

A PREDICTIVE MODEL FOR THE PERFORMANCE OF THE HANDLING SKILL AS A FUNCTION OF THE SKILL CAPACITIES -HARMONIC (MOTOR LINKAGE, SITUATION ESTIMATE) FOR SOCCER PLAYERS UNDER THE AGE OF (19) YEARS

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Abstract

Building a predictive model for the handling skill performance of soccer players in terms of the contribution ratios of their skill-compatibility capabilities associated with this performance is the primary objective of this research. To achieve this research and other goals the study was conducted on (260) players representing the Iraqi league teams and using the descriptive approach through conducting some tests of the researched skill and capabilities and analyzing their results statistically. The conclusions and recommendations came from:

From it during the regression analysis process a predictive model was built to estimate the handling skill performance of football players with the contribution of some of the capabilities involved in motor linkage and assess their status. As for the recommendations they include: The regression equation (predictive) can be designed on other samples.

Keywords: (Motor linkage estimation of situation forecast and outcome)

Introduction

One of the axioms of sports work today is that sports teams achieve victory in matches and competitions through good play linked to outstanding technical performance, in addition to many influencing factors, including: skill performance. Since football requires its players to perform these skills perfectly; process: the nature of this skill performance must be improved, including physical, motor, and coordination abilities. A performance like this depends, in essence, on physical and motor preparation, as well as many skill-coordination abilities (such as motor association, situational assessment), and they are also important in achieving the best results, which can only be achieved with training and practice, and according to the requirements of the need for these abilities. The need varies from one skill to another.

This means that the need to have these abilities (skills - coordination) when performing any of the football skills, including handling... Will be at the same level of contribution, but it varies from one case to another. Depending on what is required to reach high levels of performance.

In order to reveal the extent of the contribution of any of the skill-coordination abilities related to the performance of the handling skill among soccer players, whether it is the abilities of motor association or situational estimation, we as researchers must use the correlation coefficient as a statistical tool that processes the data extracted from the performance of the tests concerned with these abilities and the required skill. Because the connection in the form of a very useful research tool, it can tell us about the rates of availability of abilities (skills - compatibility) in the performance of skills in football, and it also tells us something about the predictive ability of those abilities through regression analysis processes. Here, a match is made between the predictive model and the data available to it, and then this model is used to predict the values of skill performance based on the number of skill-combination abilities (17:2)

What is important is that the main goal of prediction in our study is to estimate the value of the skill performance of handling at specific levels of skill-combination abilities, since there is a difficulty experienced by researchers in measuring the skill performance of all members of the researched community, due to the great capabilities available to them and requiring a long time and hard effort. In addition to the financial cost, which requires taking a small group that represents society as a research tool that achieves its goals, as it suffices for the purpose in prospective studies such as ours. Using regression as an analytical scientific tool to express a relationship between research variables and their direction will enable researchers to conduct a study on football players representing their relevant teams and sports clubs included in the research, to provide a model in evaluating the skill performance of handling and according to deductive predictive equations built on the basis of the known values of skill abilities - there is no doubt about the necessity of conducting such studies due to their importance in providing applied models that contribute to helping coaches direct the training processes and thus the possibility of selecting their distinguished players, and that their results and recommendations will resolve some of the ambiguity of the questions and hieroglyphs of those concerned with the game of football, and those working on it, including researchers and coaches. , especially with regard to forecasting and speculation in predicting results.

Research problem

Due to the importance of the interconnected relationship between the performance of skills in football and the skill-harmonic abilities enjoyed by its performers (players), meaning that any football player, in order to perform the skills of this game in the correct and agreed-upon way, must belong and develop his skill-harmonic abilities, especially those that are related to... By performing that skill and determining its level, such as abilities (motor association and situational assessment). Since the contribution of any of these abilities to the process of performing the skill cannot be at the same level for the same skill or other skills. Therefore, and to determine the percentage of contribution of each of them to the performance of any of the skills related to football in order to identify them and take the necessary measures to develop them through learning and training processes to improve the player's general skill performance and achieve the best results through competitions... And something like this is a problem that

suffers. Most trainers include them. To manage this problem and find solutions to it, researchers sought to study it scientifically to provide answers to the following questions:

1. Is there a relationship between the skill-coordination abilities of soccer players and their performance of the handling skill?
2. If there is an actual (moral) relationship between the skill-coordination abilities of football players and their performance of the handling skill;

A- what is its strength and direction?

B- how much does each of its vocabulary contribute to this performance?

C- can this skill performance be predicted and its value estimated through the valuable contribution of the skill-coordination abilities possessed by football players? That is, there is a predictive function for the skill-coordination abilities in performing the football handling skill.

D- is it possible to build a predictive model for football players' handling skill performance in terms of their skill-coordination abilities?

E- are there differences in the values obtained from the sample members of the model regarding their performance of the handling skill and the values estimated from the predictive model obtained regarding the performance of the handling skill from the equation derived from the model?

Research Aims

1. Knowing the description of statistical estimates of the results of tests concerned with the skill-coordination abilities and handling skill performance of soccer players.
2. Knowing the relationships (simple and complex) between the skill-coordination abilities possessed by football players and their performance of the handling skill.
3. Knowing the percentage of contribution of skill-coordination abilities to the performance of the handling skill of football players.
4. Identifying the differences between the average performance of the handling skill of the sample building the model and their performance of the skill, deducing their results from the model's equation.

Research areas

1. Human field: football players under the age of 19 for the 2017/2018 season.
2. Time frame: period from (10/25/2018) to (1/7/2020)
3. Spatial area: the courtyards of the stadiums concerned with the teams of the investigated players, and the people's stadium.

Methodology and field research procedures

1. The method is "the path that leads to revealing the truth of the phenomenon, so that it determines the relationships between the main variables that make up the phenomenon, and is characterized by the presence of rules that determine the practice of mental

activity” (51:4), and in light of this, the two researchers defined the descriptive method with its method of correlational relationships, existing approach for them.

2. The research community was defined as (280) young players in premier league clubs, under the age of (19) years for the 2017/2018 season, distributed among (10) sports clubs, from whom (260) players were randomly selected, with a percentage of (93%) from the community. As for the samples involved in the exploratory experiments, they were limited to between (20-30) players, to whom the tests nominated for work were applied according to the goals of each.
3. The tool adopted to obtain data for this study is the valid and representative tests for my abilities (kinetic association and situational assessment), as their validity and the abilities they represent came from a questionnaire of experts and specialists, as their opinions were treated with the statistical test (k2)
4. A reconnaissance experiment was conducted on 11/15/18/2019 on the field of al-shaab stadium for (30) players representing the club teams investigated. The method of performing the tests and the method of photographing the performance of the testers were conducted on them, in order to reach an objective scientific formula for prediction that comes through the results. Trusted. This experiment has achieved its purposes in terms of creating a spirit of competition among the testers and their high motivation to conduct it safely and securely, and to record the results and examine them accurately and properly tabulate them, as well as the adequacy of the devices and equipment and their suitability for the tests while fulfilling their scientific conditions of (honesty, stability, objectivity)
5. in light of the previous procedures, and after extracting the results of the exploratory experiment and ensuring the validity of the tests concerned with handling skill performance, motor linking abilities, and position assessment for football players under the age of (19) years. The researchers conducted their main experiment on members of the research sample, which numbered (260) players. This experiment took a full month and began on 11/20/2019.
6. The results of the main experiment were processed in a manner consistent with achieving the objectives of the research in terms of extracting statistical estimates for the results of the investigated tests concerned with their football handling performance and the skill-coordination abilities (motor linking and position estimation) of their players, and building a predictive model for skill performance with an indication of the percentages of contribution of abilities to this performance.

Statistical methods

After the data obtained from the final application of the tests concerned with the research were entered, and the laws related to the statistical indicators appropriate to the research objectives were downloaded into the computer and using the statistical system (spss), the final results were obtained. The following statistical methods were used:

1. reference (3:157 and above)Arithmetic mean - standard deviation - standard error - skewness coefficient - simple correlation coefficient - partial correlation coefficient
2. reference (1: 109 – 118)Multiple regression – determining the efficiency of the model

Results, presentation, analysis, and discussion

The purpose of our research does not go beyond predicting a variable (the outcome) based on a set of (predictive) variables using (regression analysis). This is done by presenting the estimation models produced from the research sample while ensuring their accuracy by answering two questions:

1. Does the model fit the observed data well, or is it affected by a small number of cases?
2. Can the model be generalized to other samples?

First: statistical description of the distribution of sample members based on the researched capabilities:

Table (1)It shows the statistical estimates of the results of the compatibility skills tests and the goodness of the sample distribution

| Distribution function | to | A s | A | s | measruing unit | – Skill ability tests compatibility | NO |
|-----------------------|--------|------|-------|-------|--------------------------|---|----|
| equinoctial | -0.696 | 0.87 | 1.40 | 3.668 | Minute and its parts | ,Jumping and standing then handling the ball to a small target | |
| equinoctial | -0.578 | 0.27 | 0.427 | 4.54 | The second and its parts | ,Controlling the ball then running with the then passing ,ball | |
| equinoctial | 0.889 | 0.44 | 0.712 | 8.06 | The second and its parts | ,turning ,Receiving then shooting ,running | |
| equinoctial | -0.381 | 0.50 | 0.806 | 7.99 | second The and its parts | then running ,Receiving then ,with the ball then passing ,dribbling | |
| equinoctial | 0.523 | 0.38 | 0.606 | 4.42 | The second and its parts | Receiving then modified shooting | |
| equinoctial | 0.780 | 0.22 | 0.361 | 2.66 | The second and its parts | Rotation touch color adjustment | |
| equinoctial | -0.238 | 0.88 | 1.42 | 7.02 | Minute and its parts | of Performance handling skill | |

From table (1) it is clear that the results of the statistical estimates indicate a good spread of the scores of the model-building sample for each of the combinatorial skill abilities possessed by the soccer players, as they achieved the moderate curve. The values of the standard error (p.s.)

and the skewness coefficient (l) came close to zero, which confirms the good selection of the sample construction for the model and the validity of its representation of the researched population represented by iraqi football club players (the applicants)

Second: building a model to predict handling skill performance in terms of the combinatorial skill abilities of football players

In order for us to be able to carry out the process of building the model, we, as researchers, require that we measure the handling skill performance of each member of the research sample, as well as the skill-compatibility capabilities they possess. Whereas the test of abilities and skills is measured in time and to ensure accuracy in this measurement. Researchers must depict the process of the studied players performing these tests to which they were subjected to meet the requirements of achieving the research objectives.

For the purpose of completing the work, the next step will be to find the correlation between the results of the model building sample for all tests representing the skill abilities - compatibility and handling skill investigated. The goal of studying the correlation. It is to reveal the strength or degree of the relationship between abilities and skills, as well as its direction. To achieve the process of extracting the strength of the relationship between the degrees of abilities and the researched skill concerned with the model building sample, the simple correlation coefficient (pearson) was used for simple (binary) relationships, and the partial correlation coefficient for complex (multiple) relationships to indicate the direction of the relationship between handling skill and the skill-harmonic capabilities associated with it. . The following table shows the values of these relationships and their statistical significance.

Table (2)Shows the relationship of handling skill to the researched compatibility-skill abilities of football players (sample model)

| Statistical function | Amount of correlation | The nature of the connection | Expressive character | – Skill ability tests compatibility | NO |
|----------------------|-----------------------|------------------------------|----------------------|---|----|
| Moral | -0.573 | basic | A | then ,Jumping and standing handling the ball to a small target | |
| Moral | 0.619 | basic | M | then ,Controlling the ball then ,running with the ball passing | |
| Moral | 0.655 | basic | O | ,running ,turning ,Receiving then shooting | |
| Moral | 0.679 | basic | P | then running ,Receiving ,then dribbling ,with the ball then passing | |

| | | | | | |
|-------|-------|---------|-------|--|--|
| Moral | 0.713 | basic | Q | Receiving then modified shooting | |
| Moral | 0.617 | basic | R | Rotation touch color adjustment | |
| Moral | 0.670 | vehicle | Am | the first and the second | |
| Moral | 0.703 | vehicle | Amo | second and third ,The first | |
| Moral | 0.783 | vehicle | Amop | third and ,second ,The first fourth | |
| Moral | 0.795 | vehicle | Amopq | ,third ,second ,The first fourth and fifth | |

The maximum random value of the correlation coefficient for a sample of more than (200) individuals is equal to (0.11)

Observing the values mentioned in the table above for the simple and complex relationships between handling skill and the combinatorial skill abilities enjoyed by the football players involved in the research, we find that they are greater than the maximum random value of the correlation coefficient for the model-building sample estimated at (260) players, which is (0.11). This means that the relationship between the skill and the researched abilities is significant, and that the relationship between them is a fact that did not come about by chance. Since all the skill-coordination abilities have a statistically significant relationship with the handling skill achieved by the sample building the model, therefore, all of their results will be entered for analysis.

Third: extracting indicators of the linear regression equation model

in order to evaluate the accuracy of the model's results for the sample it was built, and for the purpose of generalizing it, the model must be able to accurately predict handling skill performance from the results of combinatorial skill abilities when applied to similar or even different samples, as a sharp decline in the predictive power of the model leads to a weakening of the possibility of its design. Accordingly, the two researchers resorted to treating the results with the multiple correlation between predictive capabilities and handling skill performance. Table (3) shows its results.

Table (3)Shows indicators of the quality of the linear regression equation model.

| Standard error of the estimate | Adjusted contribution percentage R^2 | Contribution ratio interpretation) coefficient R^2 | Multiple correlation coefficientr | Variables | |
|--------------------------------|--|---|-----------------------------------|------------|----------------|
| | | | | The result | The forecaster |

| | | | | | |
|------|-------|-------|-------|---|-----------|
| 0.88 | 0.625 | 0.632 | 0.795 | I | A,m,o,p,q |
|------|-------|-------|-------|---|-----------|

Observing the table, we find that (r^2) expresses the contribution percentage, which indicates the amount of variance in the outcome variable (handling skill i), which is explained by the model derived from the sample, while the modified contribution percentage (r^2) indicates the amount of variance in (i), which the model explains if it was derived from the population from which the sample was taken randomly. importantly, the table shows that the value of the multiple correlation coefficient was (0.795) and that the value of the explanation coefficient (contribution ratio r^2) was (0.632), which means that the combinatorial skill abilities (motor linking, position estimation) explain (63.2%). Of the variance, 27.8% of it is explained by other abilities that are not relied upon or included in the model. For the purpose of knowing the significance of the multiple linear regression (the significance of the model), and the relationship between (manipulation skill) on the one hand, and the skill-coordination abilities (motor linking, situation estimation) on the other hand, is the best representation, this model must be tested with an analysis of variance to know the significant function of the value (f) until the significance level value corresponding to the calculated (f) value of (87.332) came in at (0.000), which is less than the error value of (0.025) - because the test is vector - which indicates the function of the multiple linear regression model.

Table (4) The test of the model is shown by analysis of variance, and the value function (f) to express the correctness of the prediction of the result

| Statistical significance | (value f) | | Mean square variance (| Degree of freedom | Sum of squares | Source of variance |
|--------------------------|--------------------|------------|------------------------|-------------------|----------------|--------------------|
| | Significance level | Calculated | | | | |
| Moral | 0.000 | 87.332 | 65.735 | 5 | 328.675 | Degree of decline |
| | | | 0.753 | 254 | 191.186 | The error |
| | | | | 259 | 519.862 | the total |

With the investigated compatibility-skill abilities (motor association, situational estimation), it is valid in estimation. Therefore, it is necessary to draw the equation derived from the multiple regression analysis process, and identify the significance of the parameters of this model in order to verify the possibility of generalizing it in application. Table (5) shows us the values of the parameters, which are assumed to be other than zero. This is proven by the t-test, which indicates that the values of the constant (b_1, b_2, b_3, b_4, b_5) were different from zero. Although it is closer to zero than the constant value (b_1), which is concerned with the ability to connect

the motion to the pass, which reflects its little contribution in indicating the value of the result, as this confirms the calculated value of (t) amounting to (1.339) at the level of significance (0.182), which indicates the value of moral.

Table (5) It shows the values of the regression equation coefficients and the significance of the model parameters

| Statistical significance | (value t) | | Transactions | | | | |
|--------------------------|--------------------|------------|--|----------------|---------------|-------------------------------|--------------|
| | Significance level | Calculated | The value of the coefficient in the equation | | | The nature of the coefficient | |
| | | | Standardization | Standard error | -Non standard | | |
| Moral | 0.000 | 5.988 | | 0.822 | - 4.921 | a | Fixed amount |
| Not significant | 0.182 | 1.339 | 0.073 | 0.058 | 0.074 | B ₁ | |
| Moral | 0.036 | 2.111 | 0.124 | 0.194 | 0.411 | B ₂ | |
| Moral | 0.051 | 1.921 | 0.130 | 0.134 | 0.258 | B ₃ | |
| Moral | 0.000 | 7.449 | 0.360 | 0.085 | 0.633 | B ₄ | |
| Moral | 0.000 | 3.678 | 0.259 | 0.164 | 0.604 | B ₅ | |

The constant value of the rest of the variables concerned with abilities (motor association and situational estimation) is significant in its relationship with the performance of the handling skill, as table (5) indicates the inverse relationships between each of them and the performance of this skill, meaning that the increase in the coefficient (b₂), which his choice expresses motor connection through the process of (controlling the ball, running with it, then passing), matched by speed in performing the handling skill. That is, an increase of (0.411) minutes in controlling the ball and passing it is accompanied by a decrease or decrease in the time of performing a handling skill, for example, by (1) second. As for the parameter (a) in the model, which is a fixed amount, it indicates that if the values of the predictors (skill abilities - compatibility) are equal to (zero), then the model expects the value of (handling skill performance) to be (-4.921) In summary, the variables that express the skill-compatibility abilities involved in the research as predictors contribute effectively to estimating the outcome values (handling skill performance) differently from one ability to another, and the evidence for this difference is the t-test values for each of them, as the t-test indicates to us that the (constant value) is different

from zero when compared with the (constant value) values for similar samples, in addition to the standard error being small (low value)

In general, after we concluded that the model is capable of predicting the estimate of the value of (handling skill performance) in terms of the achieved values of the skill-harmonic abilities possessed by the individuals in the model-building sample, it has become possible to apply the model to make some predictions, and according to the equation

Skill performance value (i) = $-4.921 + (0.074$

Fourth: applying the model to demonstrate its quality

To ensure the validity of the model in achieving high-accuracy estimates of the result (handling skill performance) in terms of the predictors (skill abilities - compatibility, especially motor association and position estimation), we give an applied example, which includes the arithmetic means of the variables investigated, noting that the arithmetic mean achieved for the sample in handling skill performance it amounts to (7.023). See table (1). That is to say, applying the model equation is supposed to give us a result equal to or close to this value, so that we can be reassured of its veracity and validity.

(i) = $-4.921 + (0.074$

7.023= this is the expected value, as it came in the amount achieved

To confirm this fact, the researchers chose a random sample of (30) players to whom tests related to skill (handling) and the investigated abilities (motor confusion and position estimation) were applied. Their data was then processed using and without this equation, and the results were as follows:

Table (6) It shows the function of the difference between the means of the selected sample and the model sample in the performance of handling skill

| Statistical significance | (value oft is) at a difference (58)level of and a level of (0.05) | Calculated (t) value | Statistical estimates | | the sample |
|--------------------------|---|---------------------------|-----------------------|-------|---------------------|
| | | | A | s | |
| Not significant | 2.000 | 0.161 | 1.01 | 7.433 | The elected |
| | | | 0.69 | 7.572 | model (equation) |

Thus, the reality of quality appeared in applying the model equation in predicting the performance of handling skills by football players by knowing the values they obtain in the skill-coordination abilities (motor linking and situational estimation), as there were non-significantly significant differences between the arithmetic mean of performance and this skill, and the arithmetic mean we obtained to estimate this performance by testing it statistically with the t-test, means that the tabular value of the t-test at a degree of freedom (58) and a significance level (0.05) is greater than its calculated value (0.161)... Thus, we have confirmed the validity of this model and the good predictions of the results of its application.

Conclusions and recommendations

Conclusions

1. The regression analysis process has proven to be suitable for deriving the predictive model.
2. The study determined the adequacy of the sample and its faithful representation of the population from which it was taken.
3. A predictive model was built to estimate and predict the performance of the handling skill of young football players with the contribution of the skill-coordination abilities (motor linking, situational estimation) that they possess.
4. The difference in the contribution rates of the skill-coordination abilities of the players in explaining the variance explained by the model, and their values are different from zero, which helps in deriving the estimation equation for skill (handling) and the possibility of generalizing its application.

Recommendations

1. Generalizing the predictive equation derived from this study to other samples from the same community and other communities for the same game (football).
2. It is possible to rely on the deduced model equation and apply it when testing players to represent their teams.
3. There is no harm in conducting a study based on (path analysis) to demonstrate the causal relationship between predictive (independent) variables such as the skill-coordination abilities of soccer players and their direct and indirect effect on the dependent variable (performance of other skills).
4. In similar predictive analyses, it is preferable not to exceed (15) predictive variables in total, otherwise you will go to other analyzes such as factor analysis.

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