

Conceptual Framework: Measurement and Techniques for Successful Performance in Football Game

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Abstract

Football has transcended its role as a mere sport, becoming a powerful force that touches and influences lives globally. Millions of players engage in the game, while billions of fans watch and read about football, creating a rich tapestry of cultural and social connections. Success in football today is no longer left to chance; it is the result of informed strategies, scientific knowledge, and technological advancements. As the sport continues to evolve, its impact on individuals and society will only grow, underscoring the importance of combining athletic talent with scientific understanding. Football not only entertains but also enriches lives and inspires future generations to engage with the sport, both on and off the field. The experiment aims to determine whether the implementation of varied grid training can lead to significant enhancements in the selected football skills and overall performance, contributing valuable insights to training methodologies in football. This research not only seeks to improve individual player performance but also aims to provide actionable recommendations for coaches and trainers in optimizing training regimens for football athletes. This approach not only enhances individual performance but also contributes to the overall development of the sport.

Keywords: Football, Playing Positions, Sports Coach, Performance etc.

Introduction

Sports highlight the complex interplay of various factors that contribute to an athlete's success. Indeed, the modern landscape of sports emphasizes not just individual talent but also the importance of a systematic and scientific approach to training identifying and nurturing elite athletes from a young age is crucial, as it allows for tailored training regimens that enhance their specific strengths while addressing weaknesses. This early intervention can make a significant difference in an athlete's long-term development, ensuring they have the technical skills, tactical understanding, and psychological resilience necessary for peak performance. To achieve this, a multifaceted approach is essential. Coaches and physical educators are increasingly relying on advanced training methodologies that integrate psychology, physiology, anthropometry, and other sciences. This holistic perspective not only enhances physical performance but also addresses mental resilience and strategic thinking, which are crucial in high-stakes competitions. As you mentioned, talent identification is the foundation of this process. Early recognition

of potential athletes allows for tailored training programs that develop their skills over time. By focusing on scientific methods, countries can create a sustainable pipeline of talent that continually raises for performance.

On the present day world performance in various events are touching sky high and it seems that it will go further higher and higher it-requires a highly scientific approach to achieve high level of performance and this should start right from the level of identifying talents. Today Basket Ball is at the zenith of its popularity. The Encyclopedia American estimates that it is played and watched by more Americans than any other sports The Crestar watching American basketball extends to other countries and 200 millions house halls views its matches on regular or irregular basis. A present basketball is player all over the world. More than 155 National Federation are affiliated to FIBA over the year. A football field is often referred to as a “gridiron” due to the grid-like pattern created by the markings on its surface, which resemble the layout of a grilling grate used for cooking. This terminology reflects both the aesthetics and the functional design of the field.

Key Features of the Gridiron

1. Yard Markings

- The field is marked with lines every five yards, allowing players, referees, and spectators to easily gauge distances.
- Each ten-yard segment is often marked more prominently, helping in quick assessments of field position.

2. Longitudinal Lines

- In the early days of football, particularly after the introduction of the forward pass, additional longitudinal lines were added to the field.
- These lines created a series of rectangles or squares, which were intended to regulate passing plays. Players could only legally throw the ball from one square to an adjacent one, limiting the potential for long, uncontrolled passes.

3. Historical Context

- The introduction of the gridiron pattern was a response to concerns that the forward pass might overly dominate the game.
- By establishing this system, the game’s founders aimed to maintain a balance between running and passing plays, promoting a more strategic approach to offensive tactics.

4. Visual Impact

The gridiron design not only serves a practical purpose but also enhances the visual appearance of the field, making it easily recognizable and iconic in the world of sports.

Overall, the gridiron pattern on a football field is an essential aspect of the game’s structure, reflecting both its historical evolution and the strategic considerations that have shaped its development over the years.

Review of Literature

Wilbar Martin’s (2013), study provides valuable insights into the anthropometric differences and physical performance between Mexican-American and Anglo-American adolescent boys. The study’s methodology, which includes comparisons at adjacent age levels within each racial group, helps to highlight developmental differences and may reveal how cultural or environmental factors influence physical growth and athletic capabilities. This type of research is essential for tailoring training and development programs to meet the specific needs of different groups, ultimately enhancing athletic performance and promoting healthy development among adolescents.

Sodhi and Sidhu (2015), focuses on the anatomical advantages of wrestlers highlight how specific physical attributes can enhance performance in the sport. Longer upper extremities facilitate reach, allowing wrestlers to execute holds and grips more effectively. This reach is crucial during matches, as it can provide leverage and control over an opponent. Additionally, the longer trunk combined with shorter lower extremities contributes to a lower center of gravity, which is vital for maintaining balance and stability during intense grappling exchanges.

Musaiger (2017), conducted a comprehensive analysis of body composition among various athlete groups in Bahrain, focusing on football, handball, volleyball, and basketball players. By comparing these athletes to a control group of 53 non-athlete adults, the study highlighted several key findings related to physical attributes and performance. He researchers assessed weight, height, mid-arm circumference, and skin fold thickness. These metrics are critical for understanding the physical characteristics that contribute to performance in different sports. Overall, this analysis provides valuable insights into how body composition can influence athletic performance and emphasizes the need for sport-specific training approaches.

Ghai's (2020), study sheds light on the complex relationship between physique characteristics, motor abilities, and performance in gymnastics. By focusing on twenty male gymnasts who competed at the inter-university level, the research highlights the importance of specific motor ability components over general physique traits in determining performance outcomes. The study's findings suggest that attributes such as strength, flexibility, agility, and dynamic balance are more closely linked to success in gymnastics than traditional physique measurements etc.

Venkateswarlu's (2022), research provides valuable insights into the physical characteristics of athletes across different sports, highlighting how specific demands shape the bodies of athletes in various disciplines. By comparing national-level kabaddi players, basketball players, track and field athletes, and non-athletes, the study reveals distinct trends in height, weight, and body composition. Notably, basketball players and throwers were identified as the tallest, with throwers also being the heaviest. This aligns with the physical demands of basketball and throwing events, where height and mass can provide competitive advantages. In contrast, distance runners were found to be the lightest, reflecting the emphasis on endurance and efficiency in their sport.

Debnath (2024), conducted a study on 41 gymnasts who participated in competition of the National Junior Gymnastics Championship. Age, weight, height, biacromial, betrochantorion, humorous bicondylar and femur bicondylar diameters, upper arm, forearm thigh and calf circumferences and biceps, triceps subscapular, suprailiac, and calf skinfolds were obtained one ach subject. They concluded that the high level junior performers in gymnastics possess significantly lighter weight; smaller thigh circumference, lesser for percentage and higher lean body mass percentage, mesomorphy and competition performance than mediocre group It was also concluded that the high level performance group possesses significantly wider biacromial diameter, upper arm circumferences, and greater mesomorphy and competition performance than the low level performance group.

Research Methodology

The current study utilized both primary and secondary data sources to gather comprehensive insights. The data was collected through personal interviews with 20 football coaches working in government high schools in T. Narsipura Taluk. The interviews aimed to capture the coaches' perspectives on various aspects of football coaching, training techniques, athlete development, and challenges faced in their roles and qualitative data forms the basis of the conceptual analysis presented in the study. The secondary data was collected from additional information was sourced from existing literature, including research studies, articles, and reports related to sports coaching

and athlete performance. This secondary data provided context and background, complementing the primary findings and enriching the overall analysis. The integration of both primary and secondary sources enhances the validity of the study and offers a well-rounded understanding of the coaching landscape in football within the specified region etc.

Objectives of the Study

1. To highlight the theoretical background and extensive literature survey related to the Foot Ball game.
2. To analyzes the sports coaches' perspective towards Techniques/ Measurements followed by the foot balls game.

Justification of the Study

1. Sports Coaches' Perspective towards Techniques/ Measurements Followed by the Foot Balls Game

This study highlighted significant challenges in the teaching of football courses at colleges and universities. The reliance on a one-size-fits-all approach can be detrimental, especially in a sport that requires varying levels of skill and understanding. Ignoring individual differences in aptitude means that some students may struggle to keep up, leading to frustration and disengagement. Moreover, the lack of tailored instruction can hinder both technical and theoretical development, preventing students from reaching their full potential. This approach not only impacts individual learning experiences but can also lower the overall competency of the student cohort. Additionally, the limitations in scheduling and physical space for football courses can exacerbate these issues. When facilities can't accommodate multiple classes, it restricts opportunities for practice and skill development, further complicating the learning process. To address these issues, educational institutions could benefit from adopting a more differentiated teaching strategy that considers individual skill levels and learning styles. These techniques are essential for assessing body composition, physical development, and performance potential in athletes. Coaches should be trained in these methods to ensure accuracy and consistency in measurements as follows:

Table 1 Techniques/ Measurements used in foot balls

SI. No	Techniques/ Measurements in foot balls	Explanation
	Age Measurement Technique	The age of each subject was determined using the date of birth indicated in her secondary school certificate or service record. The complete number of years from the date of birth to the date of measurement was recorded as the chronological age of the subject. This method ensures accurate age assessment, which is crucial for analyzing performance and growth in relation to age-related factors in athletes.
	Body Weight Measurement Technique	The subject, dressed in minimal clothing, stood upright at the center of a calibrated portable weighing scale. Before taking the measurement, the scale was checked to ensure the needle was at zero. The weight was recorded in kilograms, rounded to the nearest half kilogram. This method provides an accurate assessment of body weight, essential for evaluating body composition and performance metrics in athletes.

3	Stature Measurement Technique	<p>The stature is defined as the vertical distance from the vertex of the head to the horizontal floor. To measure stature:</p> <ul style="list-style-type: none"> An anthropometer was held vertically in the mid-sagittal plane in front of the subject. The horizontal movable bar was then lowered until it gently touched the vertex of the head. The measurement was recorded in centimeters. This technique ensures precise stature assessment, which is crucial for understanding growth patterns and physical characteristics in athletes.
4	Total Arm Length Measurement Technique	<p>This method provides an accurate assessment of arm length, which can be important for evaluating physical characteristics and performance potential in athletes</p> <ul style="list-style-type: none"> The subject was asked to stand in a comfortable position. The other end was adjusted to the distal point (the tip of the middle finger). The reading was recorded to the nearest 1/10 of a centimeter.
5	Total Leg Length	<p>This technique is essential for understanding leg length, which can influence athletic performance and biomechanics.</p> <ul style="list-style-type: none"> This measurement is defined as the distance from the anterior superior iliac spine to the standing surface. To measure total leg length: The subject was positioned as they would be for stature measurement, standing upright with proper posture. The measurement was recorded accurately.
6	Upper Arm Circumference Measurement Technique	<p>This method provides an accurate assessment of upper arm size, which can be relevant for evaluating muscle development and overall body composition in athletes.</p> <ul style="list-style-type: none"> The subject extended their arm and allowed it to hang loosely at their side. A flexible steel tape was used to measure the circumference at the midpoint between the tip of the acromion (shoulder) and the olecranon (elbow). The measurement was recorded in centimeters.
7	Forearm Circumference Measurement Technique	<p>This technique is important for evaluating muscle size and strength potential in athletes, contributing to assessments of overall physical fitness and body composition.</p> <ul style="list-style-type: none"> This measurement assesses the maximal girth of the forearm. To measure forearm circumference: The subject was instructed to extend their elbow, supinate the forearm (turning the palm up), and keep their fingers extended. A flexible steel tape was used to measure the circumference at the point of maximal girth of the forearm. The measurement was recorded in centimeters.
8	Calf Circumference Measurement Technique	<p>This method is useful for assessing lower leg muscle development and overall body composition in athletes.</p> <ul style="list-style-type: none"> Calf Circumference: This measurement evaluates the maximum girth of the calf. To measure calf circumference: The subject stood with her feet slightly apart, ensuring weight was evenly distributed on both legs. A flexible steel tape was used to measure the maximum circumference of the calf, typically taken at the widest part. The measurement was recorded in centimeters.

9	Elbow Diameter Measurement Technique	<p>This technique provides important information about elbow width, which can be relevant for understanding joint stability and function in athletes.</p> <ul style="list-style-type: none"> • This measurement assesses the distance between the medial and lateral epicondyles of the elbow. To measure elbow diameter: • The individual stood in an erect position, with the elbow raised horizontally and the forearm bent at a 90-degree angle. • A vernier caliper was used to measure the distance between the medial (inner) and lateral (outer) epicondyles. • The measurement was taken with slight pressure on the crossbar of the caliper and recorded to the nearest 1/10 of a centimeter.
10	Ankle Diameter Measurement Technique	<p>This measurement assesses the distance between the medial malleolus (tibia) and the lateral malleolus (fibula). To measure ankle diameter:</p> <ul style="list-style-type: none"> • The subject stood in an upright position. • A vernier caliper was used to measure the straight distance between the medial malleolus and the lateral malleolus. • The measurement was recorded accurately.
11	Biceps Skin Fold Measurement Technique	<p>This measurement is important for evaluating body fat distribution in the upper arm and contributes to overall body composition assessments in athletes.</p> <ul style="list-style-type: none"> • This measurement assesses subcutaneous fat in the biceps area. To measure the biceps skin fold: • The anatomical landmarks for the measurement are the acromion and olecranon processes on the anterior aspect of the arm. • Care was taken to grasp only the skin fold without including underlying muscle tissue. • A calibrated skin fold caliper was applied to measure the thickness of the fold, and the reading was recorded in millimeters.
12	Thigh Skin Fold Measurement Technique	<p>This measurement assesses subcutaneous fat in the thigh region. To measure the thigh skin fold:</p> <ul style="list-style-type: none"> • The skin fold was taken on the anterior surface of the thigh, positioned midway between the mid-inguinal point and the superior border of the patella (kneecap). • The subject was asked to stand in a relaxed position to ensure accurate measurement.
13	Triceps Skin Fold Measurement Technique	<p>This measurement assesses subcutaneous fat on the posterior surface of the arm. To measure the triceps skin fold:</p> <ul style="list-style-type: none"> • The measurement was taken at the same level as the biceps skin fold, on the posterior surface of the arm. • The subject was positioned similarly to the biceps measurement to ensure consistency. • A fold of skin and subcutaneous tissue was pinched, and a calibrated skin fold caliper was applied to measure the thickness of the fold, recorded in millimeters.
14	Supra-Iliac Skin Fold Measurement Technique	<p>This measurement is valuable for assessing body fat distribution, particularly in the abdominal region, contributing to a comprehensive evaluation of an athlete's body composition.</p> <ul style="list-style-type: none"> • This measurement assesses subcutaneous fat located at the crest of the ilium. To measure the supra-iliac skin fold: • A vertical fold of skin and subcutaneous tissue was taken at the midaxillary line, specifically at the crest of the ilium. • The fold was pinched firmly between the thumb and finger at a 45-degree angle to the anterior superior iliac spine, following a diagonal line going downward and inward. • The thickness of the fold, with the reading recorded in millimeters.

15	Calf Skin Fold Measurement Technique	<p>These measurements are crucial for assessing body fat distribution and overall body composition, contributing to a comprehensive understanding of an athlete's physical condition</p> <ul style="list-style-type: none"> • This measurement evaluates subcutaneous fat in the calf area. To measure the calf skin fold: • A vertical fold of skin and subcutaneous tissue was picked up on the posterior side of the lower leg, specifically at the level of maximum girth of the calf. • The measurement was taken using a calibrated skin fold caliper, and the thickness of the fold was recorded in millimeters. • These measurements are crucial for assessing body fat distribution and overall body composition, contributing to a comprehensive understanding of an athlete's physical condition.
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Recommendations of the Study

1. Imputing different variables in order to investigate their relationship to football performance ability.
2. The personality factors may be employed to football performance to find out their relationship to football performance.
3. Physiological variables may be included and find out their relationship to football performance.
4. By exploring these dimensions, future studies can provide deeper insights into the complexities of football performance. The ultimate goal is to develop robust predictive models that support talent selection and optimize training strategies for both current and future generations of football players.

Conclusion

Football sport today has become a strong touching and influencing every body's life someway or other. Millions of footballers participate in this sport of their choice and billions of people watch and read about them. The graceful, aesthetic performances of football not only entertain the minds of the billions over the universe but also at the same time have motivated the football scientists toward serious scientific queries. Football sport discipline not only discusses performance but also to study it as a means by social and professional aspect through which various problems may be solved. Application of science and technology influence the football sport in varieties dimension and success in football performance today is not only chance. The knowledge of science, scientific principles of training and coaching and application of modern testing procedure and techniques by the utilization of sophisticated instruments has predict the performance of the footballers at different levels of competition. It was further recommended that varied forms experimented in this study may be adopted for such training for better equipping the football players.

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