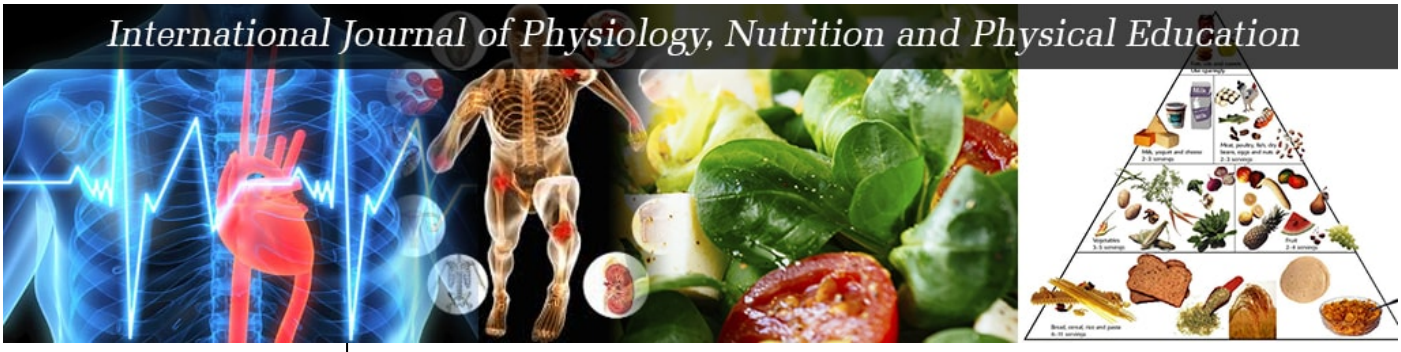

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The effect of dynamic lunge training on some functional indicators and straight punch performance endurance for boxers under 19 years of age

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Abstract
The study was significant because it prepared anaerobic workouts utilising the dynamic lunge approach to help boxers under the age of 19 improve certain functional indicators and endurance of straight punch performance. For the 2023 season, the young boxers of the Iraq Club in the Karbala Governorate made the decisions for the research community. Utilising a thorough inventory procedure, the study sample was selected, and the training activities lasted for eight weeks at a pace of three units per week, or twenty-four training units. High-intensity interval training with the dynamic lacquer approach is the training strategy used. The coach's portion of the training unit lasted for around 30 minutes, during which the players completed the exercises the coach had prescribed, accounting for the intensity of the activities the researchers had utilized. The two researchers came to the most significant conclusion that the dynamic lactic technique caused the working muscles to adapt by raising the blood levels of the enzyme L.D.H. and lactic acid concentration. Additionally, the experiments increased the experimental group members' maximal anaerobic capacity, which benefited them in turn. To improve the study sample's members' straight punch performance endurance.

Keywords: Dynamic lunge training, functional indicators, straight punch

1. Introduction
Along with other sciences, sports have seen tremendous development in all events and games for all age groups. This is because the field's goals have been to develop physical attributes, functional indicators, and energy production systems that will allow athletes to perform each event at a level that is appropriate for their intended performance intensity. Improvements in the athlete's aerobic or anaerobic capacity are reflected in a major manner. The concentration of lactic acid in the muscles and blood is one of the most significant functional changes influenced by dynamic lactation, as anaerobic training (dynamic lactation), which continues to be performed from (30 seconds - 1 minute) and at an intensity ranging between 80-90%, works to oxidise sugars anaerobically, which increases physical and skill performance as well as delayed levels of fatigue. Training according to dynamic lactation similar to the energy production systems in boxing leads to the occurrence of many changes, whether physical, functional, or chemical changes to the various body systems. Chemical reactions slow down as a result of the muscles producing more lactic acid and accumulating it at a faster rate when anaerobic activity is performed for longer periods of time and at a higher intensity.
Since the game of boxing is within the anaerobic (lactic) system, lactic acid accumulates in large quantities, especially at the end of the second and third rounds. Therefore, the boxers must bear this accumulation in the muscle and blood. Hence the importance of the research lies in using an anaerobic training system (dynamic lactic) similar to the nature of the boxer's performance from Where the intensity and energy system prevails to resist the accumulation of lactate in the muscles, as well as the development of some vital organizations for the boxers, as well as the ability to perform the straight punch due to its importance for the boxers in the fight, especially in the last round.

1.1 Research Problem
The game of boxing requires special physical and motor abilities at high levels in order to be able to complete the fight with high efficiency with a delayed onset of fatigue. He also needs physical abilities that enable him to complete the fight despite the increase in lactic acid concentrations (lactic endurance). Through the two researchers' follow-up of many training units for many Iraqi clubs in the sport of boxing, and the Iraq Club in particular, it became clear that there was insufficient attention to lactic training and emphasis on the physiological aspects of the boxers, and this is reflected in the level of the player's performance and the rapid appearance of fatigue in him as a result of the accumulation of lactic acid, as well as the endurance of performing punches, and from here came the study of training. Dynamic lactic acid for the purpose of bringing the boxer to a higher level of physical and functional capabilities.

1.2 Research objective
1. Preparing dynamic lunge exercises to develop some functional indicators and endurance of performing a straight punch for boxers age less than 19.
2. Identify dynamic lactation exercises effect on some functional indicators withstand the performance of a straight punch for boxers.

1.3 Research hypotheses: Dynamic lunge training has a positive effect on some functional indicators and straight punch performance endurance for young boxers.

1.4 Research fields
1.4.1 Human field: Iraq Boxing Club players under 19 years old in Karbala Governorate for the 2023 season.

1.4.2 Time field: From 1/7/2023 to 17/9/2023.
1.4.3 Spatial field: Boxing hall and ring for the Iraq Club - Karbala Governorate.

2. Research methodology and field procedures
2.1 Research methodology
To fit the needs of the study, the researchers used the experimental approach with two equal groups the experimental and the control, and a pre- and post-test.

2.2 The research community and its sample
Ten boxers under the age of 19 who were training for the Iraq Club in the Karbala Governorate in 2023 were designated as the study population. Five boxers each were assigned to the experimental and control groups in the sample.

2.3 Homogeneity and equality of the two research groups

Table 1: Shows the calculated Levene and T values and the significance level of the researched variables.

Variables	Experimental group		Control group		F value	Calculated T value	Sig	Sig type
	Mean	Sd	Mean	Sd				
Maximum anaerobic capacity	21.09	1.96	19.65	0.98	1.97	1.46	0.18	Non sig
Lactic acid	7.60	0.89	1	0.44	0.09	0.66	0.52	Non sig
Ldh	244.36	9	234.40	3.19	3.36	0.22	0.82	Non sig
Withstand the performance of the punch	93	5.35	89.60	3.57	0.13	1.37	0.20	Non sig

The above table makes it evident that the study variables are arbitrary, i.e., there is no distinction between the two research groups.

2.4 Field research procedures
2.4.1 Determine search tests
Maximum anaerobic capacity
- Wingate test (Hazza Muhammad Al-Hazza, p. 313).
- Test objective: Measure maximum anaerobic capacity.
- Steps to implement the test.

1. The laboratory mass is taken.
2. Depending on the subject's weight, warm up on the bike for three to four minutes with a resistance of one to two kilogrammes. The participant spins the bike wheel at top speed for three to five seconds just before the warm-up concludes, then does this two or three times in a row.
3. The resistance is adjusted based on the subject's weight, which is equal to 7.5% of his body weight, once the subject's data is input into the computer.
4. After taking the weight out of the weight basket, the participant starts to spin the bicycle wheel as quickly as they can-at least 80 revolutions per minute-for a maximum of three seconds. The patient then continues to rotate the wheel for a while while the weight is gradually decreased and the start programme button is pushed to start the measuring procedure. 30 seconds, as long as he is prodded and encouraged to keep the rotation speed as high as feasible.

- **Register:** The results are recorded directly through a program installed in an electronic calculator for the purpose of calculating variables.

2.4.1.1 Biochemical tests
LDH enzyme measurement (Marwan Abdel Majeed, p. 203)
After warming up the research sample for five minutes on the treadmill, the physical exertion test begins by increasing the speed of the device to 15 km/hour for two minutes, after which the effectiveness of the enzyme is measured after a five-minute rest, using a German-made device and according to the same instructions (Kit) in order to It gives the required results, knowing that its normal ratio is (226-351 U/L).

Measuring lactic acid in the blood (Fah Hassan Abdullah, p. 27).
- **Purpose of the test:** to measure the level of lactic acid concentration in the blood after exertion.
- **Test specifications:** The special test was conducted to measure the concentration of lactic acid by taking a drop of blood from the player's thumb five minutes after the end of the physical effort to know the movement of the rise and fall of the amount of lactic acid in the blood, where the drop of blood is drawn using a chip connected directly to the device, noting that the normal level of lactic acid is during rest. It is (1) mmol.

2.4.1.2 Performance endurance test for boxers on the bag (Yahya Al-Sayyid Ismail Al-Hawi, p. 279)
- **Purpose:** To measure the performance endurance of a straight punch.
- **Performance Description:** The boxer gets ready and

stands in front of the bag. When the instructor gives the go-ahead, the boxer starts hitting the bag as many times as possible while simultaneously recording the performance on camera.

- **Recording:** Correct punches are recorded on the boxer's punching bag within 90 seconds.

2.5 Pre-tests

Pretests were conducted for members of the research sample on Wednesday, 5/7/2023. Physiological tests were conducted at nine o'clock in the morning in the laboratory of the College of Physical Education and Sports Sciences, University of Karbala. The tests were conducted by a specialist in the field of analysis, after which a straight punch endurance test was conducted in Four o'clock in the evening at the boxing hall in the Iraq Club in Karbala Governorate.

2.6 The main experiment

The researchers used lactic exercises with an intensity similar to the energy system prevailing in the sport of boxing, that is, with an intensity between 80-90% of the boxer's potential, and according to the rule of individuality in training in terms of rationing the intensity, and it is within the high-intensity interval anaerobic energy system in the dynamic lactic style, with a time not exceeding 45 seconds for one exercise, and the nature of the exercises is Similar to the performance. These exercises were carried out in the main part of the training unit and in a time not exceeding 30 minutes out of the 90-minute training unit, three training units per week for two months, where most of the exercises were similar to the performance in terms of form, intensity and the prevailing energy system during the fight period.

2.7 Post-tests

On Thursday, September 14, 2023, the researchers administered the post-tests to the study sample participants, keeping in mind the identical circumstances and setting as the pre-tests.

2.8 Statistical methods: SPSS statistical package used by the researchers.

3. Results presentation, analysis, and debate

3.1 Presenting and analysing the variations between the experimental group's pre- and post-test results

The experimental group's pre- and post-test results for the variables under investigation are shown in Table (2).

Table 2: The experimental group's pre- and post-test results for the variables under investigation

Variables	Pretest		Posttest		Calculated T value	Sig	Sig type
	Mean	Sd	Mean	Sd			
Maximum anaerobic capacity	21.09	1.96	24.30	0.94	2.70	0.05	Sig
Lactic acid	7.60	0.89	11.80	0.83	21	0.00	Sig
Ldh	244.36	9	227.46	7.88	5.26	0.00	Sig
Withstand the performance of the punch	93	4.24	111	7.68	8.58	0.01	Sig

At a significance level of (0.05) and a degree of freedom of 4.

After presenting the results of the pre- and post-tests to the experimental group, the results showed significant differences for all of the research variables. This means that dynamic lactate training has a clear effect, given that the dominant energy system in the sport of boxing and fights is the anaerobic lactic energy system. This is what the current study relied on by targeting the energy system first for the purpose of improving the muscles tolerate lactic acid and delay the appearance of fatigue, especially at the end of the second and third round, and to increase the boxer's ability to withstand the performance of punches.

3.2 Presentation and analysis of the differences between the pre- and post-tests of the control group

Table 3: Shows the differences between the pre- and post-tests for the variables investigated.

Variables	Pretest		Posttest		Calculated T value	Sig	Sig type
	Mean	Sd	Mean	Sd			
Maximum anaerobic capacity	19.65	0.98	21.30	0.75	2.61	0.05	Sig
Lactic acid	8	1	9.40	0.54	21	0.00	Sig
Ldh	243.40	3.19	239.32	3.84	4.13	0.01	Sig
Withstand the performance of the punch	89.60	3.57	95.20	1.48	3.20	0.03	Sig

At a significance level of (0.05) and a degree of freedom of 4.

The results of the experimental group test showed positive results, and this means that the coach is working at a pace that helped the control group develop in terms of variables and increased the players' tolerance to the levels of lactic acid concentrations, and this directly contributed to the young boxers' straight punch performance.

3.3 Results of the differences between the experimental and control groups' post-tests are presented, analysed, and discussed.

The differences between the post-tests of the variables examined for the two study groups are shown in Table (4).

Table 4: The differences between the post-tests of the variables examined for the two study groups

Variables	Experimental group		Control group		Calculated T value	Sig	Sig type
	Mean	Sd	Mean	Sd			
Maximum anaerobic capacity	24.30	0.94	21.30	0.75	5.54	0.00	Sig
Lactic acid	11.80	0.83	9.40	0.54	5.36	0.01	Sig
Ldh	227.46	7.88	239.32	3.84	3.02	0.01	Sig
Withstand the performance of the punch	111	7.68	95.20	1.48	4.51	0.002	Sig

At a significance level of (0.05) and a degree of freedom of 4.

4. Discuss the results

Table (4) demonstrated that all study variables had a significance level (sig) value less than 0.05. This indicates that the training approach used by the researchers, which helped the boxers increase their anaerobic capacity during high-intensity interval training in the dynamic lactate method, has a direct impact on the research variables. In these exercises, lactate production is purposefully increased by increasing the training intensity of the exercise and then alternating with periods of low-intensity activity with the same exercise. Using this technique, the muscle is educated to generate more and less lactate during low-intensity recovery intervals. Maximum anaerobic capacity (VO2), a measure of economic performance, is greatly improved by this variation in performance speed and intensity, and this is what was indicated by (Abu Al-Ala Ahmed, p. 282,).

Oxygen consumption is a comprehensive assessment of the respiratory, circulatory, muscular, and blood systems, the four most crucial systems during performance. Consequently, it is essential for physiological labs to assess the athlete's training and physiological state (Bahaa El-Din Salama, p. 67). As for LDH, an increase in the enzyme level was observed as a result of the increased intensity of training, as (Edwards and Hassall, p. 203) indicates that enzymes are of vital importance in living cells, as they increase the speed of necessary chemical reactions.

Thus, enzymes enable reactions to occur under physiological conditions that in other cases may be unacceptably slow, as the activity of the enzyme (LDH) increases after exertion due to the increased speed of chemical reactions. This means that there is a large accumulation of pyruvic acid as well as hydrogen ions, so the activity of the enzyme must be increased. For the purpose of converting pyruvate into lactic acid, this is an indication that the activity of the enzyme increases in concentration in the blood after performing high-intensity physical effort, in addition to that it may be an indicator of the amount of glycogen being broken down anaerobically.

This method also gave the players the ability to resist fatigue despite the increased concentration of lactic acid in the muscle. Dynamic lactic acid training increased the amount of lactic acid transferred, which was reflected positively on the performance level of the boxers (Aqeel Jassim, p. 176), in addition to the similar dynamic lactic acid method. Due to the nature of the performance, it helped to increase the player's tolerance to lactic acid and increase the efficiency of muscle work, making the muscle tissues able to withstand the concentration of lactic acid and thus withstand the performance of punches, especially the third round of the fight because of its decisive role at the end of the fight, which is decisive in most fights.

5. Conclusions and recommendations

5.1 Conclusions

1. The dynamic lactic acid method led to adaptation of the working muscles by resisting the high concentration of lactic acid and the level of activity of the enzyme (L.D.H.) in the blood.
2. The exercises used contributed to increasing the maximum anaerobic capacity of the experimental group.
3. Training according to the dynamic lactation method helped the boxers withstand the straight punch, and this is important for deciding the fight in the final round.

5.2 Recommendations

1. The necessity of using the dynamic lactation method in preparing boxers because of its major role in creating adaptations that resemble the nature of performance in boxing.
2. Conduct a periodic evaluation of the training results through periodic examinations of the players during the preparation periods.
3. The need to focus on training to support the offensive performance of boxers because of their decisive role in fights.

6. References

1. Abu Al-Ala A. Physiology of Sports Training, Cairo, Dar Al-Fikr Al-Arabi, 1st edition; c2003.
2. Salama BED. Athletics Bulletin, Cairo, Regional Development Center; c2002.
3. Hussein AJ. The effect of dynamic lactate training according to the level of lactic acid concentration, some biochemical and functional variables, and the level of achievement in the 200 and 400 freestyle swimming, doctoral thesis, University of Basra; c2013.
4. Abdullah FH. The effect of anaerobic training on the efficiency of some vital regulators and biochemical variables to develop lactic endurance for basketball players. Doctoral thesis, University of Babylon; c2008.
5. Ibrahim MAM. Tests and measurement in physical education. Jordan. Dar Al-Fikr for Printing and Publishing; c1999.
6. Al-Hazza HBM. Physiology of physical effort, theoretical foundations and practical procedures for physiological measurements, King Saud University; c2009.
7. Ismail YASH. The effect of additional training and its relationship to some components of motor performance and physiological variables, published research, Journal of Physical Education Research, Helwan University; c1985.

Appendix (1): A model for dynamic lunge exercises

Objective of the training unit: Developing (lactic endurance, straight punch endurance)

N	Exercise number	Intensity	Exercise time	Performance dynamics	Rest between exercises
1	Punching on a heavy punching bag	80%	6 min	The boxer begins the exercise at 88% intensity, continues for 30 seconds, then moves to 75% intensity for 40 seconds, then returns to 88% intensity, and repeats the performance 4 times.	60 seconds is similar to rest between rounds
2	Punching on a trainer pad with weights	85%	6 min	The boxer begins by performing the exercise at 88% intensity and continuing for 45 seconds, then returning to 75% intensity gradually, continuing for 60 seconds, then returning to intensity 85% and repeating the performance 4 times.	
3	Throwing a medicine ball (2 kg) towards the wall in front of the chest	80%	7 min	The boxer begins by throwing the medicine ball towards the wall with both hands, with the arm fully extended, in a movement similar to a chest tackle with a basketball. It continues for 45 seconds at an intensity of 80%, then moves to intensity 85% for a period of 35 seconds, then returns to the first intensity of 80% for 45 seconds. The performance is repeated (4 times).	