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Predicting the level of physical performance in terms of some physiological indicators in a runner who ran 400 meters

[1] Asst. Prof . Dr. Zaydoon Jawad Mohammed; [2] Asst Prof. Dr. WISAL SABEEH KAREEM
[3]Prof. Dr. .Hayder Naji Habash Alshawi

Abstract

The upgrading and increasing the efficiency of the capacity of anaerobic leads to decrease factors of fatigue (accumulation of acid, lactic blood) and that the development of the ability of anaerobic depends on the type of exercises that used in the curriculum of training that worked on the provision of energy Anaerobic muscles for by source rapid energy, as mentioned (Qasim Hassan Hussein , 1990) " The exercises carry performance for periods of rest appropriate, lead to the development and improvement of processes of chemical vital in the muscle if the work muscular quickly and for a period of time short ." The training antenna and anaerobic of hostile speed help to increase the flow of glycogen from the liver rate ranging from (3-6) times for the case of natural The ratio 27 ml / kg / s, to maintain the rate in the blood of hand and to meet the needs of the muscles working of it to complete the processes of oxidation of hand and other inferred researchers from the so that the nature of efficiency and methods of training and components of pregnancy training has played a role in the adaptations of physiological , which occurs when a sample search and carry speed reflect the efficiency of physiological of two periodic and respiratory and the two promise of organs physiological , which play a role important for athletes who engage in activities anaerobic especially hostile distances short , including the effectiveness of the 400 meters, as is the case in the sample we discussed this, and that , because this indicator is a useful large in during periods of restoration of healing when implementing the modules of training that contain the duplicates and high, the adequacy of the devices league and respiratory is one of the components of basic and important to practice The different types of sports activity because they transfer oxygen and fuel to muscle cells , which cannot enable the muscles to continue contracting unless they are provided It out .

Key words: *Prediction, physical performance, physiological indicators, and running efficacy*

Introduction

The specialized training process in its various competitions leads to the improvement of the level of physiological aspects through the development of the work of the periodic and respiratory systems, and physical performance is a major requirement in the effectiveness of the 400-meter running and the process of interdependence and complementarity between them leads to the improvement of the level of player performance to reach the best results, and this study acquires its importance By standing on the level of physical players, each of them plays a major role in achieving the best results **(Abu El - Ela, 1999)** , and that the runners are affected by some physiological indicators as a result of the performance of the physical effort and we can say that studying the level of physical performance and knowing its effect on physiological indicators is an important issue that the trainer must be familiar with and then the possibility of predicting their level in terms of these physiological indicators in order to facilitate He has a lot of effort

[1] University of Baghdad / Faculty of Physical Education and Sports Sciences / IRAQ
[2] University of Baghdad / Faculty of arts/ IRAQ
[3] University of Kufa / Faculty of Education for Girls / Department of Physical Education and Sports Sciences / IRAQ

and time, and this helps him build the training program and identify possible mistakes and then fix them (**Qassem, 1990**) , and for forecasting several definitions, including "the conclusion process that the researcher performs based on his previous knowledge of a specific phenomenon and this conclusion is not considered valid unless he can demonstrate his empirical validity and the prediction is a logical thinking based on assumptions made by the trainer as a result of experience and study and prediction occurs as a result The accumulated experience of a person when he studies the phenomena of their predecessors and present and links them in a scientific way **(Muayyad , 1987)** He predicts its future development and study as a phenomenon, and there is a definition of Marwan Abdul Majeed, who says in "Predicting that he made assumptions about what the conditions will be in the future . The Athletics Central on 15/2/2019 in Baghdad College of Physical Education and Sports Science with the participation of (12) players from the army, police, port and Basra sports clubs running 400 meters in athletics , the tests used in the research are physical tests, and it ran (250 meters) to measure Speed endurance and running (350 meters) to measure the performance tolerance of special and physiological variables, which is the measurement of short anaerobic power by measuring the running of 50 meters, after which the medium and long anaerobic capacity was measured by testing the box **(Moayad, 1987)**.

Literature review

Athletics competitions contain several competitions that differ from each other in its characteristics and components, which include running, jumping and throwing, and athletics sports are sports that are affected by all elements of physical fitness. On the level of these elements, the results obtained by runners in their various competitions depend, and therefore requires practicing competitions Athletics The different upgrading of the elements of strength, speed, endurance, flexibility, agility and compatibility neuromuscular also leads the training process specialized in various competitions to raise the level of physiological aspects through the development of the work of the two devices and periodic respiratory , and J such as physical performance of the main requirements in the effectiveness ran 400 m and that the process of bonding And the integration between them leads to raising the level of the player's performance to reach the best results , and this study acquires its importance by standing at the level of physical players as each of them plays a big role in achieving the best results, and the runners are affected by a more important level with some physiological indicators as a result of the performance of physical effort and we can say That studying the level of physical performance and knowing its effect on physiological indicators is an important thing that the trainer must be aware of, and then the ability to predict their level in terms of these physiological indicators in order to facilitate a lot of effort and time, and that helps him in building the training program and identifying errors that are likely to occur and then Treat them , and to predict several definitions, including "the conclusion process that the researcher performs based on an identifier This is preceded by a specific phenomenon and this conclusion is not considered valid unless it is able to prove its empirical validity " (**Zoukan, 2005**). "Prediction is a logical reasoning based on assumptions made by the trainer as a result of experience and study. Prediction occurs as a result of the accumulated experience of a person when he studies the previous and present phenomena and connects them in a scientific way and predicts future development and study as a phenomenon" (Adnan, 1990) There is a definition of Marawan Abdel Majeed, where he says in "The prediction that he put Assumptions of what the future will be like " **(Marwan, 2000)**.

Methodology

1. **Defining physical variables**

Table (1) shows the total number of degrees and percentages of the chosen physical abilities, according to the opinions of experts

T	Selected physical abilities	College Degree (100)	percentage	indication
1	**Speed tolerance test**	97	97%	Acceptable

2	**Strength tolerance test**	33	33%	Unacceptable
3	**Force marked with speed**	14	14 %	Not acceptable
4	**Power**	34	34%	Unacceptable
5	**Flexibility**	12	12%	Unacceptable
6	**Endure your performance**	94	94%	Acceptable

And through him the table the relative importance of scientific physical abilities chosen by the researcher ranged Wen between (94 % -9 7 %) which is (bearing speed and carry your performance)

2. Determining the physiological indicators used by the research

Table (2) Show the total grades according to the importance and percentages of the physiological variables

T	Physiological variables	Number of experts agreed	Degree attained	Agreement rate	indication
1	**Short anaerobic power**	8	80	80%	Acceptable
2	**Medium anaerobic capacity**	8	80	80%	Acceptable
3	**Long anaerobic capacity**	8	80	80%	Acceptable
4	**Red blood cells**	2	20	20%	Not acceptable
5	**Hemoglobin**	1	10	10 %	Unacceptable
6	**Vital capacity**	3	30	30%	Unacceptable
7	**VO2max**	0	0	0%	Unacceptable

From the table (2) Note that the variables physiological that have been presented to the experts , which obtained the relative importance of greater than (53.33) which is accepted to accept the ratio variable is (the ability of anaerobic short, anaerobic capacity medium, anaerobic capacity and long).

3. Description of physical tests

- **Test run 250 meters**

– *The purpose of the test*: to measure the bearing speed.

– *The tools used*: the racetrack and the surrounding field (400 m), (3) timing hours, a registration form, two whistles.

– *Performance description***:** The contestant takes the ready position from standing behind the race line when the beeper is heard by the race organizer to start the race. The contestant starts as fast as he can until the end of the race ..

– *Registration* **:**The Registrar shall register the time that teaches him timekeeper from the moment the signal to start until crossing the finish line and records the time in seconds and their parts after calculating the average time of MOQ v yen for the three nearest 0.01 second.

- **Running test (350) meters**

– *The purpose of the test*: to measure your performance tolerance.

- *Tools used*: track and field ran surroundings (400 m), (3) messenger data timing, Safrtan and registration form.
- *Description Performance*: J A. Take the rider initially put high; when you hear the whistle by the race organizer to start the race kicks off as soon as he can until the end of the distance.
- *Registration*: The Registrar to record the time that teaches him timekeeper from the moment the signal to start until crossing the finish line and records the time in seconds and their parts after calculating the average time for three Moukan to the nearest 0.01 second.

4. Determination of physiological measurements tests

- **Test run 50 meters**

- *The purpose of the race***:** to measure the short anaerobic power.
- *The tools used* **:**The race area is determined by two lines, one for the beginning and the other for the end, so that the distance is 50 m, (3) timing hours, Two whistles.
- *Performance specifications* **:**The contestant stands behind the starting line in the standby mode , and the race organizer raises his hand and calls (get ready) and then lowers his arm with the beep being fired and orders the departure and that is the beginning mark of calculating the time and running the stopwatch, the laboratory is conducted at the fastest speed he has to cut the finish line.
- *Recording* **:**The recorder records the time that the miqati informs him from the moment of the starting signal until crossing the finish line and records time in seconds and its parts after calculating the average time of the three Muqeem to the nearest 0.01 of the second and using the following equation to extract the short anaerobic power **(Abu El-Ela, 1997)**

- **Step tests for anaerobic capacity**

- *Purpose of the test*: To measure medium and long anaerobic capacity.
- *The tools used:* Wooden box with a height (40 cm) wide (50 cm). Stop Watch. Medical scale to measure body mass. Machine calculator. Registration form.
- *Performance description*: *Before performing the test :* The laboratory will warm up no more than two minutes, and do some flexibility exercises for the muscles of the legs (2-3 minutes). *The step method* : In the anaerobic step tests, the main focus in performance is on one foot and not the other, as the laboratory stands facing to the side of the box and not facing it from the front, and the laboratory places one of its legs on the box while the other man is on the ground and notes that the body weight It is carried out before the test is carried on the leg lying on the ground before the start of the test, while it becomes carried on the leg placed on the box (The test feet) when the body is raised to the top, and in all cases the leg lying on the floor must be straight with the back, and it is used to push when the foot is on the ground. It is also used to maintain body balance throughout the performance period. *The weight of the laboratory before performing the test :*The weight is taken to the nearest (1) kg in the same test clothes. *Calculation of steps performed by the laboratory:* The laboratory is counted the number of steps performed up and down until the test time ends, as the number of steps is recorded during the time of 30s, 60s. *Calculation of time***:** The calculation of time begins when the laboratory begins moving the free man upward the moment the signal is given for the start of the test, and the timer must announce the time in a loud voice at the end of (30s and 60s) and the registrar must record the number of steps a person will follow. *The method of calculating the test results:* The test results are used to calculate the following: The anaerobic power of both types is calculated by calculating the number of steps the laboratory performs during (30s and 60s) of the test and then the following equation is applied: One of the men is placed on a box (by the laboratory) while the other (free) leg is on the ground, and the hostility will stand in front of the platform and the body weight will initially be on the man placed on the box, when the instruction is given (start a) the man who Fund (man

performance) and then leave the free man 's land when landing is based on the free man and the land can be used for payment and use arms to balance, is the rhythm of performance in (4) by the existing test (one - two- Three- Four), the performance is performed as quickly as the laboratory can.

– *Recording***:** The laboratory is calculated the number of steps he performs up or down for a period of (30) seconds to measure the average anaerobic power, and the number of steps is calculated for a period of (60) seconds to measure the long anaerobic power, and the step is not counted if the laboratory bends one of the legs or bends the stem forward. It was the Open and J's output directly to milli-watt through the use of speeding up the ground and beat him with (mass) **(Mohammad, 1998)**. Then divide the result by the body mass to extract the relative anaerobic power for each (1 kg) of the body.

Main experience **:**The researchers conducted a major experiment in the playground and field at the Faculty of Physical Education and Science Sports Baghdad University on 15 / 2 /201 9 on a sample of members of the search runners ran 400 meters, as it was calculated by the level of physical tests which ran _250 meters) to measure the carrying speed And ran (350 meters) to measure the tolerance of special performance, after which the physiological variables for measuring the short anaerobic power were measured by measuring the running 50 meters, then the medium and long anaerobic capacity was measured by testing the box , and then the results were statistically treated.

Results

1. Statistical estimates of physical and physiological variables for the individuals in the sample

Table (4) shows the statistical description of the results of the members of the research sample in the researched variables

the changes	Search variables	measuring unit	Arithmetic mean	standard deviation
±P Physical abilities				
	Withstand speed	a second	31.935	5.57
Physiological variables	Endure your performance	a second	45.28	6.44
	Short anaerobic power	W / kg	1.74	0 .2
	Medium anaerobic capacity	W / kg	0 .17 9	0 . 01

2. The correlation matrix concerned with the relationships between physiological and physical variables

After using the Pearson correlation coefficient between the studied variables, a matrix of interconnections between physiological and physical variables was obtained as in Table (5)

Table (5)

Shows the correlation matrix on the relationships between the studied (physical- physiological) variables.

Variables	Withstand speed	Endure your performance	Short anaerobic power	Medium anaerobic capacity	Long anaerobic capacity
Withstand speed	1	0.547	0.412	0.539	0.467
Endure your performance		1	0.438	0.535	0.468
Short anaerobic			1	0.658	0.304

power					
Medium anaerobic capacity				1	0.583
Long anaerobic capacity					1

3. View, analyze and discuss the results of speed tolerance and indicate the percentage of its contribution to the level of physiological variables

The researcher Wen said the training method followed by the players usually are high intensity and extreme severity or semi - maximum (especially in the period of special numbers), the muscle can not consumption of all the oxygen contained it because it is often the time of the port effort in these exercises is short is not equal The time of blood transfusion from the heart to muscles (such as a blood circulation). Also, the exercises that players usually use include speed training, speed bearing training and endurance of special performance, working to develop the non-oxygenic ability, as this ability represents a specific muscle work performance in a specific time, and on the one hand Others mean this ability to continue to work muscularly in the absence of oxygen, as this ability is related to muscle endurance (muscle work for a relatively long period) besides, the short and medium anaerobic capacity with speed tolerance and as it is known that the energy system required for any physical effort is determined In light of the time of this effort and the rate of energy consumption in this activity **(Talha, 1994)** . Aerobic and anaerobic training for runners helps to increase the flow from the liver by 3-6 times from the normal state and reaches 27 mm / kg / s, to maintain its ratio in the blood on the one hand and to meet the needs of working muscles of it to complete oxidation processes on the other hand **(Abul - Ela 1999)** , researchers from that inferred that the nature of efficiency or DONC s training components and training pregnancy play a role in the adaptations of physiological occurring in the players and carry speed reflects the efficiency physiological two periodic and respiratory and which are among the devices physiological hill G to an important role for athletes who practice events anaerobic especially hostile distances and short of which the effectiveness of the 400 meters, and e , and the case in the sample we discussed this e , because this indicator is of great benefit during periods of restoration of healing when implementing training modules that contain duplicates and high , and this is in line with What was mentioned by **(Muayyad, 1987)** in that the adequacy of the circulatory and respiratory systems is one of the basic and important components of practicing various types of sports activity because they transport oxygen and fuel to etc. Muscle cannot contract the muscles until they are provided **(Muayyad, 1987)**. Attribute researcher Wen to the carrying speed has a direct effect of the variables physiological anaerobic capacity of short, medium and long so because the presence of carrying speed is the output indicator of the presence of adaptation variables physiological that helped the player to carry the performance and carry speed , However, the player develops a high degree of physical capabilities commensurate with the nature of his activity) , and from the previous presentation, the equation for the regression line between the pulse, which got the highest correlation with physical variables **(Muayyad , 1987)** .

Conclusions

- Devising a final predictive equation in which physical performance can be predicted (bearing speed and bearing special performance) in terms of some physiological indicators (mean anaerobic ability) in a 400 meter athlete with athletics.
- Adopting the results of the research and benefiting from it by the trainers of the effectiveness of the 400-meter running in athletics to know the physical level of the players in terms of some physiological variables for the runners The effectiveness of 400 meters, to carry out similar research and studies by researchers to study the prediction of the

level of skill performance in terms of some physiological indicators among players of the 400-meter effectiveness Athletics

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