



# **THE EFFECT OF SAQ (SPEED, AGILITY, AND QUICKNESS) TRAINING ON SOME PHYSICAL AND SKILL ABILITIES, AS WELL AS THE MAXIMUM ANAEROBIC CAPACITY OF FEMALE SOCCER PLAYERS**

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| A B S T R A C T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | K E Y W O R D S                                                              |
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| <p>The aim of the research is to prepare SAQ (Speed, Agility, and Quickness) training in developing some physical and skill abilities, as well as the maximum anaerobic capacity of female soccer players in North Oil Club in Kirkuk province (Iraq). The researcher used the experimental method to suit the nature of the research and identified the research population as women's clubs in Kirkuk, which are three clubs (North Gas, North Oil, and Al-Fattah) with a total of 80 players. The research sample was chosen by purposive sampling, and North Oil Club was chosen with 28 players, representing 35% of the research population. Eight players were selected for the exploratory experiments, and the research sample became 20 players divided into two groups: control and experimental, with each group consisting of 10 players. The researcher used statistical methods such as standard deviation, median, coefficient, Pearson's R correlation coefficient, and paired samples t-test. The researcher concluded that SAQ training had a positive effect on developing physical and skill abilities, as well as the maximum anaerobic capacity for the experimental group, and that the high-intensity and repetitive interval training methods played a positive role in developing the physical and skill abilities, as well as the maximum anaerobic capacity for the experimental group. The researcher recommends the use of SAQ training in training units and the integration of physical abilities with basic skills in training units.</p> | <p>SAQ training, physical abilities, skills, maximum anaerobic capacity.</p> |

## **1-1 Introduction and importance of research:**

Soccer has been and still the most popular sport in the world for a long time, as it captivates people with its excitement and thrill. Women's soccer requires a comprehensive preparation for players to be able to withstand the pressures they face during the match, and modern requirements necessitate the need to prepare players physically, skillfully, strategically, and psychologically. Coaching science has contributed to the development of modern methods, and one of these methods is SAQ training and its impact on developing the physical and skill abilities of soccer players.

SAQ training is one of the modern training methods in the field of sports that works to improve performance efficiency by developing quick movements, which contribute to improving agility, response speed, compatibility, explosive power, and non-aerobic capacity. SAQ training is a complementary integrated training system that aims to simulate competitive play situations by breaking down speed into three main components: linear speed, agility, and reactive speed.

The importance of research lies in preparing SAQ training scientifically and its impact on some physical and skill abilities, as well as the maximum aerobic capacity of women's soccer players.

## **1-2 Research problem:**

Through the researcher's experience in the field of soccer as a first-class referee and a former soccer coach, he noticed that many women's team coaches focus on training players in traditional ways and methods in basic skills, with each skill separately, such as dribbling, control, and scoring, and not paying attention to compatibility training and linking it to basic skills. The research problem is formulated as a question: Does SAQ training have an impact on some physical and skill abilities and maximum aerobic capacity of women's soccer players?

## **1-3 Research objectives:**

- 1- To develop the SAQ training for female soccer players.
- 2- To investigate the effect of SAQ training on some physical and skill-related abilities as well as the maximum aerobic capacity of female soccer players.

## **1-4 Research hypotheses:**

- 1- There are statistically significant differences in the research variables between pre-test and post-test measurements for both control and experimental groups.
- 2- There are statistically significant differences in post-test measurements between control and experimental groups.

## **1-5 Research areas:**

1-5-1 Human domain: Players of Naft Al-Shemal Club in Kirkuk for the 2021-2022 sports season.

1-5-2 Time domain: From August 24, 2022, to October 29, 2022.

1-5-3 Spatial domain: Naft Al-Shemal Club Stadium in Kirkuk.

## **2-Research methodology and procedures:**

### **2-1 Research methodology:**

The researcher used the experimental method with a design of two equivalent controlled groups, the experimental and the pre- and post-test, to suit the nature of the research problem.

## 2-2 Research population and sample:

The research population defined as the clubs in Kirkuk governorate, represented by (3) clubs (Naft Al-Shemal, Gaz Al-Shemal, Al-Fattah Club) and consisting of (80) players. The research sample was chosen intentionally from Naft Al-Shemal Club, consisting of (28) players, representing (35%) of the research population. (8) players were selected for the exploratory experiment, and the research sample was (20) players divided into two groups, the control and experimental group, each consisting of (10) players.

## 2-3 Equivalence and homogeneity of the research sample:

### 2-3-1 Homogeneity of the research sample:

The researcher conducted a homogeneity process among the research sample members before applying the main experiment in the variables (height, weight, chronological age, training age), and Table (1) shows that.

**Table (1) Shows the homogeneity of the research sample.**

| Variables         | Unit of measurement | Arithmetic mean | Standard deviation | modal | Torsion coefficient |
|-------------------|---------------------|-----------------|--------------------|-------|---------------------|
| Length            | Centimeter          | 146,06          | 5.25               | 148   | -0.369              |
| Mass              | Kg                  | 41.61           | 5.24               | 39.5  | 0.402               |
| Chronological age | Year                | 20.41           | 0.68               | 20.5  | -0.132              |
| Training Age      | Year                | 6.5             | 0.68               | 6     | 0.735               |

### 2-3-2 Parity of the research sample:

**Table(2) Shows equivalence between variables for the research sample.**

| S | Variables          | Unit of measurement | Group        | Arithmetic mean | Standard deviation | Calculated t-value | Sig   | Significance  |
|---|--------------------|---------------------|--------------|-----------------|--------------------|--------------------|-------|---------------|
| 1 | Agility            | Second              | control      | 7.99            | 0.59               | 0.283              | 0.314 | Insignificant |
|   |                    |                     | Experimental | 7.91            | 0.63               |                    |       |               |
| 2 | Explosive power    | centimeter          | control      | 1.52            | 0.53               | 0.208              | 0.650 | Insignificant |
|   |                    |                     | Experimental | 1.59            | 0.44               |                    |       |               |
| 3 | Compatibility      | second              | control      | 8.15            | 0.848              | 0.310              | 0.125 | Insignificant |
|   |                    |                     | Experimental | 7.03            | 0.721              |                    |       |               |
| 4 | Responsiveness     | second              | control      | 1.95            | 0.36               | 0.383              | 0.240 | Insignificant |
|   |                    |                     | Experimental | 1.79            | 0.24               |                    |       |               |
| 5 | Anaerobic capacity | watt                | control      | 289.115         | 39.038             | 0.468              | 0.253 | Insignificant |
|   |                    |                     | Experimental | 297.235         | 36.134             |                    |       |               |
| 6 | Rolling            | second              | control      | 12.85           | 0.283              | 0.355              | 0.175 | Insignificant |
|   |                    |                     | Experimental | 12.77           | 0.297              |                    |       |               |
| 7 | Control            | degree              | control      | 36.16           | 6.42               | 0.253              | 0.451 | Insignificant |
|   |                    |                     | Experimental | 37.25           | 6.68               |                    |       |               |
| 8 | Scoring            | degree              | control      | 9.14            | 0.535              | 0.305              | 0.110 | Insignificant |
|   |                    |                     | Experimental | 10.12           | 0.442              |                    |       |               |

1. Non-D at  $\geq$  error ratio 0.05

2-4 Methods of data collection and devices used:

2-4-1 Methods of data collection:

(Personal interviews\*, Arabic and foreign references, (Internet), Testing and measurement, Assistant work team, exploratory experiments, Test results form).

2-4-2 Tools and devices used:

(Measuring tape, Electronic medical scale, Pulse meter, Soccer field, cones (24), Hurdles (10), Training flags, Whistler (2), Stopwatch (2), footballs (5) (12), Monarch bike (1), Laptop (1)).

2-5 Determination of physical abilities:

After analyzing the content of scientific and foreign references, the researcher used the following physical abilities and tests:

Long jump from a standstill (explosive power)<sup>(1)</sup>, running between cones (agility)<sup>(2)</sup>, jumping over circles drawn on the ground (compatibility)<sup>(3)</sup>, and Nelson test (responsiveness)<sup>(4)</sup>.

2-6 Determination of basic skills and their tests:

The researcher analyzed the content of Arabic and foreign scientific references to choose the basic skills and their tests, where the following skills were chosen:

Rolling<sup>(5)</sup>, Control<sup>(6)</sup>, Scoring<sup>(7)</sup>

2-7 non-aerobic capacity test:

Test name: RAST test<sup>(8)</sup>.

Test objective: Measurement of non-aerobic capacity.

Tools used: (4) stopwatches, electronic scale, (2) whistles.

Performance description: The player (6) performs maximum speed sprints for (35)m between each sprint (10) seconds.

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<sup>1</sup>. Muhammad Sobhi Hassanein, **Evaluation and Measurement in Physical Education**, vol. 1, 2nd edition :(Cairo, Dar Al-Fikr Al-Arabi, 2001), p. 304.

<sup>2</sup>. Encyclopedia **of Measurements and Tests in Physical Education and Sports** :(Baghdad, Higher Education Press, 1989), p. 155.

<sup>3</sup>. Muhammad Subhi Hassanein, **op. cit.**, p. 416.

<sup>4</sup>. Muhammad Hassan Allawi, Muhammad Nasr al-Din, **Kinetic Performance Tests**, 1st Edition :(Cairo, Dar Al-Fikr Al-Arabi, 1982), p. 254.

<sup>5</sup>. Thamer Mohsen et al., **Football Development Exercises** :(Amman, Dar Al-Fikr Al-Arabi, 1999), p. 160.

<sup>6</sup>. Mahmoud Hamdoun Al-Hayali, The Effect of Skill Physical **Exercises Using Special Stretching Time on several Physical and Skill Variables for Young Football Players** :(Unpublished Master's Thesis, College of Physical Education, University of Mosul, 2008), p. 62.

<sup>7</sup>. Raad Hussein Hamza, **Special exercises in the development of special endurance and its relationship to skill performance in football** :(unpublished doctoral thesis, College of Physical Education, University of Baghdad, 2003), p. 108.

<sup>8</sup>. Abdullah Mohamed Tiawi, **Training using play exercises and their impact on the maximum anaerobic ability of young football players**, 1st Edition :(Alexandria, Dar Al-Wafa, 2018), p. 52.

Recording: The time for each sprint is recorded in seconds and hundredths of a second, and the capacity results are calculated for each repetition as follows:

Non-aerobic capacity =  $\text{weight} \times \text{distance}^2 / \text{time}^3$

Non-aerobic capacity average (watts) =  $\text{Sum of values} / 6$

2-8 Exploratory experiments:

2-8-1 First exploratory experiment:

The first exploratory experiment for physical, skill, and maximal aerobic tests was conducted on Wednesday, August 24, 2022, at 3:00 pm, at the North Oil Sports Club in Kirkuk on a sample of 4 players from the research sample. The aim of the experiment was to identify the time required for the tests, test the suitability of the equipment used, assess the efficiency of the assistant team, identify the difficulties encountered in the research, and assess the sample's response to the tests.

2-8-2 Second exploratory experiment:

The second exploratory experiment for SAQ training was conducted on Thursday, August 25, 2022, at 3:00 pm, at the North Oil Sports Club on 4 players from the research sample. The objective of the experiment was to familiarize with the work procedures, assess the suitability of the training, determine the intensity and rest between training, and identify the suitability of devices and equipment.

2-9 Pre-test:

The pre-tests were conducted on Tuesday and Wednesday, August 30-31, 2022, at 3:00 pm, at the North Oil Sports Club, taking into consideration all the conditions related to the tests in terms of equipment, devices, location, and test execution procedures. The researcher clarified the test procedure for the sample and provided a detailed explanation for each test.

Day one: Skill tests

Day two: Physical and maximal aerobic tests

2-10 SAQ Training:

The researcher reviewed scientific references and previous studies to prepare SAQ training for the research sample that are suitable for women. The experimental group applied the training prepared by the researcher, while the control group applied training prepared by the team coach. The researcher considered the following when applying the training:

The training was during the preparation period.

The number of trainings used was 18 training, with one supplement.

The duration of the training was 8 weeks.

The number of training units was 3 units per week, with 24 training units in 8 weeks.

The training days were Saturday, Monday, and Wednesday.

The researcher used the high-intensity interval training method.

The training load model was 3-1.

The duration of the training ranged from 21 to 33 minutes.

## 2-11 Main Experiment:

The researcher applied the SAQ training to the research sample from Monday, September 3, 2022, to Wednesday, October 26, 2022.

## 2-12 Post-tests:

The researcher conducted post-tests on the research sample on Friday and Saturday, October 28-29, 2022, under the same conditions and terms as the pre-tests:

Day 1: Skill tests.

Day 2: Physical tests and maximal aerobic power.

## 13-2 Statistical Methods:

The researcher used SPSS statistical software.

## 3- Presentation, Analysis, and Discussion of Results:

### 3-1 Presentation and discussion of results for research groups:

#### 3-1-1 Presentation, analysis, and discussion of results for pre-test and post-test of the control group:

**Table (3) shows the mean, standard deviation, calculated t-value, and level of significance for the pre-test and post-test of the control group.**

Table (3) shows the results of the pre- and post-tests of the control group, where it was:

| s | Variables          | Unit of measurement | Pre-test |        | Post-test |        | Calculated t-value | Sig   | Significance |
|---|--------------------|---------------------|----------|--------|-----------|--------|--------------------|-------|--------------|
|   |                    |                     | M        | SD     | M         | SD     |                    |       |              |
| 1 | Explosive power    | CM                  | 1.52     | 0.53   | 1.58      | 0.63   | 14.13              | 0.000 | significant  |
| 2 | Agility            | sec                 | 7.99     | 0.59   | 7.89      | 0.66   | 10.150             | 0.000 | significant  |
| 3 | Compatibility      | sec                 | 8.15     | 0.848  | 8.10      | 0.853  | 8.65               | 0.000 | significant  |
| 4 | Responsiveness     | sec                 | 1.95     | 0.36   | 1.98      | 0.42   | 16.616             | 0.062 | significant  |
| 5 | Anaerobic capacity | watt                | 289.125  | 39.038 | 292.120   | 39.049 | -4.195             | 0.004 | significant  |
| 6 | Rolling            | sec                 | 12.85    | 0.283  | 12.77     | 0.294  | 4.90               | 0.005 | significant  |
| 7 | dribbling          | deg                 | 36.16    | 6.42   | 38.25     | 7.01   | -7.175             | 0.000 | significant  |
| 8 | Scoring            | deg                 | 9.14     | 0.353  | 9.45      | 0.601  | -8.35              | 0.001 | significant  |

First, explosive power:

The mean for explosive power in the pre-test was 1.52, and in the post-test, it was 1.58. The researcher attributed this improvement in the control group to their commitment to the training units prepared by the coach and their diligence in daily training, stating that "regular training is an important part of preparing an athlete at all levels"<sup>(9)</sup>.

Second, agility:

Table (3) shows that the mean for the pre-test was 7.99, and for the post-test it was 7.89. The researcher attributed the improvement in agility to the training prepared by the coach, which included

1- Syd Hoar. A.z.; the judo, publish by ippon, 4473, London, England, p477.

agility training with and without a ball. The control group's commitment to the training units also led to the improvement of their agility.

Third, compatibility:

Table (3) shows an improvement in compatibility in the post-test, with the mean for the pre-test being 8.15 and for the post-test being 8.10. The researcher attributed this improvement to the development of other capabilities as well as the training organized in the training units. They stated that "organized training works to develop the functioning of internal organs through the effects of the training performed by athletes during training units, which are a fundamental and important factor in the required adaptation"<sup>(10)</sup>.

Fourth: Response time:

It is evident from Table (3) that the mean of the pre-test is (1.95) and for the post-test is (1.98). The researcher attributes the improvement in response time for the control group to the trainer's reliance on traditional training, which led to a lack of improvement in response time for the post-test.

Fifth: Maximum anaerobic capacity:

Table (3) shows the results of the pre-test and post-test for the maximum anaerobic capacity. For the pre-test, the score was (289.125), and for the post-test, it was (292). The researcher attributes the improvement in the control group to the use of phosphagen system training, which led to an improvement in the maximum anaerobic capacity of the control group. The training sessions prepared by the trainer during the training units were also shorter than (15) seconds.

Sixth: Rolling:

It is evident from Table (3) that the mean of the pre-test is (2.85) and for the post-test is (12.77). The researcher attributes this improvement to the traditional training applied during the training units and the multiple repetitions, which led to the development of rolling skills in the control group. "Executing the largest number of repetitions of skill performance with the ball under special conditions helps to improve the accuracy of executing the players' performance methods in attacking skills"<sup>(11)</sup>.

Seventh: Dribbling:

It is evident from Table (3) that the mean of the pre-test is (36.16) and for the post-test is (38.25). The researcher attributes the improvement in this skill to the concentration of the players in physical and skill training, which increases the player's sense of the ball, resulting in improved skill performance.

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<sup>10</sup>- Kamal Yassin Latif, **The Effect of Training Some Tactical Proposals on Developing Some Special Physical Abilities and Basic Skills of Cod Players**:(Published Research, Journal of Sports Sciences, No. 4A, 2011), p. 92.

<sup>11</sup>- Hashem Yasser Hassan, **Developing the performance of offensive skills in different playing areas in football** :(Cairo, Book Center for Publishing, 2009), p. 14.

#### Eighth: Scoring:

It is evident from Table (3) that the mean of the pre-test is (9.14) and for the post-test is (9.45). The researcher attributes the improvement in this skill to the training applied during the training units, at least ending with scoring, which led to an improvement in the post-test results for the control group's scoring ability.

#### 3-2 Presentation and analysis of pre- and post-test results for the experimental group:

**Table (4) shows the mean, standard deviation, calculated t-value, and significance level for the pre- and post-tests for the experimental group.**

| s | Variables          | Unit of measurement | Pre-test |        | Post-test |        | Calculate d t-value | Sig   | Significance |
|---|--------------------|---------------------|----------|--------|-----------|--------|---------------------|-------|--------------|
|   |                    |                     | M        | SD     | M         | SD     |                     |       |              |
| 1 | Explosive power    | CM                  | 1.59     | 0.44   | 1.78      | 0.86   | 13.25               | 0.000 | significant  |
| 2 | Agility            | sec                 | 7.91     | 0.63   | 7.10      | 0.51   | 9.135               | 0.000 | significant  |
| 3 | Compatibility      | sec                 | 7.03     | 0.721  | 6.65      | 0.525  | 7.883               | 0.000 | significant  |
| 4 | Responsiveness     | sec                 | 1.79     | 0.24   | 1.71      | 0.20   | 8,383               | 0.000 | significant  |
| 5 | Anaerobic capacity | watt                | 297.235  | 36.134 | 316.250   | 38.180 | 7.275               | 0.000 | significant  |
| 6 | Rolling            | sec                 | 12.77    | 0.297  | 12.25     | 0.318  | 15.045              | 0.000 | significant  |
| 7 | dribbling          | deg                 | 37.25    | 6.68   | 41.135    | 7.145  | 7.990               | 0.000 | significant  |
| 8 | Scoring            | deg                 | 10.12    | 0.442  | 12.72     | 0.653  | 13.350              | 0.000 | significant  |

Table (4) shows the results of the pre- and post-tests of the experimental group as follows:

#### Firstly, explosive power

Through table (4), the pre-test and post-test results for the experimental group's explosive power can be seen. The mean for pre-test explosive power was 1.59, while the post-test mean was 1.78. The researcher attributes this to the use of training units in SAQ training, which were applied regularly in terms of training load components such as intensity, volume, and rest. Jump training played a major role in developing leg muscles. Explosive power is the ability to prepare for strength at the fastest possible rate, with the least loss of momentum. Power is the result of strength x speed, and the athlete can be very strong. Additionally, the use of repetitive training methods played an important role in the development of explosive power.

#### Secondly: Agility:

Table (4) shows that the mean score for the pre-test is (7.91) and for the post-test is (7.10), and the researcher attributes the improvement in agility to the diversity and progression of the training, as well as the motivational factor that played a prominent role in developing agility in the experimental

group. "Good soccer training is achieved through planning, organization, and continuous training based on scientific principles that ensure a positive impact on the player's level and continuous progress in the different aspects of soccer, such as the principle of gradual increase in load and proper timing of repetitions"<sup>(12)</sup>.

Thirdly, Compatibility:

Table (4) shows that the mean score for the pre-test is (7.03) and the mean score for the post-test is (6.65). The researcher attributes the improvement in the compatibility test to the training prepared by the researcher, which used tools, as well as the principle of diversity, progression, and undulation in the training load. All of this led to the development of compatibility in the post-test. "Diversity in giving training of one sport avoids mental confusion and increases the desire to train. Also, experience in diverse sports performance gains the player various physical abilities and qualities"<sup>(13)</sup>. Additionally, the researcher attributes the improvement in compatibility to the use of both high-intensity interval training and repetitive training methods.

Fourthly, responsiveness:

It is evident from Table (4) that the mean score for reaction speed in the pre-test was (1.79), while in the post-test it was (1.71). The researcher attributes this to various scientifically designed speed training with short distances and training to change direction, which played a significant role in developing reaction speed for the experimental group. "The individual's efficiency in responding to a specific stimulus in the shortest possible time should be based on the ability to move, and the time period is determined by the time between presenting the stimulus (appearance of the stimulus) and the beginning of the response"<sup>(14)</sup>.

Fifth: Maximal Anaerobic Power:

Table (4) shows that the mean for the pre-test for maximal anaerobic power was (297.235) and for the post-test was (316.250). The researcher attributed this improvement to the training prepared by the researcher, which included SAQ training supported by the ball. The development of maximal anaerobic power was the result of training according to the phosphagen anaerobic system. This enables soccer players to increase the efficiency of their muscles, allowing the production of energy in the absence of oxygen. Additionally, it increases the capacity of anaerobic enzymes that help in anaerobic metabolism. "The development of anaerobic capacity is achieved by increasing the amount of energy components in the muscle and by increasing the muscle's ability to break down anaerobic glucose. Through training, it is possible to develop anaerobic capacity by increasing the enzymes that aid in anaerobic metabolism"<sup>(15)</sup>.

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<sup>12</sup>- Khaled Tamim Al-Hajj, **Fundamentals of Sports Training**, 1st Edition :(Jordan, Al-Jandara Publishing, 2006), p. 39.

<sup>13</sup>. Khaled Tamim Al-Hajj; Basics of Sports Training, 1st Edition: (Jordan, Al-Janadra Publishing, 2006), p. 39.

<sup>14</sup>- Abdul Jabbar Saeed Mohsen, **Preparing Athletes Physically, Skillfully, Psychologically Planned**, 1st Edition :(Amman, Al-Warraq Foundation, 2016), p. 103.

<sup>15</sup>- Raysan Khreibit, Mohamed Mahmoud Abd, **Training Loads and Sports Hospitalization**, 1st Edition :(Cairo, Book Center for Publishing, 2022), p. 298.

#### Sixth: Rolling skill:

From table (4), it is evident that the mean of roll skill for the pre-test is (12.77), and for the post-test it is (12.25). The researcher attributes the development of the rolling skill in the post-test to the varied training, whether with or without a ball and with different spaces, as well as similar training to the game. All these reasons led to the development of the rolling skill in the post-test. "The more attention paid to providing similar training to competitive situations, the better players can be taught the correct skill"<sup>(16)</sup>.

#### Seventh: dribbling:

It can be seen from Table (4) that the mean skill score for goalkeeping for the pre-test was (37.25) and for the post-test was (41.135). The researcher attributes the improvement in goalkeeping skills to the "SAQ" training used by the researcher, which do not develop unless using the ball, different distances, and positions, as well as the player's feel for the ball resulting from the training, technical refinement, and repetitions on the one hand, and the development of neuromuscular compatibility on the other hand. "As the player's feel for the ball grows with training, it becomes a special type of high observation that enables him to deal with the ball with his experience."<sup>(17)</sup> "

#### Eighth: Scoring:

It can be seen from Table (4) that the mean skill score for scoring for the pre-test was (10.12) and for the post-test was (10.72). Scoring skill is one of the most important basic skills in soccer, and through this skill, the team can win matches if the team has a scorer who can score goals from half-chances. The researcher attributes this to training prepared by the researcher using different tools and multiple balls, different distances, and positions, as well as linking scoring skills to other skills. All these reasons have led to the development of scoring skills for the soccer players in the experimental group.

### 3-3 Presentation and Analysis of the Results of the Post-Tests for the Control and Experimental Groups:

**Table (5) shows the mean, standard deviation, calculated (t) value, and level of significance for the post-tests for the control and experimental groups.**

| s | Variables       | M.unit | group   | Arithmetic mean | Standard deviation | Calculate d t-value | Sig   | Significance |
|---|-----------------|--------|---------|-----------------|--------------------|---------------------|-------|--------------|
| 1 | Agility         | sec    | control | 1.58            | 0.63               | 2.405               | 0.004 | significant  |
|   |                 |        | Exp.    | 1.78            | 0.68               |                     |       |              |
| 2 | Explosive power | cm     | control | 7.89            | 0.66               | -2.195              | 0.000 | significant  |
|   |                 |        | Exp.    | 7.10            | 0.51               |                     |       |              |

<sup>16</sup>Hanafi Mahmoud Mokhtar, **Technical Director** of Football :(Cairo, Book Center for Publishing, 1998), p. 48.

<sup>17</sup>- Hisham Hamdan, **A proposed training curriculum to develop some physical, skill and functional abilities of football pentathlons for people with special disabilities** :(unpublished doctoral thesis, University of Baghdad, College of Physical Education, 2006), p. 105.

|   |                    |      |         |         |        |        |       |             |
|---|--------------------|------|---------|---------|--------|--------|-------|-------------|
| 3 | Compatibility      | sec  | control | 8.10    | 0.853  | 3.450  | 0.008 | significant |
|   |                    |      | Exp.    | 6.65    | 0.525  |        |       |             |
| 4 | Responsiveness     | sec  | control | 1.98    | 0.42   | -2.951 | 0.014 | significant |
|   |                    |      | Exp.    | 1.71    | 0.20   |        |       |             |
| 5 | Anaerobic capacity | watt | control | 292.125 | 39.049 | 2.358  | 0.019 | significant |
|   |                    |      | Exp.    | 316.250 | 38.180 |        |       |             |
| 6 | Rolling            | sec  | control | 12.77   | 0.294  | -2.750 | 0.018 | significant |
|   |                    |      | Exp.    | 12.25   | 0.318  |        |       |             |
| 7 | Dribbling          | deg  | control | 38.250  | 7.01   | 2.253  | 0.013 | significant |
|   |                    |      | Exp.    | 41.135  | 7.145  |        |       |             |
| 8 | Scoring            | deg  | control | 9.45    | 0.801  | 3.053  | 0.008 | significant |
|   |                    |      | Exp.    | 12.72   | 0.653  |        |       |             |

From Table (5), there are significant differences in the results of the two-dimensional tests for the control and experimental groups in all research variables for female soccer players. The benefit of the experimental group's two-dimensional test is evident, as the (SD) value for the control group for the above tests was (1.98, 7.89, 8.10, 1.98, 292.125, 12.77, 38.25, 9.45) and for the experimental group, it was (1.78, 7.10, 6.65, 1.71, 316.250, 12.25, 41.135, 12.72). The ( $\pm$ SEM) value for the control group for the above tests was (0.63, 0.66, 0.853, 0.42, 39.049, 0.294, 7.01, 0.801) and for the experimental group, it was (0.86, 0.51, 0.525, 0.20, 38.18, 0.318, 7.145, 0.653).

The calculated (t) value for the control and experimental groups for the above tests was (2.45, -2.195, -3.450, -2.951, 2.185, -2.750, 2.253, 3.053). The (sig) value for the research variables (0.004, 0.000, 0.008, 0.004, 0.019, 0.018, 0.013, 0.008) was less than (0.05) for all of them.

Firstly, Explosive power:

According to table (5), the mean for the vertical jump test for the control group is 1.85, and for the experimental group is 1.78. The researcher attributes this to using the "SAQ" exercise and various tools for the experimental group in the main part of the training unit. The researcher also used jumping training over different height barriers and at different distances in a structured manner in the training units. It is noted that "directed training in jumping with body weight for specific muscle groups leads to their development."<sup>(18)</sup>

Second: Agility:

Through Table (5), it becomes clear that the mean score for the dimensional test for the control group is (7.89) and for the experimental group is (7.10). The researcher attributes this to using SAQ training and various tools such as cones and barriers with different repetitions, as well as regulating the rest period between repetitions and sets, and maintaining continuity in training. The researcher

1- Saad Mohsen, **The effect of training methods for the development of explosive ability of the legs and arms and the accuracy of long-term aiming by jumping high** : (unpublished doctoral thesis, University of Baghdad, College of Physical Education, 1996), p. 99.

believes that agility is one of the fundamental variables for soccer players as it includes many movement components such as reaction, balance, and compatibility that work to accelerate the learning and mastery of motor skills in soccer. The researcher also attributes that SAQ training work on developing agility, as "SAQ training system produces integrated effects of many physical abilities within one training program."<sup>(19)</sup>

## Thirdly: Compatibility:

It is evident from Table (5) that the mean of the dimensional test for the control group was (8.10), while for the experimental group it was (6.65). The researcher attributes this significant development in the dimensional test for the experimental group to the SAQ training used. The researcher included training in speed, agility, and compatibility within the SAQ training that he prepared. These training contained many variables and interactions between easy and difficult movements during performance. The training also required a high level of muscular and nervous preparation, as well as high degrees of motor compatibility. This required the players to exert maximum effort with high accuracy and concentration. Through this, motor compatibility improved. "There is a reciprocal relationship between the components of motor compatibility and technique, which relies entirely on the development of physical qualities such as speed and strength and relies on the safety of organs and nerves, and this requires the efficiency of the nervous system"<sup>(20)</sup>.

## Fourthly, Responsiveness:

It is evident from Table (5) that the mean of the two-dimensional test for the control group is (1.98) and for the experimental group is (1.71). The researcher attributes the development achieved by the experimental group to the use of SAQ training prepared by the researcher, which helped to adapt the nervous system and improve its ability to execute movements. In soccer, the success of proper performance and the speed of the correct response in game situations and rapid changes in competitive conditions depends on the player's ability to quickly respond to various positions, anticipate the opponent, the level of skill performance, and movement speed.<sup>(21)</sup>

## Fifthly, Maximum Anaerobic Power:

It is evident from Table (5) that the mean of the two-dimensional test for the control group is (292.125) and for the experimental group is (316.250). The researcher attributes the development achieved by the experimental group in the two-dimensional test to the specificity of the training prepared by the researcher and the organization of the training according to the principles of sports training and the reliance on scientific foundations in the training prepared by the researcher. The researcher believes that soccer players are in constant motion and constant change, as required by the motor task, and that these movements are of high intensity or difficulty at times. "Soccer player's

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1- velmurugan G. & Balanisany; (2013) Effect of saq training and plyometric training on speed among college men kabaddi player, indian journal of applied research, volume: 31 11432.

2-Qasim Hassan, Mansour Jameel, **Physical Fitness and Ways to Achieve it** :(Baghdad, Higher Education Press, 1998), p. 205.

<sup>21</sup>- Essam Abdel Khaleq, **Sports Training**, 1st Edition :(Cairo, Knowledge Foundation, 2005), p. 139.

movements are in constant change and those movements do not exceed (5-6) seconds and may require muscular repetitions that can last up to two minutes, which means producing anaerobic energy"<sup>(22)</sup> .

#### Sixthly: Rolling

It is evident from Table (5) that the mean score for the two-dimensional test for the control group was (12.77) and for the experimental group was (12.25). The researcher attributes the reason for the improvement in rolling skills to the way the SAQ training are chosen and prepared by the researcher in terms of their suitability for the players and their ages, as well as considering individual differences. Additionally, the proper progression of training, and consideration of the rest periods between repetitions and groups to ensure functional adaptations of the body. The researcher believes that diversified training in terms of their nature of performance lead to developing and enjoying the skills. "The use of varied and objectively training has a positive impact on developing abilities and skills ."<sup>(23)</sup>

#### Seventh: dribbling:

Table (5) shows that the mean score for the dimensional test for the control group is (38.250) and for the experimental group is (41.135). The researcher attributes the improvement in the dribbling test for the experimental group to the adaptation of the internal organs to the training prepared by the researcher. This is achieved through relying on scientific principles regarding the appropriate repetitions and rest periods between repetitions and sets. All of this led to the adaptation of the internal organs to the training. "Adaptation to training is the sum of the changes that occur in the organs and systems of the athlete's body as a result of the specific requirements imposed by physical efforts on their bodies through the training they perform based on the volume, intensity, and frequency of training"<sup>(24)</sup> .

#### Eighthly: Scoring:

From Table (5), it is evident that the mean of the post-test scores for the control group was 9.45 and for the experimental group was 12.72. The researcher believes that developing scoring skills is very important, and this can be achieved by developing physical abilities and other skills such as suppression, handling, and rolling. By progressing in these skills, the player can improve their scoring ability because sometimes scoring requires the player to suppress the ball and then score or roll and then score. The researcher prepared different training with and without the ball and at different distances to develop this important skill. Scoring is one of the most important skills because it

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2-Marzouk Muhammad, **The effect of anaerobic exercises on the development of some special physical abilities and the concentration of coscanis in the blood of young football players aged 15-17 years** :(unpublished master's thesis, University of Baghdad, College of Physical Education and Sports Sciences, 2016), p. 37.

<sup>23</sup>- Qasim Mandalawi et al., **Tests, Measurement and Evaluation in Physical Education** :(Mosul, Higher Education Press, 1990), p. 284.

<sup>24</sup> -Muhammad Reda Ismail, **Field Application of Theories and Methods of Sports Training** :(Baghdad, University House, 2008) , p. 28.

determines the winning team in matches. "The importance of scoring increases because it is a skill that is characterized by difficulty and is one of the most difficult skills in the game"<sup>(25)</sup>.

## 4-Conclusions and Recommendations:

### 4-1 Conclusions:

- 1- The SAQ training helped in developing physical and skill abilities.
- 2- The SAQ training had a positive role in developing the maximal oxygen uptake capacity.
- 3- The use of high-intensity interval training and repetitive training methods had a positive role in developing physical and skill abilities.
- 4- The use of high-intensity interval training and repetitive training methods had a positive role in developing the maximal oxygen uptake capacity.

### 4-2 Recommendations:

- 1- The necessity of using SAQ training in training units.
- 2- The players' commitment to training units when using SAQ training is necessary.
- 3- Emphasis on mixing skills and physical abilities in training units.
- 4- Conducting similar studies on men and other age groups.

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#### Appendix (1)

##### Exercise (1)

Objective: Develop speed, agility, and shooting skills.

Upon hearing the whistle, the player runs for 10m, then runs between 5 cones spaced 1m apart, rolls the ball for 10m, and shoots towards the goal. The time limit for this exercise is 12 seconds.

##### Exercise (2)

Objective: Develop compatibility, responsiveness, shooting skills, and braking.

Upon hearing the whistle, the player jumps on numbered circles with their right foot, runs to point A on the right side, then runs to point B 5m away, takes the ball from the coach, and shoots towards the goal. The time limit for this exercise is 14 seconds.

## Exercise (3)

Objective: Develop explosive power, agility, compatibility, and rolling skills.

Upon hearing the whistle, the player jumps over a 50cm hurdle with both feet, runs while lifting their knees to a height of 10m on the agility ladder, jumps with both feet on circles drawn on the ground, rolls between 5 cones spaced 1m apart. The time limit for this exercise is 20 seconds.

## Exercise (4)

Objective: Develop speed, compatibility, rolling skills, and braking.

Upon hearing the whistle, the player runs for 15m, jumps on circles drawn on the ground with their left foot, rolls the ball for 12m, takes the ball from the coach, and brakes with any part of their body except their arms. The time limit for this exercise is 18 seconds.

## Exercise (5)

Objective: Develop responsiveness, explosive power, agility, and shooting skills.

Upon hearing the whistle, the player starts from a prone position, jumps over a 40cm box with both feet, runs laterally for 10m on the agility ladder, then shoots towards the goal. The time limit for this exercise is 12 seconds.

## Exercise (6)

Objective: Develop responsiveness, speed, braking, and rolling skills.

Upon hearing the whistle, the player starts running towards the cone and rolls for 10m, then runs for 5m, jumps over a hurdle with both feet, rolls between 5 cones spaced 1m apart. The time limit for this exercise is 16 seconds.

## Exercise (7)

Objective: Speed, Explosiveness, Damping, Shooting.

The player starts from a seated position and launches himself upon hearing the whistle, then jumps on a box with a height of (50) cm, then receives the ball from the coach with his chest and shoots on the goal with the inside of his foot, time of the exercise is (10) seconds.

## Exercise (8)

Objective: Compatibility, Speed, Rolling, Damping.

The player jumps from (5) circles drawn on the ground with both legs starting from circle number (1) and sequentially up to circle number (5), then the player runs (20) m, rolls the ball for (10) m, and then damps the ball sent by the coach, time of the exercise is (12) seconds.

## Exercise (9)

Objective: Explosiveness, Agility, Damping, Shooting.

The player jumps over a box with a height of (60) cm, then runs between (6) cones spaced (1) m apart, then receives the ball from the coach and shoots with the outside of his foot, time of the exercise is (12) seconds.

## Exercise (10)

Objective: Speed, Explosiveness, Rolling, Shooting.

The player starts from a lying position on the ground, then launches himself upon hearing the whistle, runs for (15) m, rolls for (12) m, and then shoots with the inside of his foot, time of the exercise is (14) seconds.

## Exercise (11)

Objective: Compatibility, Agility, Damping, Shooting.

The player jumps over (6) circles with both legs from circle number (1) to circle number (6) in sequence, then runs between (7) poles spaced (1) m apart, then damps the ball sent by the coach and shoots with the inside of his foot to the goal, time of the exercise is (16) seconds.

## Exercise (12)

Objective: Explosiveness, Speed, Rolling, Damping.

The player jumps over a barrier with a height of (60) cm, then runs to point (A) and then to point (B) a distance of (5) m between them, then rolls the ball for (10) m and finally damps the ball sent by the coach, time of the exercise is (14) seconds.

## Exercise (13)

Objective: Compatibility - Speed - Damping - Roll

The player jumps on (7) circles with the right foot according to the sequence from circle (1) to circle (7), then the player runs quickly for (20) meters and then dampens the ball coming from the coach with the chest and then the player scores on the goal with the outer part of the foot. The exercise time is (14) seconds.

## Exercise (14)

Objective: Explosive Power - Speed of Response - Roll - Scoring

The player jumps on a box with a height of (60) cm with both feet and then descends from the box, then the player runs to the stake according to the direction given by the coach for (10) m. Then the player rolls the ball for (15) m and then the player scores with the inside of the foot. The exercise time is (15) seconds.

## Exercise (15)

Objective: Compatibility - Agility - Roll - Damping

The player jumps on circles drawn on the ground (6) circles with the left foot according to the sequence, and then the player runs between (8) stakes with (1) m between them, then the player rolls for (10) m, and then the player receives and dampens the ball coming from the coach. The exercise time is (18) seconds.

## Exercise (16)

Objective: Explosive power - Speed - Agility - Scoring

The player jumps on a box with a height of (70) cm and then lands on the ground, and then the player runs for (25) m, and then the player runs between columns with a number of (8) and (1) m between them, and then the player scores with the outer part of the foot. The exercise time is (18) seconds.

Exercise (17)

Objective: Speed of Response - Agility - Roll - Scoring

The player starts by sitting on the ground, and when he hears the whistle, he starts running for (5) m, and then the player runs between (10) stakes with a distance of (1) m between them, and then the player rolls the ball for a distance of (15) m and then the player scores. The exercise time is (18) seconds.

Exercise(18)

Objective: Explosive Power - Speed - Damping - Roll

The player jumps on a hurdle with a height of (1) meter, and then the player runs for (20) meters, and then the player dampens the ball coming from the coach with the foot, and then the player rolls for (10) meters. The exercise time is (20) seconds.

### Appendix (2)

#### The intensity of the training load for the eight weeks

| Eighth week                                                                         | Seventh week                                                                        | Sixth week                                                                          | Fifth week                                                                          | Fourth week                                                                         | Third week                                                                          | Second week                                                                           | First week                                                                            | Week<br>Intensity       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------|
|  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |                                                                                       |                                                                                       | Maximum                 |
|                                                                                     |  |                                                                                     |  |                                                                                     |  |                                                                                       |                                                                                       | Below the maximum       |
|                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |                                                                                     |  |                                                                                       | High Strength           |
|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                       |  | Above-average intensity |
| 95.38mins                                                                           | 86,52min                                                                            | 88,32min                                                                            | 86,51min                                                                            | 77.17min                                                                            | 77.15min                                                                            | 69,22min                                                                              | 67.55min                                                                              | Training Unit Time      |

Total = 647.42 minutes

Appendix (3)

First week

Training unit (1)

special Preparation Period

model 1

Training unit time/ 21,42 min

| s | Exercise Number | Performance time | Number of repetitions | Rest between repetitions | group | Comfort between totals | Total workout time | Total rest period | Total time to exercise with rest |
|---|-----------------|------------------|-----------------------|--------------------------|-------|------------------------|--------------------|-------------------|----------------------------------|
| 1 | 1               | 14s              | 5                     | 30                       | 1     | 4min                   | 70s                | 6min              | 7.10min                          |
| 2 | 2               | 16s              | 5                     | 30                       | 1     | 4min                   | 80s                | 6min              | 7.20min                          |
| 3 | 3               | 22s              | 6                     | 1min                     | 1     | -                      | 2.12min            | 5min              | 7.12min                          |

Second week

Training unit (5)

special Preparation Period

model 2

Training unit time/ 23,11 min

| S | Exercise Number | Performance time | Number of repetitions | Rest between repetitions | group | Comfort between totals | Total workout time | Total rest period | Total time to exercise with rest |
|---|-----------------|------------------|-----------------------|--------------------------|-------|------------------------|--------------------|-------------------|----------------------------------|
| 1 | 13              | 16s              | 6                     | 45s                      | 1     | 4Min                   | 96s                | 7.45min           | 9,21min                          |
| 2 | 14              | 17s              | 5                     | 45s                      | 1     | 4Min                   | 85s                | 7.45min           | 9.10min                          |
| 3 | 15              | 20s              | 5                     | 45s                      | 1     | -                      | 100s               | 3Min              | 4.40m                            |

Third week

Training unit (9)

special Preparation Period

model 3

Training unit time/ 26,20 min

| s | Exercise Number | Performance time | Number of repetitions | Rest between repetitions | group | Comfort between totals | Total workout time | Total rest period | Total time to exercise with rest |
|---|-----------------|------------------|-----------------------|--------------------------|-------|------------------------|--------------------|-------------------|----------------------------------|
| 1 | 7               | 12s              | 7                     | 45s                      | 1     | 4min                   | 84s                | 8.30min           | 9.54min                          |
| 2 | 8               | 14s              | 7                     | 45s                      | 1     | 4min                   | 98s                | 8.30min           | 10.08min                         |
| 3 | 9               | 14s              | 7                     | 45s                      | 1     | -                      | 98s                | 4.30min           | 6.18min                          |

Fourth week

Training unit (10)

special Preparation Period

model 4

Training unit time/ 25,28 min

| S | Exercise Number | Performance time | Number of repetitions | Rest between repetitions | group | Comfort between totals | Total workout time | Total rest period | Total time to exercise with rest |
|---|-----------------|------------------|-----------------------|--------------------------|-------|------------------------|--------------------|-------------------|----------------------------------|
| 1 | 10              | 16s              | 7                     | 45s                      | 1     | 4min                   | 112s               | 8.30min           | 10.22min                         |
| 2 | 11              | 18s              | 6                     | 45s                      | 1     | 4min                   | 108s               | 7.45min           | 9.33min                          |
| 3 | 12              | 18s              | 6                     | 45s                      | 1     | -                      | 108s               | 3.45min           | 5.33min                          |

Fifth week

Training unit (14)

special Preparation Period

model 5

Training unit time/ 29,04 min

| S | Exercise Number | Performance time | Number of repetitions | Rest between repetitions | group | Comfort between totals | Total workout time | Total rest period | Total time to exercise with rest |
|---|-----------------|------------------|-----------------------|--------------------------|-------|------------------------|--------------------|-------------------|----------------------------------|
| 1 | 4               | 20s              | 7                     | 45s                      | 1     | 4min                   | 140s               | 8.30min           | 10.50min                         |
| 2 | 5               | 14s              | 8                     | 45s                      | 1     | 4min                   | 112s               | 9.15min           | 11.07min                         |
| 3 | 6               | 14s              | 8                     | 45s                      | 1     | -                      | 112s               | 5.15min           | 7.07min                          |

Sixth week

Training unit (18)

special Preparation Period

model 6

Training unit time/ 29,35 min

| S | Exercise Number | Performance time | Number of repetitions | Rest between repetitions | group | Comfort between totals | Total workout time | Total rest period | Total time to exercise with rest |
|---|-----------------|------------------|-----------------------|--------------------------|-------|------------------------|--------------------|-------------------|----------------------------------|
| 1 | 16              | 16s              | 7                     | 45s                      | 1     | 4min                   | 140s               | 8.30min           | 10.50min                         |
| 2 | 17              | 17s              | 7                     | 45s                      | 1     | 4min                   | 140s               | 8.30min           | 10.50min                         |
| 3 | 18              | 20s              | 8                     | 45s                      | 1     | -                      | 160s               | 5.15min           | 7.55min                          |

Seventh week

Training unit (19)

special Preparation Period

model 7

Training unit time/ 28,35 min

| S  | Exercise Number | Performance time | Number of repetitions | Rest between repetitions | group | Comfort between totals | Total workout time | Total rest period | Total time to exercise with rest |
|----|-----------------|------------------|-----------------------|--------------------------|-------|------------------------|--------------------|-------------------|----------------------------------|
| 55 | 1               | 16s              | 8                     | 45s                      | 1     | 4Min                   | 128s               | 9.15min           | 11.23min                         |
| 56 | 2               | 18s              | 7                     | 45s                      | 1     | 4Min                   | 126s               | 8.30min           | 10.36min                         |
| 57 | 3               | 18s              | 7                     | 45s                      | 1     | -                      | 126s               | 4.30min           | 6.36min                          |

Eighth week

Training unit (22)

special Preparation Period

model 8

Training unit time/ 30,58 min

| S | Exercise Number | Performance time | Number of repetitions | Rest between repetitions | group | Comfort between totals | Total workout time | Total rest period | Total time to exercise with rest |
|---|-----------------|------------------|-----------------------|--------------------------|-------|------------------------|--------------------|-------------------|----------------------------------|
| 1 | 10              | 16s              | 9                     | 45s                      | 1     | 4min                   | 144s               | 10min             | 12.24min                         |
| 2 | 11              | 18s              | 8                     | 45s                      | 1     | 4min                   | 144s               | 9.15min           | 10.59min                         |
| 3 | 12              | 18s              | 8                     | 45s                      | 1     | -                      | 144s               | 5.15min           | 7.35min                          |