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Artificial intelligence is employed in studying the relationship between some physical measurements and the accuracy to the young goalkeepers in football

Yousef Kadhim Abd [1], Mahdi Zidane Hamoud [2], Safwan Abdalghani Hamid [3]

[1,2,3] University of Baghdad / College of physical Education and sport sciences

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Abstract

Physical measurements are one of the basic factors that affect the performance of the goalkeeper, especially when confronting fixed kicks that require special skills such as the reaction and accuracy in concentration, and with technological development artificial intelligence has become an effective tool for analyzing mathematical data that is difficult to discover in traditional methods The study aims to employ techniques Artificial intelligence to study the relationship between physical measurements and the accuracy of confronting the fixed kicks of goalkeepers in football. This study will contribute to providing a deeper understanding of physical factors that affect the performance of goalkeepers, in addition to designing dedicated training models and programs that depend on scientific data and the research sample was for specialized school players. For football (12) players. As for the research curriculum, the researcher used the descriptive analytical approach, studying correlation relationships, to comprehend them, and the nature of the problem. As for the procedures used, it was through the

1 University of Baghdad / College of physical Education and sport sciences,
Youssef.Kazem1104b@cope.uobaghdad.edu.iq

2 University of Baghdad / College of physical Education and sport sciences,
mahdi.zeidan@cope.uobaghdad.edu.iq

[3] University of Baghdad / College of physical Education and sport sciences,
Safwan.abdulghany@cope.uobaghdad.edu.iq

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use of the GPT application and using libraries such as Python and a questionnaire. The search results were the mass 0.004 and the total length 0.001 The length of the arm is 0.001, the width of the shoulders 0.062, and the length of the man 0.061 is moral with the degree of freedom 11 at an error ratio 0.05

As for the conclusions, there is a relationship between physical measurements and the accuracy of confronting high -minded and opposition kicks. The research problem was to study the physical measurements of emerging players and identify their relationship accurately to confront fixed kicks because of its great importance in achieving good results during the match.

Keywords: Artificial intelligence, Physical measurements, accuracy, fixed kicks in football

Introduction

Football is one of the most popular sports in the world, with goalkeepers playing a pivotal role in determining the outcome of matches. Goalkeeper duties require high levels of concentration, skill, and physical ability, making the selection and development of goalkeepers a complex process that requires precise scientific foundations. This is why research into A study of the impact of body measurements on the accuracy of set-piece saves, and the use of artificial intelligence to analyze performance, draw conclusions, and improve training programs for young goalkeepers based on the results. (Kadhim & Mahmood, 2023) There are a number of recent studies that have addressed this specialty from various aspects, including: A comparative study of some anthropometric measurements and functional variables among football and futsal goalkeepers. (Issa et al., 2024) This study examined the differences in anthropometric and functional measurements between soccer goalkeepers and futsal goalkeepers. The results showed that coaches relied on variables such as body height and leg length in the selection process, with little attention paid to functional variables (Science, 2022). Predicting the contribution of the most important body measurements to the performance of some football skills for young players: This study aimed to determine the extent to which anthropometric measurements influence the performance of specific skills among junior players. (Kadhim & Majid, 2023) The results indicated a statistically significant relationship between some anthropometric measurements and skill performance (gpt, 2025). Artificial intelligence and improvements in sports performance analysis and outcome prediction. This study examined the role of artificial intelligence in analyzing player performance data in real time by tracking metrics such as player movement, positioning, and physical effort. (Mondher & Khalaf, 2023) This analysis helps coaches and

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analysts understand players' strengths and weaknesses and make informed decisions during matches (Scikit-learn, 2025).Artificial Intelligence in Football: Transforming the Game with Technology: This study discusses how AI is used to analyze match data, such as analyzing more than 500 passes in each match to help commentators and teams understand tactical trends. AI is also used to identify talent and develop player development strategies (gpt, 2025).

Artificial Intelligence and the Future of Football: Reality and Hope:

This study explores the role of artificial intelligence in referee decision-making, match outcome prediction, injury prevention, and performance improvement, as well as player selection (Specialized, 2022). The players of the specialized schools of the Ministry of Youth and Sports are distinguished by their unique physical and skill capabilities that have surpassed their peers of the same age to be accepted into these schools. This calls for attention to the field of their tests in a manner that is commensurate with their distinctive abilities and attention to evaluating training curricula in the players 'privacy and level of progress. It is necessary to know the players 'levels by conducting follow-up tests to know the extent of development achieved by the players in all physical and skill aspects in the training process and then raise them to achieve the desired goals through evaluating physical and skill capabilities and skills (Mahdi Zadan Hemood, 2019). Considering that the researcher is a lecturer in the College of Physical Education and Sports Sciences and a football coach at the same time, the problem is considered part of their work and through the use of the artificial intelligence program (gpt) and conducting private interviews with coaches specializing in goalkeeping for age groups, as studying the relationship between these two important variables, we mean body measurements and their relationship to skill performance (skill), gives positive indicators of the health and mastery of performance and clarification Its strengths and weaknesses, the suitability of these measurements, and their relationship to the achievement of this skill, given its great importance in achieving good results during the match.

Method and tools

Research methodologyThe researcher will use the descriptive analytical approach and study the correlational relationships for their suitability and the nature of the research problem. Research community and sampleThe researcher conducted his research on a sample of (12) goalkeepers from specialized football schools at the training center in Baghdad. They represent (40%) of the entire research community, which numbered (30) young players. The percentage was calculated using the law of the part divided by the whole multiplied by the number 100.. Search proceduresIn order to determine the physical measurements for skills, a special questionnaire was distributed to a group of specialists (football and tests) to choose some of them, adding what

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they see as important in this sport and using some artificial intelligence programs to collect data for the purpose of reducing effort, shortening time and material cost due to what these modern technologies provide in terms of accurate information, which became clear to us through this research after comparing the data collected manually in the traditional way of questionnaires and personal interviews and the information found in the targeted artificial intelligence applications. Thus, the following measurements and variables were chosen in light of what was agreed upon and according to the relative importance, the variables that achieved more than 50% were chosen. The goalkeeper is considered the most important player among the players and is distinguished by physical, skill, tactical and psychological specifications that differ from the rest of the players. It is also impossible to play without a goalkeeper at any time during the match, as he occupies the most sensitive and important position on the field because he is the last player who defends his goal, that is, the last player in the team's defense, and any mistake from this player most likely causes the goal to be hit by a goal. The owner of this position is distinguished from other players by the fact that international law Football allows him to touch and hold the ball with his hands inside his team's penalty area, and also allows the goalkeeper to play inside the field with his feet (Hammoud, 2019).

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table(1)
Illustrates the relative importance of body measurements for the research sample members.

T	variable	The achieved score is(50)	Average(5)	percentage	choice	
1	Total length	50	5	%100	Yes	both
2	trunk length	20	2	%40		
3	arm length	41	401	%82		
4	thigh length	23	203	%46		
5	forearm length	35	305	%70		
6	Shoulder width	9	0.9	%18		
7	Lower limb length	47	407	%94		
8	mass	35	305	%70		
9	Chest width	40	4	%80		
10	pelvic display	17	107	%34		
11	Shoulder circumference	9	0.9	%18		
12	Chest circumference	20	2	%40		

The sample members were subjected to these measurements before starting to conduct the technical test. During the experiment, work was carried out according to the prepared plan using the targeted tests, which are:

·High kick test

·Low set kick test (ground)

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Statistical method

The researchers used the SPSS statistical package. After collecting the data, the researcher analyzed it statistically using the following laws:)arithmetic mean, percentage (%), standard deviation, simple correlation coefficient, relative importance(

Presentation, analysis and discussion of results

Table(2) Evaluate the correlation relationships between the body measurements of the research sample members and the accuracy of the overwhelming and projected tax

T	Variables	Low set pieces (ground)				High kicks			
		simple association	Calculated value of r	themselves	Morale	simple association	Calculated value of r	themselves	
1	mass	0.646	0.3022	0.001	spiritual		0.323	0.004	spiritual
2	Total length	0.574		0.001	spiritual			0.001	spiritual
3	arm length	0.233		0.062	spiritual			0.001	spiritual
4	Shoulder width	0.1189		0.022	spiritual			0.062	spiritual
5	man's height	0.433		0.001	spiritual			0.061	spiritual

Degree of freedom 11 at 0.05 margin of error

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By observing Table (2), it becomes clear to us that there is a correlation between mass and low fixed kicks, because low fixed kicks do not require a very high jump and a height above the level close to the crossbar, and therefore the mass variable was influential on the jump distance. There is also a correlation between mass and fixed kicks higher than the head level (high) because fixed kicks higher than the head level (high) require a high jump distance and a height above the level of the crossbar. (Kazim et al., 2019) As for the relationship between the variable of total length, the researcher noticed the existence of a correlation with fixed kicks above head level (high) and fixed kicks that are low (ground). (Sikhe & Khalid, 2022) This is because the total length means that the center of gravity of the body is at the highest point, as well as the height of the launch point, which is the most important factor affecting the launch of the projectile (body). It also plays a clear role in determining the angle of launch of the body, as the better the launch angle, the more accurate the skill is. (Sikhe & Yasir, 2020) As for the relationship between the variable arm length, there is no correlation with it, and there is a correlation with fixed kicks higher than head level (high), and this is because low fixed kicks (ground) do not require a very high height and extension in arm length, but fixed kicks higher than head level (high) require an extension in arm length and a very high height. As for the relationship between the shoulder width variable, there is no correlation between it and fixed kicks higher than head level (high) and low fixed kicks (ground). This is because the shoulder width variable does not affect the strength and accuracy of low fixed kicks (ground) and fixed kicks higher than head level (high). As for the relationship between the variable of leg length, there is a correlation between it and fixed kicks higher than head level (high) and there is no correlation between it and fixed kicks that are low (ground) because fixed kicks higher than head level (high) require a high height from the base and precision in performance.(Munaf et al., 2021)

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Appendices

Attached (1)

Dear experts, who were presented with the questionnaire forms to select the appropriate body measurements.

T	Specialist's name	Title	University and major
1	Naji Kazim	Professor Dr.	Football / University of Baghdad, College of Physical Education and Sports Sciences
2	Ali Saad	Assistant Professor Dr.	Football / University of Baghdad, College of Physical Education and Sports Sciences
3	Mecca delegate	Doctor teacher	Football / University of Baghdad, College of Physical Education and Sports Sciences

attached(2)

Support staff

T	The three-part name	The attribute	University and major
1	Ali Musa Jawad	Lecturer at the College of Physical Education and Sports Sciences	University of Baghdad / History of Volleyball
2	Mohammed Nahed Obaid	Lecturer at the College of Physical Education and Sports Sciences	University of Baghdad / Field and Field Training
3	Fahim Abdel Wahid	Lecturer at the College of Physical Education and Sports Sciences	University of Baghdad / Training Physiology Field and Square

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Appendix(3)

Questionnaire to determine the ideal and important measurements for the goalkeeper position

Dear Professor.....

Best regards...

The researchers (Mahdi Zidane, Youssef Kazim, Safwan Abdul Ghani), lecturers at the College of Physical Education and Sports Sciences - University of Baghdad, aim to conduct their research entitled):Using artificial intelligence programs to study the relationship between some body measurements and the accuracy of stopping set pieces among young football goalkeepers(Given your expertise in your field, we ask you to identify the ideal and important measurements for the goalkeeper position to reduce the chances of scoring goals.

Thank you for your cooperation. With great appreciation...

Expert's name:

Scientific title:

Specialization:

Workplace:

Date/ : 2025 /

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