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The Effect of Giant Set Training on Some Biochemical Indicators and the Endurance of the Snatch Punch Performance of Young Boxers

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Abstract: This study intends to determine how large group exercises affect specific functional indicators that can survive a boxer's side strike and to build young boxers' endurance through large group exercises to better prepare them for side punches. In compliance with the study's design, pre- and post-tests were administered to the two equal experimental groups: the experimental group and the control group. Ten boxers from the Al-Hilla Club in total were selected to be part of the study group for the Babylon Governorate 2023 training season. The sample was split into two groups, each with five boxers: the experimental group and the control group. The two most significant discoveries made by the researcher are that the exercises raised the experimental group's maximal anaerobic capacity and that the gigantic set approach compelled the working muscles to adjust by withstanding the increased lactic acid concentration and blood enzyme activity (L.D.H.). The researchers' most significant tip is that boxers use the big set technique to prepare because it's crucial in creating adaptations that closely resemble boxing performances. Examine the athletes frequently as they get ready to evaluate the results of their training.

Key points: Giant Set, Biochemical Indicators, Endurance, Snatch Punch.

Introduction:

Sports science, like other sciences, has come a long way since its main goals were to build the physical characteristics, functional indicators, and energy production systems needed for top performance in various sports. These advancements have been seen in all sports, age groups, and tournaments. In order to develop an athlete's aerobic or anaerobic capacity, training is done utilizing both the big group approach and the high group method. This immediately affects the athlete's performance levels in terms of physical and skill, and it also significantly delays the onset of tiredness. - As with the energy production system in boxing, training at intervals of high intensity modifies several body systems on a physical, functional, or chemical level. Long-term training sessions have an impact on muscle endurance, which is where the biggest changes occur. Because the big group form of anaerobic training involves four to six repetitions at an intensity range from 75 to 90%, the longer the exercise, the more lactate is produced in the muscles. Using this technique, sugar is successfully oxidized anaerobically. Prolonged and severe anaerobic activity causes the muscles to accumulate lactic acid more quickly, which slows down chemical reactions.

Because boxing is an anaerobic (lactic) sport, lactic acid can accumulate quickly, especially near the conclusion of the third and second rounds. This accumulation in the boxer's blood and muscles is therefore inevitable, underscoring the significance of lactic acid. An anaerobic giant set training regimen that resembles the intensity and dominant energy system of boxers is employed to prevent the accumulation of lactate in the muscles. Furthermore, certain vital regulators for the boxers are being developed, and they continue to do side punches because they are crucial to their success in the battle, particularly in the final round.

Research problem:

Boxing is a physically demanding sport that requires extraordinary physical and motor skills to finish a fight swiftly, effectively, and without wearing out The researchers' monitoring of multiple Iraqi boxing clubs, and the Iraq Club in particular, revealed a lack of interest in improving physical stamina through the use of high training groups that mimic fighting conditions and an emphasis on the boxers' physiological attributes. This is evident in the boxer's level of performance, the pace at which his body accumulates lactic acid, and the length of time it takes him to throw a punch. Giant set workouts are researched as a means of improving the boxer's functional and physical abilities for these reasons.

The goal of the research is to develop intense group exercises that will help young boxers improve their side punch endurance and some functional indications.

- Countering the boxer's side kick by understanding how training in large groups impact specific functional markers

Research suppositions: - Giant set workouts help young boxers gain better side punch endurance and several functional markers.

Research areas: - Human: Al-Hillah Youth Club boxers from Babylon Governorate for the 2023 campaign.

- Date range: October 17, 2023, to January 8, 2023

Physical location: Babylon Governorate's Al-Hilla Club boxing ring and hall.

Methods of Research and Field Operations:

Methods of Research: accordance with the study's design.

Community and sample research: For the study group, ten boxers from the Al-Hilla Club in the 2023 training season in Babylon Governorate were chosen. Each of the two groups (the experimental group and the control group) that were formed from the sample contained five boxers.

Fair and consistent handling of the two study groups:

For the research variables, arithmetic mean value, standard deviation, and significance level.

No.	Variables	Experimental group		Control group		F value	T value calculated	level Sig	Type sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation				
1		7.60	0.89	1	0.44	0.09	0.66	0.52	non sig
2	Accept the punch's performance.	244.36	9	234.40	3.19	3.36	0.22	0.82	non sig
3	Maximum Lactic Acid Ldh Anaerobic Capacity	93	5.35	89.60	3.57	0.13	1.37	0.20	non sig

It is clear from the previous table that there is no difference between the two study groups, indicating that the research variables are arbitrary.

Methods for Field Research: Choose which searches to conduct:

The test's objective is to ascertain the maximum anaerobic capacity.

- How to administer the test.
- ✓ To attain laboratory quality, warm up on the bike for three to four minutes with a resistance of 1-2 kg, depending on the weight of the individual. Before the warm-up ended, the participants turned their bicycle wheels as fast as they could. Switch it up twice or three times, then hold for three to five seconds.
- ✓ Enter the person's data into the computer and adjust the resistance based on their weight (six percent of their typical body weight).
- ✓ Once the weight is removed from the weight basket, the user removes the weight by spinning the bicycle wheel for a maximum of three seconds, as quickly as they can (at least 80 revolutions per minute). The measuring procedure is initiated by depressing the program start button and bringing the wheel down a little. The user can keep moving the wheel as long as he heeds the advice to keep its rotation speed as high as feasible.
- Recording: The installed program on the electronic calculator instantly records the results and applies them to the computation of variables.

Among the biochemical assays is the measurement of the LDH enzyme (Marwan Abdel Majeed Ibrahim, 1999, p. 203). The study sample gets warmed up for five minutes on the treadmill. The device is next put through a physical effort test, which involves two minutes of acceleration to 15 km/h. After then, the sample is given five minutes to rest. The enzyme's effectiveness is then measured using a German-made device in accordance with the same recommendations (Kit). Given that its normal ratio is known to be (226-351 U/L), this yields the desired results.

- Calculating blood lactic acid (Farah Hassan Abdullah, 2008, p. 27).

Measuring the level of lactic acid in the blood following exercise is the aim of the test.

- Test parameters: Five minutes after the physical activity ended, a specific test was performed to gauge the level of lactic acid in the blood. A chip that was immediately attached to the device was used to extract a drop of blood from the player using their thumb, and it was found that (1) mmol is the normal quantity of lactic acid.
- The test aims to ascertain the side punch's durability.
- Performance description: In front of the bag, the boxer assumes a predetermined posture and records the activity. The fighter hits the bag as many times as they can using a variety of blows when the coach provides the cue.
- Capturing: In ninety seconds, the boxer's punching bag records the correct blows.

Prior to evaluations:

On Wednesday, May 8, 2023, pretests were administered to research sample participants. At nine in the morning, physiological tests were performed in the University of Karbala's College of Physical Education and Sports Sciences laboratory. An analytical specialist administered the tests, and at four o'clock in the evening, a side punch endurance test was held in the boxing arena of the Al-Hilla Club in the Babylon Governorate.

Main experiment:

The researchers used lactic exercises that fit within the big set type of the high-intensity interval anaerobic energy system. These workouts were similar to the energy system that boxers often use, which ranges from 75 to 90% of their maximum capacity. They also followed the individuality rule by keeping the intensity of their training to a minimum. Since the four to six exercises are meant to mimic the performance, there isn't a break in between them. The exercises were conducted in the main training area within the allotted 90 minutes, not more than 30 to 45 minutes, as the majority of them mirrored the battle in terms of form, intensity, and energy system, at a rate of three training units per week for a period of two months.

Post-tests: On Thursday, October 14, 2023, the research sample participants were given the post-tests by the researchers using the same configuration and environment as the pre-tests.

Statistical techniques: The Statistical Package for the Social Sciences (SPSS) was used to process the search data.

Analysis of the Data: The pre- and post-test differences for the experimental group are presented and discussed.

Table (2) displays the pre- and post-test findings for the variables under investigation for the experimental group.

No.	Variables	Pre-test		Post-test		T value calculated	level Sig	Type sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
1	Maximum Lactic Acid Ldh Anaerobic Capacity	21.09	1.96	24.30	0.94	2.70	0.05	sig
2		7.60	0.89	11.80	0.83	21	0.00	sig
3	Accept the punch's performance.	244.36	9	227.46	7.88	5.26	0.00	sig
4	Maximum Lactic Acid Ldh Anaerobic Capacity	93	4.24	111	7.68	8.58	0.01	sig

Add four degrees of freedom and a significance level of 0.05.

Positive test findings for the experimental group indicate that the coach's efforts have the varied development of the control group. The young boxers' ability to deliver consistent side strikes is directly impacted by this.

The results on the differences in post-test scores are demonstrated, evaluated, and discussed in relation to the experimental and control groups.

The differences in the post-test scores for the factors looked at for each of the two study groups are shown in Table 4.

No.	Variables	Experimental group		Control group		T value calculated	level Sig	Type sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
1	Maximum Lactic Acid Ldh Anaerobic Capacity	24.30	0.94	21.30	0.75	5.54	0.00	sig
2		11.80	0.83	9.40	0.54	5.36	0.01	sig
3	Accept the punch's performance.	227.46	7.88	239.32	3.84	3.02	0.01	sig
4	Maximum Lactic Acid Ldh Anaerobic Capacity	111	7.68	95.20	1.48	4.51	0.002	sig

Using four degrees of freedom and a significance level of 0.05.

Every research variable has a significance level (sig) value of less than 0.05, as Table 4 demonstrated. Because of the researchers' training techniques, which increased the boxers' maximum anaerobic capacity, this shows that huge set training had a direct impact on the research variables. These exercises are a component of giant set training, which increases training volumes and decreases exercise rest intervals in order to purposefully increase lactate production. During the course of a single set, this technique builds up lactic acid and acclimates the muscle to the exercise's intensity, leading to a perceptible improvement. This was demonstrated by the performance (maximum anaerobic capacity, VO2), according to Abu Al-Alaa Ahmed (2003), p. 282.

Oxygen consumption provides a comprehensive analysis of these systems. As a result, physiological laboratories employ it to assess the physiological state and training of the athlete (Bahaa El-Din Salama, 2002, p. 67). The level of the enzyme LDH increased as a result of the more intense exercise. According to Edwards and Hassall (p. 203), enzymes are essential to living cells because they enable important chemical reactions and permit them to occur under physiological conditions, which may not always be the case. Slow to an intolerable extent as a result of the enhanced chemical reactions that occur after physical exertion, which raises the enzyme's (LDH) activity. This implies that pyruvic acid and hydrogen ions have accumulated significantly. Thus, in order to convert pyruvic acid into lactic acid, the enzyme's activity must be raised. This might point to a rise in the enzyme's activity concentration. The amount of glycogen that is anaerobically broken down during vigorous physical activity may also be revealed by blood tests.

This technique, along with the massive set technique, allowed the boxers to maintain their resistance to fatigue even as their muscles continued to build up lactic acid. This was achieved by moving more lactic acid throughout the large set exercises, which improved the performance of the boxers (Aqeel Jassim Hussein, 2013, p. 176). According to the performance, it increased the player's lactic acid resistance and the efficiency of their muscle function, making their muscle tissues more resilient to lactic acid concentrations and, as a result, side blows, particularly in the third and typically most crucial round of the fight.

Conclusions and recommendations

Conclusions: The researchers came to the following conclusions based on the data they collected: - The high lactic acid concentration and the blood's level of enzyme (L.D.H) activity drove the working muscles to adapt.The experimental group's maximum anaerobic capacity increased as a result of the workouts they performed.

While using the massive set method during training, it was simpler to take side strikes. For boxers, this is crucial since it decides who will win the last round of fighting.

In light of the researchers' findings, the following recommendations are made: - The enormous set strategy needs to be used in boxer preparation since it plays a crucial role in producing adaptations that mimic boxing performance. - Check on the athletes often as they are preparing to do a periodic review of the training outcomes.

Boxers need to concentrate on high volume training because it is essential for improving their offensive performance's endurance during fights.

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Appendix (1)

A model for giant set exercises.

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

No.	No. of exercise	Intensity	exercise time	Repetitions	Nature of performance
1	Punching on a heavy punching bag - punching using rubber - throwing a 3kg medicine ball from the side towards the wall	%80	5 minute	The exercise is repeated 3 times	The exercise is performed without a rest period between repetitions, and the rest period between one exercise and another is 1-2 minutes
2	Punching on the trainer's pad - weighted punching - barbell butterfly - throwing a medicine ball towards the wall from the side	% 85-80	5minute		
3	Punching the bag - Throwing a medicine ball (2 kg) towards the wall - Opening a flat dumbbell - Collecting a butterfly from sitting -	%75	6 minute		