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**Dr. Noor Sattar Waheed**  
Assistance Lecturer, Faculty of  
Physical Education and Sports  
Sciences, Almutahanna  
University, Iraq

**Dr. Wisam Shakir Rzaej**  
Lecturer, Faculty of Physical  
Education and Sports Sciences,  
Almutahanna University, Iraq

**Dr. Ahmed Ali Sadeq**  
Lecturer, Faculty of Physical  
Education and Sports Sciences,  
Almutahanna University, Iraq

**Corresponding Author:**  
**Dr. Noor Sattar Waheed**  
Assistance Lecturer, Faculty of  
Physical Education and Sports  
Sciences, Almutahanna  
University, Iraq

## Special exercises and their impact to developing the strength distinguished by speed in the hands and feet and the accuracy of shooting basketball for the advanced Samawa Club players

**Dr. Noor Sattar Waheed, Dr. Wisam Shakir Rzaej and Dr. Ahmed Ali Sadeq**

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### Abstract

The importance of the research was to prepare special exercises and apply them to Samawa Club basketball players, as well as to identify the effect of these exercises, especially on the strength distinguished by speed in the legs and hands of Samawa Club players. As for the problem of the research, it lies in the following questions (Do special exercises have an effect in developing the strength and speed of the hands and feet for Samawa Club players? Do these special exercises have an effect in developing basketball shooting accuracy for Samawa Club players?). While the objectives of the research were to prepare special exercises and apply them to the Samawa Club players' basketball players, and to identify the effect of the exercises, especially on the strength and speed of the legs and hands for the Samawa Club players. The researchers used the experimental approach because it is compatible with the research problem. The researchers concluded from their findings that the special exercises, which include (strength-accompanying skill) exercises prepared by the researchers, have a positive impact on developing the strength characterized by speed in the arms and legs and the accuracy of basketball shooting for Samawa Club players. Accordingly, the researchers recommend that the training units include strength exercises in addition to skill exercises because of their positive impact on developing basketball skills, as well as conducting other studies by applying special exercises and knowing their effect on basketball skills, which the researchers did not address.

**Keywords:** Special exercises, strength characterized by speed and accuracy of shooting

### Introduction

The world of training is considered one of the most important fields in which many developments have occurred in recent years, due to experiments and scientific research, the sole concern of which was and still is to raise the technical level of sports in general, and to reach the level of athletes to the highest possible level, as there is no longer a limit to reaching it and stopping at it. Everything has become possible to benefit from to improve the level of the athlete.

One of the things that must be provided to sustain the training process in general is crystallized in the use of correct scientific methods and modern scientific training curricula that contain physical, skill, tactical and psychological preparation, as "the basis for raising the athletic level in sports, including basketball, is comprehensive physical preparation," which It is focused on using correct scientific training methods that are compatible with the element to be developed, whether physical or skillful.

The game of basketball is one of the team sports that has achieved wide spread throughout the world because of its educational, physical, skillful and mental advantages and characteristics, in addition to the presence of its own elements such as excitement, lively artistic performance and enjoyment for its practitioners as well as for spectators. Hence, careful care was necessary. In proper planning of the sports training process, preparing training curricula for the game and implementing them correctly. The game of basketball requires special physical and skill requirements.

The game of basketball is one of the sports that constantly needs muscular strength (static strength and dynamic strength), which contribute greatly to the development of the players' physical and skill levels, as the diversity of muscular contractions works to develop muscular strength to a greater extent.

Therefore, it is necessary to pay attention to the number of players in a comprehensive manner in all aspects, and to develop offensive skills during the training process, the most important of which is scoring. Strength is an important factor in developing these skills if done in a scientific manner according to the players' abilities and capabilities. Hence the importance of research into using special exercises in developing the strength distinguished by speed and accuracy. Shooting for basketball players. Because of its benefit in developing and raising physical and skill capabilities to reach higher levels.

### Research Problem

The research problem lies in answering the following questions:

1. Do exercises in particular have an effect in developing the strength and speed of the hands and feet for Samawa Club players?
2. Do special exercises have an impact on developing basketball shooting accuracy for Samawa Club players?

### Research objective

1. Preparing special exercises and applying them to basketball players for Samawa Club players.
2. Identify the effect of exercises, especially on the

strength and speed of the legs and hands for Samawa Club players.

3. Identify the effect of exercises, especially on the accuracy of basketball shooting for Samawa Club players.

### Research hypotheses

1. Special exercises have a positive effect on the strength and speed of the hands and feet of Samawa Club players.
2. Special exercises have a positive effect on the basketball shooting accuracy of Samawa Club players.

### Research fields

**Human field:** Samawa youth sports club basketball players.

**Time field:** From 15/5/2023 to 24/7/2023.

**Spatial field:** The closed hall in the Western Youth Forum in Muthanna Governorate.

### Research methodology and field procedures

**Research methodology:** The experimental method is the closest research method to solving problems by the scientific method, as it is an attempt to control all the basic variables and factors with the exception of one or more variables, which the researcher changes with the aim of determining and measuring its scientific effect (Melhem, Sami Muhammad, 2000, p.259), and because the nature of the research requires knowledge of a (specific) effect, so the researcher used the method Experimental design (two equal groups) and Figure (1) illustrates this.

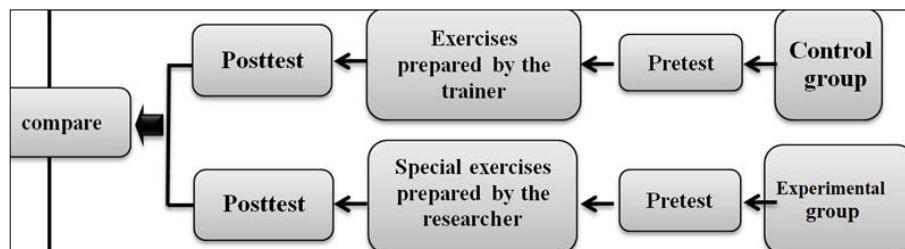


Fig 1: Explains the experimental design of the research groups

### The research community and its sample

The researcher identified his research community represented by the Samawah Basketball Club players, who numbered (14) players. As for the research sample, "which is part of the original community that contains some elements selected from it with the intention of studying the characteristics of the original community" (Al-Sayrafi, Muhammad Abdel Fattah, 2008, p. 186), the community was divided By drawing lots, two groups are drawn: a control group and an experimental group, and each group has (6) players.

### Research tools and devices used

What is meant is the means or method by which the researcher can solve his problem, whatever it may be, such as tools, data, samples, or devices, and therefore he used many of them in order to achieve this:

### Methods of data collection

- Arab and foreign sources.
- Tests and measurement.

- Registration Form.

### Tools and devices used in research

- A medicine ball weighing (3 kg).
- Measuring tape.
- Signs.
- Adhesive tape.
- Basketball number (10).
- Weights in the form of discs.
- Chalk.
- Smooth wall.
- LENOVO electronic calculator.

### Search procedures

#### Determine the research variables

The researchers conducted a survey on a number of scientific sources and previous studies, and accordingly the following variables were identified:

- Strength characterized by speed (for the arms and legs).
- Withstand the performance of shooting accuracy.

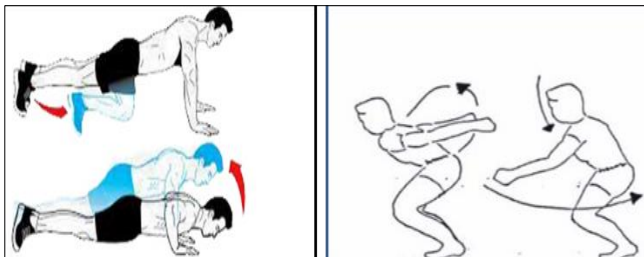
**Description of research tests**

**Continuous hop test with both feet for a distance of 25 meters:** (Abdel-Khaleq Mohamed Abdel-Khaleq, 2007) [3].

- **Purpose of the test:** to measure the strength and speed of the legs
- **Tools and capabilities:** a wide space, a stopwatch, a measuring tape
- **Conduct the test:** continuous hopping with both feet together for a distance of 25 meters.
- **Registration:** The minimum laboratory time is calculated to the nearest 0.01 second.

**Forward lean (bend and extend the arms) continuously for (10) seconds.** (Hassanein, Muhammad Subhi, 1987, p. 268) [4].

- **The aim of the test:** to measure the strength and speed of the muscles of the arms.
- **Tools:** playground, electronic stopwatch, whistle to signal the start and end.
- **Test description:** From the front support position, bend and extend the arms as much as possible in (10) seconds.
- **Test conditions:** The athlete takes the front leaning position on the ground so that the body is in an upright position at the start signal. The tester extends the arms fully and continues to repeat the performance for as many repetitions as possible without stopping for ten seconds correctly.
- Make sure your chest touches the ground while bending your arms and then extending them fully.
- **Registration:** The laboratory records the number of repetitions of bending and extending within (10) seconds.

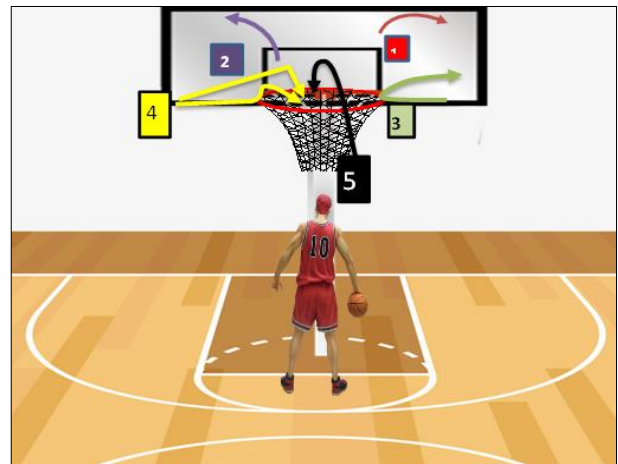


**Fig 2:** Shows the strength and speed tests for the arms and legs

**Testing the accuracy of free-throw shooting:** (Abbas, Qasim Muhammad, (2003, p. 56) [5].

- **Purpose of the test:** to measure the accuracy of free throw shooting.
- **Necessary tools:** a legal basketball court, a legal basketball goal, and (6) legal basketballs.
- **Description of performance:** The student stands at the free throw line with the ball and is asked to execute the free throw.
- **Registration:** Each student is given (6) attempts and grades are calculated as follows:
- (One score) when the ball hits the wooden board and goes out.
- (2 marks) When the ball hits the wooden board at the number (2) and comes out.
- (Three degrees) when the ball touches the ring and comes out.
- (Four degrees) when the ball touches the ring or small square and enters the ring.

- (Five degrees) when the ball enters directly into the ring without touching anything.
- (Zero degrees) if the ball does not touch any part of those mentioned above.
- **Score:** The highest score for this test is (30) and the lowest score is (0)



**Fig 3:** Shows a basketball free throw shooting accuracy test

**Exploratory experience**

Scientific research experts recommend conducting exploratory experiments for the tests used in research in order to obtain the necessary reliable results and information to benefit from when conducting the main experiment. The exploratory experiment is “a preliminary experimental study carried out by the researcher on a small sample before carrying out his research with the aim of testing the research methods and tools.” (Al-Shouk, Nouri Ibrahim and Al-Kubaisi, Rafi Saleh Fathi, 2004, p. 89) [6].

Accordingly, the researcher conducted an exploratory study on (2) players of the Samawah Basketball Club. This experiment was applied on Friday, 20/5/2023, in the closed hall of the Al-Gharbi Forum at four-thirty in the afternoon.

The aim of conducting the exploratory experiment is several points, including:

- Identifying the negatives and positives that the researcher encounters in the main tests
- Knowing the safety of the devices and ensuring their validity.
- The availability of the required capabilities in terms of the suitability of the specific places to conduct the tests, as well as the availability of appropriate devices and tools for the tests.
- The adequacy of the assistant team and their understanding of how to apply the test vocabulary and distribute them to know their tasks when conducting tests for the research sample.
- The suitability of the time period specified for the test for one player and for the other players.
- Extracting the scientific foundations of tests (validity, reliability, objectivity).
- This experiment achieved its purpose

**Scientific basis for test results****Validity of the test**

It is intended for the test to actually measure the ability, trait, attitude, or aptitude that the test was designed to measure. That is, it actually measures what it is intended to measure. (Al-Yasiri, Muhammad Jassim, 2010, p.72) [7], To

calculate the validity coefficients of the tests, the researcher used experimental validity, and this type of validity is calculated by finding the test's correlation coefficient with a test. External or internal, as the correlation of the test score with an internal or external criterion is an indicator of the validity of that test. If the researcher does not have a suitable external criterion, he resorts to the total score of the test as it is the best criterion in calculating this relationship. Accordingly, the researcher adopted the Pearson correlation coefficient, between The scores of the subtests and the total score of the test in calculating the validity coefficient, and Table (1) shows this.

### Test reliability

Constant means "that the test gives the same or close results if it is repeated more than once on the same group and under the same conditions" (Nader Fahmy Al-Zyoud and Hisham

Amer Alyan, 2005, p. 145) [8]. The reliability of the test was calculated using the method (test and re-application of the test), and for this reason the researcher repeated the tests on Monday, 22/5/2023, on the same sample of the exploratory experiment and under the same circumstances and context, and extracted the reliability coefficient from between the two tests by means of the law of the correlation coefficient (Pearson). As shown in Tables (1)

### Objectivity of the test

Objectivity means that "the tests used are not affected by the change of arbitrators" (Radwan, Muhammad Nasr Al-Din, 2006, p. 208) [9] "as the tests were conducted objectively in the presence of two arbitrators\*, as the Pearson correlation coefficient for their results was extracted and the results emerged with high objectivity for the arbitrators, as shown in Table (1).

**Table 1:** Scientific basis for test results

Variables	Validity coefficient		Reliability coefficient		Objectivity coefficient	
	Value R	Sig	Value R	Sig	Value R	Sig
The strength and speed of the arms	0.921	0.000	0.984	0.000	0.992	0.000
The strength and speed of the legs	0.833	0.000	0.969	0.000	0.997	0.000
Basketball shooting accuracy	0.941	0.000	0.914	0.000	1	0.000

### Main experiment

#### Pre-tests

The researcher conducted the tests, after preparing the research requirements, tools, and the supporting work team. The tests were applied to (12) players. The tests were applied in the closed hall of the Western Youth Forum at 4:30 p.m., according to the following sequence:

- Wednesday, 24/5/2023, for the basketball shooting accuracy test.
- Thursday, 25/5/2023, for the strength and speed tests.

The researcher recorded the variables related to all tests, such as place, time, and method of implementation.

### Homogeneity and equivalence

And to avoid influences that may affect the results of the research due to the individual differences that exist among the students, and to reach a single and equal level for the sample in the variables investigated, which are considered influential in the experiment, they must be controlled. For this reason, the researcher conducted homogeneity and equivalence, and tables (2) and (3) show this.

**Table 2:** Homogeneity between the two research groups

Variables	Control group		Experimental group		Levene value	Sig. level	Sig. type
	Mean	Std. Deviation	Mean	Std. Deviation			
The strength and speed of the arms	10.217	1.440	9.666	1.311	0.108	0.899	Homogeneous
The strength and speed of the legs	18.772	1.238	17.982	1.079	0.003	0.992	Homogeneous
Basketball shooting accuracy	12.946	1.630	13.369	1.723	0.360	0.747	Homogeneous

Table (2) shows that the significance level values for the (LEVENE) test were greater than (0.05), and this indicates

the presence of homogeneity among the sample members for each group.

**Table 3:** Equivalence between the two research groups

Variables	Control group		Experimental group		value (t) Calculated	Sig level	Sig type
	Mean	Std. Deviation	Mean	Std. Deviation			
The strength and speed of the arms	10.217	1.440	9.666	1.311	0.563	0.479	Non sig
The strength and speed of the legs	18.772	1.238	17.982	1.079	0.609	0.347	Non sig
Basketball shooting accuracy	12.946	1.630	13.369	1.723	0.559	0.414	Non sig

Table (3) shows that the significance level values of the (t) test for independent samples were greater than (0.05), and this indicates that there are no significant differences between the control and experimental groups.

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### Special exercises prepared by the researcher

The researchers applied the special exercises that he prepared and under his direct supervision on a sample of the experimental group, which numbered (6) players, on Saturday, 27/5/2023, until Wednesday, 19/7/2023. When developing the exercises, the researcher took into account some foundations and principles based on as follows:

- It took (8) weeks to implement the exercises, with (3)



training units per week. Thus, the total number of training units for the exercises is (24) training units.

- The exercises were carried out during the days (Saturday - Monday - Wednesday) of each week.
- The researcher used the high-intensity interval method in applying the exercises, with an intensity ranging from (80-95) %.
- Intensity was regulated based on repetition.
- The ratio of work to rest in the training units was (1 effort: 2 rest).
- The number of special exercises reached (16).
- The exercises were gradually graduated, moving from easy exercises to difficult exercises and from simple to complex exercises.
- The special exercises were skill exercises using force
- In distributing the intensity, the researcher took into account the fluctuation between the daily training units, using the fluctuation (2:1).
- The exercises were applied at the beginning of the main section and immediately after the warm-up, so that the player could be at a level of mental and physical

preparation and neuromuscular compatibility to achieve the goal of the exercises.

**Post-test:** After completing the special exercises, the researchers began applying the post-tests to (12) players. The tests were administered at the Gharbi Youth Forum at 4:30 pm, according to the following sequence:

- Thursday 20/7/2023 for basketball shooting accuracy tests.
- Friday 21/7/2023 for strength and speed tests.

#### Statistical methods

- Mean.
- Standard deviation.
- The value of the LEVENE test.
- Simple correlation coefficient (Pearson).
- The value of (t) for correlated samples.
- The value of (t) for independent samples.

#### Presenting, analyzing and discussing the results of the control and experimental groups in the post-tests

**Table 4:** Arithmetic means, standard deviations, t value, and significance of differences between the control and experimental groups in the tests of strength characterized by speed and accuracy of shooting a basketball for the post-tests

Variables	Control group		Experimental group		value (t) Calculated	Sig level	Sig type
	Mean	Std. Deviation	Mean	Std. Deviation			
The strength and speed of the arms	11.223	1.037	14.929	0.883	4.995	0.000	sig
The strength and speed of the legs	17.569	1.126	15.704	0.794	5.596	0.000	sig
Basketball shooting accuracy	19.600	0.995	25.236	0.762	7.601	0.000	sig

The results of the table above show that the significance level values of the (t) test for independent samples for the variables of static and moving force (force characterized by speed) of the arms and legs and the accuracy of shooting the basketball were smaller than the error rate (0.05) at a degree of freedom (10). This means that there is there were differences between the control and experimental groups in the research variables in the post-tests, in favor of the experimental group.

#### Discussing the results of the control and experimental groups in the post-tests

From the results obtained, it was found that there were significant differences between the control and experimental groups in the post-tests, in favor of the results of the experimental group.

The researchers believe that the special exercises prepared contributed to developing the strength distinguished by speed, so the researcher was keen to pay attention to training them from exercises of a physical skill nature that all players performed with precision and high proficiency, "because these exercises aim to raise physical ability by using skills and movement direction close to the type of specialization." (It is similar to the required sport)" (Al-Bashtawi, Muhannad Hassan & Al-Khawaja, Ahmed Ibrahim, 2010, p. 325) <sup>[10]</sup> and employing these exercises using the muscle groups involved in motor performances, because muscular strength is considered a factor independent of general endurance, indicating that physical ability depends on muscle strength and the efficiency of the connection between them and the nervous system, while general endurance depends mainly on the efficiency of the circulatory and respiratory systems in transporting the

oxygen and nutrients necessary for the continuation of muscular work and the speed of disposal of metabolic waste. The researcher believes that the training units included exercises in which rubber resistances and medicine balls were used to develop strength endurance (for the legs and arms), as the forms of these exercises were closely related to the offensive skills researched in basketball, as they included jumping movements and forward, backward, and lateral movements with resistances very similar to the movement of a basketball player.

The researcher was keen to add the element (strength) in addition to skill to the exercises prepared by him for the experimental group so that the player could perform the motor skill comfortably and in an optimal and appropriate manner. This was reflected positively in the development of the various muscles working in the body, in addition to organization and progression by increasing the training load and concentration. Through exercises to increase muscle capacity, especially the muscles of the legs and arms, by using strength endurance exercises using medicine balls, rubber balls, jumps, and jumping from different positions". "This led to an increase in the ability of the working muscles in the body, in addition to the use of exercises with maximum and sub-maximal intensity, which are sufficient to develop the strength endurance of the body's muscles, as (strength endurance training is determined by the ability of a large load when compared to the conditions of competitions and working with high resistance) (Qasim Hassan Hussein & Abd Ali Nassif, 1987, p. 157) <sup>[11]</sup>.

This is what the players did in the training program, as most of the training included this ability, as well as continuity in training and the time of the program, which gave sufficient opportunity for development. All of these things mentioned

contributed effectively to showing positive results between the post-tests for the experimental and control groups, and in favor of the post-test for the group. Experimental.

The researcher believes that training using qualitative methods is carried out by the researcher at the beginning of the main section to exploit the safety of the central nervous system and is carried out as quickly as possible in the training unit, "because the training intensity in team sports is very complex to keep the match going quickly and the intensity changes and changes constantly between high and low and in order to fill this need." Requirements: The coach must include in his training curriculum how to use a variety of techniques on an ongoing basis.

Researchers believe that the basketball player needs high strength in all its forms and types to perform skills and game plans in conditions similar to competition conditions. Therefore, when the player moves without pressure from the opponent, he is practically able to perform difficult skills and tactical movements without mistakes most of the time, but this situation changes as the situation changes. The opposing player is close to the player in possession of the ball and is trying to cut it. In this case, the player must have sufficient strength in performing playing skills to get rid of the opponent with quick movements with the ball and the ability to switch from one movement to another (Ibrahim, Muhammad Reda, 2008, p. 123) <sup>[12]</sup>. This is what the researchers emphasized in strength training through the use of man-to-man pressure defense on the player carrying the ball, which in turn helped develop the player's technique, appreciate different playing conditions, and find appropriate solutions for them. The strength training exercises used were performed using the ball and in the presence of the defender to give the player enough time to repeat the skills, especially since this stage of the player's life is characterized by the fact that the player at the age of 17-18 years must master most of the complex skills and skills that are performed with a teammate, which have a major role in the success of the player. Offensive and defensive tactics before moving to the stage of playing with the advanced group to avoid difficulty in harmony and understanding tactical movements, and these are the most difficult things facing young players.

"Recently, most of the skill, speed, and strength exercises are performed with the ball in all training sessions. This leads to building the required athletic condition and skill, and thus achieving perfection in technique." (Zuhair Qasim Al-Khashab & others, 1991, p.70) <sup>[13]</sup> Linking technical performances to special physical abilities in the game of basketball has a positive impact on the level of these performances. Each of the player's movements requires muscular work with a certain force and speed, and the player's ability to perform the skill for a good period of time during the match is one of the goals of the training prepared by the researcher by integrating muscle strength training with skill training. We added to that teaching the player how to perform the skills with. Colleague and under pressure from the defender." Tadeusz also explained that "choosing the opponent is the basis of the work, how is the discount based on the high load and intensity of the work? Choosing the discount depends on the period and degree of training and the skillful application of repetition. He also added that this method is suitable for those who have many years of training and is less suitable for others.

The colleague's contribution to training in the form of (competition), whether defensively or offensively, has a distinct effect in increasing the effectiveness of the activity (such as holding and then receiving and shooting, or performing accurate shooting with holds, peaceful shooting, and defensive footwork, and all of these skills have become primarily used in most plans. Modern basketball, so the researcher was keen to focus on performing these skills and repeating them, taking into account the speed and strength of performance, as modern basketball, and with the great development of individual and team defense, the player must perform the skill with high efficiency throughout the match.

The content and speed of the strength training exercises were identical to the movement performed by the player on the court at the time of the match. This is because the movement of the basketball player is characterized by a continuous change in the intensity of performing the skill work, taking into account that the movement of the player in complex skills requires him to make difficult movements with the ball in performing the skill with presence of defender. We find that there is a clear difference between the experimental group and the control group, and in favor of the experimental group in the post-measurement, as the researcher attributes the reason for this difference to their use of training in a standardized, qualitative manner, as the existing link between these skills and how to produce them in an optimal manner in all periods of the match requires continuity in running and not stopping. The training added strength to use the same muscle groups involved in motor performance, develop special endurance and skill performance under conditions and situations similar to situations and match conditions, and this is one of the goals of training because it contains complex exercises similar to the player's duty in real play, shortening the training time and adding an element of suspense and excitement (Tadeusz ulatowski, 1981, 141) <sup>[14]</sup>.

Maintaining the level of performance and its ability, especially when performing the skill and tactical requirements, cannot be achieved except by developing physical capabilities, including muscular strength, which in turn works to develop skill performance, and the element of strength itself, in its various types, contributes to mastering defensive and offensive skill work. In addition to the ability to react to changing and sudden situations in the match by resisting fatigue for a longer period. It is also known that the game of basketball is a game of seconds, and it is possible that the last seconds are decisive in the match.

"When it comes to developing the athlete's skill and tactical state, the load can be advanced by diversifying the beginnings and endings of the movement, changing their timing, and placing them in various combinations to increase the ability to integrate the performances with each other in a way that suits the requirements of the situation during the actual competition and training for it in difficult and varying conditions (Al-Basati, Amr Allah Ahmad, 1988, p. 65) <sup>[15]</sup>." Therefore, the athlete must He has high-level muscular strength to perform complex skills to win matches, and this is what was focused on in the training exercises. This is confirmed by (Klara). "One of the benefits of strength training is that the players in these training exercises are exposed to several diverse situations of applying the exercise, and these make all players interactive

in performing the skill effectively, in addition to providing the players cognitively and physically about the environment of play and competition, and teaching them to modify performance to suit the environment of play, its variables, and its features.” (Therefore, all skills were integrated during training with special physical abilities to achieve the desired research goals, and this is what the members of the experimental group showed in the skill performance endurance tests prepared by the researcher. (Klara Gubace, 1999, p, 89) [16].

### Conclusions and recommendations

#### Conclusions

1. Special exercises that include exercises (strength accompanying skill) prepared by the researcher have a positive effect in developing the strength characterized by speed in the arms and legs for the players of Al-Samawa Club.
2. Special exercises that include exercises (strength accompanying skill) prepared by the researcher have a positive effect in developing the shooting accuracy of basketball players of Samawa Club.

#### Recommendations

1. It is necessary to include strength exercises in the training units in addition to skill exercises because of their positive impact on developing basketball skills.
2. Conducting other studies by applying special exercises and knowing their effect on basketball skills, which the researchers did not address.

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