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The effect of lactic exercises on some physical and functional variables of football players

[1] Muayad nawfal Nayyef , [2]Zeyad Hameed Abd [3]Dunya Ali Abdul Hasan,

Abstract

The study aimed to know some of the physical and functional variables of soccer players (beginners) through the influence of lactic tolerance exercises, and the researchers used the experimental method by conducting a (pre-post) test to a sample of (20) players emerging from local clubs and were chosen intentionally and the most important results were An increase in the percentage of improvement in physical abilities between (3.28%, 16.98%) and an increase in the percentage of improvement in functional variables between (3.076% and 12.322%) .The researchers recommend using lactic tolerance exercises in the football training program to delay fatigue and raise the level of lactic tolerance in football

Keywords: *Football - lactic - respiratory cyclic endurance exercises - distinct strength of speed - flexibility - agility - pulse rate - cardiac thrust*

Introduction

The effect of lactic tolerance exercises on some physical variables under consideration (periodic respiratory endurance - performance tolerance - the distinctive force of speed - flexibility - agility). The effect of lactic endurance exercises on some of the functional variables under discussion (pulse rate - determining the maximum oxygen consumption - cardiac drive - Lactic acid. **(Abu Al-Ela, 1993)** The effect of lactic tolerance exercises on the association between some physical and functional variables under consideration. The presence of statistically significant differences between the mean of the two measurements (pre-post) in some physical capabilities under consideration in favor of post-measurement. The presence of statistically significant differences between the mean of the two measurements (pre-post) in some of the functional variables under consideration in favor of post-measurement. There are correlational indications in some physical and functional variables under consideration **(Wilmer, 1982)**.

Literature review

Football has immense popularity at the local and global levels, so scientific efforts and practical experiences are combined to develop the technical level of this game, and the performance of skills has become characterized by strength and speed together and is accomplished in a collective form with a high degree of understanding and mastery, and this requires players with a high physical ability and ability to Facing fatigue and continuing to exert effort throughout the game, so that the player can change places in defense and attack , and keep pace with the character of modern play, so many football specialists agree that the physical requirements of the football player that the physical requirements of the football player include endurance capabilities, Speed, strength ,agility, compatibility, and flexibility (**Muhammad , 2000**) The level of football

[1] Al_Nahrain University \College of Biotechnology/ Nawfal@ced.nahrainuniv.edu.iq

2Al-Nahrain University/ College of Sciences/ Zhr@sc.nahrainuniv.edu.iq

3Al_Nahrain University\ College of Political Science/ Dunyaa049@gmial.com

players' performance is also affected by several different factors, including biological factors, including physiological and morphological factors, while others are related to educational, emotional, and psychological factors, but the physiological factors come at the forefront of these factors to influence the level of physical performance, especially in football .Football training is defined as the overall organized, planned, and directed process to advance the level of players through coordinated effects aimed at developing physical competence and a willingness to perform effort to reach the highest level of athletic performance .Although pulse is used to codify physical loads (**Lamp , 1984**) They confirmed that measuring the pulse rate is less accurate than measuring the rate of concentration of lactic acid in the blood during the maximum and less than maximum loads on the intensity of training, and the reason for this is due by the Lamb test 1984 Until the pulse curve increases with the increase in training time linearly to certain limits, while lactic acid is associated with the maximum and less than the maximum load, therefore a measure of lactic acid must be used to follow training programs until they are more accurate**. (Muhammad , 2000)** As a result of the aforementioned, we find that the football match is a set of conscious moves and quick decisions achieved by using the optimal method of skills according to situations that are similar to what happens in the game .The researcher has noted through their previous experiences that there are some deficiencies in the programs that neglected the development of lactic tolerance and its effective impact in raising the functional efficiency of vital devices and this is evident from local levels if compared to global levels. **(Muhammad, 2001)** Therefore, the research assumes that the most important reasons for the decline in the performance of players during the matches is due to the lack of the level of preparation of players in terms of lack of focus training programs in football to form training loads in a scientific manner, which depends on lactic endurance training and its sources of aerobic and anaerobic work and codification in a way that achieves the player adapt The physiology required by the nature of competition in soccer matches. **(Bahaa El-Din, 2001)** In the previous presentation, and through the observations of the researchers and their follow-up to many football training and games for young people at the club level at this age level, it is clear that the physical level has decreased, especially in the crucial last times of the game, which may be due to the reliance on personal experience by coaches in planning their programs, and neglecting Rationing loads using the player's pulse measurements, or according to energy production systems and choosing appropriate training methods for their development. This is evident in the physical aspects in general and in particular it appears in lactic tolerance exercises that are often developed using high-intensity interval training that depends on the performance of intensity exercises. **(Wilmer, 1982)**

Methodology

Research Methodology **:**The researchers used the experimental method using the experimental design of one group using pre and post measurement.

Research community **:**The research community consists of soccer players from some local clubs.

Research sample **:**The research sample consists of an intentional sample consisting of (20) footballers and the researchers chose (10) players from outside the research sample to conduct exploratory studies.

Results

1. View and discuss the results of physical variables

Table (1)

Statistical treatment of pre and post measurements in the physical variables under investigation

Variables	measrui ng unit	Tribal measurements	Dimensional measurements	Calculat ed T	Chan ge

		Arithmetic averages	Standard deviations	Arithmetic averages	Standard deviations	value	ratios
Withstand running performance	the second	2.0720	0.04873	1.8515	0.04082	15.513	11.90
Endure a respiratory league	the second	3.0615	0.03014	2.6170	0.17303	11.318	16.98
Force marked with speed	cm	159.8025	1.11609	165.0555	1.27559	13.860	3.28
Running Fitness	the second	25.3815	0.22530	23.5770	0.39809	17.642	7.65
Flexibility	cm	65.3000	2.12999	70.0500	1.76143	7.686	7.27

The tabular "T" value at the significance level 0.05 = 2.015

The researchers add that athletic training is an organized process that aims to develop the athlete's physical and functional capabilities to the highest possible level to achieve the best sporting achievements. Each stage of sports training has goals that must be achieved to continue training towards the end goals .One of the most important features of the football training phase is the interest in special physical preparation in the game to master motor skills and basic skills. **(Bahauddin, 2000)** The results of the current research show the extent of the improvement (or change) that appeared in the level of physical abilities of football players, and this improvement may be due to the training program proposed by the researcher who contained various modern training methods that worked to increase the ability of the players to reverse if it was Training is limited to one or two methods only .Consequently, we can conclude that the power characterized by speed in the game of football is the speed and strength of the player's performance in matches while performing a strong and rapid skill performance and good achievement. **(Muhammad, 2005)** These results also agreed with the study of Mohamed El-Sayed El-Junaidi 2005 which showed the results of the program significantly improvement in all physical abilities and physiological tests under consideration for the benefit of the experimental group and the program showed a positive impact percentage on the element of speed tolerance in favor of the experimental group and the results of the program showed an improvement rate for measurement Al-Baadi is better than the pre-test improvement rate in all physical and physiological tests in favor of the experimental group, and the program showed significant improvement in skill tests in favor of the experimental. The results of this study are also consistent with the findings of **the (Mufti, 20 14)** result **.**The most important results were that the maximum velocity of a ball reached at the speed of self-approximation at the approaching speeds (low, medium, and high) is different and the approach velocity, whether it is low, medium or high, it is Factor affecting the velocity of the ball while there were no differences in the work variable on the leg muscles and pelvic dilation .Through presenting and discussing the previous results, the validity of the first hypothesis is established, which states :There are statistically significant differences between the mean of the two measurements (tribal - dimensional) on some physical abilities (endurance performance - respiratory periodic endurance - the distinctive strength of speed - flexibility - agility) in favor of Telemetry.

2. Presentation and discussion of the results related to functional and biochemical changes

Table (2)

The significance of the differences and the percentages of change between the pre and post measurements in the functional and biochemical variables under consideration

Variables	measruing unit	Tribal measurements		Dimensional measurements		Calculated T value	Change ratios
		Arithmetic averages	Standard deviations	Arithmetic averages	Standard deviations		
Resting pulse rate	Z / s	63.3500	0.81273	56.4000	0.50262	32.526	12.322
Pulse rate after voltage	Z / s	184.6000	1.04630	174.1000	0.78807	35.849	6.031
The maximum oxygen consumption	Milliliter	3.0380	0.06238	3.1431	0.02041	7.158	3.459
The size of the tribal payment	Liters	20.8050	0.22355	21.4450	0.10501	11.589	3.076
Lactic acid at rest	Milli Mall	1.7990	0.17574	1.4052	0.14846	7.655	28.02
Lactic acid after the effort	Milli Mall	19.32 72	0.19150	17.5286	0.07503	39.110	10.26

The tabular "T" value at the significance level 0.05 = 2.015

The researchers believe that the differences and the percentage of improvement of the research sample in the functional variables to the training program are exercises of lactic tolerance, in which progression and overall development were taken into account, and the researcher sees that the exercises of lactic tolerance that were codified according to the energy production systems in football (antenna - anaerobic) and the pulse used in them with the aim of developing the training Lactic, whether using tools or without tools or a ball or without a ball, holds that these exercises are similar in their performance to what happens in the game, as well as in terms of the areas in which they lead and the number of players and other variables that may contribute to the development of performance, which in turn led to an improvement in the situation Physical fitness of the players as a result of their training program, which reflected positively on the functional and physiological status of the players **. (Hassan, 2015)** Table (2) also shows the presence of statistically significant differences between pre-measurement and post-measurement in favor of post-measurement. The researchers explain that the reason for this is due to an increase in the efficiency of the periodic and respiratory system in the research sample as a result of the adaptation processes in a number of functional variables linked directly to the improvement .max2voWhich is one of the determinants of raising the level of athletic achievement as a result of the athlete's subject to training in an orderly manner, and this indicator is one of the most important measurements that reflect the functional condition of the player's body, because oxygen plays an essential and important role in energy production processes, especially wind energy. The body's ability to use the maximum amount of Oxygen indicates its ability to perform physical exertion and the adequacy of the circulatory and respiratory systems to meet the requirements of this performance**. (Vivan, 2003)** It is that aerobic endurance

training improves the physical and functional performance of the heart, respiratory system, pulse during rest, the maximum oxygen consumption, and also anaerobic abilities during the program .Interventional training is better than continuous training in improving the level of maximum oxygen consumption. The most important results of this study were to obtain a higher average rate of running using interval exercises than in exercises that were at a steady rate, and accordingly the most important conclusions of this study were that running using interval exercises helps Better to improve the maximum oxygen consumption and improve the continuity of performance than training at a fixed rate. **(Hanafi, 2008)** The study confirms Vivant Heyward Entitled "Aerobic endurance training improves the level of performance of soccer players" with the aim of knowing the extent of the impact of these exercises on the physical performance level of football players, and this study was conducted on (10) of young soccer players with first-class clubs in England and the most important results were that aerobic endurance training Improved physical and functional performance of the heart, respiratory system, and pulse at rest, the maximum oxygen consumption and also anaerobic abilities during the program**. (Vivan, 2003)** We conclude the following that the amount of oxygen consumption and use increases as the intensity of physical performance increases and begins to decrease after stopping this performance .Physiological sources stated that there is a percentage of lactic acid in the human body during rest and without physical exertion, and that this percentage increases from its normal level during any effort and the greater the intensity of the effort, the higher the levels of this acid with it .The researchers attribute this result to the effect of codified lactic tolerance exercises and the intermittent breaks between them, whether between repetitions or groups. The researchers also refer to the physiological adaptation of the research sample and the nature of codified lactic tolerance exercises according to the physiological framework .The researchers believe that the high pulse rates after the effort is a functional reaction that occurs in the body's systems, especially the circulatory system, as a result of the physical effort to which the subjects of the research sample are exposed . It is clear from Table (2) that there are statistically significant differences at the level (0.01) between the mean concentration of lactic acid in the blood in the voltage dimension between the pre and post measurement .The researchers attribute this improvement in the ability to get rid of lactic acid to an improvement in the training condition of the members of the research sample, and thus an improvement in the functional condition, which has a positive effect on reducing the rate of accumulation of lactic acid in the blood .And agrees with Adams Watson study that reached the maximum rate of air capacity, an unaffected factor in the changes that occur during training for football players, and lactic acid and aerobic and anaerobic capabilities are the two factors that influence the state of the training players, and the aerobic and anaerobic capabilities are of great importance Also due to the nature of the performance during the matches .The anaerobic energy production system is the basic system of soccer sport, especially the lactic acid system where the glycogen is broken down to produce anaerobic energy and the production of lactic acid as a result of this, and by observing the nature of performance in football, which is characterized by the need to produce batches of energy to perform strong and fast muscular works through dependence On the anaerobic energy in the phosphate system, but the basic system is lactic acid (Adams, 2003). The researchers believe that the use of training programs that use high-intensity in vitro training works to reduce the concentration of lactic acid and its concentration in the blood, leading to a decrease in its presence and speed of disposal, as the functional efficiency of the body increases in converting it into a protein or oxidation, as well as converting it to urine and sweat, as well as the need for muscle endurance By ensuring that performance is maintained without fatigue **(Peter, 1994)** . It is evident that the research sample in the pre-measurement was performing the parts of the training units without undergoing codified lactic endurance exercises .While conducting the post measurement, the research sample performed the rated lactic tolerance exercises in terms of controlling the intensity and size of training and the distribution of

intervals between interfaces, whether between repetitions or groups, as well as the type of rest used by the researcher in training doses .These results are consistent with a study, and the result of the study was the presence of statistically significant differences between the pre and post measurements in the physiological study variables (pulse rate, the maximum oxygen consumption, physical sufficiency) and the skill variables (the zigzag run test, the fixed scoring test, the ball hitting test for a distance of 20 m in favor of Post-measurement, there were differences between the four groups in all physiological and skill variables in the post-measurement and the best group was the half-cycle training group **(Muwaffaq, 2010) .** From the above it is clear that the second hypothesis is valid, which states that there are statistically significant differences between the means of the two measurements (Tribal - dimensional) on some functional and biochemical variables (pulse rate - determination of the maximum consumption of oxygen - cardiac propulsion - the level of concentration of lactic acid in the blood) in favor of dimensional measurement.

3. View and discuss the results of the third hypothesis

Table No. (3)

Indications of correlation between physical and functional variables under consideration

Variables	Endure shuttle performanceX555M ball	Endure a respiratory league	The force of speed	Running Fitness	Flexibility	Resting pulse rate	Pulse rate after voltage	The maximum oxygen consumption	The size of the cardiac propulsion	Lactic acid at rest	Lactic acid after the effort
Endure shuttle performance X555M ball	1	277	-111	.243	.123	149	.110	.316	.315	-359	.000
Endure a respiratory league		1	.408 (*)	292	.470 (*)	-361	-256	119	. 118	145	.106
The force of speed			1	.671 (**)	.227	-402	.416 (*)	185	192	149	151
Running Fitness				1	-006	- 330	.251	-.264	-269	- 332	.009
Flexibility					1	-321	-269	.444 (*)	.442 (*)	-105	.075
Resting pulse rate						1	.027	.242	.239	-039	-024
Pulse rate after voltage							1	- 370	-375	-024	-256
The maximum oxygen consumption								1	1,000 (**)	.075	-100
The size of the cardiac propulsion									1	.076	096
Lactic acid at rest										1	0.013
Lactic acid after the effort											1

The researchers attribute this result to the researcher following the scientific principles in codifying lactic tolerance training and the time period taken to implement the proposed training program, which took (10) weeks, which is sufficient time to show the extent of functional adaptation of the organs and organs of the body .It is consistent with Adams Watson study that concluded that the maximum rate of air capacity is a factor that does not affect the changes that occur during training for football players, and lactic acid and aerobic and anaerobic capabilities are the two factors that influence the state of the training players, and that the aerobic and anaerobic capabilities are of great importance Also due to the nature of performance during matches **(Adams, 2003).** This is in line with what the results of studies conducted on all the different sports indicated, which reached the effect of using various endurance training exercises on the physical pathways on some physical abilities and delaying fatigue among the soccer youth. He emphasized that the endurance training of various kinetic paths has a positive effect on endurance capabilities and indicators Delaying physiological and biochemical fatigue among members of the experimental research sample **(Hassan, 2015)** and thus the validity of the third hypothesis of the research hypotheses, which states "that there are correlative connotations between some physical and functional variables of football players, the research sample and in favor of telemetry".

Conclusions

1. The effect of the training program using lactic endurance exercises positively on the development of physical abilities (endurance performance - respiratory cyclic endurance - strength distinguished by speed - agility - flexibility)
2. Lactic tolerance exercises had a positive impact on the development of functional and biochemical variables under discussion (pulse rate at rest - after effort) and at (maximum oxygen consumption) and (volume of cardiac thrust - lactic acid in rest and after effort).
3. Lactic tolerance exercises showed correlations between some physical and functional variables as follows.
4. There was a correlation between respiratory cyclic endurance and the strength marked by speed and (0.408 (*) (Periodic respiratory tolerance and flexibility were (0.470) (*).
5. There was a correlation between the force marked by speed and agility (0.671) (*) (The force distinguished by the speed and pulse rate after the voltage was (0.416) (*).
6. There was a correlation between flexibility and the maximum oxygen consumption and (0.444) (*) (Flexibility, cardiac thrust size were 0.442 (*).
7. There is a correlation between the maximum oxygen consumption and the volume of cardiac thrust 1,000 (**).
8. The use of lactic tolerance exercises under consideration in football training programs to delay fatigue and raise the level of lactic tolerance in football.
9. Apply physical and functional measurements for soccer players before starting the training program and after completing to determine the status of the players and their progress.
10. Conducting more research and studies in different sports to see the effect of using lactic tolerance exercises on various fitness elements and functional variables.

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