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Biomechanical Indicators of Corner Kick Skill of the Distance Zone and its Relationship to the Performance Accuracy of Premier League Players in Football

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ABSTRACT

The importance of the research in the study of the biomechanical indicators of the skill of executing the corner kick of the player executing the far area and the extent of its relationship to the accuracy of the performance is understood so that the way of performance is understood and the interactions between the movement of the body parts during the performance are also determined, as well as the motor procedures required to accomplish this performance with the highest possible efficiency and with the least possible effort to achieve the accuracy of the execution and delivery of the ball to the attacking player to achieve the goals, **as for the research** problem as a result of the researcher's observation and follow-up. And his experience as a former player for the developments of development in this game, and the lack of studies that dealt with this skill in the mechanical field, and because of the lack of values for its biomechanical variables, the researcher decided to study this skill mechanically, in addition to discovering the appropriate and proper motor infiltration of the executing player, as well as discovering and avoiding weaknesses and enhancing the positive aspect to reach the optimal performance to achieve the required accuracy and optimal performance, and **the objectives of the research** were to identify the Some biomechanical indicators of the skill of executing the corner kick in football for applicants and its relationship with accuracy, andidentifying the nature of the relationship between some biomechanical indicators of the skill of executing the corner kick in football for applicants with accuracy, and the researcher used **the** descriptive approach in the method of studying correlation relationships, which is the best method to solve the research problem, and the research community was deliberately identified, which is represented by the teams of the Premier League football for the football season 2024-2025, which are clubs Al-Nasiriyah Club – Al-Gharraf Club from Dhi Qar Governorate, South Refineries Club and Al-Bahri Club from Basra Governorate, three players were selected from each team, so that the number of members of the sample is (12) players who are good at performing the corner kick with the right foot, and the selection of the players was based on t researcher with the coaches of those teams in order to name the players who implement this method. One of the most important **conclusions** is a significant correlation between biomechanical variables and the accuracy of the corner kick skill of the distant area .

1- Introduction to the research:

1-1 Introduction and the importance of the research:

Science began to progress from year to year, and this progress was clear and continuous in most areas of life and reflected positively on its most important manifestations, and from here we find that the developed countries spared no effort in the way of scientific research in order to obtain everything new, so these countries began to make rapid progress in most of its aspects, and one of these aspects is the sports aspect, which is considered a basic pillar and an important manifestation of these countries.

Football is one of the modern manifestations that reflect the progress of countries, the size of their sophistication and their interest in building the new player, which is reflected in the splendor of performance and the formulation of skills according to the scientific and biomechanical foundations in order to reach accurate results that provide the most appropriate technical solutions with the economy of time and effort during the performance of football skills.

The corner kick is one of the basic skills that players must possess and is implemented from the corner of the field, and the ball is returned to the field through the implementation of the corner kick skill, and the corner kick, which is considered one of the main and modern technical methods followed by coaches to achieve the planning goals, but has become an effective means and plan of attack in the world of football, as a result of the proper use of the foundations. Scientific in the study of movement based on the latest devices and means represented by imaging devices and kinetic analysis programs that achieved accurate objective results in motor performance that added to football skills in general and the implementation of the corner kick in particular.

Therefore, the prohibition of an effective attack depends on the accuracy in the execution of the kick after which one continuous and sequential movement is made , so the identification and good preparation according to the biomechanical indicators of the mechanical aspect of the joints of the body has an impact on the stages and sections of the performance of the corner kick skillTo prepare for the skill, the player requires the player to present the center of gravity of his body, which is represented in the torso as the largest mass in the body, forward in an attempt to obtain the best outcome of the direction of the execution of the ball according to the three areas of play (the near and far column and the middle of the penalty) in which his stability is greater as a biomechanical requirement to reach the accuracy of the accuracy to a high level, maintaining his position at the end of the movement and after directing the ball to the areas of delivery accuracy.

In order to build the movement on solid foundations that the player is aware of, it is necessary to use the science of biomechanics, this science, which records the highest degrees of association with the rest of the other sciences, where the mechanism of the causes of movement, weaknesses and strengths in it are due to Doesn't hide The role of modern technologies in measuring and monitoring the development accompanying all development processes.

Hence, the importance of the research in studying the biomechanical variables of the skill of executing the corner kick of the player executing the remote area and the extent of its relationship to the accuracy of the performance in order to understand how to perform and detect the interactions between the movement of body parts during the performance , as well as to determine the motor procedures required to accomplish this performance with the highest

possible efficiency and with the least possible effort to achieve the accuracy of the execution and delivery of the ball to the attacking player to achieve the goals.

2-1 Research Problem:

The skill of executing the corner kick in football is not an easy skill as some imagine, but it has become one of the important and modern skills that is used in coaches scientific studies and plans to implement them in different ways and methods, but it has become an effective offensive means in the world of modern football, so any training is based on sound scientific foundations. Through the researcher's observation of the Premier League matches, as well as the observation of the training of some clubs, and through the experience of the player being a former player in the Premier League in football, the researcher noticed the lack of concentration in the training of the corner kick skill, as well as the lack of studies that dealt with this skill, and therefore the lack of digital data on the values of biomechanical variables, so the researcher decided to study this skill mechanically, in addition to discovering the appropriate and proper narrative sequence for the executing player, as well as discovering the Weaknesses and avoiding them and enhancing the positive aspect to reach the player for optimal performance to achieve the required accuracy and optimal performance.

3-1 Research Objectives:

1- Identifying the values of some biomechanical indicators and accuracy of football players in the skill of the corner kick

2- Identifying the Relationship between the Values of Some Biomechanical Indicators and the Accuracy of Corner Kick Performance in Football

4-1 Imposing the Research:

There is a significant correlation between some biomechanical indicators of precision advanced soccer corner execution skill.

5-1 Research Areas :

5-1-1 Human Field: Al-Nasiriyah and Al-Gharraf Football Club Players for Applicants and Participants in the Iraqi Premier League for the year 2024-2025

5-1-2 Time Domain: 1/12/2024-20/2/2025

5-1-3 Spatial area: Workers' Sports Club football stadium.

2- Research Methodology and Field Procedures:

2-1 Research Methodology:

The researcher used the descriptive method of studying relational relationships, which is the best method to solve the research problem.

2.2 Research population and sample

The research population was deliberately determined, represented by the teams of the Premier League football season for the 2024-2025 football season, which are the clubs of Nasiriyah Club – Al-Gharraf Club from Dhi Qar Governorate, the South Refineries Club and the Bahri Club from Basra Governorate, which are (20) players specialized in performing the skill of the corner kick, and three players from each team were selected in the deliberate way, so that the number of the sample members is (12) players, and their percentage is (60%) from the original

community who are good at performing the corner kick with the right foot, and it was Selecting players based on the researcher's personal interviews with the coaches of those teams in order to name the players who implement this method.

2.2.1 Homogeneity of the research sample:

In order to achieve homogeneity among the members of the research sample and to avoid the effect of factors that may affect the results of the experiment in terms of the individual differences in the sample, the researcher conducted the homogeneity of the research sample in the variables related to morphological measurements that may have an effect on the biomechanical variables and from these measurements (chronological age, training age, mass, height, trunk length, leg length) and it was performed on the sample before the test was carried out in the main experiment .

The output of the coefficient of difference was taken by means of the arithmetic mean and the standard deviation of the physical measurements to ensure the homogeneity of the sample, and it was proven that the value of the coefficient of difference is less than 30**%,** and the sources state that whenever the coefficient of difference is less than 30**%,** it means that the sample is homogeneous and Table (1) shows this

Table (1)
Shows the homogeneity of the research sample in (chronological age, mass, height, trunk length, leg length) using the coefficient of difference.

Difference	Standard deviation	Arithmetic mean	Unit of Measurement	Measurements	t
9.78 %	2.18	22.33	Year	lifetime	1
5.60 %	4.04	72.10	kg	Mass	2
1.76 %	3.10	175.25	poison	Length	3
1.82 %	1.11	60.81	poison	Trunk length	4
1.66 %	1.78	106.59	poison	Leg Length	5

2-3 Means of collecting information, devices and tools used in the research:

In order for a researcher to be able to complete his research to the fullest, he must use devices, tools, and aids that help him complete his work.

2.3.1 Means of Information Collection:

⊙ Arab and foreign sources and references.
⊙ Personal Interviews
⊙ Tests and metrics.
⊙ Note.

⊙ Analysis.
⊙ The International Information Network (Internet).
⊙ Data Dumping Form
⊙ Programs and applications used in the computer.

2.3.2 Devices and tools used:

⊙ Medical Weighing Scale Type (Chinese) (1).
⊙ 1 x linen measuring tape.
⊙Stationery (papers, pens).
⊙ Leaflets (4).
⊙ Japanese-made whistle.
⊙ Japanese-made Sony video camera.
⊙ HP laptop for viewing and analyzing videos and photos, documenting data and statistical manipulations
⊙ A legal football stadium.
⊙ Legal Football (10).
⊙ Adhesive tape with a width of (5) cm.
⊙ Casio Electronic Stopwatch (4).

2-4 Field Research Procedures:

2.4.1 Nomination and Characterization of the Corner Kick Test:

After reviewing the modern scientific sources and references related to football, tests and measurement, and through the personal interviews conducted by the researcher with experts and specialists, he chose the corner kick test on the far area, which is somewhat similar to Dr. Hanafi Mahmoud Mokhtar Test[(1)] In order to fit this test with the purpose of the study and its problem, the researcher made a slight change to it, as a questionnaire form was designed to survey the opinion of experts and specialists, asking them the following:

1- **Define the execution distance**
2- **Define the Execution Area**
3- **Determine the number of attempts the player makes.**
4- **Determine the path of the ball.**

The researcher then reached the final form of the proposed test, which was re-codified in order to ensure the accuracy and validity of the modification that was agreed upon, which is to identify three different regions in the form of 3 squares, as well as determine the number of attempts for each region, and then analyze the best attempt to extract the biokinematic variables of this attempt.

- **Final Exam**

Test objective: Accuracy of the performance of the corner kick for the far area.
Pitch and Tools: The football field is between the corner of the field and the box, and a means is placed for the accuracy of the corner kick with a height of 2 m, and it contains at its upper end a circular ring with a diameter of 50 cm, and the control of the height of the ring is from (1-10 cm)
How to perform the test: The ball is placed at the corner area of the field, the player kicks the ball to go semi-straight high to fall at the end of the 6 meter area, i.e. (the execution is done from the

[1] Hanafi Mahmoud Mukhtar: Tests and Measurements for Football Players, 1st Edition, Dar Al-Fikr Al-Arabi, Nasr City, 1993, p. 110.

right side and the area far from the execution is determined with dimensions of (6.1 m × 5.5 m) Repeats the performance.

Scoring: Two points are given for each ball that falls inside the circle and a point for the ball around the boundaries of the circle and no point is given to the ball that does not performin the right way and each player performs (3) attempts from the right side and the highest score that the player can get is (6) scores

2.4.2 Identification of Biomechanical Variables:

After reviewing the recent scientific sources and references related to sports biomechanics and kinetic analysis, the biomechanical variables were filtered, which are:

1- **Approach angle**: "The corner between the line connecting the foot to the ground to the point of the centre of body mass with the horizontal line and measured from behind".[2]
2- **The angle of inclination of the body at the moment of kicking the ball: "**is the corner confined between the body line from the point of the shoulder joint to the point of the separate hip with the vertical or horizontal line".[3]
3- **The relative corner of the knee joint of the kicking leg at the moment of kicking the ball**: "It is the corner that is confined between the femur and the leg and is measured from the back".[4]
4- **The corner velocity of the man thekicker**: "It is the corner displacement that the man travels from the setting position to the moment of kicking the ball divided by time, i.e. from the moment the back weighted ends and the moment the forward weighted begins " (5).
5- **The height of the center of body mass at the moment of kicking the ball:** "The vertical distance between the point of the player's hip and the surface of the ground."[6]
6- **Football contact time:** "The time between the first contact between the foot and the ball to the moment of the last contact**".**[7]
7- **The speed at which the ball is kicked:** "The distance traveled from the moment the ball is kicked to another moment thereafter divided by time".[8]
8- **Ball Departure Angle**: It is the meeting point between the line connecting the center of the ball before it goes to its center after kicking off with the horizontal line passing through the center of the ball before it kicks off (9).
9- **The distance between the anchor foot and the center of the ball** : It is the distance between the position of the anchor foot and the center of the ball.
10- **Total kinetic energy** : It is calculated in terms of half the mass multiplied by the square of the total performance velocity.

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[2] Yasser Najah Hussein and Ahmed Thamer Mohsen: Mathematical Kinetic Analysis, 1st Edition, Najaf Al-Ashraf, Dar Al-Diaa Printing, 2015, p. 89.

[3] Yasser Najah Hussain and Ahmed Thamer Mohsen: Source previously mentioned, p. 88.

[4] Hikmat Abdulkarim Al-Mazkhoury: Biomechanics and Kinetic Analysis in Mathematical Skills, Baghdad, Moonlight for Printing and Publishing, 2019, p. 62.

[5] Falah Hassan Khalaf: The Effect of Exercises Similar to Performance According to Some Biokinematic Variables on the Accuracy of Direct Free Kick Performance of Youth, Unpublished Master's Thesis, University of Baghdad, Faculty of Physical Education, 2015, p. 45.

[6] Hikmat Abdulkarim Al-Mazkhhouri: Previously mentioned source, 2019, p. 63.

[7] Falah Hassan Khalaf: A source mentioned above , p. 45.

[8] Falah Hassan Khalaf: Ibid., p. 46.

[9] Falah Hassan Khalaf: Source previously mentioned, p. 48.

11- **Kinetic Transport**: It is calculated by the amount of the angle of inclination of the object at the moment of kicking divided by the amount of decrease in the total energy (kinetic and potential) (kinetic transport index = angle of departure/(tah + i k) - (tah + i k)) and its units d/joule/kg).

12- **The quantity of linear motion:** It is the product of the mass of the player's body multiplied by his speed.

13- **Kinetic Fluidity** : It is calculated by the value of the difference between the two linear moments between the second linear momentum from the moment of preparation for kicking the ball to the moment of kicking the ball and the first linear momentum from the approach stage to the preparation stage to kicking the ball **Linear momentum = (momentum 2 - momentum 1).**

2.4.3 Exploratory Experiment:

The researcher conducted the exploratory experiment on Friday, 14/2/2025 at ten o'clock in the morning at the Workers Sports Stadium on a sample of (6) players from the research community and from outside the sample to apply the test and the purpose of this experiment is to determine the performance of devices and tools used and their selection, and knowing the negative aspects and variables that will face the work, as well as to make sure of the following:

1- Finding the scientific foundations of the tests.
2- Knowing the appropriate tools and devices to perform this test.
3- Know the right time and place to take the tests.
4- Know the right place to place the camera orders.
5- Ensuring the adequacy of the support staff
6- Define the assistant staff in how the test is applied.
7- Knowing the difficulties and problems facing the researcher in applying the test before applying it in the main experiment

2.4.4 Scientific Basis of the Test:

First: The validity of the test:

The researcher adopted apparent honesty, which means that "the test appears to be honest in its appearance because its name is related to the function to be measured"[10], and the test was presented through personal interviews conducted by the researcher to a group of experts and specialists in the field of football, testing, measurement and sports biomechanics to make sure that the researcher chose the most appropriate test under study, and thus the test used was honest in what it measured and was reliable in the study.

Second: Stability of the test:

The researcher used to calculate the stability coefficient (test and retest method) with a time interval between the first and second test (7) days, and the first test was conducted on Friday 14/2/2025 at ten in the morning on (6) players from the researcher's community and outside the sample and was repeated on Friday 21/2/2025 at ten in the morning. The researcher extracted the stability coefficient through the correlation coefficient (Pearson) to know the stability of the tests between the results of the first test and the results of the second test, and extracted the significance of the correlation, as the SIG value was less than (0.05), which means that the test has a high degree of stability. As shown in Table (2).

Third: Objectivity:

[10] Haider Abdul Razzaq Kazim Al-Abadi: Basics of Writing Scientific Research in Physical Education and Sport Sciences: 1st Edition, Al-Ghadeer Printing and Publishing Company, Basra, 2015, p. 122.

The researcher found the objectivity coefficient of the test by finding the simple correlation coefficient (Pearson) between the results of the two referees (*) in the first application conducted during the exploratory experiment, and the correlation coefficients were high, which indicates the objectivity of the tests used in the current study.

Table (2)
Builds the coefficient of consistency and objectivity of the tests under study

SIG value significance level	Objectivity Factor	SIG value significance level	Stability Coefficient	audition	t
0.000	0.92	0.000	0.88	Corner Kick Test	1

2.4.5 Videography

The researcher used a video camera type (sony)Japanese-made frequency (300The first camera was placed at a distance of (6.90) m from the position of the ball and at a perpendicular angle to the field of hitting the ball and the height of the lens measured from the ground (1.33) m, while the location of the second camera was placed at a perpendicular angle to the player's field of motion at a distance of (7.80) m and the height of the lens measured from the ground (1.30) m, and the reason for its placement was to photograph the player's approach to the ball, which is at an angle with the ball, and a scale with a length of (1 meter) was used.

2-5 Analysis of Videography (Kinematic Analysis of Motion through Computer):

Kinetic analysis by means of videography is an accurate method of studying kinematic variables, a quantitative study that enables the person studying movement to point out the weaknesses and strengths of the variables affecting the movement, as (Raysan Khraibet and Najah Mehdi Shalash _ 1992) says: "The biomechanical analysis of the motor skill includes the segmentation of the movement to be analyzed into its overlapping sections and the determination of the nature of each part of the movement for the purpose of applying the mechanical-anatomical foundations and laws appropriate to the ideal technique of movement."[11]

Qasim Hassan and Iman Shaker (1998) adds: "Analysis is a key to defining the behavior of human movement or its path, i.e. the process of breaking the whole into parts, and the nature of those parts and the relationship between them is studied by knowing the minutes of the path of movement and the extent of the relationship between the variables that affect that path, i.e., the transformation of the studied phenomena into numbers and degrees."[12] In order to study and analyze the kinematic research variables, the researcher took the following actions:

First of all:-

Converting the video material in its raw form, which represents the players' performance of the skill of the corner kick in football from video films to laser discs (CDs) and stored in the form of files after making a process of cutting all the attempts and movements of the players into parts, using a program installed on the researcher's laptop called (**Hero-Soft**) and then those clips were stored in files (File).) where (3) storage files have been prepared for each player divided according to the areas of the corner kick.

Arbitrators: 1- Prof. Dr. Hussein Qasim, Ph.D. in Football.
2- Eng. Dr. Ahmed Hussein Abed, Ph.D. in Football.

[11] Raysan Khraibet, Najah Mehdi Shalash. Kinetic Analysis: Basra, Dar Al-Hekma for Printing and Publishing, 1992, p. 28.

[12] Qasim Hassan Hussein and Iman Shakir. A source already mentioned. 1998, p. 42.

In other words, a file has been placed for each player in which there are three files for each file area in order to perform the kinematic analysis steps of the movement on it.

Secondly:-

The Kinovea program was used for the purpose of extracting the research variables in terms of distances, velocities, angles, and times.

Kinova Kinetic Analysis Software This program is a video player, as well as displaying the video slowly, and supports specific functions for monitoring, analyzing, and describing the performance of athletes, which allows the study of sports movements, and commenting on the technical performance (technique) by recording and writing notes , as well as this program uses a smart way to measure the dimensions through the scale depicted in the film by identifying two points on both ends of the scale that reads in nature (1 meter), and with this simple step, the program can determine any distance. Horizontal, vertical, height, or long, after the beginning and end of the distance are set by pointing to it (with the mouse) and showing the result directly without the need for other operations. Kinematic variables were extracted directly through the computer.

Through the above, the researcher was able to extract the variables concerned with the subject of the study and analyze them according to the purpose of the research.

2.6 Main Experience:

Experience is "a tight regulation of the conditions and conditions in which we can observe a particular phenomenon in order to determine the factors influencing, inducing, or causing that phenomenon[13].

After reviewing the data extracted from the exploratory experiment, the researcher conducted the main experiment on Tuesday , 25/2/2025 at the Workers' Sports Stadium in Dhi Qar Governorate, Nasiriyah District, where the photography process and test procedures continued from nine in the morning until twelve o'clock in the afternoon.

After obtaining the measurements and data of the players, which are (chronological age, training age, mass, height, torso length, leg height), he performed the field experiment procedures by giving each player (6) attempts.

The first hour included the process of preparation, preparation, installation of cameras and devices used, as well as the warm-up process for the players, followed by the test process for the corner kick, which lasted for about (60 minutes) and included giving (3) attempts (to the postal area) interspersed with intervals between each attempt and the other ranging between (30-45) seconds.

2-7 Statistical Methods:

The researcher used statistical methods that helped to process the results and test the research hypotheses through the use of the statistical package (IBM SPSS Statistics 24), which are:

- Arithmetic mean
- Standard deviation

[13] Fouad Abu Hattab, Muhammad Seif al-Din Fahmy. Dictionary of Psychology and Training: Cairo, Al-Amiriya Press, 1984, p. 58.

- Percentage
- Test (v) for independent samples
- Pearson correlation coefficient
- Torsion coefficient

3- Presenting, analyzing and discussing the results:

3-1 Presentation and analysis of the results of the values of some biomechanical variables of corner kick skill for different areas of the field:

Table (3)

Shows the values of some biomechanical variables of corner kick skill for different areas of the pitch

Remote area		Unit of Measurement	Biomechanical variables
on	Going to		
1.78	79.58	D	Angle of Approach
1.21	15.75	D	Angle of inclination of the body the moment the ball kicks
3.05	154.66	D	Relative corner of the knee joint for the kicker man
11.33	341.25	d/s	Corner Speed of the Kicker Man
3.07	119.25	poison	High center of body mass the moment the ball kicks
0.014	0.111	Tha	Football contact time
1.88	17.58	M/s	The speed of the ball
1.49	39.66	D	Ball Angle
1.30	9.333	poison	Distance between the fulcrum and the center of the ball
8.78	559.58	Kgm/s	Total kinetic energy
1.31	13.91	d/joule/kg	Kinetic transport
8.29	289.91	Kgm/s	Linear Motion Quantity
1.19	17.16	Kgm/s	Motor Aerodynamics

3-2 Presentation of the results of the accuracy of the corner kick skill for different areas of the field:

Table (4)

Shows the results of corner kick skill accuracy for different areas of the pitch

Remote area		Unit of Measurement	Skill	t
on	Going to			
0.834	2.166	**degree**	**Corner Kick Skill Accuracy**	**1**

The tabularity of (0.576) at the degree of freedom (10) and the significance level (0.05) as well as the SIG value for all variables $\geq$ (0.05).

3.3 Presentation of the results of the relationship between certain biomechanical variables and the accuracy of the distant area kicking skill

Table (5)

Shows the results of the relationship between certain biomechanical variables and the accuracy of the skill of kicking from the far area

Significance	Sig	T Value	Biomechanical variables	t
Moral	0.001	0.666	Angle of Approach	1-
Moral	0.002	0.581	Angle of inclination of the body the moment the ball kicks	2-
Moral	0.002	0.583	Relative corner of the knee joint for the kicker man	3-
Moral	0.002	0.579	Corner Speed of the Kicker Man	4-
Moral	0.002	0.577	High center of body mass the moment the ball kicks	5-
Moral	0.002	0.580	Football contact time	6-
Moral	0.001	0.606	The speed of the ball	7-
Moral	0.001	0.619	Ball Angle	**8-**
Moral	0.000	0.703	Distance between the fulcrum and the center of the ball	**9-**
Moral	0.001	0.645	Total kinetic energy	**10-**
Moral	0.000	0.709	Kinetic transport	**11-**
Moral	0.000	0.623	Linear Motion Quantity	**12-**
Moral	0.000	0.798	Motor Aerodynamics	**13-**

- The tabular t-value is (0.576) at the degree of freedom (10) and the significance level (0.05)

4.8 Discussion of the results

Through Table (5), we see that there is a relationship between biomechanical indicators and the accuracy of the corner kick skill of the distant area, as the greater the distance between the man and the ball, the less force that affects the ball, and thus the time of contact between the man and the ball[14] increases, we observe that in the distant area, the distance between the man and the ball is small, and therefore the time between the man and the ball is reduced, and the player increases the force affecting the ball, and thus the time of the man's contact with the ball is less, and it is known mechanically that the relationship between the force is known. Time is an inverse relationship, which means that an increase in force leads to a decrease in time and vice versa, and when a soccer player hits the ball with more force, it reduces the time it takes for a foot to contact the ball [(15).]

As for the accuracy variable, there was also a significant relationship with biomechanical variables, and the researcher attributed it to several reasons, including the effect of wind and other weather conditions on the ball, when the distance is closer, the wind reduces its effect on the ball, which leads to improved accuracy, as well as the less distance, the less the effect of gravity on

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Joseph Jenkins: Classical Dynamics, Cambridge University, 2013, p. 789[14]

Louay Ghanem Al-Sumaida'i: Biomechanics and Sports, 1st Edition, Mosul, Dar Al-Kutub Directorate for Printing and [15] Publishing, 1987, p. 315.

the ball, and the less the effect of bounce and reflection on the ball, when the distance is closer, the player increases his control over the ball, which leads to an improvement in accuracy as well, as well as the distance The closer you get to the control of the ball and control its movement[16].
We also see that the rest of the variables had a significant relationship with the distant area, and from these variables, the angle **of approach and the angle of the knee joint relative** the researcher attributes this relationship because when the player tries to pass the ball to the far area, the player needs the moment of kicking the ball to increase the angle of inclination of the body at the same moment, and the relative angle of the knee joint is greater unlike the near and middle area, and these two variables have a direct correlation with the variable **of the corner speed of the kicking leg.** The length of the radius has an advantage of benefit to the player that caused an increase in the corner speed of the rotating muscles, which is described as the result of the rotational radius movement, which depends on achieving the required angles in performance in order to achieve a good angular velocity, and these movements lead to pushing the ball in an arc path towards a certain area."[17] [18) .

Either variable **High center of body mass the moment the ball kicks** So a moral relationship with the distant area also appeared, where the higher the center of mass of the object, the faster the ball flew, and thus a greater distance was achieved according to the laws of projectiles, which leads to an increase **The speed of the ball** In the distant area, the researcher attributes the reason for the increase in the variable of the kicking speed in this area to the relationship between the length of the kicking leg, which works to find an appropriate collision force between the kicking foot and the ball, which led to the formation of a large speed score at the moment of collision, and since the angle of the knee at the moment of kicking the ball showed significant differences for the distant area, where the relatively larger the corner, it will lead to an increase in the length of the radius of the kicking leg, and this in turn leads to an increase in the peripheral speed of the kicking leg.[(19)] Because the far area needs an increase in the power of hitting the ball unlike the near and middle area, and this in turn will increase the speed of the ball launching This is what he pointed out Lees ,A. and Nolan , (1998) If he says that the speed of kicking is high when the extensor muscles of the knee are stretched and then shortened against kicking only with eccentric contraction movements, for this reason he emphasizes the function of the role of lengthening and shortening of the extensor muscles of the knee for the success of kicking.[(20)].

It also showed a significant relationship with the variable **of total kinetic energy** of the distant area because passing the ball to the distant area needs to increase the speed of the ball from the near and medium area because the relationship between kinetic energy and speed is a direct relationship according to the law Kinetic energy = 1/2 mass × (velocity) ^{2}
A significant relationship was shown with the variable **of motor transmission** of the distant area, as the kicker man has a major and essential role in directing the ball accurately towards the target,

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Abdel Rahman Mohamed: Classical Dynamics and its Application in Football, Alexandria University, 2010, p. 111.[16]
(1) Asami , T. and Nolte ,V. Analysis of Powerful bull kicking in Biomechanics ,Human Kineti ,1999,p 75.
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([4]) Lees , A. and Nolan , L. (1998) , The biomechanics of soccer , Are view . Journal of sports sciences 16 , p213.

if the kicker is in the right direction and its skill path, this will achieve harmony in the kinetic transmission during the strike, and thus the final result of this movement will be an increase in accuracy[21].

The ability transmitted to the man came from the angle of the inclination of the torso when kicking, as it gives an indication of its amount, which increases the corner speed of the man, so the player reduces the corner speed of the man, which in turn will affect the value of the ability in the moment before kicking the ball, to achieve the element of accuracy in delivering the ball to the desired point (1).

The variable **of the amount of linear motion also** showed a significant relationship for the distant area, as the amount of motion is the product of the mass multiplied by the velocity, and the speed of the ball in the distant area is the highest rate of velocity than the rest of the other areas, so it is obvious that the differences are significant for the amount of motion for the distant area, as well as the variable **of kinetic fluidity**, where the difference between the first momentum and the second momentum is represented and depends on the speed of the ball as well, and that the distant area is the area that obtained the highest rate of launch speed for the ball. This is confirmed by both Raysan Khraibet and Najah Mahdi, "The increase in speed is directly proportional to the force created by the movement if the mass is relatively constant" [22] , in addition to this, Samir Muslat points out that the amount of motion obtained is proportional to the effective force, the greater the effective force, the greater the movement, and thus the increase in the amount of motion and the linear kinetic energy. (23)

4 - Conclusions and recommendations:

4.1 Conclusions:

1- There is a significant correlation between biomechanical variables and the accuracy of the kick skill of the far area of the field.

4.2Recommendations:

1- Emphasize the passing of the ball when performing the skill of the corner kick on the far area to achieve high accuracy.
2- Trainers must be familiar with the foundations and rules of biomechanics, kinetic analysis, in addition to other sciences, in order to be able to train correctly according to the scientific foundations and correct information.
3- The necessity of conducting other studies at different levels (junior or advanced).
4- Conduct studies similar to other individual and team sports.
5- Emphasize the values of the mechanical variables required by the accuracy of the soccer corner kick skill.

(1) Raysan Khraibet and Najah Mehdi Shalash: 2002, op. cit., p. 333.

(2) Huzaifa Ibrahim Khalil Salman Al-Harbi: The Relationship between Some Kinematic Variables and the Accuracy of the Crushing Strike with the Badminton, Master's Thesis, Faculty of Physical Education, University of Al-Qadisiyah, 2004, p. 64.

(4) Samir Muslat Al-Hashimi: Mathematical Biomechanics , 2nd Edition, Dar Al-Kutub for Printing and Publishing, Mosul, 1999, p. 131.

6- It is necessary to conduct similar studies on the same sample to extract the variables that the researcher did not take and that did not appear due to the lack of a suitable imaging machine for speed.

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