The journal « sports creativity »

Volume: (12) / N°: (01)-(2021), p95-114

The effect of training with mini games on some biochemical indicators for football players under the age of 17 years

أثر التدريب بالألعاب المصغرة على بعض المؤشرات البيوكميائية للاعبي كرة القدم فئة أقل من 17 سنة

Benchebha Tariq [1], Sadek ismail [2]

[1] Institute of Science and Techniques of Physical and Sports Activities - University of Djilali Bou-Naama , khemis Miliana, The science and practice of sports and rhythmic physical activities laboratory, tarek.benchebha@univ-dbkm.dz

[2] Institute of Science and Techniques of Physical and Sports Activities - University of Djilali Bou-Naama , khemis Miliana , Sports Laboratory, Health and Performance , s.smail@univ-dbkm.

Received: 02/01/2021 **Accepted: 06/03/2021** **Published:01/06/2021**

Abstract : The study aimed to know the effect of training with mini games on some biochemical indicators (red blood cells, lymphocytes and eosinophil cells), the researcher adopted the experimental approach, and the study population represented in football players a category less than 17 years for the department of Bou-Saada, the sample was chosen. Intentionally, which was represented by 16 players from Amal Bou Saada team of less than 17 years, where the researcher designed a training program consisting of 24 unites and was applied to the individuals of the sample, and after collecting data by laboratory analyzes and statistically processing we reached the following results: Training leads With mini-games to increase the number of red blood cells, lymphocytes, and the number of eosinophil cells

Keywords: mini-games, lymphocytes, Eosinophil

الملخص : هدفت الدراسة إلى معرفة أثر التدريب بالألعاب المصغرة على بعض المؤشرات البيوكميائية (كريات الدم الحمراء ، الخلايا اللمفاوية و كريات الايزونوفيل) ، اعتمد الباحث المنهج التجريبي ، و تمثل مجتمع الدراسة في لاعبي كرة القدم لأقل من 17 سنة لدائرة بوسعادة ، تم اختيار العينة بطريقة عمدية و التي تمثلت في 16 لاعب من فريق أمل بوسعادة لأقل من 17 سنة ، حيث قام الباحث بتصميم برنامج تدريبي مكون من 24 حصة و تم تطبيقه على أفراد العينة ، و بعد جمع البيانات بواسطة التحليلات المخبرية ومعالجتها إحصائيا توصلنا للنتائج التالية : يؤدي التدريب بالألعاب المصغرة إلى زيادة كل من عدد كريات الدم الحمراء ، الخلايا اللمفاوية ، و عدد كريات الايزونوفيل المناعية .

- **الكلمات المفتاحية :** الألعاب المصغرة ، الخلايا اللمفاوية ، الايزونوفيل .

Corresponding author: Benchebha Tariq , e-mail: tarek.benchebha@univ-dbkm.dz

- Theoretical chapter

*** Introduction and problematic of the study**:

In recent years, football has witnessed an increasing and remarkable development in all aspects of physical, psychological, tactical and skill. These aspects unite in common to reach players to the sports performance through training based on scientific principles, and great attention is focused on basic skills that are considered A valuable indicator of the players' abilities in the implementation of the main tasks in the game, and there are physical abilities such as strength, endurance, speed and agility that have important Connotations for team players performing technical tasks, and the sports training process in recent years has witnessed a remarkable development in All areas, especially in the physiological aspect of sports training, that is, the link between the process of sports training and its effect on the functional systems of the body, and the main goal of the latter is to try to reach the individual to the highest possible level of sports activity practiced. This can only be achieved through good physical preparation and strenuous training that affects the development of biochemical variables and immune characteristics of the body using appropriate exercise and training. (Ahmad Nasreddin, 2003, p. 23).

It is known that the physical preparation of soccer players has many different methods and styles that are followed each time in order to achieve the desired results, among the modern training methods we mention the combined physical training method as it is a type of training that is characterized by the incorporation of the peculiarities of activity in physical work and which allows the acquisition of the physical and skill capabilities of the players. Among the methods used in this type of training with mini-games, which are programming exercises with the ball in different areas and with specific laws by the trainer, as their forms differ according to the different training objectives, and in this regard

(Hill-Haas) sees that the mini games have been used widely due to their great effectiveness in developing athletic performance. Many research papers have been published on the physical and physiological responses that occur during mini games. (Khalif Abdel Qader, Mazari, 2019, pp. 464, 465). Perhaps what distinguishes this method from the rest of the methods is that it mainly depends on presenting a set of metered exercise in the form of small games with physical goals and at the same time skillful and tactical goals, as this method is concerned with developing physical qualities during training in competitive situations similar to what happens in matches where the quality of the selected games helps in developing and progressing skills and raising the level of physical performance.

And since most specialists agree that the style of mini-games is effective in developing physical and skill characteristics at the same time, we wanted through this study to know the effect of this method on some biochemical indicators on a sample of soccer players less than 17 years old. By deliberately choosing this category as falling within the stage of adolescence, which is considered one of the age stages characterized by increased physical and physiological changes (Saeed Mouhamed Bahalder, 1986, p. 26), and during this period the best possible sports achievement in a person's life will be achieved, Sports psychologists have called it the `` age of heroism '' and sports record-breaking (Saeed Mouhamed Bahalder, 1986, p. 28). Some researchers have touched on similar topics to the subject of our study, such as:

Ibtihaj Rifaat study 2015: The effect of a proposed training approach using some herbs to develop strength and characteristic of speed and some blood components for young Taekwondo players.

Where the study aimed to identify the effect of the proposed training approach to develop strength characterized by speed and the use of some natural herbs as

a means to improve performance on some blood components of young Taekwondo players, and the researcher used the experimental approach in a one-group method to suit the nature of the problem to be investigated and the research sample consisted of The youth players of the Electricity Club in the Taekwondo game. The research community consisted of 14 players representing the community. As for the research sample, it consisted of 10 players. The pre-tests for the research sample were conducted in El djoulan room of the Electricity Club located in Sadr City, Where the research-specific tests were applied to the sample and the training curriculum continued for a period of 06 weeks, at a rate of 3 training units per week, and after performing the laboratory analyzes, the researcher reached: There was a clear progress in the level of strength characterized by speed and this was proven by the significant differences between the two tests The study found significant differences between the pre and post test in the blood components (blood cells), Red blood cells white blood cells, hemoglobin concentration, the degree of blood concentration, the rate of blood deposition and in favor of the post test. The results also showed a clear development in the physical and physiological tests of the research sample in the post test after consuming the natural herbal compound.

Researchers Rawabi Seif El-Din, Youssef Fathy 2020, also addressed an article similar to the subject of our study entitled: The effect of both high-intensity intermittent training and pleometric training on the motility of some immune blood elements in football players - senior.

The most important goal of the study was to compare two methods of muscle strength training (high-intensity intermittent and plyometric training) on the effect that these two methods can have on the level of an individual's immune system. Where the aim was to identify the differences between the pre and post analyzes of the two experimental groups in the number of white blood cells of

the players, where the researcher used the experimental method and that on a random sample of 12 players - senior. Qaws Youth Club, season 2019/2018, and the team was divided into two experimental groups (6 players intermittent high-intensity weight training, 6 players plyometric training). In order to verify the validity of the hypotheses, the student conducted a set of laboratory measurements and tests (analyzes of blood samples). The results were as follows: The training session led to the plyometric training and high-intensity intermittent training resulted in statistically significant differences between the pre and post analyzes in most white blood cells.

Through the previous intellectual principles and previous similar studies, we summarized the problem of the study in the following question: Does training with mini-games affect some of the biochemical indicators (red blood cells, the number of lymphocytes, the number of eosinophils cells) of football players?

This was divided into the following partial questions:

- Are there statistically significant differences between the pre and post-measurement of the experimental group in the number of red blood cells?
- Are there statistically significant differences between the pre and post-measurement of the experimental group in the number of lymphocytes ?
- Are there statistically significant differences between the pre and post-measurement of the experimental group in the number of eosinophils cells ?

To answer the general question, we guessed the following general hypothesis:

Mini-game training affects some biochemical indicators (erythrocytes, lymphocyte counts in blood, eosinophils) in soccer players.

We also formulated the partial hypotheses as follows:

- There are statistically significant differences between the pre-measurement and the post-measurement of the experimental group in the number of red blood cells in favor of the post-measurement due to training in the style of mini-games.

- There are statistically significant differences between the pre-measurement and the post-measurement of the experimental group in the number of lymphocytes in the blood in favor of the post-measurement due to training in the style of mini-games.
- There are statistically significant differences between the pre-measurement and the post-measurement of the experimental group in the number of eosinophil cells in the blood in favor of the post-measurement due to training in the style of mini-games.

The objectives of the study were summarized in knowing the effect of training with mini-games in improving the red blood cells index, the number of lymphocytes, in addition to the number of eosinophil cells among football players, and drawing attention to this distinctive training method that saves time and effort due to what it includes of types of preparation.

Which confirms the importance of the research in being a link between academic work and field work,and the importance of the research and the need for it in to two main axes and aspects which are: the theoretical importance in the first place is represented in adding an important scientific reference to the library in general and specialists in particular. and we especially mention researchers and coaches in football. In addition to the field importance and it appears in knowing the effect of using mini-games training as a method for developing some biochemical indicators that have indications of the player's performance during competition, such as red blood cells, which are very important in the process of transporting oxygen and aerobic work that represents the dominant system in athe football game, in addition to the index of eosinophil cells in the blood, which is an important component of the immune system and contributes to maintaining the health of the athlete. The importance of field research is also included in knowing the effect of the mini-games style that combine physical,

skill and planning exercises in increasing the number of lymphocytes that play a very large role in the immune system and represented in the production of antibodies that work to eliminate germs and extraneous viruses on the body and thus allows the athlete to maintain a good physical fitness, as the study enables him to keep pace with developments in modern training methods and to give sports training a clear scientific character.

The practical chapter :

1- Followed Methodologies :

- **Exploratory study:** The exploratory study was applied through two main stages **:**

The first stage: through reviewing football resources, as well as previous and similar studies, where we have identified the most important biochemical characteristics of a football player, which can be measured by blood analysis, and that after consulting a group of specialist doctors.

The second stage: taking the preliminary steps and joining the team's training headquarters after we obtained the approval of the club president and the aim of the club visit was:

1- Taking the approval from the trainer to implement our training program and to know if it is compatible with his training plan.

2- Taking the approval of the players to conduct blood tests before and after the program.

3- Determining the number of shares that will be given to us during one weekly unit.

4- Identify the difficulties that may face us at work.

5- Knowing the capabilities and means available to the Amal Bou Saada team.

6- Control all organizational matters before starting work.

- **Approach**: we relied on the experimental method, with designing one group
- **Study population and sample:**
- **A- Study population:** We have identified footballers under the age of 17 for the teams active in Bou Saada district as a community for our studies.

B- The study sample: We relied in our research on the intentional sample, Where we have selected 16 from Amel Bou Saada Football Club less than 17 years .

- **The homogeneity of the study sample:** In our study, we found the homogeneity of the sample in some variables that may affect the dependent variable and that indicated it the other research and previous studies, and in our study we identified the variables that may affect the dependent variable which are corporeal variables, and in order to achieve this we Conducting homogenization of the study sample, to adjust the following variables: Biological age as measured by ratio and height measured in centimeters, Weight measured in kilograms.
- **Moderation of the sample:** To ensure the normal distribution of the sample, we calculated the Coefficient of torsion and the Shapiro-Wilk test, which is used to check how close the scores are to the normal distribution.
- **Coefficient of torsion:** Acceptable values of the torsion coefficient are between (2, 2-) the most commonly used test.

Table 1. shows the values of the medium, standard deviation and torsion coefficient of the experimental sample with respect to age, weight and height.

Variables	Sample number	Medium	standard deviation	Coefficient of torsion
Age	16	16.56	0.51	-0.279
Weight		51.18	2.78	0.368
Height		1.67	0.062	0.984

Through Table No. (01), which shows the extent of homogeneity of the experimental sample in terms of age, height and weight, we note through the table that the value of the medium was (16.56), the standard deviation (0.51), and the coefficient of torsion (0.279) for age, Regarding weight, the mean value was (51.18), standard deviation (2.78), and torsion coefficient (0.984), and for length, the mean value was (1.67), standard deviation (0.062), and torsion coefficient (0.368). torsion is a criterion (2 and 2-), so the data are close to a normal distribution.

- **Data collection tools:** We have used field tests (height and weight tests), laboratory tests (blood analysis)

- **Training program :**The scientific basics for building the training program: After the researcher's use of many specialists in sports training and football, and many scientific references and previous studies in determining the physiological indicators under study (red blood cells, lymphocytes, eosinophils), the researcher built a training program in the manner of mini-games, and Where the researcher

noticed that when applying this training method, some scientific basics must be taken into consideration:

- Taking into account the age group "less than 17 years"

- Taking into account the period of its application, the "competition period".

- Respect the principles of sports training.

- Respecting the principles of the training method in mini-games, the training load (game time, playing space, ...)

- **Content of the training program**:

The duration of the program implementation is 12 weeks.

- The total number of training doses is 24 training doses, at a rate of two (02) doses per week.

- The time for each training dose is from 90 min to 120 min

- As for the training load, it was high due to the period of its application (competition period).

- The researcher relied on rationing the load on percentages of maximum intensity, playing space, game time and number of repetitions, rest time between repetitions and groups.

- **Statistical methods:** The goal of using statistical techniques is to come up with quantitative indicators that help us in analyzing and interpreting, and judging. the most important techniques that we used in our research were:

- DF: degree of freedom, Sig: moral significance, level of significance 0.05 was chosen in this study, Medium ,Standard deviation ,Coefficient of torsion ,T test of two correlated samples.

2- Exposure , analyses and result exam :

A- Presentation and analysis of the first hypothesis results :

The text of the hypothesis: There are statistically significant differences between the pre and post-measurement of the experimental group in the number of red blood cells and in favor of the post-measurement due to the method of training with mini-games.

Table2. shows the differences between the pre-measurement and the post-measurement of the experimental group in the number of red blood cells.

	$\overline{X}$	S	T value calculated	DF	level of significance	Sig	Stat significance	Evolution %
pre-measurement	14.64	0.73	-4.056	15	0.05	0.01	Significant	1.19%
post-measurement	15.01	0.77						

From the above table, we notice that the sample obtained a medium of (14.64) and a standard deviation of (0.73) in the pre-measurement, while the medium was (15.01) and a standard deviation (0.77) in the post measurement, and the value of T reached (-4.056) At a degree of freedom (15) and a level of significance (0.05) and the value of the moral significance was sig (0.001), and

by comparing the significance with the level of significance, we find that sig = 0.001 <α = 0.05 and this is statistically significant, and the percentage of development is (1.19%) .Thus, it can be said that there are statistically significant differences between the pre and post-measurement of the experimental group in the number of red blood cells.

- **Discussion of the first hypothesis results:**

By displaying the results of table No. (02) for testing the number of red blood cells, and after obtaining the results of the pre and post-measurement of the sample and the comparison between the two measurements, the following is revealed: The value of the moral significance (0.001) is smaller than the level of significance (0.05). This indicates that there is a statistical indication in favor of the post-test, which confirms that training in the style of mini-games has positively affected the number of red blood cells, and as table No. (02) shows us the rate of development (1.19%) between the pre and post measurements.

The increase in the number of red blood cells in favor of the post measurement of the sample is due to the method of training mini-games, and the results of the research support the findings of previous research as he states (Abou Al-alaa Abdel Fattah, 2003, p. 345) that sports training leads to changes in the blood as it occurs to other functional organs of the body, and these changes are of two types, some of which is temporary, any changes that occur temporarily in response to physical activity and then the blood returns to its resting state and some of them are relatively continuous, which are changes that occur in the blood as a result of regularity in the practice of sports training for a certain period, which leads to an adaptation of the blood to the training performance, and these changes include an increase in the volume of blood and the volume of hemoglobin and red blood cells, and it is also mentioned (Mouhamed Hassan

Allawi, 2000, p. 168) that the practice of sports training for a certain period leads to the adaptation of the blood to perform physical training.

And this is also consistent with the first study: the study of Ibtihadj Rifaat, which concluded that the training method used led to improvement of some blood components represented in red blood cells, white blood cells, hemoglobin concentration, degree of blood concentration, and blood sedimentation rate. (Ibtihaj Rifat, 2015, p. 48), And from the results of the previous tables, we conclude that the style of mini-games led to an increase in the number of red blood cells, and therefore it can be said that the first hypothesis states that: "There are statistically significant differences between the pre and post-measurement of the experimental group in the number of red blood cells In favor of post measurement attributed to training with the style of mini-games" has been achieved.

B- Presentation and analysis of the second hypothesis results :

The text of the hypothesis: There are statistically significant differences between the pre and post-measurement of the experimental group in the number of lymphocytes in the blood in favor of the post-measurement attributed to training with the style of mini-games.

Table 3. The differences between the pre and post-measurement of the experimental sample in the number of lymphocytes in the blood.

	$\bar{X}$	S	T value calculate	DF	level of significance	Sig	Stat significance	Evolution %
pre-measurement	6787.5	486.86	22.03	15	0.05	0.01	Significant	11.45%
post-measurement	8543.7	467.92						

From the above table, we notice that the sample obtained a medium of (6787.5) and a standard deviation of (486.86) in the pre-measurement, while the medium was (8543.75) and a standard deviation (467.92) in the post measurement, and the value of T reached (-22.037) At a degree of freedom (15) and a level of significance (0.05), the value of the moral significance was sig (0.001), and by comparing the moral significance with the level of significance, we find that sig = 0.001 <α = 0.05, and this is statistically significant, and the development rate was (11.45%). Thus, it can be said that there are statistically significant differences between the pre and post-measurement of the experimental group in the number of lymphocytes.

- **Discussion of the second hypothesis results:**

By displaying table03 results which is for testing the number of lymphocytes, and after obtaining the results of the pre and post-measurement of the sample and the comparison between the two measurements, the following is revealed: The moral significance value (0.001) is smaller than the level of significance (0,

05), and this is evidence of a statistical significance in favor of the post test, which confirms that the method of training with mini-games has positively affected the number of lymphocytes in the blood, and as table No. (03) shows us the rate of development (11.45%) between the two pre and post measurements.

The researchers attribute the increase in the number of lymphocytes in favor of the post measurement of the sample to the method of training with mini-games, and the results of the research support the findings of previous research, stating **(Bahaa El-Din Ibrahim Salama, 1998, p. 112)** that training for endurance and long-distance running increases cells White blood of all kinds. And this is also in line with the first study: Ibtihadj Rifaat study, which concluded that the training method used led to an improvement in some blood components represented in red blood cells, hemoglobin concentration, degree of blood concentration, blood sedimentation rate, white blood cells (which It contains undesirable white blood cells, including lymphocytes).

(Ibtihaj Rifaat, 2015, p. 48) From the results of the tables and with the help of previous studies, we conclude that the second hypothesis, which states: "There are statistically significant differences between the pre and post-measurement of the experimental group in the number of lymphocytes in the blood and in favor of the post-measurement attributed to training with the style of mini-games. " has been achieved.

C- Presentation and analysis of the third hypothesis results:

The text of the hypothesis: There are statistically significant differences between the pre and post-measurement of the experimental group in the number of eosinophil cells in the blood in favor of the post-measurement due to the training method by the mini-games.

Table 4. Shows the differences between the pre and post measurement of the experimental group in the number of eosinophil cells in the blood.

	$\bar{X}$	S	T value calculate	DF	level of significance	Sig	Stat significance	Evolution %
pre-measurement	144.76	1731.2	-9.88	15	0.05	0.01	Significant	7.59 %
post-measurement	215.80	2015.6						

From the above table, we notice that the sample obtained an medium of (1731.25) and a standard deviation of (144.76) in the pre-measurement, while the medium was (2015.62) and a standard deviation (215.80) in the post measurement, and the value of T reached (-9.88) At a degree of freedom (15) and a level of significance (0.05) and the value of the moral significance was (0.00), and by comparing the moral significance with the level of significance, we find that sig = 0.00 <α = 0.05 and this is statistically significant, and the development rate reached (7.59%). And therefore, it can be said that there are statistically significant differences between the pre-measurement and the post-measurement of the experimental group in the blood eosinophil ratio.

- **Discussion of the third hypothesis results:**

By displaying the results of table No. (04) for the number of eosinophil cells in the blood, and after obtaining the results of the pre and post-measurement of the group and the comparison between the two measurements, the following is revealed: The value of the moral significance is (0.00) which is smaller than the level of significance (0,05). This indicates that there is a statistical indication in favor of the post-test, which confirms that the method of training with mini-games has positively affected the number of eosinophil cells in the blood, and as table No. (04) shows us the k8rate of development (7.59%) between the two pre and post- measurements. The researchers attribute the increase in the number of eosinophil cells in the blood in favor of the post-measurement of the sample to the method of training with mini games, and the results of the research support the findings of the study of Rwabi Saif al-Din and Yousefi Fathi, which confirmed in its results the existence of a positive correlation between the percentage of white blood cells, the type of eosinophil, and the speed of transition the researchers attributed this to the fact that the transition speed improves the level of skillful performance and this in turn is reflected in the nervous, psychological and functional work, as experts and researchers agree that sports training leads to an increase in the number of eosinophil cells (Rwabi Saif al-din, Yousefi, 2020, p. 87) And these are the same results that we reached in our study after subjecting the sample to training in the style of mini-games, which is a combination of the skill, physical and tactical aspect, And through the results of previous tables and studies, we conclude that the third hypothesis, which states: "There are statistically significant differences between the pre and post-measurement of the experimental group in the number of eosinophil cells in the blood in favor of the post-measurement due to the training method with mini-games" has been achieved.

3- Finding and propositions results

Through our study, we tried to shed light on the effect of mini-game training on some biochemical indicators (red blood cells, lymphocyte number, eosinophil cells) to football players, and the aim of the study was to try to identify the differences between the pre and post measurement of the experimental group in all applied laboratory analyzes, and by analyzing the results we obtained with statistical and scientific methods, we reached the following results:

Training with mini-games positively affects the number of red blood cells .

- Training with mini-games positively affects the number of lymphocytes .
- Training with mini-games positively affects the number of eosinophil cells .
- And from this, the general hypothesis which states that "mini-game training affects some biochemical indicators (red blood cells, the number of lymphocytes in the blood, eosinophil cells) of footbal players" has been achieved.

Where the researchers see that the method of training with mini-games is very important from all aspects, including physiological and biochemical, which are indicators of the physical level, in addition to the skill, tactical and even psychological aspects, as this method allows achieving the objectives of the training units and programs as a whole indirectly and in An atmosphere of competition and enthusiasm that the players tend to like the most. And Aqli Hussain's study found that mini-games in general have great importance in developing physical, technical, tactical and psychological qualities because they represent exercises closest to the player's activity in the match.

Games in small spaces are among the modern uses in football because of its conditions similar to the conditions of competition performance. It is one of the means that enables the coach to keep his players boredom away and thus their demand for training because of its excitement and overcoming the training loads in a competitive atmosphere in which all performance requirements are

integrated and it improves the player's response during training and competition, and in this context, Amer allah Al-Basati states that mini-game training or competition style is one of the best methods to stimulate the player's activity and increase the motives of his practice towards performance.

And the researcher suggests:

- The need to pay attention to the style of mini-games on the part of coaches due to its great importance, especially with regard to the connection between aspects of physical preparation, skills, tactical and even psychological, which saves the coach a lot of time and effort.
- It is necessary to take all the considerations when using the mini-games style, especially the area of the playing field, the time of playing, the rest period ... etc.
- tackling studies on the style of mini-games and its comparison with other methods and training methods, such as: A comparative study between the effectiveness of mini-games training and interval training on some physical and skill characteristics of football players.

4- List of used sources and references in the study

1- Ibtihaj Rifat, the effect of a proposed training approach using some herbs to develop strength distinguished by speed and some blood components for young Taekwondo players, Sports System Journal, Volume 2, Issue 2, 2015, Pages 25-52

2- Bahaa El-Din Ibrahim Salama, Sports Physiology, Dar Al-Fikr Al-Arabi, 1998.

3- Abou Al-Ela Abdk2el Fattah, Physiology of Training and Sport, Arab Thought House, 2003.

4- Ahmed Nasreddin Al-Sayed, Sport Physiology, Theories and Applications, Arab Thought House, 2003.

5- Khalif Abdel kader, Mazari Fatih, The Impact of a Proposed Training Program Using Special Force Training and Mini-Games on the Development of Explosive Power and the Ability to Retrieve Between Speed Repetitions of Football Players

Under 19 Years of Age, Sports Creativity Journal, Volume 10, Issue No. '02bis part 01', 2019, page 463-479

6- Rawabi Seif El-Din, Youssef Fathy, the effect of both high-intensity intermittent training and pleometric training on the motility of some immune blood elements in soccer players - senior, Sports Innovation Journal, Volume No. 11, Issue No. 01 bis, 2020, page 72- 91.

7- Saeed Mouhamed Bahlader, Adolescence Psychology, Scientific Research House, 1986.

8 - Mouhamed Hassan Allawi, Sports Physiology, Arab Thought House, 2000.

6- Appendices

Table 5. results of the Shapiro-Wilk , the distribution of the experimental sample scores does not differ from the normal distribution, there is a statistically significant difference for the variables of age, weight and height.

	The value of Shapiro Wilk test	Degree of freedom	Level of significance	SIG
Age	0.638	16	0.05	0.098
Weight	0.960	16		0.657
Height	0.918	16		0.159