Vol 2 Issue 4 Thi Qar University Journal of Physical Education

مجلة جامعة ذي قار لعلوم التربية البدنية

مجلة علمية محكمة تصدرها كلية التربية البدنية وعلوم الرياضة

The Effect of Tabata Style Exercises on the Development of Some Motor Abilities and Functional Indicators in Young Boxers

Hussein Ali Hussein Subkhh 1 ***Zainab Saleh Kadhim2***

Hussein.ali@st.tu.edu.iq *zainabs.alutayjawee@uokufa.edu.iq*

https://orcid.org/0009-0006-7711-0242

Published online:
20/ 12/2025

Keywords:
Special Exercises, Tabata Style, Motor Abilities, Functional Indicators, Athlete, Boxing.

ABSTRACT

The importance of the research can be achieved through the preparation of specia exercises in the (Tabata) method, as the researchers believe that it will have an effect o motor abilities and functional indicators, as this training method improves the player ability functionally and motorally, so the researchers wanted to go through this experimen as for the research problem, the researchers noted that there is a noticeable decrease in th level of motor abilities and that the continuation of the match for long periods contribute significantly to that decline. This, in turn, leads to a slowness in moving to take the righ place during the performance of these skills, thus negatively reflecting on the team an losing many crucial points of the match, as for the purpose of the research, the researc aims to identify the effect of special exercises in the Tabata style on the development o some motor abilities and functional indicators in young boxing players, as for the researc methodology, the researchers used the experimental method because it fits with the natur of the research problem. They also chose to design the method of the two equal group (experimental and control) with the pre- and post-tests. As for the research population an sample, the research population was determined by the deliberate method, which are th (16) players of Dhi Qar Club in Dhi Qar Governorate, who are (16) players registered i the Iraqi Federation for the sports season 2024-2025, and the research sample was selecte by simple random method (lottery), which is (12) players, as it was dividedinto equally fo two groups (experimental and control) by simple random method (lottery). The mos important conclusions were that the continuous training of special exercises applied in th (Tabata) method led to the development of some motor abilities and functional indicators The most important recommendations were that the researchers recommended payin attention to the use of special exercises in the (Tabata) method according to scientifi training foundations to raise the efficiency of anaerobic boxing players during matche and competitions.

.

1- Introducing the research:

1-1 Introduction and importance of the research:

There is no doubt that scientific research has become one of the most important necessities in our modern society in reaching the highest levels of all aspects of life by identifying the different abilities and energies that God has given to man in an attempt to achieve the greatest possible benefit from scientific theories and their application to serve and develop society, including the sports field, and many sports events may need a great deal of time to reach the high level of abilities and capabilities.

The field of training has been affected in recent years by the scientific revolution, as the training process has taken a form, structure and organization that is consistent with the new development of methods, methods and means used in the training process, as scientific development has added many new and modern methods in line with the nature and capabilities of the trainee through the trainers' endeavor to choose the best and latest methods that suit the specialized activity, and accordingly, scientific research has tended towards the study of various sciences, including chemistry, biomechanics, anatomy and science Sport Physiology and its employment to serve the science of sports training in order to raise the level of mathematics in all sports because of the fundamental importance of these sciences in the development and evaluation of training methods, and to know the responses and adaptations that occur during the practice of sports activity, with the aim of achieving and investing in the specificity of training related to the type of activity in order to reach a direct impact to improve the skill, physical, functional, planning, psychological and mental level.

One of the sports that has received a lot of attention in recent times is the game BoxingWhen looking at the game, Boxing Looking at the nature of their performance, we find that they require a large muscular ability to perform their skills, in addition to high energy to perform motor duty with strength, speed and high endurance, i.e. they need functional ability and high motor abilities when performing their skills.Tabata) is performed with high intensity, in which various muscle groups participate, and it is also an effective and efficient movement for the body, but the most important aspect of physiological movements when the exercises are collective, these three characteristics (intensity, size, and comfort) and compound exercises qualify to produce a high ability according to the special endurance to perform the exercises, and tabata training is one of the modern training programs that have been used nowadays in the form of comprehensive, diverse and complex sports events and competitions that require high physical fitness in the participant, and can be organized anywhere In the gym, on the playground, on the beach, on the street or at home, these workouts are initially multi-level exercises in order to improve, develop and evaluate the basic elements of physical fitness such as strength, speed, endurance, flexibility, agility, compatibility, balance... Etcetera

Therefore, it is important that the motor and physiological abilities serve each other to achieve the goal, and the level of the player's ability can be determined through these abilities.

Considering the multiplicity and diversity of training curricula followed by coaches at the level of clubs and teams and the overlap of these curricula with each other, the impact of each of them has become a serious case to address certain requirements in order to develop the level of female players, all of this is worth studying and researching, especially if we know that there are those who do not pay attention to the effectiveness of this training method, and thus the importance of research is manifested through the preparation of special exercises in the (Tabata) style. The researchers believe that it will have an effect on motor abilities and

functional indicators, as this training method improves the player's ability functionally and motorally, so the researchers wanted to go through this experiment.

1-2 Research Problem:

That the nature of skill performance in the game Boxing It is characterized by speed and continuity in exerting effort, especially in Punches This requires a high ability of physical and skill integration as well as functional integration, because it requires great muscular endurance and high and fast technical performance without a drop in level and facing fatigue.

and through Follow up Researchers and their observations For boxing fights In the Iraqi League for the category of (Youth) noted that there is a noticeable decrease in the level of motor abilities and that the fight will continue To the last round This in turn leads to a slowness in moving to take the right place while performing these skills, thus reflecting negatively on the team and losing many crucial points of the match, and the researchers believe that the reason for this is that these abilities do not take their sufficient share of training in accordance with the nature of their performance from a physical and physiological point of view. Also, the lack of use of modern training methods, so the researchers decided to prepare special exercises for the Tabata method. Its goal is to try to The positive impact on the development of motor abilities and functional indicators, and that most of the studies and researches in the field of handball training did not focus on this method in terms of training, so there was a need to study it and make it in the hands of coaches, players and researchers.

1-3 Research Objectives:

1- Preparing special exercises in the Tabata style for young boxers.
2- Identifying the effect of special exercises in the Tabata style on the development of some motor abilities and functional indicators in young boxing players.
3- Identifying the advantage in influencing the training of the Tabata style and the exercises used by the coach in developing some motor abilities and functional indicators in young boxing players.

1-4 Research Hypotheses:

1- There are significant differences between the experimental and control groups in the development of some motor abilities and functional indicators in young boxing players.

1-5 Research Areas:

1.5.1 Human Field: Players of Dhi Qar Club in Dhi Qar Governorate for the 2024-2025 season.
1-5-2 Temporal Domain: From 1/10/2024 to 27/2/2025.
1.5.3 Spatial Field: The Specialized School of Boxing in Dhi Qar.

1-6 Defining the Terms:

- **Tabata exercises:** They are exercises that aim to make the body exert maximum possible effort, and reach its muscles to the maximum possible level of performance, relying on the internal effort and energy of the body without external effort and heavy weights, so that it returns after the end of the exercise with a large and long energy charge for hours, and that Tabata exercises depend on doing intense, fast and repeated exercises in a short time and taking quick intervals to rest

between these exercises. 8) Sets, training for (20) seconds, and taking a break for (10) seconds. (1)

3- Research methodology and field procedures:

3-1 Research Methodology:

The researchers used the experimental method because it is suitable for the nature of the research problem, and they also chose to design the method of the two equal groups (experimental and control) with pre- and post-tests.

3-2 Research Population and Sample:

The research population was determined by the deliberate method, which are the (16) players of Dhi Qar Club, who are registered in the Iraqi Federation 2024-2025, and the research sample was selected by simple random method (lottery), which are (12) players, as they were divided equally into two groups (experimental and control) by simple random method (lottery).

3-3 Means, Tools and Devices Used:

3.3.1 Means of Information Collection:

1. Arab and foreign sources and references.
2. Personal interviews.
3. Questionnaire .
4. Note.
5. Testing and measurement.

3.3.2 Tools and Devices Used:

1. A pill of descent .
2. Gloves (12) pairs .
3. Headscarves (12)
4. Colored Adhesive Tape (4).
5. Metric tape measuring tape with a length of (50) m.
6. Whiteboard (1), Chair (2).
7. Medical balls with different weights (1 kg, 2 kg, 3 kg, 4 kg, 5 kg) number (12).
8. Terraces and barriers of different heights (80, 70, 60, 50, 40, 30) cm, (10).
9. A ladder with a length of (4 meters) number (2).
10. 2 sports stopwatches.
11. Whistle number (2).
12. Medical cotton, sterile materials.
13. Stationery (papers and pens).
14. Canon Camera (1).
15. Lenovo Laptop Calculator (1).
16. Chinese-made electronic device for measuring height and weight.

3-4 Field Research Procedures:

3.4.1 Identifying Research Variables:

After reviewing many scientific sources, as well as conducting some personal interviews, they were agreed upon in accordance with the research problem, and they were as follows:

First: The percentage of lactic acid concentration in the blood.

(1(1) Olson, M. (2014). Tabata it's a HIIT!, ACSM's Health & Fitness Journal, 18, 17–24. Onodera, S., Yoshioka, A., Nishimura, K., Kawano, H., Ono, K., Matusui, T., . . . Hara, H. (2013). Water exercise and health promotion. The Journal of Physical Fitness and Sports Medicine, 2(4), P 393..

Second: Motor Abilities:

1- Motor flexibility .
2- Fitness.
3- Balance.
4- Compatibility.

3.4.2 Determination of measurements and tests for variables :

After reviewing many sources and scientific references and similar studies, in addition to personal interviews of some experts and specialists in the field of testing and measurement and boxing Measurements and tests have been identified to measure the research variables, which can measure and express the research variables.

3.4.2.1 Measurement of the level of lactic acid concentration in the blood:

Measurement Method:

The measurement of the level of lactic acid concentration in the blood was done after giving physical exertion (performance tolerance test) in the sports hall of Dhi Qar Club, after (5) minutes of the test was performed, the measurement is made, which is the best period for the transfer of lactic acid from the muscles to the blood" [(1),] as the laboratory sits on the chair and the measuring tape is placed in the designated location in the device. After the tape is placed, the code number of the tape will appear, and then a blood sample is taken from the research community of (12) players during the use of a skeptic, through which one of the fingers of the hand is pricked and then we press it so that we can take out the drop of blood, and then the percentage of lactic acid in the blood is observed through the screen of the device according to the specified percentage.

3.4.2.2 Motor Abilities Tests:

First: Flexibility Test:

- **Test Name:** Dynamic Flexibility Test.[(1)]
- **Purpose of the test**: This test is one of the tests used to measure dynamic flexibility as it is the flexion, extension and rotation of the spine.
- **Tools needed**: Electronic stopwatch, wall.
- **Performance Specifications:** A mark (×) is drawn on two points:

1- On the floor between my lab feet.
2- On the wall behind the back of the lab in the middle, when the start signal is heard, the tester bends the torso in front of the bottom to touch the ground with the fingertips at the mark (×) between the feet and then stretches the torso high and turns to the left to touch the mark (×) behind it.

- **Actions:** 20-second performance time

Second: Moving balance test[2]:

- **Test Name** : Walk on the Bill
- **Objective of the test** : Balance

(2) Muhammad Ali Al-Qat, Organ Functions and Training , Cairo, Dar Al-Fikr Al-Arabi, 1999, p. 27.

2) Muhammad Sobhi Hassanein: Physiology and Morphology of the Athlete and Methods of Measurement and Evaluation , 1st Edition, Cairo, Dar Al-Fikr Al-Arabi, 1997, p. 437.

Muhammad Sobhi Hassanein, Measurement and Evaluation, Physical and Sport Education, Volume 2: (Cairo, Dar Al-Fikr Al-Arabi, 2003), p. 317.[2]

- **Devices and tools:** Balance beam with a width of (10) cm, length of (4) m and thickness of (3-5) cm, flat ground, stopwatch
- **Test Procedures:** When hearing the signal to start, the tester walks on the beam to the end, then turns and returns again to the starting point at full speed and without touching any part of the ground body outside the beam.
- **Registration: The** time taken to walk on the beam is calculated to be less than 1/10th of a second when any part of the object touches the ground outside the beam is added to the time taken.
-

Fourth: Compatibility Test:

- **Test Name:** Numbered Circuits(3).
- **Purpose of the test:** Measurement of neuromuscular compatibility.
- **Tools used:** stopwatch, hilo-hop rings, calligraphy, whistle.
- **Performance Specifications:** Eight circles with a diameter of one circle (60 cm) are drawn on the ground, and the circles are numbered, and the laboratory stands in circle (1), and when you hear the start signal, you jump with your feet together to (2), then to (3), to (4), and so on until the eighth circle, and this is done at maximum speed.
- **Procedures: The** laboratory is given two attempts and the least attempt is calculated to move through the eight circuits.

First: Shuttle Running Test of Different Dimensions (9 – 3 – 6 – 3 – 9) Meters: (1)

- **Purpose of the test** : Measuring agility.
- **Tools:** Boxing court , electronic stopwatch, (6) cones.
- **Test Administrator:** An administrator who calls the testers and a recorder records the performance time.
- **Performance Description** : The tester stands behind the starting line of the stadium and when he hears the start signal, he runs in a straight direction to touch the funnel above the 9m midline with the right hand, then turns to run towards the 3m line in the middle of the field from which the running started to touch the funnel over the line with the right hand 3m then turns towards the L3m line located in the second half of the field to touch the funnel above the 6m line with the right hand to go to the 3m midline to touch the funnel above the line of 6m with the right hand to go to the 3m midline to touch the funnel above the line 3 m with the right hand, M turns to run towards the finish line 9 m to cross it with both feet, and here it should be noted that the lines are touched each time with the right hand and the finish line should be crossed with both feet.
- **Recording:** Records the time from the start to the finish line

3-5 Exploratory Experiments for Physical Tests Used:

- The First Exploratory Experiment:

1) Muhammad Sobhi Hassanein: Measurement and Evaluation in Physical Education , vol. 1, 4th edition, Dar Al-Fikr Al-Arabi for Printing and Publishing, Cairo, 2001, p. 329.

(1) Muhammad Sobhi Hassanein: Measurement and Evaluation in Physical and Sport Education , vol. 1, 1st edition, Cairo, Dar Al-Fikr Al-Arabi, 1997, p. 353.

The researchers conducted the first exploratory experiment of the tests used on Sunday, 6/10/2024 on a sample of (4) from the same research community on the closed sports hall of Nasiriyah Club.

The aim of the exploratory experiment for the tests was as follows:

1- Ensure the validity of the stadium and the tools used and their suitability for the tests.
2- Prepare the support team, as well as identify the difficulties they may face.
3- Knowing the extent to which the sample is ready to perform the tests, as well as the time it takes for the tests.
4- Knowing the obstacles that may appear and avoiding the occurrence of errors and interference in the work.

- The Second Exploratory Experiment:

The researchers conducted a second exploratory experiment on Tuesday, 8/10/2024, and its purpose was to know the maximum stress of each of the exercises used by the research sample members and the time of its performance, by applying the time of each exercise and identifying the obstacles that may accompany it.

3.6 Main Experimental Procedures:

3.6.1 Preliminary Examinations:

The researchers conducted pre-tests on the research population for the two groups (control and experimental) of the study variables (physiological indicators, motor abilities) on **(Sunday and Monday)** corresponding to 13 and 14/10/2024, and the tests were according to the **following sequence:**

- The first day: Physical abilities tests in the closed sports hall of Al-Nasiriyah Club.

- Day Two: Functional Indicators.

3.6.2 Homogeneity and parity of the research community:

3.6.2.1 Equivalence of the two research groups:

In order to be able to attribute the differences in the results of the post-tests of the variables under study to the effect of the experimental factor, the researchers used the t-test of the independent samples as shown in Table (1).

Table (**1**)

Equivalence between the experimental and control groups of the research variables

Type of indication	Moral level	Value T Calculated	on	Q-	Collection	Unit of Measurement	Variables
Insignificant	0.873	0.16	0.79	16.25	Officer	Second	Flexibility
			0.85	17.90	Experimental		
Insignificant	0.816	0.24	0.67	6.47	Officer	Second	Compatibility
			0.85	8.58	Experimental		
Insignificant	0.889	0.14	0.62	7.70	Officer	Second	Moving balance
			0.53	7.72	Experimental		
Insignificant	0.639	0.483	0.282	11.625	Officer	Second	Agility

			0.302	11.543	Experimental		
Insignificant	0.354	0.972	0.602	10,933	Officer	Milli Mol/Liter/ Tail	Percentage of Lactic Lion Concentration
			0.701	11.030	Experimental		
Insignificant	0.793	0.690	0.390	1.250	Officer	L/D	Oxygen deficit
			0.333	1.248	Experimental		
Insignificant	0.480	0.734	17.012	464.075	Officer	U/L	L.D.H Concentration Ratio
			12.956	457.663	Experimental		

The tabular value is below the significance level of (0.05) with a sample size of (12) and a degree of freedom (10)

3.6.3 Preparation and application of specialized exercises in **the Tabata** style :

Special exercises have been prepared in the style of TabataThe researchers prepared some exercises that serve Boxing Skills and the kinetic side, and then the researchers Applying it In line with the Tabata style, these exercises include the motor and functional aspect and in accordance with the Boxing , and were distributed in the training units in a harmonious and appropriate manner, and the exercises began to be applied to the experimental group on 27/10/2024 until 22/12/2024, taking into account (intensity, repetitions, rest periods) and the researchers codified the exercises according to the method of Tabata It was based on a physiological scientific basis, as well as the motor and functional abilities of the research sample and the tools used, to be able to develop some functional indicators and motor abilities to achieve the goals and objectives of the training process.

- **The details of the exercises** in **the Tabata style were as follows:**

1- The total number of training units included the exercises for the Tabata method (16) units

2- The number of weekly training units that included the exercises for the Tabata method is (2) units for a period of (8) weeks.

3- The intensity was extracted by repetition over a time of (15 s).

4- Exercise time in one training unit is (11-13) minutes.

5- The intensity used ranges between 80-90%.

6- The training days during the week are (Sunday, Tuesday, Thursday).

7- The goal of the Tabata Method exercises is to develop functional indicators.

8- The purpose of the exercises for the Tabata method is to develop the motor abilities under study.

9- Considering the exchange of work between muscle groups.

10- The planning of the Tabata Style exercise formations during the daily and weekly modules is (2-1).

3.6.4 Post-tests:

The researcher conducted that with the help of the assistant work staff and the physiological staff, the post-tests of the research sample after the completion of the application of special exercises in the Tabata method, and that was **on Sunday and Monday (29 and 30/12/2024)** and in the same sequence of pre-tests, as the researchers believe that the conditions in which the pre-tests were conducted in terms of the sequence of tests.

3-7 Statistical Methods Used:

The researchers used the statistical package (SPSS) to analyze the research results.

4- Presenting, analyzing and discussing the results:

4-1 Presenting and discussing the results of the pre- and post-tests of the control and experimental groups of the variables under study.

4.1.1 Presentation of the results of the pre- and post-tests of the control group for the research variables : Table (2)

Shows the arithmetic media, standard deviations, and the calculated value of (v) for the correlated samples

The level of significance of the test and the significance of the difference for the pre- and post-tests

for the control group of the studied variables

Type of indication	Moral e level	Value T Calculated	on	Q-	Testing	Unit of Measurement	Variables
Moral	0.000	34.79	1.05	15.05	Tribal	Second	Flexibility
			0.85	17.90	Dimensional		
Moral	0.000	18.66	0.85	8.58	Tribal	Second	Compatibility
			0.79	5.69	Dimensional		
Moral	0.000	24.04	0.53	7.72	Tribal	Second	Moving balance
			0.80	5.48	Dimensional		
Moral	0.000	9.17	0.302	11.543	Tribal	Second	Agility
			0.152	10.11	Dimensional		
Moral	0.000	9.522	0.602	10.933	Tribal	Milli Mol/Liter/Tail	Lactic acid concentration
			0.696	13.183	Dimensional		
Moral	0.027	3.11	0.39	1.25	Tribal	L/min	Oxygen deficit
			0.217	1.016	Dimensional		
Moral	0.002	6.098	17.122	464.075	Tribal	U / L	Blood L.D.H concentration after exertion
			8.525	497.665	Dimensional		

4.1.2 Presentation of the results of the pre- and post-tests of the experimental group of research variables :

Table (3)

Shows the arithmetic media, standard deviations, and the calculated value of (v) for the correlated samples

The level of significance of the test and the significance of the difference for the pre- and post-tests

For the experimental group of the variables

Type of indication	Morale level	Value T Calculated	on	Q-	Testing	Unit of Measurement	Variables
Moral	0.000	8.76	0.91	15.10	Tribal	Second	Flexibility
			0.79	16.25	Dimensional		
Moral	0.000	7.65	0.92	8.64	Tribal	Second	Compatibility
			0.67	6.47	Dimensional		
Moral	0.000	16.70	0.62	7.70	Tribal	Second	Moving balance
			0.53	6.67	Dimensional		
Moral	0.003	5.348	0.282	11.625	Tribal	Second	Agility
			0.348	10.88	Dimensional		
Moral	0.000	8.569	0.333	1.248	Tribal	L/min	Oxygen deficit
			0.201	0.665	Dimensional		
Moral	0.003	5.565	12.956	457.663	Tribal	U / L	Blood L.D.H concentration after exertion
			14.107	524.483	Dimensional		
Moral	0.000	11.239	0.701	11.030	Tribal	Milli Mol/ Liter/ Tail	Lactic acid concentration
			0.539	15.866	Dimensional		

4-1-3 Presentation of the results of the tests (dimensional and dimensional) for the control and experimental groups of the research variables :

Table (4)

It shows the calculated value of (T) for the independent samples, the level of test significance and the significance of the differences between the results of the test (dimensional and dimensional) for the control and experimental groups of the studied variables.

Type of indication	Morale level	Value T Calculated	on	Q-	Collection	Unit of Measurement	Variables
Moral	0.000	6.36	0.79	16.25	Officer	Second	Flexibility

			0.85	17.90	Experimental		
Moral	0.000	3.370	0.67	6.47	Officer	Second	Compatibility
			0.79	5.69	Experimental		
Moral	0.000	5.516	0.53	6.67	Officer	Second	Moving balance
			0.80	5.48	Experimental		
Moral	0.001	4.960	0.348	10.880	Officer	Second	Agility
			0.152	10.11	Experimental		
Moral	0.000	7.460	0.539	15.866	Officer	Milli Mol/Liter/ Tail	Lactic acid concentration
			0.696	13.183	Experimental		
Moral	0.016	2.903	0.217	1.016	Officer	L/min	Oxygen deficit
			0.201	0.665	Experimental		
Moral	0.025	2.63	8.525	497.66	Officer	U / L	Blood L.D.H concentration after exertion
			14.107	524.483	Experimental		

4.1.3 Discussion of the results of the research tests :

During the above results that appeared in Tables (2) and (3), we find that there are significant differences with statistical significance in Variables The researchers attribute the members of the experimental group to the quality of the special exercises prepared by the researchers in the Tabata method according to scientific and physiological foundations, as the researchers focused ona These exercises create a state of adaptation for muscle cells by tolerating large amounts of lactic acid concentration in the muscles and blood and continuing muscular work, which is called chemical imprinting, as it has a great role in this increase as well as the repetitions that Performed by the players During the training unit, and diversifying and changing those exercises so that the player does not feel bored, this method was given Players The ability to resist fatigue despite the increased concentration of lactic acid in the muscle, and this was confirmed by (Ekströmand others, "The Tabata method improves the storage capacity of energy production by improving the efficiency of different metabolic pathways, and that it is better for the body to use exercises that create the most (confusion) of the metabolic rate. [1] This is because the increase in the percentage of lactic acid concentration in the blood of the control group members is due to the adaptation of the working muscles and internal organs of the player's body by enduring greater amounts of lactic acid accumulation in the blood during physical exertion, and

(1) Ekström, A., Östenberg, A. H., Björklund, G , & Alricsson, M. (2017) , OP. Cit P 60 .

this physiological adaptation comes due to the quality of the exercises prepared by the coach in his training method, to which the players were exposed continuously. The frequent repetitions and the lactic action system contributed to the muscle cells tolerating a higher percentage of lactic acid in the blood than the initial measurement, and thus it led to a state of functional adaptation of the lactic acid concentration ratio.

Tests (Oxygen deficit) andThe researchers believe that the reasons for the morality of the differences are due to the training methods and methods that were used and applied by the coach to the players. The repetitions performed by the members of the control group and the continuation of sports training lead to the occurrence of functional adaptations in certain proportions, and one of these adaptations is the lack of oxygen, all these reasons contributed to these significant differences for the members of the control group.

As for the significance of the differences in the experimental group of (oxygen deficit) variables,The researchers attribute the use of special exercises by the researchers to the members of this group In the style of the tabata which It was codified according to the systems of energy production suitable for muscular work, as the training modules prepared by the researchers helped to improve the ability of the players. Physiological according to what is observed, and the researchers were keen that the exercises in the Tabata style work according to the requirements of the game's specificity and the player's capabilitiesYen physiological and kinetic as well as research objectives, this resulted from the use of Anaerobic exercises that are characterized by high intensity lead to a state of lack of oxygen needed to produce energy, and this is called the phenomenon of (deficit) Oxygen) which occurred as a result of the maximum and near-maximum physical loads that were performed repeatedly, that is, the oxygen deficit expresses the oxygen that the muscles need and is not available during the first seconds of exercise, the keenness of the members of the experimental group and their commitment to perform exercises continuously and regularly, and this in turn contributed to the development and functional adaptations of the circulatory respiratory system that led to a decrease in the percentage of oxygen deficit in telemetry by increasing the efficiency of the muscles to produce the energy needed to perform high-intensity physical exertion. This is what Abul Ela Abdel Fattah pointed out that "organized training leads to functional changes in the body's systems, including the heart and blood circulation, as well-trained individuals can adapt to the functional changes that occur in the body's systems as a result of muscular effort and continue this effort. (4) .

As for the concentration of the enzyme (L.D.H) in the blood, there are significant differences between the members of the control and experimental groups, and the researchers attribute the reason for these differences to the application of the trainer's exercises prepared for the members of the control group, as they contributed to increasing the level of activity of that enzyme, and the activity of this enzyme is accompanied by an increase in the activity of lactic acid, thus accumulating larger amounts of it, and this is important for the players in order to continue working for as long as possible. Since boxing is one of the activities and games that rely on anaerobic systems more than the aerobic system, and therefore there is a lack of oxygen for the muscles, and here the role of the enzyme (L.D.H) comes into play, as it helps to break down glycogen to produce glucose in the muscles and use it to produce energy.

---

4 Abul Ela Ahmed Abdel Fattah: Development and Measurement of Maximum Oxygen Consumption for Middle- and Long-Distance Runners, Cairo, International Federation of Amateur Athletics, Regional Development Center, Issue Twenty-Four, 1999, pp. 86-87.

As for the members of the experimental group, the researchers attribute the significance of the differences to the fact that when the percentage of lactic acid concentration in the blood increases as a result of the adaptations that occur in the body's cells due to special exercise, which were prepared according to the Tabata method, an increase in the level of activity of this enzyme and thus the occurrence of physiological adaptations, the reason for the increase in the activity of the enzyme lactic dehydrogenase (L.D.H)) due to the special nature of exercise that is characterized by lactic anaerobic nature, as it led to an increase in the activity of the enzyme responsible for converting pyruvic acid into lactic acid during anaerobic physical exertion, which was reflected in the ability of the muscle to tolerate larger amounts of lactic acid and thus increasing the concentration of lactic dehydrogenase enzyme (L.D.H) which is directly related to the percentage of lactic acid concentration and thus increasing the anaerobic leaching time.

We note that there are significant differences in the motor abilities tests, andthe researchers believe that the reason for the differences that appeared on the members of the control group is due to the exercises prepared by the coach that contributed to the increase in the level of motor abilities of the player, as they had a great role in improving the motor aspects and that the development of motor abilities is related to the development of physical abilities, and this is what was applied by the team coach to the members of the control group.

As for the significant differences that occurred among the members of the experimental group, the researchers reasoned that the special exercises were prepared and applied in the Tabata style, as these exercises included strengthening the muscles of the center of the body, which are of great importance in boxing , and the reflection of this on motor control during the performance of skills, whether they are of stability or by changing directions, as well as their ability to transfer movement with the same speed and force from one direction to another by connecting the two ends of the body during the performance. by a strong body center, and this is consistent with what (Juan Caros, 2016) has pointed out, in the attributes of functional exercise by "focusing on the group of core muscles, all athletic movements will lack efficiency without their integration with strong core muscles, strong center muscles help to connect the lower limb to the upper limb, as well as prevent the leakage of force" (1), thus accumulating strength and stability in the direction of performance of skills and their requirements in the body center support for the players, is added to This included the Tabata style exercises on compound exercises similar to play situations that contribute to maintaining consistency during skill performance, and this (Michael Boyle, 2016) confirms through the importance of special exercises "that balance is a key element in functional exercises, not only the balance between strength and flexibility or working and non-working muscles, but also what we may think are the means used, for example standing on one leg and the trainee being able to move other body parts without This is an important interactive feature in functional exercises, and that functional exercises are mostly a combination of strength training and balance exercises performed simultaneously" (1), and here it is worth mentioning that the majority of exercises supported skill performance by developing those abilities in terms of generating the force necessary to perform during stability and alignment, rotation and change of direction and pivot, flying, in addition to strength in performance in terms of active bending and stretching movements of the angles of the joints of the body, as well as alignment. In the performance of among the parts of the body for skills in the movements of the legs and hands as a result of the compatibility of the work of its muscles

(1) Michael Boyle : OP. Cit ,2016 , p5.

in the movement of the skill, and the compatibility of the work of the legs and hands with the eyes, the researchers were also keen to use the auxiliary tools in the exercises prepared by the two researchers, such as the use of the ground ladder, which contributed to the development of motor compatibility and agility, as well as the use of plastic collars and rubber balls that helped develop motor compatibility. Essam Abdel Khaleq points out that "the motor performance of the skill depends on the special physical and motor abilities" [(2),] and (Juan Caros, 2016) confirms by studying the benefits of functional exercises, "We find that it can develop any sports skill, one leg training improves mobility and gives the hamstrings flexibility that allows them to stretch the hips, stabilize the body, increase the speed of running, and improve jumping on one leg in some futsal games, as well as jumping and weightlifting exercises help improve high jumping. Using the legs, push-ups, pull-and-push exercises enhance punching and pivoting skills, and finally the rotation exercises improve the change of direction and generate rotational energy for many games." [(3)]

The researchers also attribute that the rationing of the training load by the method of metabolic adaptation (MetCon) for functional exercise is one of the important factors that led to the increase in the level of biomotor abilities because the development of any ability, whether physical or motor, depends on the validity of the rationing of the components of the external load (intensity, size, rest) with the internal load (physiological adequacy of the body's internal systems), and the researchers relied on the literature of the Tabata method in developing motor abilities, by codifying the frequency of performance with the nature of intensity. which contributed to increasing the amount of motor abilities and especially the muscular strength resulting from contractions as a result of this compatibility through various specialized exercises, and mobilizing the largest possible number of motor units for performance, the exercises in the Tabata style worked to develop neuromuscular compatibility, and (Miller) and others emphasize the necessity **of using** exercises in the Tabata **styleIn training curricula, because it achieves an increase in strength without gaining weight, as one of the most important characteristics of neuromuscular adaptation is that you can become stronger without gaining more volume or weight, and this can be done through the coordination between the work of muscles and muscular systems so that it allows the distribution of load (weight) to the different muscles of the body, and this distribution works to relieve the pressure on the muscles, which reduces the need for a specific muscle to adapt and get a larger size. And with** the Tabata style exercises**, there are no cries for one muscle, instead the whole body will be created, and this is the essence of increasing strength through neuromuscular compatibility"**(1), and this is reinforced by what (Qasim Hassan) said, "The performance of skills is done first intellectually and secondly motorally, and this leads to the implementation of the task quickly and in the shortest possible time." Together in performance [(1).]

5. Conclusions and Recommendations:

5.1 Conclusions:

Based on the results of the research reached within the limits of the research community, the following conclusions were reached:

---

(2) Essam Abdel Khaleq: A Source Mentioned above , 1999, p. 184.

(3) Juan Carlos : OP. Cit ,2016 , p5.

(1) Miller, L. J., D'Acquisto, L. J., D'Acquisto, D. M., Roemer, K., & Fisher, M. G. (2015). Cardiorespiratory Responses to a 20-Minutes Shallow Water Tabata-Style Workout. International Journal of Aquatic Research and Education, 9 (3), P 6.

1- Continuous training of special exercises applied in the Tabata style led to the development of some motor abilities and functional indicators.

2- The duration of the independent variable, represented by the number of training units, was appropriate in creating adaptations that express the extent of development of the experimental research group of motor abilities (motor flexibility, agility coordination, and motor balance).

3- The development of motor abilities was positively reflected on the development of functional indicators in young boxers in the experimental research group.

5.2 Recommendations:

In light of the conclusions reached by the two researchers that proved the effectiveness of using the (Tabata) method of exercises Recommend The researchers made several recommendations:

1- The researchers recommend paying attention to the use of the (Tabata) method exercises according to scientific training foundations to raise the efficiency of anaerobic boxing players during matches and competitions.

2- Adopting the exercises prepared by the researchers as basic data when training players in other sports .

3- The use of exercises in the Tabata style for the rest of the sports, whose skills require strength, muscular ability, and endurance.

4- Conducting similar studies on other individual and group activities, and on different age groups.

Arabic References and Sources:

- Abul Ela Ahmed Abdel Fattah: Development and Measurement of Maximum Oxygen Consumption for Middle- and Long-Distance Runners, Cairo, International Federation of Amateur Athletics, Regional Development Center, Issue Twenty-Four, 1999, pp. 86-87.
- Qasim Hassan Hussein: Foundations of Sport Training, Jordan, Dar Al-Fikr Printing, 1998.
- Essam Abdel Khaleq: Mathematical Training: Theories and Applications, 5th Edition, Cairo, Dar Al-Fikr Al-Arabi, 1999
- Muhammad Sobhy Hassanein: Measurement and Evaluation in Physical and Sport Education , Volume 1, 1st Edition, Cairo, Dar Al-Fikr Al-Arabi, 1997.
- Mohamed Sobhy Hassanein, Measurement and Evaluation, Physical and Sport Education, Volume 2: (Cairo, Dar Al-Fikr Al-Arabi, 2003).
- Mohamed Sobhi Hassanein: Measurement and Evaluation in Physical Education , Volume 1, 4th Edition, Dar Al-Fikr Al-Arabi for Printing and Publishing, Cairo, 2001.
- Mohamed Sobhy Hassanein: Physiology and Morphology of Sport and Methods of Measurement and Evaluation , 1st Edition, Cairo, Dar Al-Fikr Al-Arabi, 1997.
- Muhammad Ali Al-Qat, Organ Functions and Training , Cairo, Dar Al-Fikr Al-Arabi, 1999, p. 27.
- Hussain Ali Hussain Sabkha. Selective Attention According to the Rehakum System and its Relationship with Reaction Speed in Young Boxing Players. The Second International Scientific Conference on Social, Humanities and Pure Sciences. 2023.

- Michael Boyle : New Functional Training For sports ,2nd , Champaign , Human Kinetics , 2016 .
- Miller, L. J., D'Acquisto, L. J., D'Acquisto, D. M., Roemer, K., & Fisher, M. G. (2015). Cardiorespiratory Responses to a 20-Minutes Shallow Water Tabata-Style Workout. International Journal of Aquatic Research and Education, 9 (3), P 6.
- Ekström, A., Östenberg, A. H., Björklund, G , & Alricsson, M. (2017). The effects of introducing Tabata interval training and stability exercises to school children as a school-based intervention program. International journal of adolescent medicine and health, 31(4) .
- Juan Carlos : Functional Training , USA , Human Kinetics , 2016.
- Olson, M. (2014). Tabata it's a HIIT!, ACSM's Health & Fitness Journal, 18, 17–24. Onodera, S., Yoshioka, A., Nishimura, K., Kawano, H., Ono, K., Matusui, T., . . . Hara, H. (2013). Water exercise and health promotion. The Journal of Physical Fitness and Sports Medicine, 2(4), P 393..
- Hussein Ali Hussein : The Effect of Cross-Training Exercise to Develop Some Kinetic Apilties and Physiological Indicators of Young Boxers , Chinese Journal of Medical Genetics , vol 32 iss , 1, 2023 ,

Appendices

Shows the exercises used in the curriculum and the training modules
Shows the specialized exercises in the Tabata method used in the special preparation period on the research sample.

Notes	Comfort between groups	Totals	Rest between repetitions	Duplicates (Exercise Time)	Hardship	Exercises	Totals	Units	Weeks
3-5 minutes to move to the second group	-	one	15 seconds	15 seconds	80%	K1+K1+K2+K2+C1+C1+B2+B2	First	First	First
	-	one	15 seconds	15 seconds	80%	H1+H1+C1+C1+C3+C3+F1+F1	The second		
	-	one	15 seconds	15 seconds	84%	K1+K1+K2+K2+C1+C1+B2+B2	First	The second	
	-	one	15 seconds	15 seconds	84%	E3+E3+F2+F2+A1+A1+A3+A3	The second		