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The effect of the development of maximum oxygen consumption in football players in the recovery of basic skills acquired during periods of muscle fatigue category less than 17 years (an experimental study on the teams of the State Association of the mandate of the market for the sports season 2016/2017).

تطوير الإستهلاك الاقصى للأكسجين لدى لاعبي كرة القدم و دوره في أداء المهارات الاساسية المكتسبة خلال فترات التعب العضلي فئة اقل من 17 سنة (دراسة تجريبية على فرق الرابطة الولائية لولاية سوق أهراس الموسم الرياضي 2016/2017).

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Abstract :

The objective of this research is to identify the relationship between one of the concerns of physiological characteristics of developing the maximum oxygen consumption and the extent of retrieval of the basic skills acquired in football for a class of less than 17 years during periods of muscle fatigue. To study the effectiveness of the development of maximum oxygen consumption, The study sample consisted of 38 randomly selected players, divided equally between two experimental and a witness groups. The researcher relied on the experimental method..

Keywords: consommation maximale d'oxygène, compétences de base en football, fatigue musculaire, football.

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الملخص :
هدف هذا البحث الى التعرف على العلاقة الموجودة بين احد الهم الخصائص الفيسيولوجية و المتمثلة في تطوير الاستهلاك الأقصى للأكسجين و مدى إسترجاع المهارات الأساسية المكتسبة في كرة القدم لفئة اقل من 17 سنة خلال فترات التعب العضلي , و لدراسة مدى الفاعلية لتطوير الاستهلاك الأقصى للأكسجين ,قام الباحث بدراسة ميدانية على لاعبي فرق الرابطة الولائية لولاية سوق اهراس اقل من 17 سنة , حيث شملت عينة الدراسة على 38 لاعب اختارهم بطريقة عشوائية,مقسمة بالتساوي على مجموعتين تجريبية و شاهدة ,و قد اعتمد الباحث في هذه الدراسة على المنهج التجريبي.
الكلمات المفاتيح: الاستهلاك الأقصى للأكسجين, المهارات الأساسية في كرة القدم ,التعب العضلي , كرة القدم.

-Introduction:

Due to the great importance of football in various developed and developing countries, experienced people always think about finding the best scientific methods that develop the game and select the necessary training programs to reach the high levels. Therefore, the process of preparing athletes to participate in sports competitions is a very important process focused on several of these factors how to choose an effective training program, as the recent changes in the achievement of football linked to accelerate the activities of defensive and offensive with a high level of strength as well as high skill level of players and the adoption The ball is full, so that the player occupies more than one position in the team (farid, 2019), that is, we see the defender contribute effectively to the attack and the attacker retracts to defend the goal and despite the endurance of the player to this high effort, he has to keep fit throughout the period Spotted

(1992) Dufour, and it should be the player to develop a physical fitness and efficiency in line with the physical activity requirements of the idea of football.

Endurance is one of the components of physical performance for all athletes in different sports that require continued effort for a long time. It expresses the ability to perform a certain sports activity for a long period of time without a decline in the level of performance. As well as the type of game, or effectiveness in terms of distance or duration of time. Also endurance is linked to the phenomenon of fatigue, it enters in every situation regardless of whether the work is physical or mental, with the participation of large muscle groups or small and under different external conditions, as fatigue Is the result Endurance works to resist fatigue by overcoming it during and after performance, as the development of endurance helps in the speedy return to normal state after performing physical effort. "The ability to resist fatigue in the case of physical exercise for a long period of time." (Magd)

And Perhaps the most important indicators that reflect the athlete's aerodynamic capacity are the maximum oxygen consumer and the anaerobic threshold. The term "maximum oxygen consumption" is termed as a measure of maximum aerobic capacity. This means the maximum amount of wind energy an individual can produce per minute. At lower levels Of the maximum oxygen consumption in the range of less than 80%, so this ability is called the anaerobic threshold. (Fattah, 1997)

"Hazaa Mohammed Hazaa " said that The anaerobic differential threshold is considered to be a decisive factor in an individual's ability to perform a strenuous

exercise at a high percentage of maximum oxygen consumption without entering anaerobic metabolic processes. Football is considered to be one of the endurance activities that depend on the efficiency of the respiratory system. It also contains a combination of aerobic and anaerobic endurance. Mathematical Specialist. (Ahmed Mohamed KhaterProf. Dr. Ali Fahmy Al-Baik)

Given the importance of developing the maximum oxygen consumption of football players in influencing the overall outcome of the results of the games, especially in the final stages of the game, where most players reach fatigue, we are asked the following question:

Is there a relationship between the development of maximum oxygen consumption and the restoration of basic football skills in players during periods of muscle fatigue?

And then we address the following sub-questions mentioned:

- Is there a statistically significant relationship between the development of the maximum oxygen consumption level and the upgrading of the offensive skills acquired?
- Is there a statistically significant relationship between the development of the maximum level of oxygen consumption and the recovery of skills common to defense and attack?
-Is there a statistically significant relationship between the development of the maximum oxygen consumption level and the recovery of defense skills?

1.Theoretical background.

- Definition of skill:

Skill has been defined as the ability to perform movement in different positions. This means that movement leads to a smooth, easy and economical work as harmonious kinetic responses are directed by the nerves to the muscle groups of the movement. It delivers full attention to the ocean according to a predetermined kinetic program. It is the accuracy of performance when the motor path meets the performance path without full attention to the course of things (Charles Hughes, 1990). Stress or psychological stress, incompatibility between neuromuscular guidance, incoherence and harmony between working muscles and auxiliary and opposite thinking too much movement details. (Ahmed Mohamed Khater, 1996)

- Basic football skills:

1) Offensive skills: All the skills given by players when they acquired the ball to build an attack against the goal of the team struggling to achieve a goal (Hanafi Mahmoud Mukhtar, 1998, p. 76) and include:

a. Rolling: The ability of the player to move and move the ball from one place to another in narrow areas with the presence of one or more opponents, and move is either straight or transverse or diagonal and in the form of short and balanced steps while keeping the ball under control.

B. Attribution: The location taken by a player of the attacking team is close to the player holding the ball, and the attribution is either individual, even or collective. It may be from the back and front straight or lateral range of support from (0 - 0) cold and perhaps the shape of the triangle taken by the players is one of the oldest forms.

C. Handling: is the most frequent skill on the field and the fastest way to get the ball to the colleague and the most effective in skipping opponents and easier to reach the opponent's goal. It means the ability to deliver the ball to the colleague easily and effectively and intentionally, whether in the vacuum or in direct form.

D. Reception of the ball: Reception means the ability of the player to put the ball at his disposal in a way that is measured according to the requirements of the situation and as allowed by the law of the game.

e. Running ball: it is the process of moving the player and the ball in areas free of competitors and is done by hitting the ball and running behind them at rapid steps, and this type of skill is in quick counterattacks, and requires a sound tweet with a good reading of the sites players colleagues and competitors alike through Continuous view of the stadium.

f. Dribbling: The ability of a player who has acquired the ball to pass one or more opponents through control and mastery and deception, provided that the ball remains under his control.

G. Correction: Correction is the primary means of scoring goals, which must be mastered by the players, which is no longer the exclusive domain of the

attackers, but all players have to train and master them from different distances and directions.

2) Common skills of defense and attack: These skills can be used by defensive players and attackers alike, both when the acquisition or loss of the ball and midfielders are the most used players for these skills because of their defensive and offensive duties,

a. Attachment: Attachment means trying to take the opposing player out of the game for some time by blocking his vision and restricting his movement and standing between him and the teammate of the barrier or between him and the ball, according to the requirements of the situation in defense and attack.

B. Deception: a physical movements by the player or without the ball in order to retain the ball or get rid of the opponent or cut the ball and distracted by creating positions in favor of the player who deceived is attracted the attention of the opponent mock movement leads then a basic movement was decided in advance.

C. Salutation: It means the process of guidance between the players through speech and signals, just as the goalkeeper guides his teammates in the defense and the player Alqashash when guiding his teammates, the process of communication has a high technical value, especially when the team leader guides his teammates.

In each of the centers of play has become a leader guiding his colleagues, whether in defense or attack.

D. Calling: is the process of pushing the opponent at the top of the arm (shoulder area) Purpose Control the ball and remove the taste and must be performed properly and as allowed by the law of the game, and used caller when both defense and attack, and the best timing performance Calling when the opponent is based on the distant man and at the moment of lifting The nearby foot is easy to push and disturb.

3) Defensive skills: those movements performed by the players after losing the ball for the purpose of re-acquisition or remove the danger from their goal and prevent injury, and these movements always lead without a ball, and to be known that the process of defense aimed at the acquisition of the ball and at a minimum distract attack The opponent has closed the defense outlets and prevented him from scoring a goal.

a. Defensive pause: It means the defending player stands between the ball and the goal of the defending or moving player towards the vacuum, which is likely to reach the ball.

B. Attacking the ball: Attempting to pounce on the opposing player to draw the ball and acquire or distracted to thwart the attack, and before attacking and swooping, players must learn how to put pressure on competitors when the ball is lost.

C. Coverage of the ball: Covering is one of the defensive skills, which shows the cooperation between the team members, and means the defender player grooming and standing behind his teammate, the first defender who confronted the ball-winning attacker protection and guidance of the first defender as well as

the process of defense and attack the ball in case the attacker can pass the first defender Right direction.

d. Dispersing the ball: means the ball directed from the opponent to the penalty area head or foot directly and without reception and the process of dispersion is a defensive skills often used by the defender team, preferably dispersed to the sides so as not to allow the opponent to aim on the goal and prefer to distract to the destination of the ball Being became free after playing the ball. (Mawla, 1997)

- Definition of maximum oxygen consumption:

Maximum oxygen consumption (Vo2max) is defined as the maximum amount of oxygen that can be consumed per unit time during muscular exertion, and is also defined as the largest (maximum) oxygen level at sea level consumed per unit time during muscle effort. (PD, 1999)

2. Similar studies.

- Sadeq Ben Hammou's study 2006: "Test the estimation of air power (vo2max) for runners of long and short half and long distances" The aim of this study was to determine the maximum oxygen consumption ((vo2max and the maximum air speed at runners of short and medium distances (800 _ 1500 meters) and long (5000 meters) Using two field tests:

Cooper Cooper test track.

- Navette track test.

- The level of the relationship between the two tests and the performance efficiency for 800 - 1500 meters and 5000 meters.

The results showed that:

- Cooper test is positive that it is simple and easy to implement, but carries some disadvantages such as the maximum airspeed limit, you can use it as a method of underestimating the indirect consumption of maximum oxygen.
- The values of (vo2max) are closely related with the performance effectiveness of the mid-distance races of both groups.
- Analysis of the results of the pneumatic power evaluation indicates that there is no difference between the two groups.
- Muftar Mokhtar 1999: "The study of the air power of Algerian runners for long and long distances" The study aimed to:
- Determine the morphological and physiological characteristics of the Algerian runners for long and half distances

Long starting from the evaluation of the airway (vo2max) threshold and anaerobic capacity.

- Study the impact of training on these standards.

The study has shown the following results:

- (vo2max) is one of the most important determinants of performance for the long distance runners, especially with the competence of 1500-3000 meters.
- The development of anaerobic power allows runners to improve the speed element.
- (v.m.a) can be relied upon to form training programs and develop maximum aerobic capacity by specialty.

3.Methodology

- The methodology used in the research: The researcher used the experimental method in an equivalent group method, where the researcher divided the sample into two groups, the first control and the other experimental being the most appropriate to address the problem raised in the study.

Study community: The research community included the football players of the state of Souk Ahras U17 for the sports season 2017/18, who were 336 players who are active in the championship section honor and above.

- Research sample: so that after adjusting the teams that correspond to the age of the research and the practice of training sessions at similar times a lottery was conducted including selected samples and method of work, where the draw is done by dividing each team from the State Association of the Wilayat of Souk Ahras into three layers, namely: - Defense players

- Players attack

- Midfielders

Considering that the research community is N which consists of 14 teams and has 336 players

Divided into layers as follows:

- ✓ Number of attack players: 84 players.
- ✓ Number of defense players: 131.
- ✓ Number of Midfielders: 121.

The search sample is "n", and the layers are "t"

The researcher decided to use a sample of 36 players representing 10% of the research community

We extract the sample layers according to the following equation:

$$n_p = \frac{t \cdot n}{N}$$

The following table shows the total sample layers:

position play	Number of pleyer	Sample volume	Experimental group	Control group
Defense	131	14	7	7
attack	84	9	5	5
The middle	121	13	7	7
Total	336	36	19	19

Table (1): represents the different layers of the sample

- Field information collection tools: In this study we relied on the basic skills tests in football offensive, defensive and joint defense and attack in conjunction with the measurement of maximum oxygen consumption using the test Cobor to achieve the condition of muscle fatigue when the implementation of tests, where the tests were designed by a researcher Presented to a group of arbitrators consisting of doctors in the field of physical sports and football coaches and the approval of the tests by 90% due to clarity and ease of handling.

- Tests used:

1) Cooper test:

Objective: To measure maximum oxygen consumption.

• **Tools:** athletics track - clock - whistle - data form.

• **Procedure:** The test is conducted at the athletics track, and is based on running as far as possible in a time of 12 minutes after the warm-up process of 10 to 15 minutes before the test, to be the distance covered in kilometers within the following equation (Felio Carmelo Ruiz munuera.p 2006,): Vo2 max = 22.31 * d-11.288

2) Testing offensive skills acquired:

• Objective of the test: To measure the recovery of skills acquired by attackers immediately after Cooper test to achieve muscle fatigue condition.

• Tools: football stadiums, bibs of different colors, cones, tombstones, a form on which the test results are written.

Method of assessment tests: The skill is analyzed into 3 parts given on each part one point They are shown in the following table:

Skill	Rolling	Attribution	Handling	Receiving the ball	Control the ball	Running with the ball	Shuffle	Throwing	Total
Point	3	3	3	3	3	3	3	3	24

Table (2): represents the scale of the attacking foals

3) Test the basic skills acquired between defense and attack:

• **Objective of the test:** To measure the extent of retrieval of the acquired skills shared by the midfielders.

• **Tools:** soccer balls, bibs of different colors, cones, tombstones, a form on which to write the results.

• **Test assessment method:** The skill is analyzed into 3 parts given on each part poin.

Common skills	Defense-related attachment	Attack associated with the attack	Deception	Calling	Salutation	Total
total	3	3	3	3	3	15

Table (3): represents the ladder of common skills.

4) Basic defense skills test:

• **Objective of the test:** the extent to which the defensive skills acquired by the defense players.

• **Tools:** soccer balls, bibs of different colors, cones, tombstones, a form on which to write the results.

• **Test assessment method:** The skill is analyzed into 3 parts given on each part point One shown in the following table:

Defensive skills	Defensive stance	Attack the ball	Cover the ball	Distracting the ball	Total
Total	3	3	3	3	12

Table (4): represents the ladder of defending skills.

- Stability of the test tools: In order to identify the validity of the data collection tools (tests: Cooper, offensive skills, common skills, defensive skills.) The researcher found the stability factors through the method of testing and retesting, where they were applied to a group of 12 players The researcher used the Pearson simple correlation coefficient to find consistency between the results as shown in the following table:

Tests	Cooper	Offensive skills	Common skills	Defensive skills
Correlation coefficient	0 .82	0.92	0.87	0.85

Table (5) shows the stability of the test coefficient

Statistical methods used: football stadium, track athletics, bibs of different colors, cones, tombstones, balls, the researcher used to process his data on the

package of statistical programs for social sciences "spss" and we extracted the following: arithmetic mean, standard deviation , Pearson simple correlation coefficient, the value of (T) calculated for two independent samples.

4.Presentation, analysis and discussion of results:

a. Presentation and discussion of the first hypothesis:

For the control group: In the pretest, I obtained an average of 8.14. A standard deviation of 1,57, obtained in the post-test, a mean of 9.71 and a standard deviation of 2.13, and the calculated values of (T) 1.86 less than (C) tabular 2,44 at the degree of freedom 6 and the level of significance. , 05. Thus, there is no statistical significance for the differences, and random evolution is due to the differences, while we observed that the simple Pearson correlation coefficient between the test results and the maximum oxygen consumption R1 = 0.94 and R2 = 0.94 in the pretest and posttest respectively, therefore there is a complete direct correlation between Maximum oxygen consumption and recovery of common core skills during periods of fatigue.

For the experimental group:

In the pre-test I got an average of 8.28. A standard deviation of 1.11, and in the post-test obtained an arithmetic mean of 12.71 and a standard deviation of 1.38, and the calculated values of (T) 14.89 were greater than (C) tabular 2,44 at the degree of freedom 6 and the level of significance. , 05. Thus, there is a statistical significance of the differences, ie the proposed training program for the development of consumption has positively affected the level of recovery of basic offensive skills in the experimental group, as we observed the simple

correlation coefficient Pearson between the test results of the skills and the maximum oxygen consumption R1 = 0.85 and R2 = 0.94 in There is a direct correlation between the level of maximum oxygen consumption and the recovery of basic offensive skills during periods of fatigue.

B. Presentation and discussion of the second hypothesis:

For the control group:

In the pre-test I got an average of 8.14. A standard deviation of 1,57, obtained in the post-test, a mean of 9.71 and a standard deviation of 2.13, and the calculated values of (T) 1.86 less than (C) tabular 2,44 at the degree of freedom 6 and the level of significance. , 05. Thus, there is no statistical significance for the differences, and the random evolution is due to the differences, while we observed that the simple correlation coefficient Pearson between the test results and the maximum oxygen consumption R1 = 0.94 and R20.94 in the pre- and post-test respectively, and therefore there is a direct correlation between the level Maximum oxygen consumption and recovery of common core skills during periods of fatigue.

For the experimental group:

In the pre-test I got an average of 8.28. A standard deviation of 1.11, and in the post-test obtained an arithmetic mean of 12.71 and a standard deviation of 1.38, and the calculated values of (T) 14.89 were greater than (C) tabular 2,44 at the degree of freedom 6 and the level of significance. , 05. Thus, there is a statistical significance of the differences, ie the proposed training program for the development of consumption has positively affected the level of recovery of

basic offensive skills in the experimental group, as we observed the simple correlation coefficient Pearson between the test results of the skills and the maximum oxygen consumption R1 = 0.85 and R2 = 0.94 in There is a direct correlation between the level of maximum oxygen consumption and the recovery of basic offensive skills during periods of fatigue.

C. Presentation and discussion of the third hypothesis:

For the control group:

In the pretest, I got an average of 6.60. And the standard deviation of 2.07, and obtained in the post-test on the arithmetic mean of 7.4 and standard deviation of 1.51, and the values of (c) calculated 1.63 less than (c) tabular 2.44 at the degree of freedom 4 and the level of significance. , 05. Thus, there is no statistical significance for the differences, and the random development is due to differences, while we observed that the simple correlation coefficient Pearson between the test results and the maximum oxygen consumption R1 = 0.96 and R2 = 0.02 in the pre- and post-test respectively, There is a direct correlation between the maximum level of oxygen consumption and the recovery of basic offensive skills during periods of fatigue in the pre-test, but a slight correlation is observed in the post-test. This is due to the nature of the defense skills in which the laboratory finds sufficient time to retrieve them compared to offensive skills and common defense skills. And attack .

For the experimental group:

In the pre-test I got an average of 6.00. And a standard deviation of 1.58, and obtained in the post-test on an arithmetic average of 9.4 and a standard

deviation of 2.07, and the values of (c) calculated 13.8 were greater than (c) tabular 2,77 at the degree of freedom 4 and the level of significance. , 05. Thus, there is a statistical significance of the differences, ie the proposed training program for the development of consumption has positively affected the level of recovery of basic offensive skills in the experimental group, as we observed the simple correlation coefficient Pearson between the test results of the skills and the maximum oxygen consumption R1 = 0.95 and R2 = 0.85 in There is a direct correlation between the maximum oxygen consumption level and the recovery of basic defensive skills during periods of fatigue.

summary.

After the studies carried out on the football team of the middle class which is our sample and from the results obtained, we have concluded the following conclusions:

Through the results of the control group that practice the normal training program three times a week, we have shown that this group has given tangible results and this is because there are significant differences with numerical indication that the exercise of the normal training program leads to the development of maximum oxygen consumption for all players in their different positions, which led Develops the recovery of basic skills during periods of fatigue that have been acquired and are automatically recovered during rest periods.

Moreover, the results of the tests of the control group showed that there is a direct correlation between the development of the maximum oxygen

consumption and the recovery of the basic skills acquired, confirming the existence of a statistically significant relationship between them.

As the experimental group that practiced the normal training program three times a week in addition to the proposed training program for the Strand, the results were generally very clear and with significant differences also clear, in all tests and all positions, whether compared with the control group or through the correlation coefficients between retrieval Basic skills in football, which confirms the validity of the general hypothesis developed by the researcher, which provides a statistically significant link between the development of maximum oxygen consumption and the recovery of basic skills in football. The defense of the defense players depends primarily on the reaction force of the players and is mainly responsible for the nervous system because there is no statistically significant relationship between the control group and the experimental group when calculating the value of (T), where the researcher explained the evolution to the normal training program that Contributed to the development of reaction speed.

Theoretical studies have proven that the use of a training program to develop maximum oxygen consumption leads to better results, in addition to that the studied age facilitates the development of maximum oxygen consumption and this is due to the maturity of all the physiological and physical characteristics of the players in this stage, and thus this period is suitable for the development of consumption Maximum oxygen.

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