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The effect of maximum speed training on some biochemical blood variables and digital achievement with 100m freestyle running effectiveness for young arena and field players

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- **young arena.**

ABSTRACT

The researcher aims in this study to identify the impact of speed training on some biochemical blood variables as well as digital achievement effectively ran 100 m freestyle for young arena and field players through the development of a training program for maximum speed and to know the impact of these exercises on the variables researched The researcher has dealt in this study with some biochemical blood variables, namely (white blood cells, Red blood cells, platelets, blood plasma, red blood cell deposition speed index and hemoglobin) as well as **digital achievement effectively ran 100 m freestyle** , and the researcher chose his research sample in a deliberate way, and they are the four players of Al-Ittifaq Sports Club for the sports season 2023-2024, and the researcher conducted homogeneity for the players in terms of lengths and weights, as well as chronological and training ages and variables studied, the researcher used here the experimental method in the style of one experimental group for its suitability and nature The problem studied, and the curriculum took a period of four weeks by three training units per week, and the researcher conducted statistical treatments using the statistical bag SPSS for the purpose of reaching the results and knowing the impact of the program used on the variables of blood researched, the researcher has reached the most important conclusions that clarify that the approach used has a significant and clear impact on the variables of blood researched and in the body of the research will address the researcher in detail that study and results.

1-1 Introduction and importance of research:

Taking the concept of sports training takes wider and more important areas in our time, after it was limited to the purely training concept today has become carrying a great scientific depth for its association with many other sciences and training has become taking multiple forms and sophisticated can benefit anyone as much as possible, the researcher wanted in this study to use sports training for maximum speed training and to know their effects on the blood variables researched, The researcher used here high-intensity practical exercises through a training program prepared by the researcher for this purpose and to know the impact of these exercises on the variables researched for the players of the arena and field effectively ran 100 m free for young people and this event is considered one of the rapid anaerobic events that require a great depth of training for aspects of physical preparation in full such as speed, strength, endurance, speed of motor response and other psychological and achievement factors are part of the psychological preparation of players to achieve large numbers in this area, Therefore, we find that the players of the arena and the field with an effectiveness of 100 m are characterized by great physical and physical specifications such as muscle massiveness, high response speed and strength on the rapid muscle contraction of white blood cells differently from their peers in medium and long events who are characterized by thinness and slow contraction processes and the abundance of red blood cells at the expense of white, so the researcher wanted to delve into this study and reach real results that serve the process of scientific research and achievement of that event.

1-2 Research problem:

Through the follow-up of the researcher in the field of the effectiveness of running 100 m and watching some local championships for some of the local clubs and Arab and international clubs that there is a disparity in the achievement rates of this event between local runners and their peers in the same category at the Arab and village levels, so the researcher wanted to prepare a training curriculum for physical preparation represented by maximum speed training and know their direct impact on his research sample and the possibility of reaching results that serve many aspects of the players, the most important of which is the digital achievement aspect of this event.

1-3 Research Objectives

1- Preparing a training program for the maximum speed of the effectiveness of 100 m for young arena and field players.

2- Identify the effect of the prepared training program on some of the biochemical blood variables studied

3- Identify the impact of the training program on digital achievement with 100 m freestyle effectiveness for young arena and field players

1-4 Research Hypotheses:

The researcher assumes that there are statistically significant differences between the tests and pre- and post-measurements for the studied biochemical blood variables and the digital achievement of the 100m freestyle youth players.

2-1Research Methodology :

The researcher used the experimental method in a one-group method for its suitability and the nature of the problem.

2-2 Research sample :

The researcher determined his research sample in a deliberate way, namely the players of the arena and field of the Sports Accord Club in Diwaniyah Governorate, and the number of only 4 players and the researcher has conducted homogeneity for the players as shown in the following table:

Table (1) shows the homogeneity of the members of the research sample:

homogeneity	Torsion Lab	Standard deviation	Broker	Arithmetic mean	Variables
Smooth	0,05	6,86	177,6	176	Length
Smooth	0,13	4,34	78,3	78.2	Weight
Smooth	0,25	1,76	30	29	Chronological age
Smooth	0,49	0,36	7	7	Training Age
Smooth	0,52	0,89	5,4	5,4	WBC
Smooth	0,96	0,12	4,5	4,5	RBC
Smooth	0,88	3	356	353	PLT
Smooth	0,43	1,82	51	51	Blood plasma
Smooth	0,24	0,18	12,2	12,3	LOVE
Smooth	0,03	1,06	13,4	13,2	ESR
Smooth	0,89	0,02	11,59	11,28	Digital Achievement Tha

2-3 Research variables studied, namely:

1- **WBC mononucleosis.**
2- **RBC erythrocytes**
3- **Platelets PLT**
4- **Blood plasma**
5- **Hemoglobin HB**
6- **Speed of deposition of red blood cells ESR**
7- **Digital achievement with 100m freestyle efficiency**

2-4 Means, devices and tools used in research:

The researcher used a number of devices and utilities to obtain the required data, which are as follows :

1- Length measuring device.
2- Electronic digital scale for weighing.
3- Electronic stopwatch.
4- Medical alcohol .
5- A cooling box to save samples after withdrawing them from the sample.
6- Medical sterilization.
7- Auxiliary medical staff.
8- Assistant technical staff and a number of training.
9- Square track and square for Ettifaq Sports Club.

2.5 Field research procedures :

2.5.1 Pre-measurements (before the implementation of the training program):

The researcher conducted the tribal measurements of the research sample on Tuesday, 10/12/2024 at exactly nine o'clock in the morning in Diwaniyah Governorate, and the researcher withdrew blood samples and extracted the biochemical data of the blood, represented by white and red blood cells , platelets , blood plasma, hemoglobin and the speed of deposition of red blood cells, and the researcher with the help of a specialized medical staff withdrew blood samples of 5cc From the vein of each player and save those samples in special boxes prepared for this purpose, prepared, collected and transferred to the medical laboratory for the purpose of analysis and extraction of results.

2.5.2Application of the training program prepared by the researcher:

The researcher prepared a training program for the maximum speed of the runners 100 m freestyle by one training month includes 3 daily training units, the researcher clarified the objectives of the training program for his research sample and the goal of each training unit and each physical exercise and the possibility of making the maximum possible effort for the purpose of giving a great and real effort for each exercise, especially since the exercises used by the researcher are exercises of high intensity for the development of speed in order to reach results that serve physical work and serve the results of the research obtained.

2.5.3 Dimensional measurements :

After the researcher implemented his training program on the research sample, he conducted the same procedures that he performed in the pre-test and with the same conditions and controls previously followed in the pre-test.

2.6 **Statistical means:**

The researcher used the statistical method SPSS to extract statistical data.

3.1 Presentation, analysis and discussion of results :

After the researcher completed his training program and training units on his inductive sample, the researcher put the results reached from the statistical bag SPSS in special tables that facilitate reading and the process of clarifying them better and clarifying the results of this study as shown in the table below.

Table 2

It shows the arithmetic means, standard deviations, calculated value (t), significance of differences in the research variables PLT, HB, ESR, WBC, RBC, and blood plasma and the numerical achievement of 100 m effectiveness.

Statistical significance	Calculated t-value	Post		Tribal		Variables	t
		Deviation	Middle	Deviation	Middle		
Moral	7,45	0,67	8,6	0,88	5,4	WBC	1
Moral	10,98	0,17	6,7	0,12	4,5	RBC	2
Intangible	1,65	2	350	3	353	PLT	3
Moral	3,16	0,22	12,5	0,18	12,3	LOVE	4
Moral	1,88	1,04	13,9	1,09	13,4	ESR	5
Moral	3,43	2,33	42	1,76	49	Blood plasma	6
Moral	6,59	0,02	11,00	0,02	11,28	Digital Achievement Tha	7

3.2 Discussion of results :

Through what was presented in the second table, the researcher reached the following:

Through the previous statistical table, the researcher concluded that there is a clear change and impact of the blood variables surveyed as a result of the exercise of physical effort, which is characterized by high intensity, as well as a noticeable improvement in the level of digital achievement of the players.

The researcher attributes these differences between the pre- and post-tests in favor of the training program developed by the researcher , and the tables show that there are differences in the biochemical blood variables between the pre- and post-tests and in favor of the post-test as shown below.

1- RBC erythrocytes, WBC leukocytes and hemoglobin HB:

Through the previous statistical table, the researcher concluded that there is a clear change and effect for white and red blood cells and hemoglobin in the pre- and post-tests and in favor of the post-test, as there are biochemical responses to the blood as a result of physical exertion, which serves as reactions to those efforts practiced by the athlete, so they appear in the form of numbers showing the chemistry of blood as a result of physical labor (Anwar Abdel Hadi, 2024, p. 8), that any physical work has a clear effect on the level of white and red blood cells and hemoglobin and is affected as a result of the quality of the effort practiced, so we find that red blood cells are more responsive to anaerobic work in contrast to white blood cells, which respond more to anaerobic work, so we find that red blood cells are important in the process of oxygen transport, while we find that white blood cells are important in resisting bacteria and diseases (Muhammad Hassan Allawi, 2000, p. 173) Therefore, the researcher believes that these variables respond as a result of physical labor, both aerobic and anaerobic.

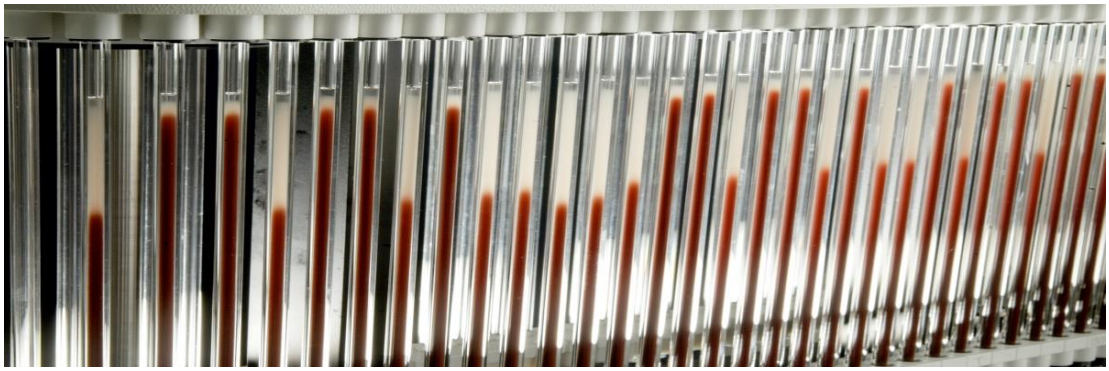
2- Platelets PLT :

The previous table shows that there are differences between the pre- and post-tests and the table also shows that there is a non-significant significance of the platelet variable, as a result of physical labor of high intensity, there is damage and loss of some platelets owned by humans, and as a result of this loss, there is a decrease in the production processes of these platelets from their main laboratory (bone marrow), which is considered as the main laboratory or factory for these platelets, and as a result of the rather harsh physical labor, there is a difference and a noticeable delay. In the production of these platelets for the runner, and that the exercise of any physical effort causes significant changes in

the chemical properties of the blood as a result of physical labor as a temporary response to physical labor (Saad Kamal, 2003, p. 34).

3- Rapid deposition of ESR and blood plasma red blood cells:

The speed of sedimentation of blood cells is the speed at which red blood cells are deposited, which is one of the common tests in medicine and blood diseases, which is an indication of certain diseases that can affect the average person or athlete (Wiki<https, ar.wikipedia.org) Through the previous table, it is clear that there are statistically significant differences between the pre- and post-tests and in favor of the post-test for the variable of the speed of deposition of red blood cells and blood plasma The researcher attributes this change between the two measurements due to the nature of the training program used And the nature of the physical work practiced by the runner, as the use of physical effort leads to changes and functional and biochemical responses to the blood in order to ensure that the working muscle fibers obtain an adequate supply of nutrients and oxygen due to the body's need to complete the work (Amer Fakher: 2017, p. 220).



A row of blood sedimentation velocity tubes

4- Digital achievement of the 100m freestyle event:

It is clear from the previous table that maximum speed training is of great importance in the processes of improving digital achievement with this effectiveness and that digital achievement in the valley of 100 m free requires many physical and psychological requirements to reach the runner to achieve good quality numbers, as the beginning of sitting to reduce the radii of the body is important for the stage of advancement (Qasim Al-Mandalawi: 1990, p. 19) and one of the most important stages that this event goes through is the stage of reaching the maximum speed to enhance achievement in running short distances, so it must This ability has given great attention in special training operations (Raysan Khreibit: 1989, p. 46), and the last five meters of the race to the finish line is played, in which the runner exerts the maximum of his energy

(Soran Taher: 2023, p.), so the maximum speed training has an important and effective role to reach the runner to the maximum possible speed during the race.

A picture showing the stage of reaching the maximum speed

4.1 Conclusions:

Through field procedures and statistical results of the data, the following conclusions were reached:

1- The presence of a clear effect of maximum speed training on the biochemical blood variables, namely white blood cells, red blood cells, hemoglobin and the speed of deposition of red blood cells
2- No positive effect of maximum speed training on the platelet variable and observance of damage to some platelets as a result of extreme training
3- The presence of a positive effect of maximum speed training on the digital achievement variable for the 100m freestyle event.

5.1 Recommendations

The researchers recommend the following:

1- The necessity of conducting other similar studies for the purpose of detecting other physiological variables related to blood components and their relationship to maximum and non-maximum physical work.
2- The need to pay attention to speed training because of its great and clear importance on digital achievement with 100 m freestyle effectiveness.
3- The need to conduct a periodic biochemical analysis of runners for its importance in giving a clear picture of the biochemical variables that accompany the work and its importance in avoiding many diseases and turns in the training process.

Supplements

Appendix No. (1) Weekly and Daily Training Units Form

Comfort between iterations	Duplicate	Intensity	Exercise	Training Module	Weeks
45s	3 Repetition	95%	30m running 4.70s	The first	First
45s	4Repetition	90%	40m running with a time of 6.00 s		
1 min	2 Repetition	90%	He ran 50m in 8.50s		
30s	5Repetition	95%	He ran 20m in 3.20s	The second	
45s	2Repetition	90%	He ran 60m in 9.5s		
45s	4 Repetition	95%	He ran 30m in 4.70s		
1,5 minutes	2 Repetition	100%	He ran 75m in 10s		
2.5-1 min	2 Repetition	100%	He ran 80m in 10.80 seconds	Third	
2-2,5 minutes	1 Repetition	100%	He ran 100m in 13 seconds		
2 min	2 Repetition	90%	He ran 110m in 15 seconds		

References:

1- Qasim Al-Mandalawi and others: Training Foundations of Athletics, Mosul University Press, 1990.
2- Raysan Khuraibet and Abdul Rahman Mustafa: Athletics, 1st Edition, First Edition, International Scientific House for Publishing and Distribution and Dar Al-Thaqafa for Publishing and Distribution, Amman.
3- Soran Taher and Ibrahim Omar Ahmed: The speed of motor response and its relationship to some basic skills for five-a-side football players, Master Thesis, Salahaddin University, 2023.
4- Anwar Abdul Hadi Hammoud: The effect of aerobic physical effort on the response of some blood variables for gym visitors aged 30-35 years in Najaf Governorate: published research, Maysan University, 2024.
5- Mohamed Hassan Allawi, Abu Ela Abdel Fattah: Physiology of Sports Training, Cairo, Dar Al-Fikr Al-Arabi, 2000.
6- Saad Kamal Taha, Ibrahim Yahya Khalil: Fundamentals of Physiology, Part 2, Cairo, 2003.
7- Amer Fakher Shaghati, Haider Balash: Endurance Training Physiology Practical Applications, Dar Al-Diaa for Printing and Publishing, 2017.
8- Wiki<https,ar.wikipedia.org