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Motor Intelligence and its Relationship to the Performance of Football Goalkeepers

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ABSTRACT

There is no doubt that intelligence plays a fundamental and important role for goalkeepers in football in the implementation of the game plans and duties assigned to them, which require them to possess the skill performanceand high accuracy to apply them and continue them throughout the match. Through the researcher's modest experience and her follow-up of goalkeepers in the field teams, his familiarity with researches and studies, and his follow-up of the league matches The first degree, the researcher witnessed the fact that practicing the game is a weakness in the goalkeepers in football at a level of motor intelligence, which affected their level of performance, so the researcher decided to study this problem and develop appropriate solutions to it in order to help coaches and goalkeepers in football by studying the relationship between the level of motor intelligence and its relationship with the performance of football goalkeepers. The research aimed to identify the level of Motor intelligence and its relationship to the performance of football goalkeepers, as well as to identify the relationship between motor intelligence and its relationship to the performance of football goalkeepers. The researcher hypothesized that there are statistically significant differences between motor intelligence and its relationship with the performance of football goalkeepers. The researcher has used the descriptive method in the survey method and relational studies, which means (knowledge of the correlation of variables or knowledge of the extent to which variables in one factor are consistent with variables in another). (Al-Saadawi et al The research sample was a group of goalkeepers for the first division (2024-2025), which numbered (12 goalkeepers) for her research, where when the researcher seeks to achieve a specific goal or purpose of a study, he selects the sample members in a way that serves and achieves this purpose or goal. By random method and by lottery method, the sample of football goalkeepers for clubs (Al-Methaq Club - Al-Adl Youth Club - Electrical Industries Club - Tourism Club) for the first class for the season (2024-2025) was determined (12 goalkeepers), which is the part that represents the community of origin or model on which the researcher conducts his entire work and focuses on it so that In a deliberate way, guards were selected from the research sample to carry out the exploratory experiment (4 guards from the Tourism Club), while the research tools were represented by the means of collecting information, where the researcher used the following scientific means to collect information (Arabic sources and references, personal interviews, observation numbers, motor intelligence scale, tests for goalkeepers in football)

1 – Introduction
1.1 Research Overview
 Football is a team game and enjoys great popular encouragement, so it is important to exploit the abilities of the players, including the goalkeeper in terms of basic skills and physical fitness and employing them, and coordinating between them to create the best team game plans, and there is no doubt that the goalkeeper's movements in the match must be intelligent and understand and anticipate all the movements of his fellow players according to his motor intelligence, because the football team plays as one on the field and must move with one mentality in which all mental abilities are in harmony Hence, motor intelligence has become an integral part of the team's work, and without it, winning is not easy.

Physical-motor intelligence is one of the important types of intelligence in physical education that the theory of multiple intelligence came up with, it means the ability of the individual to use his natural senses to move his body effectively in difficult conditions, and to use his natural senses in how to move his body in difficult conditions, and the possibility of using the body as a whole faster than his peers, or the ability to coordinate the motor visual, or to acquire knowledge.

Intelligence as one of the most important psychological traits in sports practice plays a great role in the integration of the goalkeeper, as some studies clearly indicate the interdependence of the skill abilities of goalkeepers with both motor intelligence and the acquisition of knowledge, and we infer the intelligence of goalkeepers in training and matches, the development of the goalkeeper depends on what he can have of these abilities, through which we can face the urgent and worsening problems he encounters day by day in training and in the match Officially, a smart goalkeeper is someone who strives and appreciates early and authentic changes in the match that serve his team to achieve victory.

The importance of the research lies in an attempt to identify motor intelligence and its relationship to the performance of football goalkeepers , considering that the correct goalkeeper's intelligence towards changing playing situations will be highly related to the goalkeeper's skills, and thus we can prepare a goalkeeper capable of defending his goal.

1-2 Justifications and importance of the research :
 The availability of these abilities in goalkeepers in training for quick easy learning, excellence in this field, and intelligence is part of the mental abilities in goalkeepers, and it is an important condition for success in the goalkeeping position, and the motor solution is one of the complex elements that combine intellectual character, physical ability, and the art of motor performance, so the motor solution is the result of the intellectual solution produced and is related to the best possible skill ability

The researcher noticed a weakness in the goalkeepers in football in the level of motor intelligence, which affected their level of performance, and requires the ability of the goalkeeper to digest the information that reaches him by observing the different situations during the match, and the more the goalkeeper is able to act quickly, and observe and understand the information that reaches him, he is able to think quickly and deduce what needs to be done, executing the required move at the right time, all of this had an effective impact on his proper performance during the match

1.3 Research Problem:
 There is no doubt that intelligence plays a fundamental and important role for goalkeepers in football in the implementation of the game plans and the duties assigned to them, which require them to possessthe skill performanceand high accuracy to apply them and continue them throughout the match.

Through the researcher's modest experience, her follow-up of goalkeepers in field teams, his familiarity with research and studies, and his follow-up of the first-division league matches, the researcher witnessed the fact that he practiced the game as a weakness among goalkeepers in football at a level of motor intelligence, which affected their level of performance.

Therefore, the researcher decided to study this problem and develop appropriate solutions to it in order to help coaches and goalkeepers in football by studying the relationship between the level of motor intelligence and its relationship with the performance of football goalkeepers.

1-4 Research Objectives:

1. Identify the level of motor intelligence and its relationship to the performance of football goalkeepers.

2. Identify the relationship between motor intelligence and its relationship with the performance of football goalkeepers.

1-5 Research Requirement:

1- There are statistically significant differences between motor intelligence and its relationship with the performance of football goalkeepers.

1.6 Research Areas

1.6.1 Human Field: Football Goalkeepers – for Clubs (Al-Methaq Club – Al-Adl Youth Club – Electrical Industries Club – Tourism Club) First Division for the 2024-2025 season (12 goalkeepers)

 1-6-2 Temporal Domain: Period from 27/10/2024 to 10/4/2025.

1.6.3 Spatial area: Club stadiums (Charter Club, Justice Youth Club, Electrical Industries Club, Tourism Club)

1.7 Defining the Terms

1.7.1 Motor Intelligence: It is the ability of the individual to use the whole body or parts of it with balance and synergy, and to deal with objects mechanically or manually with skill, as the ability to face difficulties, the skill of adapting to emergency conditions, and thus solving problems that stand in the way of the individual. (Ibrahim: 2011: 112).

2. **Research methodology and field procedures:**

2-1 Research Methodology:

The researcher has used the   descriptive method in the survey method and relational studies, which means (knowledge of the correlation of variables or knowledge of the extent to which variables in one factor are consistent with variables in another). (Al-Saadawi et al.: (2007), 24).

2-2   Research Population and Sample:

After selecting the research sample, which is represented by goalkeepers for the first division (2024-2025), which is (12 goalkeepers), a sample for her research, where when the researcher seeks to achieve a specific goal or purpose of a study, he selects the sample members in a way that serves and achieves this purpose or goal. By random method and by lottery method, the sample of football goalkeepers for clubs (Al-Methaq Club - Al-Adl Youth Club - Electrical Industries Club - Tourism Club) for the first class for the season (2024-2025) was determined (12 goalkeepers), which is the part that represents the community of origin or model on which the researcher conducts his entire work and focuses on it so that In the deliberate way, guards were selected from the research sample to carry out the exploratory experiment (4 guards from the Tourism Club).

2.3 Means of information collection and research tools used:

2.3.1 Means of Information Collection:

The researcher used the following scientific means to collect information:

- Arabic Sources and References.
- Personal interviews.
- Observation Numbers
- Motor Intelligence Scale

- Football Goalkeeper Tests

2.3.2 Devices used:

- Dell Pentium 4 Laptop.
- Canon Type 2900 Laser Printer.
- (2) Stopwatch (Sony)

2.3.3 Experiment tools used

- The football stadium is in accordance with the law.
- Football Goals
- Football Balls (10 Balls)
- Tape measure.
- Associate Staff

2-4 Steps to perform the identification of search variables:

2.4.1 Determination of the Motor Intelligence Scale

The researcher used the motor intelligence scale (Abdulhadi Mohammed, 2013, 34) for football goalkeepers, which consists of (19 items) distributed over the following dimensions and includes (19) paragraphs representing four dimensions, namely (flexibility, originality, dependability, and persistence) and the answer to it is through four alternatives (always applicable to me, applies to me a lot, applies to me a little, does not apply to me at all) for football goalkeepers.

2.4.2 Determination of Football Goalkeeper Tests

After consulting with the supervisor on identifying the most important physical abilities, he said, "A questionnaire is a means of gathering information about a problem (Al-Hamid, Hassanein, 1980, 254). After reviewing the sources and references represented in books, literature, theses and theses related to the event, in order to determine the standardized tests that have previously been worked on similar samples, as well as the existence of criteria for these tests, a special form (Appendix 2) was designed to be presented to a group of experts (4 experts) in order to be able to determine which tests are suitable for the performance of football goalkeepers and to take the percentage of agreement of experts (Appendix 3).) on the identification of these tests and the agreement percentage of 75% of the phenomenon to be measured was adopted.

Table (1) shows the most important skills tests for football goalkeepers

Percentage	Repetition	Tests	Variables	t
100%	4	Test the skill of throwing the ball by hand about three squares in a row on the ground	Tests	1
50%	2	Test your soccer kicking skill as far as possible From stability		
100%	4	Test the skill of kicking (hitting) the ball with the foot from the box without it falling to the ground or touching the ground (bouncing off the ground) to the designated areas		
100%	4	Rolling Globe Catching Skill Test		
25%	1	Medium Height Ball Catching Skill Test		
25%	1	High Ball Catching Skill Test		

2.4.3 Selected Tests for Goalkeepers in Football

First: Testing the skill of throwing (handling) the ball with the hand about three consecutive squares on the ground (Sadiq Jaafar Mahmoud: 2004, 67)

- **Objective of the test:**

Measuring the accuracy of hand-handling for a soccer goalkeeper.

- **Necessary tools:**

Half a football field, 5 balls, a tape measure, Burke for marking the squares.

- **Test Specifications:**

The goalkeeper stands inside the box with a ball in his hand, and when he hears the instruction from the coach, the goalkeeper throws the ball inside the squares drawn and specified by the goalkeeper, which is the diameter of (1) square meters at a distance of (10-15-20) meters from the (18) yard line of the goalkeeper's penalty area.

- **Exam Conditions:**
- The tester must stand before the start of the starting line.
- Throw the ball inside the squares.
- The number of attempts executed is only (5) in a row.
  - A- The score of the attempt that the ball falls into the box is calculated only.
  - B- Throw the ball with one hand only.
  - C- The laboratory shall have the right to perform all its handlings on Box No. (3).
  - D- The total test score is (15).
- Scoring Scores: Scores are recorded as follows. (1) A degree if he drops the ball on the first square. (2) A degree if he drops the ball on the second square. (3) A degree if he drops the ball on the third square.

Figure (1)

A handball throw test shows about three consecutive squares on the ground.

Second: Test the skill of kicking (hitting) the ball with the foot from the box without it falling to the ground or touching the ground (bouncing off the ground) to the specified areas: (Sadiq Jaafar Mahmoud: 2004, 67)

- **Objective of the test:** Measure the distance that a goalkeeper can achieve without touching the ball or with it touching the ground (bounced off the ground) to reach the specified areas.
- **Necessary tools:** (3) balls, tape measure, burke, football field, colored tapes, and whistle.
- **Test Specifications: On** the playing field in the other half of the field, three areas with a distance of (15) meters shall be determined, the goalkeeper stands in the box with the ball in his hand, trying to kick it after leaving it from his hand while it is in the air or after touching the ground (touch or bounce off the ground) trying to drop it in the specified areas in the other half of the playing field.
- **Exam Conditions:**
- The goalkeeper may not cross the 18-yard line of the box when kicking the ball.
- It gives the keeper three consecutive attempts.
- **Scoring Scores:**

The total scores obtained by the goalkeeper shall be recorded as follows:
- (1) A degree if he drops the ball on the first field.
- (2) A degree if he drops the ball on the second field.

-    (3) A degree if he drops the ball on the third field.
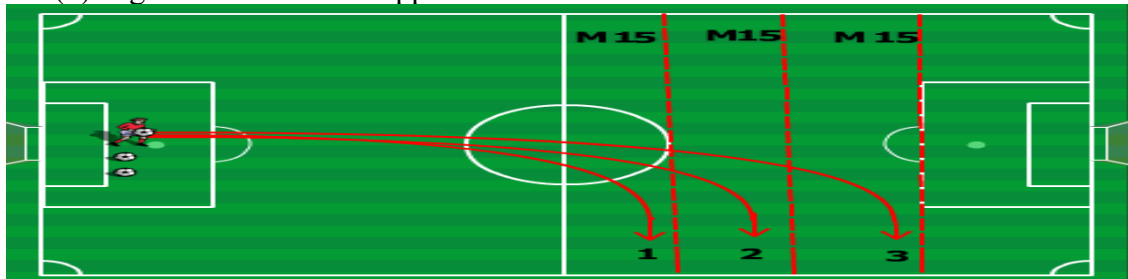-   (0) degree if the ball is dropped outside the area of the test fields.

Figure (2)

The test shows kicking (hitting) the ball with the foot from the box without it falling to the ground or touching the ground (bouncing off the ground) to the designated areas.

Third: Rolling Globe Catch Skill Test : (Hussain Jabbar Jassim: 2012, 38).

- Objective of the test: To measure the skill ability of the goalkeeper to block and hold the front and side rolling ground balls (right and left).
- **Necessary tools:** Half a regular football field and the work of the goalkeeper in the box, (10) balls, training cones to identify the designated areas, his whistle, a measuring tape, and a registration form.
- **Test Specifications:** The goalkeeper stands in the designated place inside the goal and at a distance of (5.1) One meter from the goal line from the front and defends his goal according to the position of the ball from outside the box, and the (6) balls are on the line of (18) yards and the distance between one ball and another is (2) meters for the purpose of forward shooting, while from the side the goalkeeper stands an arm away from one of the goal posts, and when hearing the instruction, he starts defending his goal and preventing the ball from entering if it is forward, either if it is sideways he defends the specified areas from the side Right and left, while shooting from the (18) yard line (right and left) is done by means of two balls on each side.

- **Exam Conditions:**
  - If a coach misses kicking the ball and does not get it to the designated place, the attempt is repeated.
  - The laboratory (goalkeeper) was shot at 10 balls, including (6) balls in front of the distance between one ball and another (2) meters, and four balls for the sides, two for the right side and the same for the left side, as shown in Figures (3-4-5).

- **Scoring Scores:**
    The tested guard shall be recorded with the sum of the scores obtained from the ten corrections, as follows:
  - T(3) degrees are given to the ball that he catches directly from the position of the distal side fall.
  - Two(2) degrees are given to the ball he holds from the forward position, or he holds it in two batches of fall.
  - T(1) grade is given in case the ball is removed from the goal and the ball is close to the goalkeeper.
  - Tgive (3) degrees in case the dimensions of the ball from the goal are difficult to hold.
  - Tis given (zero) in case the ball enters the goal.
  - If the ball bounces off the post with direct aim by the coach and the goalkeeper does not intervene, the attempt is repeated.
  - On the side, (2) degrees are given when the ball is held directly from the side fall within (6) yards.

- The goalkeeper gives (3) points when holding the ball directly outside (6) yards, and (1) degrees are given when it is not caught and (zero) when the ball crosses the goalkeeper.
- The total score obtained by the guard shall be recorded.
- The final grade of the laboratory is calculated as follows:
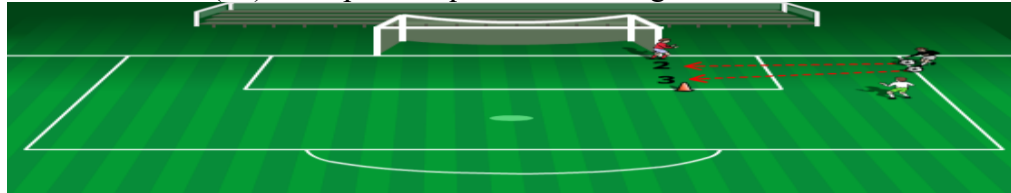- The total score of the (10) attempts is equal to the final grade.

Figure (3)
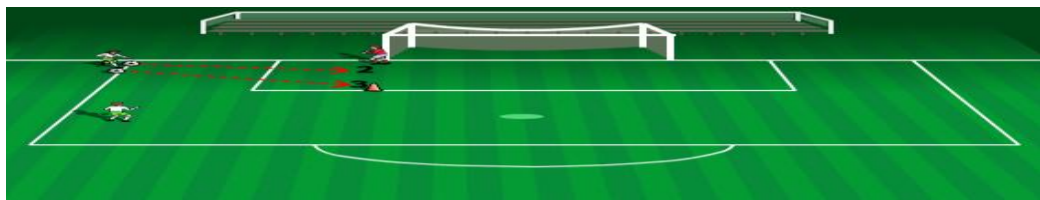Grip test shows the rolling globes of the right side

Figure (4)
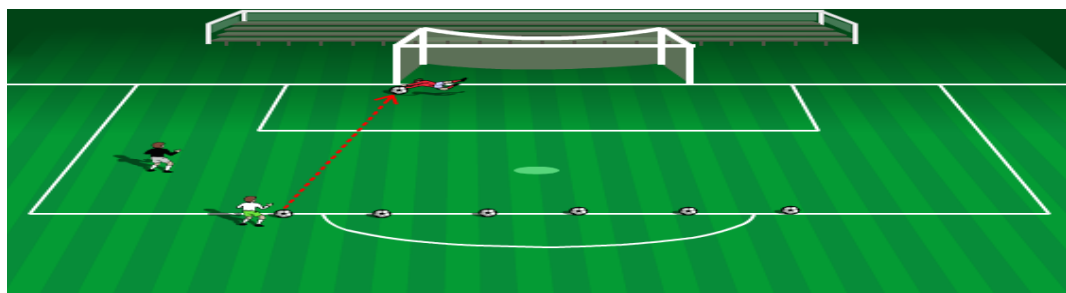Holding test shows the rolling globes of the left side

Figure (5)
Grip test shows front rolling globes

2.5 Exploratory Experiment:

It is a mini-experiment similar to the main experiment, where the exploratory experiment was conducted on the date of
25/1/2025 at the Tourism Sports Club, and it included (4 guards from the Tourism Club) and its purpose was:

- ◄   Knowing the obstacles and negatives that the researcher may face during the work.
- ◄   Find out how long it takes to perform the scale used in the research.
- ◄   Know how long it takes to take the tests used in the research.
- ◄   Identify the safety and validity of the tests and materials used.
- ◄   Ensure the ability and efficiency of the support team and their ability to use the devices during the implementation of the main experience.

2.6 Main Experience:

After the tests were determined by the experts through the distribution of the questionnaire form for variables of the motor intelligence scale and tests for goalkeepers, the researcher conducted the main experiment on the research sample represented by the football goalkeepers - for the clubs (Al-Methaq Club - Al-Adl Youth Club - Electrical Industries Club - Tourism Club)

the first class for the season 2024-2025 (12 goalkeepers) after the application of Tests: Data were collected and then the researcher processed them statistically in order to extract the results.

2.7 Statistical Methods:

The researcher used a statistical package (SPSS), including:

1- Arithmetic mean

2- Standard deviation

3. Simple Link (by Pearson)

3. Present, analyze, and discuss the results

3-1 Presentation and analysis of the results of the Motor Intelligence Scale for the Performance of Football Goalkeepers in the Research Sample

After completing the procedures for completing the final application of this scale and skill on the research sample, which are (the Motor Intelligence Scale for the Performance of Football Goalkeepers in the Research Sample), the data obtained by the researcher in the sample were analyzed as well as knowing the relationship between them, and after the researcher reached the results, he presented, analyzed and discussed them.

3- 4.1.1 Presentation and analysis of the results of the motor intelligence scale and the skill test of throwing the ball with the hand towards three consecutive squares on the ground

Table (1)

Shows the results of the arithmetic media, standard deviations, calculated value (r) and the significance level of the research variables

Significance	Significance Level	Value (r) Calculated	Standard deviation	Arithmetic mean	Sample Number	Variables
			7.47	59.08	12	Motor Intelligence
D	0,01	-0.481	1.42	9,87	12	Test the skill of throwing the ball by hand about three squares in a row on the ground

Freedom score (n-1) and significance level (0.05)

It can be seen from Table (1) that the arithmetic mean of the motor intelligence scale was (59.08) and the standard deviation was (7.47), while the mean of the test of the skill of throwing the ball with the hand towards three consecutive squares on the ground was (9.87) and the standard deviation was (1.42) in the research sample, which consisted of (12 players) and the value of (r) was (r)) calculated (-0.481) below the significance level of (0.01), which is less than (0.05) and with a degree of freedom (11), which means that there is a significant correlation between them.

3.1.2 Presentation and analysis of the results of the motor intelligence scale and the skill of kicking (hitting) the ball with the foot from the box without it falling to the ground or touching the ground (bouncing off the ground) to the specified areas

Table (2)

Shows the results of the arithmetic media, standard deviations, calculated value (r) and the significance level of the research variables

Significance	Significance Level	Value (r) Calculated	Standard deviation	Arithmetic mean	Sample Number	Variables
D	0,01	-0.481	7.47	59.08	12	Motor Intelligence
			1.32	6.10	12	Test the skill of kicking (hitting) the ball with the foot from the box without it falling to the ground or touching the ground (bouncing off the ground) to the designated areas

Freedom score (n-1) and significance level (0.05)

It can be seen from Table (2) that the arithmetic mean of the motor intelligence scale was (59.08) and the standard deviation was (7.47), while the arithmetic mean was the test of the skill of kicking (hitting) the ball with the foot from the box without it falling to the ground or touching the ground (bouncing off the ground) to the specified areas, it was (6.10) and the standard deviation (1.32) in the research sample, consisting of (12 players) and the calculated value of (r) was (-0.481) below the significance level (0.01), which is less than (0.05) and with a degree Freedom (11), which means that there is a moral relationship between them.

3.1.3 Presentation and analysis of the results of the Motor Intelligence Scale and the Rolling Globe Catch Skill Test

Table (3)

Shows the results of the arithmetic media, standard deviations, calculated value (r) and the significance level of the research variables

Significance	Significance Level	Value (r) Calculated	Standard deviation	Arithmetic mean	Sample Number	Variables
D	0,01	-0.481	7.47	59.08	12	Motor Intelligence
			3.02	21.00	12	Rolling Globe Catching Skill Test

Freedom score (n-2) and significance level (0.05)

It can be seen from Table (3) that the arithmetic mean of the motor intelligence scale was (59.08) and the standard deviation was (7.47), while the arithmetic mean of the Rolling Globe Holding Skill Test was (21.00) and the standard deviation (3.02) in the research sample, which consisted of (12 players) and the calculated value of (r) was (-0.481) below the significance level (0.01),

which is less than (0.05) and with a degree of freedom (11), which means that there is a significant correlation between motor intelligence and the rolling globe holding skill test in the sample

3.2Discussion of the results:

Tables (1-2-3) show that there is a correlation between the motor intelligence scale and the performance of football goalkeepers, andthe researcher attributes the reason for this to what was stated that the graph line for the performance of the skill and retrieving it mentally without thinking about it during its actual performance, and confirmed by (Jinan Saeed; 2005, 227), that the result of psychological, mental and voluntary qualities should be in the mind of the coach while developing the long training plan and during the daily training unit, and this development is not Directly, i.e. invisible, but always available, the more the level of this condition is exposed and treated, the higher the level of performance and giving of the skilled and planning player, because "good visualization results from a good perception that is characterized by stability and often precedes the visualization movements, i.e., the athlete imagines the movement that he will perform, especially by imagining the parts of the movement during its performance, and adds to this that complete visualization leads the athlete to success and that motor visualization is necessary and learning and developing skills. Especially since this perception is linked to the intellectual aspect resulting from the linguistic explanation and clarification of motor skill, and that intelligence is the ability of the goalkeeper to solve the problems that may face him in different styles and methods, and thereforethe goalkeeper while performing his motor duties inside the field has many difficulties in front of him, including the ball, and the movements of the colleague or opponent, and these are a set of problems to be solved and overcome in order to achieve the duty or goal to be achieved, so motor intelligence plays An important role in the process of making the appropriate decision or finding appropriate solutions during the performance of motor skills and offensive and defensive duties (Wajih Mahjoub; 2001, 87).

Being intelligence means "the ability to adapt to solve new problems and emergency circumstances by adapting movements and actions to accidents and images of external objects, and it is intelligence that represents skill and skill in work" (Jinan Said, 2005, 227).

In general, people with this type of intelligence are characterized by a lot of movement, and they have physomotor skills through which they acquire knowledge and experience through movement, so they have the ability to control and coordinate difficult movements, i.e. they have high sensory coordination, as well as the ability to practice physical activities .

Intelligence plays a major role in sports activities and many researchers consider it the basis for individual differences between athletes, and it is an important condition for success in most sports activities, especially those activities that require the rapid perception of obstacles in different play situations, and this is confirmed by (Wajih Mahjoub, 2001) that "Sports events differ among themselves because they require the degree of intelligence of the game, which is characteristic of the individual athlete, as some games need high intelligence to reach the highest ranks in them, and others require a lower degree of intelligence, especially those games that take place in one and known style.

In light of the above, it is clear that there are differences between the intelligence of goalkeepers in football and their creativity, "Intelligence depends on traditional thinking abilities to come up with a correct solution to the problem, and this solution is known and expected by others, especially the testers, while creativity is mental abilities that free up a set of solutions to a single problem, and the solution chosen by the individual is unknown and not expected by others (Thamer Mohsen, 1990, 107).

4. Conclusions and recommendations

4.1 Conclusions:

1- There is a significant correlation between motor intelligence and the test of the skill of catching the rolling ball in football goalkeepers.

2- There is a significant correlation between motor intelligence and defensive skills among football goalkeepers.

4.2 Recommendations:

In light of the study, the researcher reached some recommendations, which are as follows:

1- The need to apply the planning and skill aspects to the goalkeepers during the training units.
2- Similar studies are conducted by researchers on soccer players.
3- The interest of coaches in the game of football is their choice of goalkeepers and their lack of intelligence and their reliance on physical and skill testing only.
4- Emphasis is provided by training courses for goalkeeper coaches on the schematic side.
5- Attention to the offensive and defensive skills of both goalkeepers in football.

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Appendices

<div align="center">

Attachment (1)
Scale (Motor Intelligence)

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It never applies to me.	Applies to me a bit	Applies to me a lot	Always apply to me	Paragraphs	t
				I can focus my thoughts and pay attention to all the movements of my colleagues.	1
				My skills performance is better when I am in front of my colleagues.	2
				I excel in performing movements and physical skills that require attention.	3
				I can maintain my body balance while performing some skills.	4

				I come to my thoughts when I am practicing one of my manual skills.	5
				I am good at skills that require precision in doing things.	6
				I can get work done to improve my athletic skill.	7
				I can perform different skills with good compatibility.	8
				Use my hands skillfully to do things like magic tricks.	9
				Demonstrated new high-innovation movements.	10
				I can use my body parts simultaneously when I need to.	11
				I have a knack for using gestures and hand movements accurately.	12
				I learn quickly when I get a machine instead of listening to someone teach me.	13
				I can express an opinion using body movements and facial expressions.	14
				I can easily acquire a new sports game	15
				The best ideas come to my mind while performing physical movements.	16
				I use my body movements in whole or in part to imitate some of my colleagues efficiently.	17
				I am able to change my motor directions quickly and accurately.	18
				When a certain skill is performed, the precision of the movement is performed.	19