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REFEREEING PERFORMANCE AND ITS RELATIONSHIP WITH THE PHYSICAL AND MENTAL ABILITIES OF FUTSAL REFEREES

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ABSTRACT:

Through the researcher's experience as one of the accredited referees in the Iraqi Central Union, and because the success of any referee's performance is largel`y dependent on possessing a wide range of variables mentioned earlier, the researcher was motivated to provide these tests. On the other hand, the researcher aimed to identify these variables and understand the relationship between them to derive an equation for predicting refereeing performance based on the physical and mental abilities of futsal referees. This is aimed at improving the reality of this important category to enhance their level as much as possible during their leadership in matches. The research objectives were to know the refereeing performance and the physical and mental abilities of futsal referees and to understand the relationship between refereeing performance and the physical and mental abilities of futsal referees. The researcher used the descriptive method with a survey approach to measure refereeing performance and the physical and mental abilities of futsal referees. Correlational methods were used to determine the relationship between them and predictive studies to predict refereeing performance based on the physical and mental abilities of futsal referees. The study focused on first-degree futsal referees in Iraq, totaling (60) referees for the 2022-2024 sports season. The conclusions included the ability of the refereeing performance evaluation form prepared to measure and evaluate the refereeing performance of futsal referees. Futsal referees have refereeing performance and physical and mental abilities specific to futsal referees.

KEYWORDS: Refereeing performance, Physical abilities, Mental abilities, Futsal referees

INTRODUCTION:

Refereeing performance is one of the important and fundamental aspects for referees in various activities. All referees must understand and comprehend an appropriate amount of general sports knowledge, mental and psychological understanding, legal aspects, as well as physical attributes and motor abilities. It is essential for referees to possess the physical and mental abilities that enable them to follow the game throughout the match without fatigue or a drop in physical efficiency, which is an important factor in making successful and correct refereeing decisions. The importance of the research lies in identifying the refereeing performance and the physical and mental abilities of futsal referees and understanding the relationship between these variables. It also involves predicting refereeing performance based on the physical and mental abilities of futsal referees.[1]

RESEARCHPROBLEM:

Refereeing situations and decisions are among the biggest challenges referees face during the match. These situations and decisions depend entirely on the referee's physical and mental capabilities and how the referee uses electronic information sources to lead the match. The skills available to the referee and whether there is interest or demand for them from the referee before leading futsal matches require several tests to measure the suitability of futsal referees physically, motorically, and cognitively, as well as their possession of information to ensure their readiness to lead matches in local and international championships. Through the researcher's experience as one of the accredited referees in the Iraqi Central Union and because the success of any referee's performance is largely linked to possessing a large number of variables mentioned earlier, the researcher was motivated to provide these tests. On the other hand, the researcher aimed to identify these variables and understand the relationship between them to derive an equation for predicting refereeing performance based on the physical and mental abilities of futsal referees, with the aim of improving the reality of this important category to enhance their level as much as possible during their leadership in matches.

The research problem can also be identified through the following questions:

1. To what extent do futsal referees possess physical and mental abilities?
2. What is the relationship between refereeing performance and the physical and mental abilities of futsal referees?
3. Can an equation be derived to predict refereeing performance based on the physical and mental abilities of futsal referees?

RESEARCH OBJECTIVES:

1. Understand refereeing performance and the physical and mental abilities of futsal referees.
2. Identify the relationship between refereeing performance and the physical and mental abilities of futsal referees.
3. Predict refereeing performance based on the physical and mental abilities of futsal referees.

RESEARCH HYPOTHESES:

1. There is a relationship between refereeing performance and the physical and mental abilities of futsal referees.
2. It is possible to predict refereeing performance based on the physical and mental abilities of futsal referees.

RESEARCH DOMAINS:

1. Human Domain: First-degree futsal referees in Iraq for the 2023-2024 season.
2. Temporal Domain: From 1/9/2023 to 1/7/2024.
3. Spatial Domain: Sports halls in the governorates of (Najaf Al-Ashraf, Diwaniya, Babil, Baghdad, Karbala, Basra).

RESEARCH METHODOLOGY:

To address the problem's nature, the researcher used the descriptive method with a survey approach to measure refereeing performance and the physical and mental abilities of futsal referees. Correlational methods were used to determine the relationship between them and predictive studies to predict refereeing performance based on the physical and mental abilities of futsal referees.

RESEARCH POPULATION AND SAMPLE:

The research population was defined as first-degree futsal referees in Iraq, totaling (60) referees for the 2022-2024 sports season.

1. Exploratory sample for variables (physical and mental abilities): The exploratory experiment was conducted on (10) referees, representing (16.66%) of the research population, selected randomly as shown in Table (1).
2. Application sample (refereeing performance and physical and mental abilities): All research variables were applied to (20) referees, representing (33.33%) of the research population, for the purpose of conducting correlational studies and deriving a regression equation.

RESEARCH TOOLS AND INSTRUMENTS USED:

1. **Research tools include:**

- Interviews.
- Arabic and foreign sources and references.
- Questionnaire.
- Tests and measures specific to research variables.

2. **Tools and instruments used in the research:**

- A legal futsal field.
- Two stopwatches.
- An electronic calculator type (CLTON).
- One personal computer type (DELL).
- Office supplies (papers and pens).
- Two hand-held stopwatches type (KENKO).
- Measuring tape.
- Whistle.
- Four medical balls.
- Chair.
- Adhesive tape.
- A rope 24 inches long.
- 16 colored boards measuring (30 cm in length and 20 cm in width).
- 8 stands.

FIELD RESEARCH PROCEDURES:

Determining physical and motor abilities:

To determine the physical abilities associated with futsal referees, a series of personal interviews were conducted to determine these abilities, based on which (8) physical and motor abilities were identified. Although the title only mentioned physical abilities, due to the importance of motor abilities,[2] the researcher decided to study them and present them in a special questionnaire distributed to experts and specialists, totaling (15) experts and specialists, to determine the most important ones. After collecting and analyzing the data, all of them were accepted because they achieved more than (80) in relative importance and more than (53.33%) as shown in Table (1).

Table (1) Total Scores for Relative Importance and Percentage of Physical and Motor Abilities

No.	Test Name	Score Achieved from Total Score	Percentage of Importance from Total Score	Relative Importance of Ability	Nomination
1	General Endurance	147	98	12.58	Yes
2	Power Distinguished by Speed for Legs	146	97.33	12.5	Yes
3	Transition Speed	148	98.66	12.67	Yes
4	Response Speed for Legs	140	93.33	11.98	Yes
5	Agility	148	98.66	12.67	Yes
6	Motor Flexibility	146	97.33	12.5	Yes
7	Motor Coordination for Legs	147	98	12.58	Yes
8	Motor Balance	146	97.33	12.5	Yes
Total		1168		100%	

Determining Physical and Motor Ability Tests:

A special questionnaire was prepared for physical and motor ability tests, including a set of tests, distributed to experts and specialists totaling (10) experts and specialists. The percentage method was used to accept tests, resulting in the acceptance of tests that achieved a higher percentage than the threshold, as shown in Table (2).

Table (2) Tests of the Most Important Physical and Motor Abilities After Using the Percentage Method

Test Name	Test Name	Number of Agreeing Experts	Percentage %	Nomination
General Endurance	Running 800m	10	100	Yes
	Running Test (400)m.	0	0	No
Power Distinguished by Speed for Legs	Side Jumping Test Over a Bench (10 seconds).	1	10	No
	Forward Jumping Test with Legs for (10 seconds)	9	90	Yes
Transition Speed	Running Test (30)m.	10	100	Yes
	Running Test (25) m.	0	0	No
Response Speed for Legs	Nelson Test for Motor Response.	10	100	Yes
Agility	Multi-directional Running Test.	9	90	Yes
	Zigzag Running Test Among Sticks.	1	10	No
	Shuttle Running.	0	0	No
Motor Flexibility	Lower and Side Touch Test (X mark).	10	100	Yes
Motor Coordination for Legs	Rope Jumping Test.	9	90	Yes
	Numbered Circles Test on the Ground.	1	10	No
Motor Balance	Modified Bass Test.	10	100	Yes
	Transition Test Over Marks.	0	0	No
	Octagon Shape Test.	0	0	No

Exploratory Experiment for Physical and Motor Ability Tests:

- Date of the experiment: Conducted on 16/3/2024 at 5:00 pm.
- Number of sample: (4) referees from Najaf Governorate in Al-Salam Hall, the same sample as the exploratory experiment for the scale.
- Tools used: Specific tools for tests (see Appendix 19).
- Objectives of the experiment:

1. Ensure the clarity of tests for the sample.
2. Identify the sample's understanding of test instructions.
3. Identify the conditions of test implementation and accompanying difficulties.
4. Understand the assisting team's comprehension of test procedures.
5. Identify the negatives and positives faced by the researcher during the main tests.
6. Ensure the stability and objectivity of tests.

After conducting the exploratory experiment, several results were reached, the most important of which are:[3]

- Instructions were clear to the sample.
- The testing conditions were good.
- The time was appropriate for conducting the tests.
- The assisting team understood the work procedures.
- The stability and objectivity coefficients were extracted, making the tests ready for final application.

SCIENTIFIC FOUNDATIONS OF REFEREEING PERFORMANCE TESTS:

1. Validity of Tests:

The researcher used content validity to verify the validity of mental and physical ability tests.

- Content Validity: There are two types of content validity:
  1. Face Validity: This type of validity was achieved when the tests were presented to a group of experts and specialists to determine the validity of the tests and the extent to which these tests can measure what they were designed for. The experts unanimously agreed on the validity of all the tests presented to them.
  2. Logical Validity: This was verified in light of the precise definition of each test.

2. Test Reliability:

To verify the reliability of the tests, the following methods were used:

Test-Retest Method: The test reliability coefficient was found through the test-retest method. The test for mental abilities was conducted on 15/3/2024 and retested on 20/3/2024. The tests for physical and motor abilities were conducted on 16/3/2024 and retested on 21/3/2024.

3. Objectivity of Tests:

Two judges (*) were used to record the results of all tests except for the evaluation of refereeing performance, which was evaluated by specialized assessors (**). The scores indicated by the judges were statistically processed using the simple correlation coefficient (Pearson), and all correlations were found to be highly significant, as shown in Table (3).

Table (3) Reliability and Objectivity Coefficients for Research Variables

No.	Tests	Reliability Coefficient	Objectivity Coefficient
1	Refereeing Performance	0.89	0.98
2	General Endurance	0.84	1
3	Power Distinguished by Speed	0.87	1
4	Transition Speed	0.88	1
5	Response Speed	0.85	1
6	Agility	0.90	1
7	Motor Flexibility	0.92	1
8	Motor Coordination	0.90	1
9	Motor Balance	0.87	1
10	Mental Abilities	0.86	-

APPLICATION OF TESTS ON THE SAMPLE:

After preparing all the tests specific to the research variables, the main experiment was conducted on a sample of (20) referees from 4/5/2024 to 11/6/2024 during the Iraqi league matches. The refereeing performance was evaluated by assessors (see Appendix 20), and the remaining tests were applied by the researcher and the assisting team to collect results and achieve the main research objectives.

Statistical Means:

The researcher used the SPSS statistical package version 25 to extract the following means:

3. PRESENTATION AND ANALYSIS OF RESULTS:

This section presents, analyzes, and discusses the results reached, according to the sequence of the main research objectives.

3-1 (Understanding Refereeing Performance and the Physical and Mental Abilities of Futsal Referees):

To achieve this goal, tests were applied to the research sample of (20) referees, and the results were as follows:

Refereeing Performance:

Table (4) Statistical Description of Refereeing Performance Results for Futsal Referees

Variable	Measurement Unit	Mean	Standard Deviation	Hypothetical Mean	Skewness Coefficient	Calculated (t) Value	Sig. Value	Significance Type
Refereeing Performance	Score	75.40	0.94	50	0.88	23.17	0.000	Significant

*Degree of freedom (19) at a significance level (0.05).

Physical and Motor Abilities:

Table (5) Statistical Description of Physical and Motor Abilities Results for Futsal Referees

Physical Abilities	Measurement Unit	Mean	Standard Deviation	Skewness Coefficient	Calculated (t) Value	Sig. Value	Significance Type
General Endurance	Minutes	3.44	0.26	0.71	19.69	0.000	Significant
Power Distinguished by Speed for Legs	Meters	28.18	0.82	0.75	20.44	0.000	Significant
Transition Speed	Seconds	4.23	0.39	0.61	16.12	0.000	Significant
Response Speed	Seconds	2.42	0.21	0.56	15.92	0.000	Significant
Agility	Seconds	12.95	0.53	0.69	22.46	0.000	Significant
Motor Flexibility	Number	12.09	0.35	0.60	20.14	0.000	Significant
Motor Coordination	Number	2.96	0.30	0.49	18.32	0.000	Significant
Motor Balance	Score	80.14	1.01	0.64	26.84	0.000	Significant

*Degree of freedom (19) at a significance level (0.05).

Mental Abilities:

Table (6) Statistical Description of Mental Abilities Results for Futsal Referees

Variable	Measurement Unit	Mean	Standard Deviation	Hypothetical Mean	Skewness Coefficient	Calculated (t) Value	Sig. Value	Significance Type
Mental Abilities	Score	7.89	0.70	5	0.38	19.32	0.000	Significant

*Degree of freedom (19) at a significance level (0.05).

Legal Knowledge:

Table (7) Statistical Description of Legal Knowledge Results for Futsal Referees

Variable	Measurement Unit	Number of Items	Mean	Standard Deviation	Hypothetical Mean	Skewness Coefficient	Calculated (t) Value	Sig. Value	Significance Type
Legal Knowledge	Score	10	8.77	0.52	5	0.49	39.12	0.000	Significant

*Degree of freedom (19) at a significance level (0.05).

3-2 (Understanding the Relationship Between Refereeing Performance and the Physical and Mental Abilities of Futsal Referees):

To achieve this, the researcher used the simple correlation coefficient (Pearson) as shown in Table (24):

Table (8) Nature of Relationships Between Refereeing Performance and Physical, Motor, and Mental Abilities of Futsal Referees

Variables	R Value	Sig. Value	Significance
Refereeing Performance and General Endurance	0.87	0.000	Significant
Refereeing Performance and Power Distinguished by Speed	0.89	0.000	Significant
Refereeing Performance and Transition Speed	0.58	0.000	Significant
Refereeing Performance and Response Speed	0.88	0.000	Significant
Refereeing Performance and Agility	0.90	0.000	Significant
Refereeing Performance and Motor Flexibility	0.89	0.000	Significant
Refereeing Performance and Motor Coordination	0.88	0.000	Significant
Refereeing Performance and Motor Balance	0.85	0.000	Significant
Refereeing Performance and Mental Abilities	0.95	0.000	Significant
Refereeing Performance and Legal Knowledge	0.96	0.000	Significant
Refereeing Performance and Information Awareness	0.93	0.000	Significant

DISCUSSION OF RESULTS:

1. The Relationship Between Physical Fitness and Refereeing Performance:

Improving Physical Performance:[4]

- The results indicate that referees with high physical fitness can better follow the game, helping them make more accurate and timely decisions.

- High physical fitness contributes to reducing physical stress during the match, reducing the likelihood of errors due to fatigue.

2. Mental Abilities and Their Impact on Performance:

Focus and Attention:[5]

- The results show that referees with high focus and attention capabilities can spot errors and make decisions quickly, positively reflecting on refereeing quality.
- The ability to maintain continuous focus throughout the match duration is one of the key factors that contribute to improving refereeing performance.

3. Interaction Between Physical and Mental Abilities:

Mutual Influence:[6]

- The results indicated a strong interaction between physical and mental abilities, where improvement in one aspect may lead to enhanced performance in the other.
- Referees who achieve a good balance between physical and mental abilities demonstrate superior performance and reduce error rates.

4. Recommendations for Improving Performance:

Training Programs:[7]

- The study recommends developing integrated training programs that enhance physical fitness and mental abilities for referees.
- These programs include training on focus and decision-making under pressure, in addition to exercises to improve physical endurance and speed.

Stress Management:

- It is advised to apply stress management techniques to help reduce the negative effects of psychological pressure on refereeing performance.

Conclusion:

The results show that refereeing performance in futsal is significantly influenced by the physical and mental abilities of referees. Therefore, investing in improving these abilities through specialized training programs can lead to a significant improvement in refereeing quality and error reduction.

4. CONCLUSIONS AND RECOMMENDATIONS:

4-1 Conclusions:

In light of the results obtained from the current research and the subsequent interpretations, the researcher can draw several conclusions as follows:

1. The ability of the refereeing performance evaluation form prepared to measure and evaluate the refereeing performance of futsal referees.
2. Futsal referees have refereeing performance and physical and mental abilities specific to futsal referees.
3. A strong positive correlation exists between refereeing performance and the physical and mental abilities of futsal referees.

4-2 Recommendations:

In light of the research results and conclusions, the current research reached the following key recommendations:

1. Utilize refereeing performance tests and physical and mental abilities to detect these variables for futsal referees.
2. Use the refereeing performance form prepared and applied for accurate evaluation of futsal referees' performance by the Iraqi Central Football Federation - Referees Committee.
3. Use refereeing performance tests and physical and mental abilities to select futsal referees.
4. Conduct training programs to develop futsal referees based on refereeing performance tests and physical and mental abilities of futsal referees.
5. Utilize these tests and apply them to second-degree referees and samples in other sports.

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