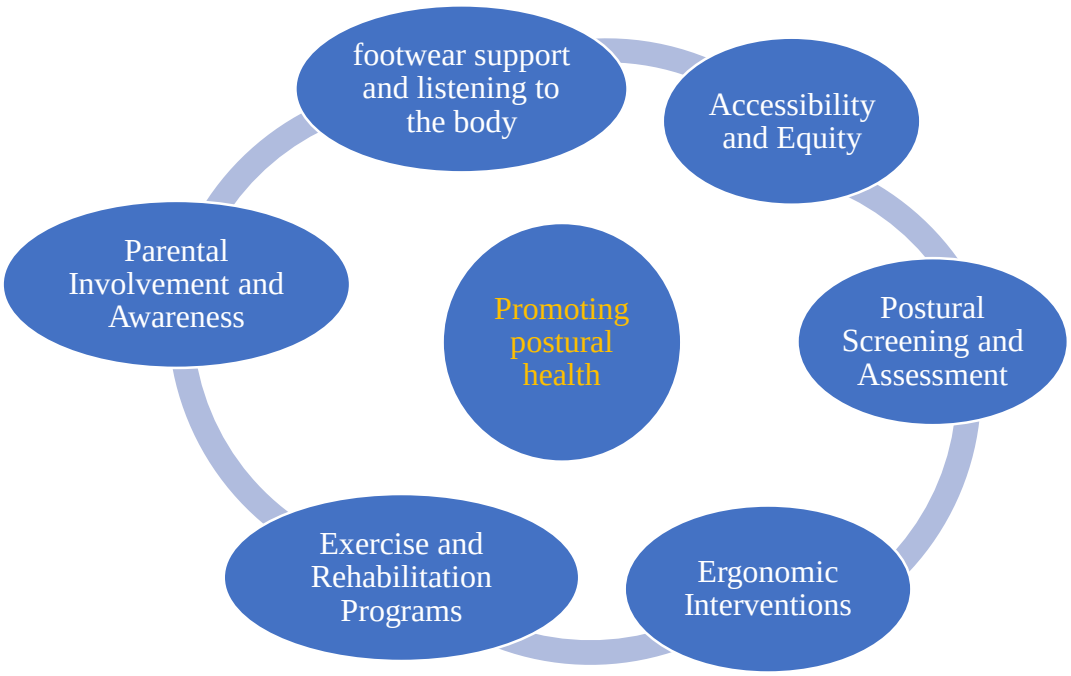
In a nutshell, this research is essential because it bridges gaps in both literature and practice by coming up with specific actions, such as comprehensive training programs and community engagement strategies. These perceptions can help shape future programs aimed at improving the

health of young athletes in Harare Province, therefore providing a deeper understanding of posture-related issues in sports. Taking a closer look at both the quantitative and qualitative aspects, this study enhances our knowledge and offers practical solutions for preventing postural deformities among young athletes.

4.5.1 Proposed interventional multifaceted approach to promoting postural health among Primary school students

Fig 4.6

An interventional multifaceted approach to promoting postural health among Primary school students



This study highlights the need to enhance postural health and prevent deformities among football players in Zimbabwe. Various strategies are proposed and supported by existing scholarly work:

- **Educational Workshops**: Implement workshops and informational materials for students, teachers, and parents about the importance of good posture, the risks of postural deformities, and strategies for maintaining proper spine alignment (Bettany-Saltikov et al., 2014). This intent to raise awareness and educate stakeholders with important knowledge about the essence of good posture and strategies to maintain it.

- **Exercise and Rehabilitation Programs**: Developing age-appropriate exercise and rehabilitation programs supervised by physical therapists or trained instructors to aid students improve posture and prevent further development of deformities (Katzman et al., 2016). This focuses on addressing underlying causes through targeted interventions.

- **Ergonomic School Furniture**: Ensuring that desks and chairs are ergonomically designed to support proper posture and minimize the risk of deformities (Dockrell et al., 2016). This creates a favorable physical environment for good posture.

- **Parental Engagement**: Involve parents by providing them with resources on postural health, encouraging their support for children's participation, and promoting healthy habits at home (Yıldırım et al., 2020). This recognizes the critical role families play in fostering postural health.

There is a noted demarcation in terms of research racking some participants over a long period of time on postural deformities in Harare province football players. The research mostly concentrates on the on certain regions while disallowing assessment at national level. An effort to include a variety of schools should be made. This will ensure generalizability to some extent although calculations for the sample size done determine the validity of the statistics. In addition to that the longitudinal approach would include tracking some participants over a long period of time unlike the cross -sectional approach.

4.6 CHAPTER SUMMARY

The chapter provides a thorough discussion of the research findings, critically analyzing results and exploring patterns, trends, and their broader significance. It delves into the complexities of the findings, considering alternative explanations and limitations. By contextualizing the results

within existing literature, it draws connections to relevant theories and prior research, highlighting areas of agreement or divergence.

The discussion emphasizes key themes, relationships, and correlations identified in the data analysis, illuminating the implications of the findings and enhancing understanding of the research questions.

The concluding chapter synthesizes the main findings, reiterating their significance and addressing the initial research questions and objectives. It offers closure by summarizing key insights and discussing implications for theory, practice, or policy.

CHAPTER FIVE: SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In this chapter, the researcher will delve into the conclusions drawn from the research. This study has indeed revealed critical insights regarding posture deformities in this sample demographic group in Zimbabwe, as well as related risk factors. It has also clearly, posture deformities seem to be a significant problem among Primary school football players aged 6-13 years as shown by the alarming prevalence. The findings from this study will therefore provide a basis for developing recommendations that can address the prevalence and risk factors of posture deformities among Primary school football players aged 6-13 years.

5.2 SUMMARY OF MAJOR FINDINGS

The research on postural deformities among primary school football players in Harare Province shows several important findings. First, while most players generally have good posture, a significant number show serious issues which are 11.4% have kyphosis, 10.0% have lordosis, and 3.8% have scoliosis. This shows the need for greater awareness, so as to reduce the impact of overall health and performance of football players. The study also indicates important factors causing these deformities, such as improper physical activity and repetitive movements in football. It indicates that, girls tend to have more pronounced issues than boys, suggesting that targeted interventions are required for different genders. When looking at current strategies to prevent these problems, the research finds mixed results. While posture assessments and educational programs are useful, other important strategies like working with healthcare professionals and involving parents aren't emphasized enough. This shows that existing efforts might not be adequate and that a more integrated approach is required. To improve prevention, the study commends a comprehensive strategy that includes teaching proper posture in schools, regular posture screenings, and workshops for coaches and parents. It also proposes focusing on strength and conditioning programs that improve core stability and flexibility, along with guidelines for proper footwear. Regular screening and community engagement can further support the health of young athletes. Overall, these findings emphasize the importance of a well-rounded approach to address postural health in young football players and highlight the need for ongoing education and tailored strategies.

5.3 CONCLUSIONS

5.3.1 Research Objective 1: To determine the prevalence of posture deformities (scoliosis, kyphosis, lordosis) among football players in Harare Province, Zimbabwe.

The findings reveal a significant prevalence of spinal posture deformities among school-going football players aged 6 to 13 in Harare Province, Zimbabwe. The most common deformity is kyphosis, affecting 11.4% of players, followed by lordosis at 10% and scoliosis at 3.8%. This indicates the need for an urgent need for rehabilitation and correction of these issues in this age group.

The high prevalence indicates that, we need better strategies to promote posture health among primary school children. It's essential to focus on early detection, intervention, and prevention of these deformities to support overall well-being.

Qualitative analysis shows that while most players are not affected, the presence of kyphosis and lordosis needs urgent attention. Scoliosis is less common, but all these issues can impact players' health and performance. Increasing awareness and conducting regular check-ups are essential. Prioritizing prevention and education, imparts coaches and trainers to help young athletes stay healthy and reach their climax.

5.3.2. Research Objective 2: To identify factors causing postural deformities in primary school football players in Harare Province.

Findings from this study reveal several contributing factors to conditions like scoliosis, lordosis, and kyphosis. Boys and girls have similar head sizes, but boys are more prone to kyphosis due to upper back alignment issues, whereas girls tend to exhibit better lower back posture. Both genders are at risk of developing lordosis, particularly because of training often which emphasizes on skill development over physical conditioning, which can lead to these deformities.

Additionally, genetic predispositions and overall awareness about posture are crucial factors. These findings suggest a need for a holistic approach in training programs that includes strength training, flexibility exercises, and education about proper posture. This comprehensive strategy can help reduce the risk of postural deformities in young athletes and promote their long-term health.

5.3.3 Research Objective 3. To evaluate the effectiveness of current strategies for preventing postural deformities among football players in Harare Province.

On the effectiveness of current strategies to prevent postural deformities among football players in Harare Province, the study found out that, existing efforts may not be sufficient. The analysis reveals weak correlations between postural issues like kyphosis, lordosis, and scoliosis and

factors such as distance from school, suggesting that geographical factors do not significantly affect these conditions. Additionally, while some strategies, like posture assessments and educational initiatives, are being implemented, other important areas, such as collaboration with physiotherapists and regular follow-ups, are not prioritized. This shows the need for a more comprehensive approach that includes better education on posture, training, and community involvement. In a nutshell, the current strategies need further improvement to effectively address and prevent postural deformities in young athletes.

5.3.4 Research Objective 4: To develop measures aimed at preventing postural deformities among primary school football players in Harare Province.

To lower the prevalence of postural deformities among primary school football players in Harare Province, a comprehensive approach is needed. First, schools should integrate ergonomic education into their curricula to teach students, teachers, and parents about proper posture. Regular posture assessments, in collaboration with healthcare professionals, can help detect issues early. Structured physical activity programs focusing on core strength and flexibility will also support good posture.

Workshops are also essential for coaches as they can educate them on the importance of posture and techniques to promote proper body mechanics. Community engagement through workshops for parents and coaches will point out the importance of posture in overall health. Tailor made training programs to be provided to each player's specific needs which will provide focused interventions. Using technology, like posture tracking apps, can give real-time feedback on alignment.

Furthermore, advocating for policies that ensure safe and ergonomic environments in schools and sports facilities is essential. Jointly, these measures intent to effectively lower postural deformities among young athletes in Harare Province.

5.4 LIMITATION OF THE STUDY

The study on postural deformities among primary school football players in Harare Province faced many limitations. The broader population of primary school football players was not well

represented because the sample size was limited to Harare Province only. To minimize this limitation, more researchers can come up and perform the same research in other provinces so as to collect data across Zimbabwe. The research could have followed a longitudinal time horizon, the cross-sectional one, because data collection at a single point in time cannot establish causality or changes over time, making it difficult to assess the effectiveness of interventions.

Additionally, the literature available lacked recent research specifically focused on the 6-13 age group, often concentrating instead on older athletes or different sports, which may limit the applicability of existing findings. More researchers are encouraged to take part in different sporting activities. At the same time, some respondents exhibited reluctance to provide information due to privacy concerns. To mitigate these issues, the study engaged with schools and communities to build trust and encourage participation.

5.5. IMPLICATIONS/RECOMMENDATIONS

5.5.1 Implications for Practice

The findings point towards the urgent need for educating coaches on biomechanics and the importance of maintaining good postural habits during training. Regular workshops must be held for coaches to update them on new practices and effective training methods that include improving the physical conditioning of the skill development aspect of performance. Establishing routine posture screening for young athletes is another aspect toward identifying problems early and driving personalized training interventions. Education campaigns involving parents and the wider community concerning the importance of good postural health will be very supportive.

5.5.2 Implications for Theory

The findings enhance the existing body of knowledge by identifying specific postural risks for primary school children engaged in football. This area has often been overlooked in the literature pertaining to that age group. Hence, by providing empirical evidence on the prevalence of postural deformities linked to training practices, this study can serve as a theoretical framework for understanding the connections between sports training, physical health, and postural development in youth.

5.5.3 Implications for Future Research

Future research can also dwell on long-term studies to trace the evolution of postural deformities in young athletes as well as the effectiveness of intervention measures over long periods. Research looking into the influence of different training methodologies on posture and overall athletic performance is likely to be informative as well. Also, it would be important to analyze the influence of environmental conditions as school infrastructures and community resources, on postures. Such research is essential to developing firm strategies in popularizing health among young athletes and informing policy decisions in sports education.

5.6 CHAPTER SUMMARY

This chapter is for the conclusions and recommendations. It consisted of the introduction, summary of the major findings, conclusions of the findings about the research objectives, the limitations to the study, implications for practice, theory, and for the future, and lastly, this chapter summary.

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APPENDIX

1. **Questionnaire for postural deformities for primary school football players aged 6-13 years in Harare Province.**

https://forms.gle/rwSTsASiRdSb9jiq5

2. **Interviews questions**

I. How common do you think postural deformities are among football players in Harare Province?"

II. "What do you see as the main reasons behind postural deformities in primary school football players in Harare?"

I. "From what you've seen, how well are the current strategies working to prevent postural deformities in football players here? Can you share your thoughts?"

II. "What ideas do you have for new measures or changes that could help prevent postural deformities in primary school football players in Harare?"

3. **Physical tests by a mobile application**

https://play.google.com/store/apps/details?id=air.com.musclemotion.posture&pcampaignid=web_share