

# A study of the motor response speed of the arms on the performance of some types of basketball scoring

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**Abstract:** The game of basketball is a group game that has several basic principles, and its mastery depends on following proper planning. By informing the player of the performance of the basketball players, he noticed the appearance of signs of fatigue in the performance of the players as a result of the nervous tension and psychological pressure of the matches. He began to lose his focus in performing the skill of scoring, especially jumping. During the final times of the match, the researcher resorted to studying this situation among the players in order to develop appropriate solutions in order to avoid mistakes during the matches.

**Keywords:** response, basketball, group games, Maysan Oil Club.

## 1- Introduction to research

### 1-1 Introduction to the research and its importance

The great development in the field of scientific research is one of the most important features of this time in which we live, which permeated the various fields of life, as the sports field is considered one of the most prominent aspects of human activity that has undergone research and great developments in the levels of achievement except at the level of individual games or team games, as this is achieved In the way of subjecting the process of sports training to accurate scientific foundations that work to improve the capabilities of athletes in terms of skill, physical and planning in order to reach these sports capabilities to the best level and thus to achieve achievement. Modern training methods and studies according to the correct scientific and skillful method to obtain the best results by using the requirements of modern training in basketball, and the training process must be comprehensive for the team and the player in terms of physical aspects, skills, etc. It helps the player to act correctly in the situations and variables he is exposed to while playing.

### 1-2 Research problem

Theoretical knowledge and information should be linked to practical application on well-studied scientific foundations so that it is directed towards achieving the set goals. Scientific methods should also be followed to raise the level of players for the better. Many countries of the world have reached very advanced levels in this game due to their adoption of the selection of advanced modern methods and studies in the field. Training, as the game of basketball is characterized by a very high physical and skill effort to face the different playing situations that the player goes through in the process of attacking, which requires quick and accurate motor responses in performance. Scoring skill and related situations through informing the researcher of the performance of the players of most Iraqi teams every year and the players of Naft Club. Maysan Basketball in particular, that at the moment fatigue appeared on the players as a result of the nervous tension and psychological pressure of the match, he began to lose his concentration in performing the skill of scoring from jumping, especially in the last times of the match, so the researcher resorted to studying this condition among the players, paying attention to it, and developing appropriate solutions in order to avoid Mistakes that occur during matches.

### 1-3 Research goals

1- Identifying the relationship between the motor response speed of the arms and the level of performance of basketball scoring types.

### 1-4 Research hypotheses

There are statistically significant differences between the motor response speed of the arms and the performance level of basketball scoring types.

### **1-5 areas of research**

1-5-1 Human Field: Maysan oil Basketball Club players.

1-5-2 Spatial area: Maysan Basketball Club court.

1-5-3 Time frame: 11/6/2022 until 5/8/2023.

## **2- Theoretical studies**

### **2-1 speed**

It is one of the physical and motor components that express the extent of the nervous response and its compatibility. The speed of movement and speed during exercise depends on the extent of the resistance that it encounters during the work of the muscle or muscles, which requires increasing muscle contraction, which helps to increase the speed of movement and is proportional to the effort and time required, and the speed is changed by two opposing factors: The speed of fast contraction uses energy to overcome resistance in a short time, and in slow contraction energy is used to maintain the contraction for a longer period. Speed is considered one of the important and necessary elements of physical fitness for various forms of sports, and not, as some believe, its importance is limited to distance running, as it is linked and influential in all elements of fitness. The well-known physical fitness has been defined by many scientists and researchers with words that may be different because they serve one goal and meaning. It is the individual's ability to perform a specific movement in the shortest possible time. Some said that it is the speed of the exchange of muscular response between contraction and relaxation. Others said that it is the speed of the athlete's reaction and his ability to Stopping at a high speed when hearing or seeing something(1).

Like traffic lights and the driver's ability to stop while speeding, meaning the speed of completing the movement. In fact, the concept of speed in the sporting aspect should not be limited to one type of movement, as it is in distance running, and as some believe, but rather it must include all the movement characteristics of other forms of sports, such as frames. The puck or team player cannot do without any of these and other speed elements. Deception, launching, rising, throwing, handling, and receiving all require great speed in order to perform them, or the player's result and athletic achievement will be weak.

### **2-1-1 Developing speed**

There is no doubt that exercises that contain speed exercises lead, over time, to improving the speed and reaction of the athlete, especially among advanced players. Regarding this subject, Gelazkov said that athletes who are distinguished by general speed at the beginning of training to develop the speed of the technique specific to the form of the sport, the reaction speed decreases, and if If the general speed is less than its maximum, they will be distinguished by their reaction speed, and here the big difference between general speed and specific speed becomes clear to us, but we must emphasize the importance of general speed, which is considered the basic rule for developing specific speed, and that reaction speed is one of the very important points in all types of sports. Its importance is It is distinguished from some forms more than others, such as boxing, short-distance running, athletics, team sports, swimming, etc(2).

The player's intelligence plays an important role in introducing the appropriate muscle groups and participating in the movement to be applied, and this gives the possibility not only to increase the organization of the movement, but it also works to give a great benefit to each part of the movement, and this leads to saving the energy expended and time as well. During the performance process, the importance must be emphasized. Stretching and flexing the working muscles because as much as there is a possibility to achieve this, there is more room for comfort for the working muscles and when training to develop and develop speed.

## **Research methodology and field procedures**

### **3-1 Research methodology**

**It is the scientific research method that leads the researcher to a scientific and objective** investigation into the condition, characteristic, or phenomenon that the researcher wants to study. Of course, the nature of the method used in the research. The descriptive method was used in the style of a survey study because it is

the method that helps in a scientific manner to achieve the goal of the study, as it is known The descriptive approach may result in either being approved, supported and supported, or suggesting new means and methods for the better(3).

### **3-2 Research sample**

The goals set by the researcher for his research, the procedures he uses, and the nature of the sample. Therefore, the sample was chosen intentionally from the basketball players of Maysan oil Sports Club for the year 2022-2023 AD, whose number is (10) players out of (12) players, as their percentage reached (84%) of Original total.

### **3-3-1 Tools and methods used to collect research information**

- 1- Basketball number (4)
- 2- Basketball court
- 3- Measuring tape
- 4- Stopwatch
- 5- Whistle.

### **3-3-2 Means used**

- 1- Theoretical tests.
- 2- Paper and pen
- 3- Skill tests
- 4- Arabic sources and references.

### **3-4 Field procedures in the research**

#### **3-4-1 The tests used in the research**

##### **1- Free throw test(4).**

- The purpose of the test: measuring the free throw skill from behind the free throw line.
- Tools: basketball, basketball goal.
- Performance specifications: Throws are performed from behind the free throw line. Each laboratory has twenty attempts, and the laboratory may perform free throws using any shooting method, provided that the twenty throws are performed in groups of five throws each, provided that this is in the form of a circle or left Another tester is performing his first set, and so on, and this one enjoys performing some throws before the performance as an experiment.

##### **• the conditions:**

- 1- Every laboratory has the right to perform twenty throws
  - 2- The throw must be done from behind the free throw line
- Scoring: One point is counted for each correct hit (the ball enters the basket), and the laboratory does this regardless of how it enters the basket and counts (zero) if this is not achieved. Since each laboratory has the right to perform twenty throws, the maximum number of marks is twenty marks.

##### **2- Frontal aim test**

- Purpose of the test: To measure the player's skill in aiming at the basket in a specific place on the left side.
- Necessary tools: a basketball, a basketball goal.
- Description of performance: The player shoots the ball from the specified place directly outside the free throw area, from an area located at the intersection of the free throw line from the circle, which is a specific point to the left of the basket. This area must be identified with a mark drawn on the ground, and the tester can perform the shot with one hand or with both hands together. By any means of shooting, noting that the shot is done directly at the basket without the ball touching the target board. The experimenter has (15) attempts, which are performed in three groups. Each group has (5) throws, noting that the experimenter leaves the shooting area after each set and moves around in a circle or is given a chance. Another tester may

perform his first set, and so on. Before the performance, he is allowed to make some throws as an experiment.

**• Test conditions**

A- The shot must be made from the designated place.

B - The laboratory has the right to (15) shots - scoring. Two points are counted for each successful shot or (attempt) in which the ball enters the basket.

**3- Nelson motor speed test**

• Purpose of the test: to measure the connection between reaction speed and arm movement speed.

• Tools needed: Nelson ruler included, chair table, chalk, tape measure.

• Description of the performance: The tester sits on the chair facing the table, placing the palms facing its edge, and the hands are placed on the two lines marked with chalk on the edge of the table with (30) cm between them. The judge holds the Nelson ruler from its upper end so that it becomes suspended in a vertical position so that it is in the middle, the distance between the palms. The tester's hands. The arbitrator determines the base line of the graduated ruler and the starting point in the test. This point is at the level of the upper border of the tester's hands. After the referee gives the signal of readiness for the test, which is "Get ready" and moves the graduated ruler, it falls down outside the edge of the table. Then the tester tries not to move the hands downward. This is when Trying to drop the ruler by moving the hands. Each tester attempts (20) consecutive attempts.

• Calculating grades: The degree of motor response is read on a graduated Nelson ruler and determined by the point parallel to the level of the borders of the hands at the top. After holding the ruler, the grades for the twenty attempts are recorded, then the grades are arranged in descending or ascending order, and the highest and lowest quartiles are excluded as outliers. Then the average of the ten attempts that fall between the two quartiles is calculated.

**3-5 Exploratory experience**

The researcher conducted an exploratory experiment on Thursday, 5/2/2022, at (12) noon, on a group of players consisting of (3) from outside the research sample. The aim of the experiment was:

1- Revealing the difficulties and obstacles the researcher faces while applying the test.

2- Emphasizing the organization of work between the researcher and the assistant staff in order to obtain accurate data.

**3-6 Main experiment**

The researcher started the quarterly work from his research sample on Wednesday 1/3/2022 at (11) am, where the researcher conducted physical tests on his research sample consisting of (10) players, and the researcher finished the physical tests after (30) minutes, and after that the researcher conducted Skill tests at (1) noon and at the Maysan Basketball Club stadium with the help of members, teachers and players, where each player performed two attempts in the test and after collecting data through the players' attempts and then processing them statistically to reach the results of the tests.

**3-7 Statistical methods**

The researcher used statistical methods by using the statistical group program (SPAS), including extracting (arithmetic mean, standard deviation, percentage, and simple correlation coefficient - Pearson)(5) .

**4- Presentation and discussion of the results**

4-1 Presentation and discussion of the results of physical and skill tests:

4-1-1 Presentation and discussion of the speed of the motor response of the arms and the accuracy of scoring when jumping with a basketball

Table (1)

It shows the arithmetic means, standard deviations, and the calculated and tabulated R value for the speed of the motor response of the arms and the performance of scoring accuracy from jumping with a basketball.

Significance level	tabular value	R	Calculated R value	standard deviation	Arithmetic mean	Tests
Significant	0.715	0.798		0.438	1.283	The response speed of the arms
				1.69	12.70	Scoring accuracy of jumping basketball

**\*The value of (t) tabular at degree of freedom (8) error 0.0 = 0.715**

The table shows that the speed of the motor response of the arms reached (1.283) with a standard deviation of (0.438), while we find that the value of the arithmetic mean for the accuracy of scoring from jumping with a basketball reached (12.70) and the standard deviation is (1.69), in order to know the significance of the difference between the two tests, the researcher attributes the reason for this development to the speed of the player's reaction and motor response in how to attack, to the development of the muscle groups of the legs and shoulders. For basketball players, training must be directed towards speed, and the researcher believes that the scoring skill requires many physical qualities and that. Due to the sudden, rapid and variable nature of the player's movement, which works to develop groups, and the nature of the game is characterized by speed of movement and speed in response to the variables of rapid play, it is necessary for the player to develop, build and display physical qualities, and this is what Mustafa Zidane confirms, that the player's keenness to perform this type of scoring is for reasons including that it hinders the scoring opportunity. Without harassing the opposing team, the chance of obtaining a point is almost certain, so the player tries to employ all his capabilities and abilities in order to achieve a point, especially in some matches that are decided by a point from a free throw(6).

4-1-2 Presenting and discussing the results of the speed of motor response of the arms and the accuracy of scoring free throws in basketball.

Table (2)

The arithmetic means, standard deviations, and the calculated and tabulated (R) value for the speed of the motor response of the arms and the accuracy of the free throw shot in basketball

Significance level	tabular value	R	Calculated R value	standard deviation	Arithmetic mean	Tests
Significant	0.811	0.795		0.438	1.293	The response speed of the arms
				1.366	11.66	Free throw scoring accuracy in basketball

**\*The value of (R) tabular at degree of freedom (8) error 0.05 = 0.811**

By observing table (2), it shows the value of the arithmetic mean for the speed of the motor response of the arms amounted to (1.293) and with a standard deviation (0.438), while we find that the arithmetic mean value for the shooting accuracy of the free throw amounted to (11.66) and with a standard deviation ( 1,366) and to know the significance of the difference between the two tests, the (R) test was used for correlated samples, where the tabular value of (R) was (0.811). The free throw skills in basketball require more accurate play by focusing and paying attention. Each circle is a goal. Therefore, we find that most of the test sample players did not adhere to the correct use of the skill, which affected the performance of the skill. This

type of scoring is the scoring of the free throw that needs basic requirements for the success of the performance. Among the most important of these requirements is the phenomenon of focus and accuracy, where the player needs to direct all his attention and focus on the ring through the interdependence that is formed by smart simulations between the mind and the body in order to deliver the required information to all the muscles and joints working in the movement and to reach the required motor momentum to deliver the ball and in the end Direct it with the required force and speed on the throat without wasting any part of the energy(7).

## 5- Conclusions and recommendations

### 5-1 Conclusions

1. There was a level effect in the motor response speed of the arms in the basketball scoring skill.
2. The impact of the motor response of the arms on the skill of scoring from jumping was better than the skill of scoring from stability.

### 5-2 Recommendations:

1. The necessity of conducting tests and measurements to know the progress of the player with the relevant skills in order to determine the striker's susceptibility and the possibility of modifying his scoring skills with basketball.
2. Emphasis on developing some basic skills in playing basketball.
3. Emphasizing that the training units include the development of physical attributes in general, with special emphasis on some elements that help in the skill.

## FootNotes

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