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THE EFFECT OF OCCLUSION TRAINING WITH COQ10 SUPPLEMENTATION ON LACTIC ACID AND LDH IN ROWING PLAYERS

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Abstract: The study aims to identify the effect of Occlusion training with COQ10 supplemental on lactic acid and LDH in rowing players, the sample was selected by the intentional method from the players of the rowing club aesthetic for water sports and sports from the age of 17 :20 years and the number of the sample (18) players. The results revealed an improvement in the level of performance when taking CoQ10.
Conclusion: Using the Coenzyme Q10 (COQ10) Supplemental and Occlusion training has a good effect on the level of performance.

Keywords: *COQ10, Occlusion training, LDH*

Introduction

The development of the physical and physiological fitness of the sports champion has become an urgent necessity to break records and achieve ideal sports achievements. Here lies the importance of scientific research in its ability to reach results that constitute a new scientific addition that can be applied in the field to achieve a new breakthrough in sports.

Recently, studies have spread recommending the use of the Occlusion training method, which means controlling the amount of blood loaded with oxygen at the cellular level. This type has many examples, such as training with an air mask, hypoxic. The effectiveness of this type of training has been proven and this has appeared in the results of many studies.

Lavie & Dornelles (2012) point to the important role of the coenzyme Co q10 in improving performance in exercises and delaying the onset of fatigue in athletes; Occlusion training leads to an increase in the accumulation of lactic acid and its appearance at a certain rate. The more the body's ability to resist the increase in lactic acid production increases, the more the percentage of its appearance in the blood is delayed, and vice versa, i.e. increased resistance to fatigue and continued performance.

Because rowing is one of the sports that depend on oxygen debt and work in conditions of oxygen deficiency, the game requires high physical and physiological abilities due to the difficulties that players are exposed to, such as muscle fatigue. Through the work of researchers in the field of sports physiology, in addition to their field experience in the field of training, they noticed the constant complaint of coaches due to the rapid fatigue of athletes, especially in sports that require performance with high loads for a long time. This appears after performing half the race distance, fatigue quickly increases as the finish line approaches. Therefore, it was necessary to search for a new method that would improve endurance at the cellular level, such as taking a co q10 nutritional supplement to increase the speed of recovery. The importance of the research appears in

knowing the effect of using the Occlusion training method with taking a co q10 supplement on lactic acid and LDH in rowers. The study aims to identify the effect of Occlusion training with taking a co q10 supplement on lactic acid and LDH in rowers by: - Identifying the extent of the effect of Occlusion training with taking a co q10 supplement on lactic acid in rowers.

Methods

Participation

The research sample was chosen intentionally from the players of the Al-Gamaliya Rowing Club for Water Games and Sports, aged 17 to 20 years. The total sample size was (18) players, including (2) players who underwent the exploratory study, (16) players for the basic experiment were divided into two equal groups (control - experimental), each consisting of (8) players.

Data collection tools and methods:

The tools that are appropriate to the nature of the research were identified by reviewing previous research and studies, scientific journals, and personal interviews. After presenting them to the supervisors, the researcher reached the following:

Means and tools for measuring growth variables:

- Medical scale to measure weight.
- Resta meter to measure height.
- Club records to extract the age.

Means and tools for measuring blood variables:

- Alcohol or povidone iodine to wipe the skin before drawing blood.
- Plastic syringes, size 10 cm.
- Stickers with specific codes.
- Medical cotton.
- Ice box.

Exploratory study:

- The researcher conducted the exploratory study in the period from 5/30/2023 to 6/2/2023 on the exploratory research sample, consisting of (2) players from the original community and outside the basic research sample, with the aim of:

- Knowing the validity of the compression bandage and the amount of muscle strangulation.
- Ensuring the suitability of the exercises used in the program.
- Verify the specified period for muscle strangulation.

Results of the exploratory study:

- It was confirmed that the trainers are aware of the muscle strangulation locations and the amount of strangulation.
- The program is valid for implementation during the unit time according to each individual part of the unit in the general plan of the program.

Pre-measurements:

The researcher conducted the pre-measurement of the basic research sample in the period from 6/6/2023 to 8/6/2023.

Basic stage:

The basic experiment was applied during the period from 6/11/2023 to 8/11/2023, where the proposed training program was applied (3 times) per week on Sundays, Tuesdays and Thursdays.

Post-measurements:

The researcher conducted the post-measurements for the two research groups from 8/11/2023.

Statistical treatments:

The researcher conducted the statistical treatments using the Statistical Packing for Social Science (SPSS) program

Results and discussion.

Table (1)
Significance of the differences between the two measurements (pre- and post-test) of the control group in the variables under study

Variables	Unite	Pre		Post		Sign .
		M	Sd	M	Sd	
LDH	**U/L**	**227.8**	**1.03**	**232.8**	**7.29**	**0.045**
Lactate	**U/L**	**16.42**	**2.92**	**18.85**	**1.66**	**0.080**

Table (1) shows that there were statistically significant differences between the pre- and post-measurements. The researchers attribute the variable improvement to the traditional training program that depends on regular training that the control group underwent. The results of this study agree with what was indicated by Sami Moheb 1997, quoting Wedbaro Oded Bar-or 1987, Abu Al-Ala Abdel Fattah 1997, Yahya Al-Hawi 2002, that regular training leads to an improvement in the functions and systems of the body, and this is reflected in the player's physiological abilities. The results of this study also agree with Muhammad Abdul Raouf Diab 2004 and Adel Helmy 2000, that regular training leads to an increase in the concentration of LDH. As for the increase in LDH, both Ferro and Ferro 2000, Sherrod 2001 confirm that the biochemical changes that occur in the body during aerobic training require the LDH activity system and many glycolytic enzymes to provide the energy needed to continue performing. Atwell et al 1991 also confirm. Continuing to train with a standardized physical load of high intensity for 60 seconds leads to a significant increase in the concentration of LDH in the serum after performance.

Table (2)
Significance of the differences between the two measurements (pre- and post-test) of the experimental group in the variables under study

Variables	Unite	Pre		Post		Sign .
		M	Sd	M	Sd	
LDH	**U/L**	**230.5B**	**4.57**	**338.7**	**85.37**	**0.005**
Lactate	**U/L**	**16.48B**	**3.43**	**34.40**	**6.84**	**0.001**

Table (2) shows that there were statistically significant differences between the pre- and post-measurements. The researchers attribute the increase in both ((LACTATE - -LDH) to the physiological mechanism of catechin training, which is represented in controlling the amount of blood supplied to the muscle, as both "Abu Al-Ala Abdel Fattah & Brent Rushall" (2016) (1) see that the muscle, when contracting, produces Bi-products, and these wastes accumulate in the muscle. Naturally, the body tries to get rid of these wastes by pushing quantities of oxygenated blood to the muscle, but with BFR training, these wastes remain in the muscle as a result of obstructing the flow of venous blood, and this will lead to many physiological changes in the human body, as the accumulation of metabolic wastes for energy by-product accumulation Metabolic is what stands behind the benefits of BFR training, as all blood lactate, cells, and muscle cells accumulate as a result of obstructing the flow of blood from the muscle, and when the muscle environment is acidic, the PH decreases as a result of a decrease in the acidity in muscle tissue and an increase in the levels of regular blood lactate, which is what Loenneke, Jeremy Paul BS; Pujol (2009)) 'The results of the current study agree with Samia Khalil, as it reached a set of positive effects resulting from the use of catechin training, through the breakdown of glycogen inside the working muscles and increasing the activity of the enzymes necessary for the reaction, the enzyme lactate dehydrogenase (LDH), as the activity of the enzyme (LDH) increases, which helps convert lactic acid to pyruvic acid, and large parts of these materials are oxidized to form large amounts of (ATP). Loenneke et.al (2009) (63) also confirms the increase in the accumulation of lactate inside the muscle cell, which makes the medium inside the muscle tend to acidity; This is consistent with what Atweel el.Al.1991 went to that continuing to perform a standardized physical load with high intensity for (60s) seconds leads to a significant increase in LDH in the

blood immediately after the performance. In addition, LDH stimulates the reactions related to the conversion of pyrones to lactate.

Table (3)
The significance of the differences between the two groups (control - experimental) in the post-measurement of the variables under study.

Variables	Unite	Control		Experimental		Sign.
		M	Sd	M	Sd	
LDH	**U/L**	**232.8**	**7.29**	**338.7**	**85.37**	**0.005**
Lactate	**U/L**	**18.85**	**1.66**	**34.40**	**6.84**	**0.001**

Table (3) shows that there were statistically significant differences between the two groups (control - experimental) in the post-measurement of the variables.

By comparing the change rates of both the control and experimental groups, the change in the experimental group in some variables (LDH - Lactate) is much better than the control group. These results indicate that the use of catechin training led to a better positive effect than the traditional program on the biochemical variables under study. These results agree with both Eonho Kim et al. (2014) where blood lactate was higher in the high-intensity resistance training group, which is what the current study indicated. It also agreed with Matthew Driller, Andrew Williams (2012) and agreed with Johann Edge et al. (2006) It confirmed the improvement of lactate thresholds and the presence of a significant decrease in hydrogen ions in the blood and muscle. The researcher attributes the reason for this to the physiological mechanism of catechin training, which led to an increase in the acidic environment. This was confirmed by Jeremy (2009) with an increase in the percentage of both lactate acids. As for LDH, Atwell et al (1991) added that continuing training with a standardized physical load of high intensity for 60 seconds leads to a significant increase in the concentration of the enzyme lactate dehydrogenase LDH in the serum immediately after performance.

Conclusion.

Occlusion training improves muscle and blood biochemical parameters by increasing the release of accumulated lactate

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