International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 05, 2020
ISSN: 1475-7192

Effect of lactic threshold training on the development of some functional lung indicators and achievement of 800 meter runners under 20 years old

[1]Asst. Prof. Dr. Zaydoon Jawad Mohammed, [2]Lect. Dr. Zahia Sabah Abdulsalam

Abstract

The process of preparing the physical and functional public and private for runners of intermediate distances is to give them a certain amount each of the air and anaerobic energy and in different proportions according to the requirements of specialized effectiveness, that is, the longer the race distance the greater the need for a high level of air energy, and vice versa the shorter the distance the race the more it goes Training to anaerobic energy. The effectiveness of running (800) meters of competitions is in which most athletics coaches find it difficult to develop. It is good to given the need for hostility in this competition to develop all energy systems, specifically the non-tactical system. The research aims to prepare (tactical threshold) exercises for young players with an effectiveness of 800 m and to identify the effect of non-tactical threshold exercises in the development of some functional variables of the lungs and the achievement of an aggressive 800 m youth. The researcher used the experimental approach to its suitability to the nature of the research. The research community was determined by young players in elite clubs of ages (16-18) years for the training season 2017-2018, which numbered 14 players. As the research sample was chosen using the comprehensive inventory method, the sample was divided into two groups (experimental and controlling), and by seven players for each group. The most important conclusions were reached and they produced the tactical threshold exercises that were carried out from the experimental group that used a remarkable development in the achievement of the 800-meter enemy. Lactic threshold exercises also caused an increase in all lung function variables, part of which elevated to the level of significance (forced vital amplitude, forced expiratory volume for one second, and maximum lung ventilation volume).

Keywords: lactic threshold, training, functional, lung indicators, achievement, 800 m runners

Introduction

The physical and functional preparation of body systems is of great importance in reaching the best sporting achievements, as the levels reached by many world champions are a form of imagination after the progress that has occurred in the sciences related to the sports field, especially the science of sports training and physiology of training. (Mandalawi, 2012) Modern athletic training depends on focusing its goals to develop energy production systems and accompanying functional changes. The better the aerobic or anaerobic ability of the athlete, this is directly reflected at the level of physical and skill performance and achievement, and

[1,2] College of Physical Education and Sports Science / University of Baghdad
drzaydoonj@gmail.com

this is by setting training programs that are based on the development of energy systems associated with the game, and game sports The powers are among the activities that are affected by all elements of physical fitness, as in the light of these elements the level of achievement depends in its various competitions, and the specialized process in athletics activities leads to an improvement in the level of physiological (functional) aspects through the development of the work of the periodic and respiratory systems (Ibrahim, 1998).

Literature review

Each athletics event has its own specifications and requirements .In the 800-meter enemy competition, which is one of the Olympic and world exciting distance-running competitions in athletics, it is not possible to develop the athletic level of the runner without providing the correct scientific foundations related to the type of training used. It is known that the character of aerobic exercise is one of the important physical characteristics that the runner who needs an enemy of 800 meters is practiced, which can be developed in several ways that contribute to improving achievement in the enemy of the mentioned distance. And the functional variables of the players are very important because of their great importance in the athlete's access to adaptations that lead to the best achievements, including lung functions that work on many important functions for runners Including oxidation of oxygen through the pulmonary vesicles, and this belief from the researcher in the scientific research is the scientific method that works to reach the results and verify them. A study aimed to develop the exercises of the non-tactical threshold in developing some functional variables of the lung and the achievement of the aggressive 800 m young men .(Macardle, 1981) The process of preparing the physical and functional public and private for runners of intermediate distances is to give them a certain amount each of the air and anaerobic energy and in different proportions according to the requirements of specialized effectiveness, that is, the longer the race distance the greater the need for a high level of air energy, and vice versa the shorter the distance the race the more it goes Training to anaerobic energy. The effectiveness of running (800) meters of competitions is in which most athletics coaches find it difficult to develop. It is given the need for hostility in this competition to develop all energy systems, specifically the non-tactical system. (Abu Al-Ella, 2003) Through the work of the researcher, being one of the certified coaches, who said that the Iraqi Central Athletics Federation followed up the Iraqi Championship in Athletics, as well as personal interviews conducted by the researcher with some of my coaches The elite reached a conviction that weak enough interest by some coaches with training related to the physiological aspect, (Astrand, 1979) which is reflected in the level of player performance, which usually decreases, especially in the last meters of the race, as the performance effectiveness of the players in the competition decreases, so the researcher headed to conduct a field academic study It includes putting the tactical threshold exercises in the development of some functional variables of the lungs and achievement for my 800-meter hostility. Youth hope that they will be a remedy for this deficiency and benefit coaches and players, as well as providing information to be added to the Arab sports library in mathematical physiology. (Muhammad, 1990)

Methodology

Research methodology: The researcher used the experimental approach to suit its nature.

The research community and sample: The research community was determined by the young players in the elite clubs of the ages (16-18) years for the training season 2017-2018, and the number is 14 players .As the research sample was chosen using the comprehensive inventory method, the sample was divided into two groups (experimental and controlling), and by seven players for each group.

*Homogeneity and parity of the sample***:** In order for the researcher's work to go in the right direction and to confirm the objectivity of the work, the researcher has found homogeneity and parity between the two research groups in terms of physical measurements (length, mass, training and time age (as well as "on the functional variables of the lungs and achievement using appropriate statistical treatments.

Table (1) shows the homogeneity of the sample

T	Variables	measuring unit	Test value) Leven(		Significance level	
			Calculated	Standard error		
1	Age	Year	1,324	0,322	Not significant	Homogeneous
2	Training age	Year	0.301	0.429	Not significant	Homogeneous
3	Bloc	Kg	0,077	0,871	Not significant	Homogeneous
4	Length	cm	1,301	0.320	Not significant	Homogeneous
5	Forced vital capacity	L / d	0.641	0.892	Not significant	Homogeneous
6	Forced expiratory volume for 1 second	L / d	1.982	0.762	Not significant	Homogeneous
7	Maximum pulmonary ventilation volume	L / d	1.198	0.832	Not significant	Homogeneous
	Achievement	a second	1.762	0.879	Not significant	Homogeneous

Table (2) Statistical treatment of the examined tests between the control and experimental groups in the pre-test

Variables	measuring unit	Control group		Experimental group		Values t Calculated	mistake percentage	Indication of differences
		s	P	s	P			
Age	Year	16.82	1.67	16.23	1.82	1.110	0.355	random
Training age	Year	5.113	0.897	4.998	0.762	1.698	0.061	random
Bloc	Kg	69.10	2.861	70.210	1.54	0.567	0.442	random
Length	cm	178.59	9.186	177.23	9.332	0.431	0.241	random
Forced vital capacity	L / d	3.64	0.640	3.535	0.347	0.542	0.431	random
Forced expiratory volume for 1 second	L / d	3.566	0.397	3.387	0.382	0.087	0.331	random
Maximum pulmonary ventilation volume	L / d	102.9	12.201	100.9	5.68	0.783	0.398	random
Achievement	a second	1.590	0.932	1.580	0.897	0.541	0.221	random

*Moral at the level of significance (0.05) if the error level is smaller than (0.05.(

From the previous two tables (1,2), the randomness of the differences between the control and experimental research groups is evident in the variables under discussion at the significance level (0.05) and at the degree of freedom (12), as all error levels appeared greater than (0.05), which indicates homogeneity and equivalence Two research groups.

Hardware and tools used: Type stop hours (Rhythm measures the time to the nearest 0.01th of a second (4). Electronic type height measuring device OSK) Type body mass sensor (OSK measures the mass to the

nearest (50) grams. A device for measuring type lung function variables (Vicatest Spirometer) (Factory in company) Hellfire, German.

Measurement of lung function variables: Functional variables of the lungs were measured by a device Vicatest Spirometer. The variables are: Forced Vital Capacity. Forced Expiratory Volume in one Second Maximum Voluntary Ventilation.

*Achievement time measurement of 80 m***:** The achievement was measured through a 800-meter running test and the same procedures as in the race through the running field and the launch pistol.

The exploratory experiment **:**The researcher conducted the exploratory experiment on a sample of (5) players on 12/7/2017 at 3:00 p.m. on the playground of the College of Physical Education and Sports Science in the University of Baghdad in The exploratory experience reported to the researcher to identify :the validity of the devices and tools used in search .The time taken to take the tests .Stand on the difficulties that may be exposed by the researcher when giving a test the Chairperson C.

Scientific coefficients for testing

– *Honesty* **:**The researcher extracted the apparent sincerity of the tests under research through a questionnaire which was distributed to experts and specialists who indicated their fitness to measure (functional variables of the lungs and achievement).

– *Stability* **:** The researcher found stability in the test method and re-testing the exploratory sample three days after the first test, and after calculating the correlation coefficient (Cyber man) for the ranks between the results of the first and second tests, as shown in Table (1), the significance of correlation was extracted by T-law, and it appeared that the correlation was significant at the degree of freedom (3), and the level of significance (0.05), as the calculated value of (T) was greater than the tabular of (2.11), and this indicates that the test has a high degree of stability.

- *Objectivity*: The researcher extracted objectivity by finding the correlation between the results of two judgments, because the value of the correlation coefficient (Cyber man) for the ranks between the results of the two judgments came to confirm that the test is highly objective, given that the value of (T), calculated for the significance of the correlation significantly, is greater than the tabular amount of (2) 11), at a free degree (3), and a significance level (0.05)

Table (3) shows the value of the stability and objectivity coefficient and their statistical significance for the examined tests

the test	measuring unit	Coefficient of stability	Values Calculated v	Statistical significance	Objectivity factor	Values Calculated v	Statistical significance
Forced vital capacity	L / d	0.78	3,321	moral	0.921	4,431	moral
Forced expiratory volume for 1 second	L / d	0.88	3.798	moral	0.889	3.223	moral
Maximum pulmonary ventilation volume	L / d	0.90	4.321	moral	0.879	3.764	moral
Achievement	a second	0.89	2.522	moral	0.882	3.903	moral

Values (t) Table 2.11 at freedom degree 3 and significance level 0.05

Tribal tests: The researcher conducted tribal tests on Sunday, corresponding to 10 /12/2017 three o'clock in the afternoon at the Stadium College of Physical Education and Sports Science at Baghdad University and a researcher after giving a brief explanation of how to perform the tests and made the goal of.

Suggested special exercises: The exercises were in the special preparation stage. The researcher considered the principle of diversity in the exercises used. The exercises used were according to the lactic differential threshold. The tactical threshold training intensity is 80% - 90 % of the player's maximum portability, as the maximum intensity of exercises used in each player's exploratory experience has been determined. The determination of the intensity was by measuring the pulse during the voltage so that the pulse rate if it was 175-185n / d. These exercises were applied at the beginning of the main section of the training unit.

Tests posteriori: After the completion of the implementation of vocabulary exercises set within the prescribed period and then conduct their own tests to research and so on 25 /2/ 2018 three o'clock in the afternoon, in the court of the Faculty of Physical Education and Sports Science at the University of Baghdad has taken into account the researcher to provide similar conditions for tests tribal terms (Time, place, tools used, and method of performing the tests).

Results

1. **Presentation and analysis of results of lung function and achievement variables:**

In order to verify the differences related to lung function variables between the pre and posttests of the experimental and control groups.

Table (4) Statistical treatment of pre and posttests in lung function variables

Statistical parameters Lung function variables		**s-**	**± P**	**Values (t)Calculated**	**Sig**	**Indication of differences**
Forced vital capacity FVC (Liter)	Tribal	3. 642	0.640	2.793	0.000	moral
	after me	4. 398	0.712			
Forced expiratory volume for 1 second FEV 1 (Liter)	Tribal	3. 596	0.397	2.561	0.021	moral
	after me	3. 787	1.397			
Maximum pulmonary ventilation volume MVV (L / d)	Tribal	102. 8	12.201	4.670	0.011	moral
	after me	108.6	12.71			
Accomplished ran 800 m	Tribal	1.580	0.897	7.432	0.000	moral
	after me	1.470	0.763			

It is clear from Table (4) the arithmetic mean and the standard deviations of the variables under consideration for the experimental group and in the pre and posttest, where the results indicate a significant difference between the pre-measurement and the post-measurement and in favor of the post-measurement because the value of (Sig) For all variables less than (0.05), which confirms the significance of the results and for the benefit of dimensional measurement.

Table (5) Statistical treatment of pre and posttests in lung function variables

Statistical parameters	s-	± P	Values (t)	Sig	Indication of

Lung function variables				Calculated		differences
Forced vital capacity FVC (Liter)	Tribal	3.64	0.542	3.043	0.043	moral
	after me	3.788	0.812			
Forced expiratory volume for 1 second FEV 1 (Liter)	Tribal	3.566	0.554	4.675	0.034	moral
	after me	3, 599	1.623			
Maximum pulmonary ventilation volume MVV (L / d)	Tribal	102.9	11.621	3.907	0.022	moral
	after me	103.4	11.672			
Accomplished ran 800 m	Tribal	1.590	0.932	2.998	0.0321	moral
	after me	1.580	0.892			

It is clear from Table (5) the arithmetic mean and the standard deviations of the variables under discussion of the control group and in the pre- and post-test, where the results indicate that there is a significant difference between pre-measurement and post-measurement and in favor of post-measurement because the value of)Sig (For all variables less than (0.05), which confirms the significance of the results and for the benefit of dimensional measurement.

Table (6) Statistical treatment of the two dimensional tests in the lung function and achievement variables and the significance of the differences between them for the experimental and control group

the exams	measuring unit	Experimental group		Control group		Values t Calculated	Sig	Indication of differences
		s	P	s	P			
Forced vital capacity	Liter	4.398	0.712	3.788	0.812	8.901	0.000	moral
Forced expiratory volume for seconds	Liter	3.787	1.397	3,599	1.623	8.891	0.002	moral
Maximum pulmonary ventilation volume	Liter	108.6	12.71	103.4	11.672	11.432	0.032	moral
Achievement	a second	1.470	0.763	1.580	0.892	6.783	0.043	moral

It is clear from Table (6) the arithmetic mean and the standard deviations of the variables under consideration for the experimental and control groups in the dimensional measurement, where the results indicate a significant difference between the two measurements and in favor of the experimental group because the value of (Sig. For all variables less than (0.05), this confirms the significance of the results and in favor of the experimental group.

Discussion

Based on the above results from the table (4. 5. 6), it is clear that we have significant differences in a number of lung function variables between the pre and posttests of the two research groups and in favor of the posttest. The researcher attributes the reason for this to the development in the level of players through the

use of threshold exercises Lactic acidity), as the importance of physiological abilities appears to improve the processes of building and development as a natural consequence of the training that contributed to the development of lung variables. The researcher also attributes this improvement to the improvement that occurred in the lungs by increasing the vital capacity, increasing the strength of the breathing muscles and the large volume of breathing air, which led to an increase in gas exchange with the blood more after training the threshold of the lactic differential that lasted (12) weeks by (3) Weekly training modules. Some emphasized that "the world is beginning to fully turn to relying on energy systems for athletic training, and this has been proven by field experiments that confirmed the need for similar performance requirements during exercise with the energy system working during the competition to ensure the largest proportion of the contribution of exercises and Special in refining the athlete and achieving the required achievement (Muhammad, 1990). Some notes that "sports games and events of different types and peculiarities need different systems and a different amount of energy and muscular work. Therefore, improving the level of sports achievement requires careful attention in planning training curricula that aim to increase the efficiency of energy systems work and the efficiency of muscular work and Special in performing these games. (Mohamed, 2008) This is in line with what was stated by which indicated that lactic exercises work to improve the work of the oxygen-connected apparatus such as the circulatory and respiratory system and increase blood efficiency, so that more oxygen can be supplied to the muscle, and that exercise is closely related to the ability of Heart, circulatory efficiency, respiration, and chemical changes in the muscle. (Ibrahim, 1998) To shed light on the moral differences that occurred in the lung function variables mentioned earlier, the researcher attributes the moral differences for forced vital capacity, and the exhalation volume for one second to the increase in the amount of air that enters and exits from the lungs in the processes of inhale and exhale as a result of the tactical threshold exercises adopted by the researcher has mentioned that exercise increases the strength of the breathing muscles, increases the vital capacity of the lungs and increases the volume of breathing air . (Abu Al-Ella, 2003) Notes that regular athletic training leads to adaptations in the respiratory system that are evident by increasing the vital capacity and vital capacity per minute and the development of respiratory volumes and capacities. (Macardle, 1981) He agrees with his study (Astrand, 1979) , whose aim was to study the effect of a training program for students of primary studies, as the study showed an evolution in forced vital capacity (FVC(Forced expiration volume for 1 second)FEV 1). Through our observation of the table (4. 5. 6) we see that there was an evolution that occurred at the time of the enemy of 800 meters among the experimental group that used non-tactical exercises. The table showed significant differences in the time of the enemy of 800 meters between the pre and posttests in favor of the posttest, And the researcher can be attributed this result to the effectiveness of the exercises used by the researcher who carried out the experimental group and in a way pulsation training also emphasizes that "interval training works to increase hostility ability to get great speed under the conditions of the availability of oxygen and to improve Susceptibility to blood circulation and lungs. (Mandalawi, 2012) some also mentioned, "The method of vigorous high- intensity training contributes to upgrading the work of the circulatory and respiratory systems, by improving the vital capacity, lungs and heart capacity, as well as working to increase the ability of blood to carry more oxygen, and lead to development The individual's ability to adapt to physical exertion, which leads to delaying the onset of fatigue. And that the process of regularity in training leads to changes in the various cells and tissues of the body. The changes that occur after aerobic training are to improve the ability to work muscularly in the case of oxygen availability. By increasing the stock of glycogen in the muscles, as well as increasing the activity

of enzymes, it can also increase the ability of the muscles used to consume fats and use them as energy to drive the muscular action. (Muhammad, 1990)

Conclusions

1. The tactical threshold exercises carried out by the experimental group that used a remarkable development in the achievement of the 800-meter enemy.
2. Lactic threshold exercises also caused an increase in all lung function variables, some of which elevated to the level of significance (forced vital amplitude, forced expiratory volume for one second, and maximum lung ventilation volume).
3. The necessity of adopting non-tactical exercises when training my runners, 800 meters, because of their importance in developing the level of achievement.
4. Emphasis on athletics coaches to adopt functional measurements as indicators of adaptation in the body's functional devices because of their effect in revealing the level of training status, especially (lung function variables).
5. Carrying out a similar study on other enemy activities and on advanced players in the enemy of medium distances.

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