FORECASTING CROSS FITNESS TEST OWN FOOTBALL RULES, ACCORDING TO SOME PHYSIOLOGICAL VARIABLES

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Abstract
The current study aims to reach a formula predictive for the purpose of identifying the ability of football referees in passing your physical fitness test has been the study on a sample of (25) the rule of first class and make a test of maximum oxygen consumption (Bruce) and using fitmat pro device and some lung variables using Sbirumeter device and the concentration of lactic acid in blood using lactic device pro meter. The current study found several results of the most important is that the equation predictive to pass the test of 150 m variables vo2max and the concentration of acid include lactic blood either equation predictive own test of 40 m it is found that vo2max vital capacity and capacity exhaled variables forced.
KEYWORDS: Vo2max. VC. FVC. Prediction.

1. INTRODUCTION

There is a group of multiple tests (literal, physical, theoretical) that must be crossed by football referees in the whole world, as the failure of one of those tests, it will lead to a lack promoted from grade to another, and in the assigned tasks and external obligations and the most important difficulties faced by the football rule, especially in Iraq is pass a physical test, carried out by the international Federation of Football (FIVA) during the past few years to amend those tests, as it was in the past based on the Cooper test (12 minutes running) because of the substantial evolution in physical performance the skill of speed in performance, which led to the development or adoption of a new test owned to football rulers fitness and when Note that the test will note that compound between high speed and carry speed and so the there is a physiological and physical requirements of the new must be enjoyed by football referees including the physiological capacity of which (the maximum consumption of oxygen, the concentration of lactic acid, and variables lung) as well as other physical abilities. As long as there is a range of physical and physiological variables, it necessitated the development of governance and the development of the most important physiological capacity or physical, which enables it to pass your physical fitness test, and therefore became the preparedness process possibility of passing judgment soccer physical test from the standpoint of physiological's very important for several reasons, the most important stand the most important physiological capacity that could be the development of physical performance and it is possible to hold the other physiological tests in addition to the physical as possible to stand on the possibility of passing your physical fitness test, if we know that the process of preparedness contribute to shortcut the effort, time and money in the training process in general.

(**Faff J. and others, 2007**) was accurate prediction of ·VO2max obtained from submaximal ratings of perceived exertion and heart rate during exercise. Of note, in the last few years, in spite of the great technical progress in construction of modern equipment to measure oxygen uptake, new methods to predict ·VO2max have continued to be developed and are considered to be very useful, particularly in studies of large population samples.

The purpose of the study:
The purpose of the study is to predict the ability of football to pass judgment on their fitness International Federation of Football test (FIFA) the most important in terms of lung variables and maximum oxygen consumption and the concentration of lactic acid.

2. MATERIAL AND METHODS

Sample: The sample included (25) the rule of first class between the ages (25-32 years) and weight (72 kg) were measured as a range of physiological and physical variables of their own.
The studied variables:
1. Concentration in blood lactic acid.
2. Vo2 max.
3. Lung variables include: (VC, TLC, VC, FVC1, FVC, FVC1, and FVC).
4. Special referees physical fitness test.
Main experience: Was a major experiment over three stages, with the maximum oxygen consumption measurement in the first stage, and after the measured concentration of lactic acid after physical effort with fitness own rulers football test in the second phase, and in the third stage was measured lung variables (FVC, FVC, FVC, FVC, TLC, VC).
Physical tests and physiological measurements:
Special football rulers fitness test:

First rulers:
- 40 m × 5.90 seconds was repeated 6 times
- 150 m × 30 seconds was repeated 20 times
- 50 m × 30 walked again repeated 20 times

Second assistants:
- 40 m × 5.80 seconds was repeated 6 times
- 75 m × 15 seconds was repeated 20 times
- 15 m × 20 walked again repeated 20 times
- Allowed to rule warning only in the 150 m test and re-only once in the test 40 m, as well as Assistant alarm in 75 AD and re-once in 40 AD.

Measure the concentration of lactic acid after the effort:

Was measured lactic acid blood for (25) provision for football after doing their fitness test your physical containing (40 m × 6 recurrence and 150 m × 20 repeat) since leaving the judgment period (5 minutes) after physical effort was measured lactic acid using a device (Lactic Pro meter), as was the use of more than one device to ensure rapid access to blood samples from the rulers who were divided into four groups when performing special fitness test called (FIFA).

Figure 1 illustrates the device measuring lactic acid in blood.

The maximum oxygen consumption measurement (Vo2 max):

The maximum measurement of oxygen consumption using a device (Fit mat pro) and by working on moving traffic device (Tread mill) depending on the test (Bruce) set out the details in the figure below, as it includes a working length (21 minutes), divided into seven stages by (3 minutes) for each final stage of each stage is to increase the speed (km / h) and the degree of inclination (%), as shown. As it has been every day three rulers to measure and thus continued to measure (Vo2 max) for eight days.
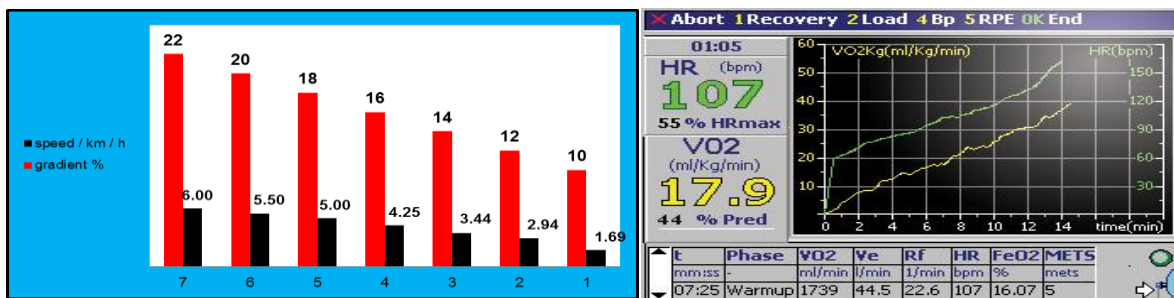

Figure 2 illustrates the Bruce test to measure the Vo2max and interface software to device Fit mate

Measuring lung variables:

Was measured lung variables using Spaarometr device making company (BTL) English as has been measured (FVC1, FVC) through its own profile of a (Force) as it is taking quick inspiration with a very fast exhalation repeat work for three times after being read the results of the screen directly . As for (TLC, VC) has been using the same device with the profile, as it has been to use a different tactic for the first case, as shown in the figure below, has been conducting measurements after taking personal information full for each rule (name, age, height, weight, smoking) was given a rest for (5 minutes) between the measure and another.
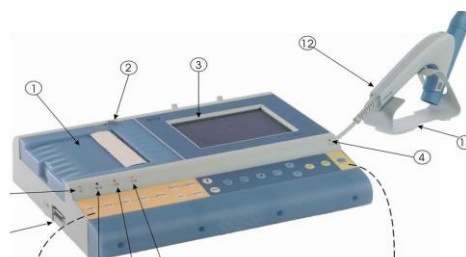

Figure 3 shows a device for measuring lung Sbirumatr variables

3. RESULTS AND DISCUSSION

Table 1 shows the circles calculations and standard deviations to test your ruler's football and physiological variables fitness:

	M	S. D	N
150 M	28.0800	1.25565	
40 M	5.4452	.19954	
VO2max	55.4640	2.39859	
L.A	12.3800	.70887	
FVC	3.8624	.41179	25
FVC1	3.8364	.40236	
FVC1/FVC	99.3600	.94064	
IC	4.2176	.42979	
VC	5.4684	.47083	
TLC	6.8648	1.42790	

Table 2 shows the highest correlation coefficient values and the percentage of contribution and moral links to two variables vo2max, lactic acid test with 150 m

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Change Statistics df 1	df 2	Sig. F Change
1	.788a	0.62	0.604	0.79	0.62	37.6	1	23	0
2	.835b	0.7	0.67	0.721	0.077	5.61	1	22	0.03

a. Predictors: (Constant), vo2max

b. Predictors: (Constant), vo2max, lactic acid

Table 3 shows the contribution of variables in building predictive equation to test the 150 m values:

Coefficients (a)

Model		Unstandardized Coefficients Standardized Coefficients				
		B	Std. Error	Beta	t	Sig.
1	(Constant)	50.95	3.73		13.64	0
	VO2max	-.412-	0.07	-.788-	-6.129-	0
2	(Constant)	45.89	4.02		11.41	0
	VO2max	-.432-	0.06	-.825-	-6.971-	0
	L.A	0.496	0.21	0.28	2.368	0.027

Prediction 150m test $= 45.89 - 0.432 \times Values\ of\ vo2max + 0.496 \times Values\ of\ lactic\ acid$

Shown in the table (3) crossing the highest form links between the studied variables for the respiratory system and maximum oxygen consumption and blood concentration of lactic acid. As it emerged that these variables had a correlation with variables (Vo2max) and the concentration of lactic acid, the variable (Vo2max) contributed by (60%) to achieve best accomplished through the test (150 m) has a contribution of both variables by the largest amount (0.67) and came adequate results are in line with the test distance and nature of the physiological and this means that there is a large key role in the predictability of the removal of the (150 m) to test football fitness rulers, as it is also known that this test includes 30 again and a time not to exceed (30 seconds) this means that the lactic system is the main charge of the processing required to complete the muscle work required energy and hence the rulers during this test that they have a large capacity to bear the accumulation of lactic acid production for this effort in order to complete the muscle work required a (150 m × 30 repeat) a time does not exceed (30 seconds) maximum, so the nature of the test imposed on the body work devices to maintain the speed port of the race with an accumulation of lactic acid in the muscles currency and blood sports, without landing speed for more than (30 seconds) as a time to accomplish that effort.

As for the reason for the contribution of variable (Vo2max) in the equation predictive to pass the time (150 m), the maximum oxygen consumption associated efficiently three main devices are periodic, respiratory, muscular, with the main function of the league for two devices and respiratory reflected in the provision of adequate (O2 quantity) and rid the body , (CO_2) produced in the working muscles muscular As for the device, the muscle efficiency in extracting large amounts of (O2) passing through the capillaries have a role in increasing the oxygen consumer.

(**McLaughlin J.E and other, 2010**)Maximal oxygen uptake (VO2max) is generally believed to be the best measure of cardio-pulmonary fitness and aerobic performance. The most accurate method of ·VO2max estimation is direct measurement of oxygen uptake during maximal exercise. This method is, however, troublesome because of the necessity of a thorough medical check-up before exercise and continuous supervision of the exercise test by a physician trained in treatment of circulatory failure. In addition, appropriate laboratory equipment for direct measurement of ·VO2max is rather expensive and requires skilled personnel.

(Abou El Ela Ahmed, Ahmed Nasr eddin, 1993) Confirms that functional capacity became one of the factors upon which the modern training to raise the level of performance, and without it cannot move the sports level, and between these functional capabilities, is the maximum oxygen consumption development. It cannot be said of the muscles continue to muscle work without oxygen (anaerobic) more than (10) seconds, while the muscle can continue to work for more than a minute in the case of continuing to supply the muscle with oxygen through the transfer from the lungs to the working muscles. On the other hand, the (Vo2max) is an indication of the maximum aerodynamic potentials, which have an important role in delaying the accumulation of lactic acid in muscle, working as well as increasing the possibility of the body to get rid of lactic acid therefore predictability in time, who turns judgment Football distance (150 m) possible to predict through these two variables (Vo2max, lactic acid in blood). Points (Bahauddin safety, 2000) that there is a relationship between blood lactate and bearing performance and because of the blood lactate seem more sensitivity training as a system of maximum oxygen consumption, the training programs need to be more specialized planning to lead to undesirable responses. In studies conducted on runners and then the follow-up changes (Vo2max) and lactic acid show that the enemy has led to an improvement in the oxygen consumer and increased lactate blood are linked quickly the enemy, but the change in the ratio of lactate was linked to the performance of the enemy with a greater degree of (Vo2max). It was reported (Jabbar Rahima, 2007) that (Vo2max) index on the efficiency of functional devices, which include periodic respiratory efficiency in the delivery of this inspiration into the blood, which depends on the ability of the lungs and the ability of hemoglobin to unite with oxygen as well as the efficiency of the delivery of (O2) into the blood and relies mainly on the speed of the circulatory system and the ratio (HP) in the blood.. As well as muscle efficiency in extracting oxygen depends on the distribution of blood in the muscles and capillaries.

Table 4 shows the highest correlation coefficient values and the percentage of contribution and moral links to two variables vo2max, FVC, VC test with 40 m.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df 1	df 2	Sig. F Change
1	.444a	0	0.16	0.2	0.2	5.6	1	23	0.03
2	.615b	0	0.32	0.2	0.18	6.4	1	22	0.02
3	.714c	1	0.44	0.1	0.13	5.6	1	21	0.03

a. Predictors: (Constant), vo2max
b. Predictors: (Constant), vo2max, FVC
c. Predictors: (Constant), vo2max, FVC, VC

Table 5 shows the contribution in building a predictive equation to test 40 m values of the variables
Coefficients (a)

Model		Unstandardized Coefficients Standardized Coefficients				
		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.493	0.863		8.682	0
	VO2max	-.037-	0.016	-.444-	-2.375-	0.026
2	(Constant)	7.104	0.791		8.98	0
	VO2max	-.045-	0.014	-.536-	-3.119-	0.005
	FVC	0.211	0.083	0.436	2.538	0.019
3	(Constant)	6.144	0.825		7.446	0
	VO2max	-.045-	0.013	-.545-	-3.487-	0.002
	FVC	0.248	0.077	0.513	3.213	0.004
	VC	0.157	0.066	0.37	2.371	0.027

$$\text{Prediction 40m test} = 6.144 - 0.045 \text{ Values of vo2max} + 0.248 \times \text{Values of FVC} + 0.157 \times \text{Values of VC}$$

Shown in Table (4) that there is a percentage of the amount of the contribution (82%) for the three physiological variables are (forced expiratory capacity, and maximum oxygen consumption, and vital capacity) accomplishment (40 m × 6 iterations) or that the test conditions are imposed on the player with a time of (6 seconds) to complete the muscle work at low speeds during the 6 iterations. The reason for this link or contribute to these changes the fact that work in accordance with the thrill of the mechanism that the body depends on the anaerobic system phosphate mainly the fact that the time periods for the effort does not exceed (6 seconds) and periods of rest between the frequency and the last (60 seconds) and this rest period to allow re what has been consumed

(ATP) within the muscle cell with the amount of retrieval (O2) consumed during the effort. This requires that the circulation and breathing devices with high efficiency, so it notes that the forced time capacity. Vital capacity, one of the variables that give an indication of the respiratory efficiency of the rule of being a results of several sizes pulmonary them inspiratory and expiratory reserve Air normal size, they are one of the variables that can predict which in the digital delivery of the rulers in the test (40 m × 6 iterations) in addition to The index most assessment of functional efficiency of the physical, which (Vo2max) which is also contributed to traverse those predictive equation because the athlete or trainee different levels must have the ability maximum aerobic has a good level to be able to bear the burden of training and competition if we know the aerodynamic possibilities one delay fatigue factors resulting from the accumulation of lactic acid during the competition, so the football referees have a good capacity through the (Vo2max) is an indication of good training, confirms (Bahauddin safety, 2002) that the maximum oxygen consumption to reduce the scale is a measure integrated four most important vital organs during the performance of a respiratory and circulatory system and muscle and blood, so dependent upon laboratory physiological calendar sports state training and physiological mentions (Hazza Mohammed Al-Hazza, 2009) that the volume of air that can get him out of the lungs at the end of the first second after taking Screened deeper inspiration as possible, which is a good indicator of the strength breathing muscles and safety of the pulmonary system of respiratory diseases, and can also use the volume ratio of forced expiratory when the first second to the vital capacity and forced (Forced vital capacity) as an indicator of the integrity of the respiratory tract of respiratory diseases, and this percentage should be not less than 75% of vital capacity and forced . And points (Mohammad Hassan Allawi and Abu Ela Abdel Fattah, 2000) that the volume of air that comes out in exhaled during the first second after maximum inhalation, usually of air exhaled volume during this time (80%) of the vital capacity and associated air volume strongly muscles exhale and the degree of resistance air in the airways. And remember (Nahla stubbornness mystic, 1999) the percentage of the volume of exhaled disappearance (FEV), a relationship between the ratio (FEV1) and (FVC) any (100 × FEV1 / FVC) and use the volume exhaled disappearance (FVC) and the volume of exhaled disappearance in the first second (FEV1) and the ratio between them all, a preliminary guide to the interpretation and examination of spirometry and if I say the ratio between the two is the index of the blockage of the airways, and that the ratio between the size of the natural exhalation disappearance in the first and the second is Forced expiratory volume (70%).

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