

COMPARISON STUDY OF SOME FUNCTIONAL VARIABLES BETWEEN PRACTITIONERS OF AEROBIC AND ANAEROBIC EXERCISES (ACIDOTIC EXERCISES) BY USING (FIT MATE PRO) DEVICE

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Abstract

For the purpose of comparison the researchers use the device (fitmate pro) by bruce test to define some physiological variables in the players bodies. The research includes two sample :the first sample includes the players of long the players of long distance that train Aerobic training and the second sample includes the players of football that train anaerobic training related to the Respiratory system (,HR,RF,VO2max,EE).

This research is carried out the physiological tests in the special laboratory of physical college Education /Diyala University.

The research use the descriptive method with comparative style to fit the nature of the research .samples are divided according to the used energy system .The first sample includes a group of long distances which represents airy-system and the second one includes a group of team sports (football, handball and basketball) which represents non-airy system .After the use of (fit mate pro) device by Bruce test and application of statistic means, the researchers analyze and discuss the results.

KEYWORDS: Handball. Shooting. Weak. Strong. Double.

1. INTRODUCTION

The devices of physiological exercises developed at present time (Exercise Physiology) and became able to measure the most functional indicators by the direct method and with results that free from the mistakes almost in the case of the correct use of them, and from these devices or supplies is a fitness device (Fitmate pro).

It is understood that the recent trends in the athletic training through studies that carried out by scientists and researchers focuses on energy production systems and considers it the foundations that classifies the sporting events on the basis of them and for studying them , they follow what happens during implementing of these proposed training curriculum and methods like the physical and skilled and functional changes due to the existence of a direct link between the functional improvement of vital body organs and sporting achievement for athletes "(Abu Zeid 1987.144), the field of sporting physiology considers one of the fields of knowledge that are no longer hidden from stakeholders in the sporting field after this vital field has seen significant attention by researchers and stakeholders alike and has become the basic pillars in the preparation of athletes and number of important aspects dealt with research and study which had a big role in the results of the tremendous development that has been achieved in the field of higher achievement sport in many countries of the world.

The study of functional and adaptations responses to different body organs and systems had a great importance to the research scholars that athlete can get to a high degree of performance through the mechanism that is divided into a series of integrated processes to various body organs.

Perhaps the study of respiratory system variables responses one of the determinants of sporting achievement and vital task which requires the need and then focuses on them and the factors affecting them.

As the game of football, basketball and handball games that requires significant scientific efforts to find out what accompanies the performance of the players during the game or at the very necessary for the effectiveness of the techniques and methods of training that used and for each of them impact in improving the performance of the players as a result of adaptation to functional systems due to that training load is the primary mean that used during the training program to influence the functional levels of systems and organs of the body to make progress by them , rationing the training load became very important to improve the level of sports (pick, 1997, 20) .

And also the track and field events considers the bride of athletic games that require ramified technical skills and high physical strength, and that requires proper planning by using the correct scientific rules in the science of sports training and the physiology of training and other sciences . That the energy of human body represented by biological processes inside the body (metabolic processes) and outside

the body to keep the energy level and control on it (the external oxygen) and must be accompanied by organizational and training programs to develop and preparing the athlete in the best manner .

Here lies the importance of research through the identification of physiological variables for the research samples of the respiratory system through the use of a device (Fit mate pro) by Bruce test and on the device (Trad mail) and then compare between them in these physiological variables for providing physiological information needed by trainers and workers in the field of athletic training and through them , the training loads can be rationed according to the energy that needed by the players in sporting training or racing systems.

The research problem:

The researchers found during the field experience that most of coaches and researchers are focusing on given the training loads in the training unit and in the training curriculums for the players depending on the variable of heart rate without depending on the rest of the body variables that are of high importance in describing the state of the functional or physical state of the player which lead to inaccuracies in the rationing of the training load or the training curricula that used according to the principles of training which is the most important of them is the individual training and through the presence of a medical specialist device that measures the variables that determine the functional status of the players and the most important of them is the maximum consumption of oxygen and variable of disbursed energy and by the direct method which make the researchers to identify on these functional variables for the players who practice aerobic and anaerobic exercises to make the coaches able to identify rationing the training curricula and bear training that fits the requirements of the game or training, and here lies the problem of the research.

Research Aim:

- To identify the values of some functional variables for a sample of long-distance runners -practitioners of aerobic exercises and players of the grouped games (football, basketball, and handball), practitioners of anaerobic exercises (acidotic).
- Comparison of some functional variables for a sample of long-distance runners -practitioners of aerobic exercises and players of the grouped games (football, basketball, handball), practitioners of anaerobic exercises (acidotic).

2. MATERIAL AND METHODS

The researchers used the descriptive approach by the comparative manner for its suitability to nature of the research problem and the descriptive approach depends on studying the phenomenon as present in fact and describes it in a delicate manner and expresses on it in a quantitative expression (Wajih Mahjoub, 1989.135), while the comparative study is "comparisons between different phenomena to discover the factors that accompany a certain event" (Wajih Mahjoub, 1989.135), which fits the research problem and contributes to the achievement of its objectives.

Research sample: Included two groups were selected in the intentional way, the first one included long-distance runners (aerobic system) totaling (8) runners representing Al-Kahrabaa club and Al-Shurta club, the second group (lactic system) included players from events (football, basketball, handball) totaling (15) players of Diyala club and at rate (5) players per each effectiveness.

Table 1: shows the normal distribution of the research sample in the functional indicators under the study

Rank	Functional indicators	Unit of measurement	M	S.E	Med	S.D	SK	Minimum	Maximum
1	VO2max	ml/kg/min	54.465	2.511	48.3	9.649	0.703	45.3	70.3
2	HR	bpm	181.13	2.162	185	10.371	0.933	154	196
3	RF	1/min	54.769	1.069	55.4	5.126	0.495	43	63.7
4	EE	Kcal/h	1231.47	26.48	1199	127.04	0.412	1035	1451

Steps of conducting the research:

Functional tests of the research:

Test Name: test of maximum level of oxygen consumption

The Aim of the test: measuring the maximum oxygen consumption and the spent energy, heart rate and other index during the effort.

The used tools: device (fitmate pro), a mobile traffic (Treadmill).

The performance method: the measurement process is done by linking the belt pulse on the runners chest and then the runner climbs on the mobile traffic device and wearing the mask of the voltage test (maximum oxygen consumption test) so that the runner breathes from it only and Bruce test applied with the observation of operating the device of (fitmate pro) after a minute of starting scrambling of the

runner for the purpose of debugging the mistakes and warm up , for that it was calculated the amount of maximum oxygen (VO₂max relative) by the gradient voltage (increased intensity) and by the direct way through the device (Fitmate pro) through air analysis by the mask that measures this indicator and its accessories.

Bruce test was applied as in the table (2) on each member of the sample through the continuous running by increasing the intensity stages through increased speed and increasing the traffic mobile device until depletion voltage (fatigue) of the player.

Registration: Results of functional indicators appear under study through the printer that exists in the same machine and on special paper and for each player individually.

Table 2: shows the bruce test stages or curriculum during the use of mobile device (treadmill) (Robert .A .Robergs and Scott) O. Roberds, 2000, 0330

The Bruce Treadmill Test Protocol			
Height grade %	speed Kg/h	Time (minutes)	level
10	2.74	0	1
12	4.02	3	2
14	5.47	6	3
16	6.76	9	4
18	8.05	12	5
20	8.85	15	6
22	9.65	18	7
24	10.46	21	8

The tests of the sample research has been conducted on Tuesday, Wednesday and Thursday, 14-15-16 / 5/2013 in Physiology Laboratory of the Faculty of Physical Education - University of Diyala, to extract physiological variables through the device (Fitmate Pro) and by Bruce (Bruce Test Test) and the device (Tradmail).

The first group which is represented by long-distance was tested on Tuesday 05/14/2013, the second group was tested on Wednesday and Thursday 15-16 / 5, the test started at 9 o'clock A.M until two o'clock noon, the researcher did the following actions:

- The height and weight in the electronic device in the laboratory was measured.
- The test was explained by the researcher so that individuals can understand the test sample and the health of its application.
- Give the opportunity to the players for the purpose of simple warm-up prior to the test.
- Provision of continuous electricity co- operating with generator operator and Dean of the college

3. RESULTS

Showing arithmetic means values and standard deviations and the value of calculated (t) and error rate and significance of the two sets of the research:

Table 3: shows the arithmetic mean values and standard deviation and the value of calculated (t) and error rate and statistical significance of the results of the search variables during the voltage between long-distance values (aerobic system) and the second group of football players, basketball and handball (anaerobic or lactic system) for the research sample.

The functional indicators	Unit of measurement	the first group (long distance runners) (aerobic system)		The second group (football , volleyball and handball players) (lactic system)		Value of calculated (t)	Error rate	Statistical significance
		M	S.D	M	S.D			
VO ₂ max	MI/kg/min	67.03	2.97	47.76	1.83	19.29	0.00	Significant
HR	Beat /minute	169.1	7.14	187.53	4.15	7.876	0.00	Significant
RF	Time / minute	50.25	4.626	57.18	3.562	4.008	0.001	Significant
EE	Kcal/h	1156.5	52.44	1218.4	138.05	2.25	0.035	Significant

4. DISCUSSION

Discussing the analysis of the variation of functional tests for the two groups:

The maximum oxygen consumption VO₂max test results of the research sample:

By the results that have been obtained from the table (3) appeared that there are significant difference between the first group (practitioners of aerobic exercises)and the second group (practitioners of the anaerobic or lactic exercises) as these results showed a

clear increase in the index of VO₂max for the first group and the researchers attribute this result to the impact of regular training programs that used by this group and depends on the aerobic running which leads to positive functional adaptations for this group and the long running is characterized by oxidizing the energy materials continuously by aerobic way thus will increase the oxygen consumption due to the participation of most of the voluntary muscles in running and this as evidenced by numerous studies (Bahaa Al-Deen Salama, 142.1999).

And that the effect of the regular aerobic training programs on the first group leads to increased mitochondria (energy houses) as well as increase the capillaries and these functional changes are responsible for increasing the efficiency of the muscles in the oxygen consumption and aerobic energy production (Bassett, D, Rand E.T. Howley, 1997, p599 -601).

These are the reasons that led to the superiority of the first group (practitioners of aerobic exercises) on the second group (practitioners of anaerobic or lactic exercises) according to the researcher's opinion in maximum oxygen consumption index.

Results of the heart rate test (HR):

according to the results in the table (3) founded that there were significant differences between the first group and the second group and in favor of the first group differences as these results showed a decrease in heart rate range for the first indicator that they were the (169 beat / minute).

The researchers attribute this decline to the functional adaptations in different organs of the body especially the circulatory system as a result of respiratory aerobic exercises or regular aerobic and relatively for long periods.

This was confirmed by (Resan Kahribt, 1995, p. 7) "from the regular sporting training works to adapt to the circulatory system."

And that heart rates is a good indicator on the efficiency of the heart and respiratory system for the players, the first group is the measure of the foundation of the physical load.

As it is a good sign which reflects the integrity of the heart and circulation of the players and their adaptation to do the muscular exercise and also leads to increase the cardiac output and also leads to increase the size of cardiac output and decrease the heart rates which leads to increase the size of the heart that leads to increase the amount of oxygen to the tissues in a single beat and this helps to continue with work regularly and properly for longer period without feeling tired.

For the second group, the heart rate value has reached during voltage (187.53 z / d) which is higher than the value of the index in the first group and this increase is attributed by researchers as a result of inflation in the walls of the heart muscle of the players of anaerobic exercises (lactic exercises) and so there will be an increase in the number of heart beats per minute if compared with the first group.

Breathing frequency test results (RF):

Through the table also found significant differences between the first group and the second group, as these results showed a decrease in breathing frequency range index (long distance runners) as reached to (50.25) times / minute which is less valuable than the results of the second group (football players football, basketball, handball) that reached to (57.18) beat / minute .

the researchers also attribute the cause of decreasing the index of the second group to the use of regular aerobic exercises and that leads to positive functional response for the vital organs of the body especially the respiratory tract (such as the widening of the rib cage and increase the size of the cavity of the lungs) and this contributes to increase of the gas exchange and economy of the process of breathing movement due to the increase in vital capacity this eventually leads to a decrease in respiratory rate or breathing frequency of the player (Qassim Hassan Hussein, 1990, p. 134).

Since the long-distance runners have a vital large capacity of the lungs and reach approximately to (5300 cc) which is bigger than football, basketball, handball players and their value 4,500 centimeters cubic and this shows that who has the vitality of a larger capacity has less respiration rate (breathing frequency) (Qais Al-Doory, Tariq Abd Al-Malik, 1988, p. 128).

Results of spent energy test (EE):

From the results of (Table 3) found that there are significant differences between the first group and the second group of the values of spent energy index during the effort of the research samples and for the benefit of the first group as well, since these results showed a decrease in spent energy of the first group as amounted to (1156.5 kilometers Clary per hour), while value of the same index of the second group amounted to (1218.4 kilometers clary per hour).

The researchers attribute the reason of these differences that the sample of the second group do the performance of high-intensity activities and for a short time. Therefore, it increases the activity of hormones to breakdown glycogen and forming energy and this therefore shows that the energy consumption for the second group (the expended energy) more than the energy consumption of a sample of the first group and this points to a preference of the first group being consume less energy for the same effort.

5. CONCLUSION

1. Superiority of the first group (long distance runners) (practitioners of aerobic exercises) with a maximum index of oxygen consumption on the second group (football players, basketball, handball) (practitioners of anaerobic or lactic exercises)
2. The (long-distance runners) (practitioners of aerobic exercises) have the preference in the functional indices (heart rate, breathing frequency, the expended energy) during the effort when compared with the second group (football players, handball, basketball) practitioners of anaerobic or lactic exercises .

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