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## The effect of exercises according to anaerobic load to develop the endurance of the special speed and blood electrolytes in the achievement of running 800 m for young

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### Abstract

The purpose of this paper is to preparing special exercises to develop speed tolerance and blood electrolytes, and to complete the 800-meter run for young, and identify the effect of the use of exercises in endurance speed, blood electrolytes, and achievement of running 800 m for youth. The experimental approach was used with one group design with a pre and post-test due to its suitability to the nature of the research. The research community was determined from the runners of the youth clubs of Wasit Governorate by the intentional method, as the research community consisted of six runners representing the clubs (Kut, Al-Nahrain, Damok, Wasit, Al-Azza, Al-Mowafaqia), a player for each club. One of the most important results reached by the researcher is that: Speed endurance training according to the anaerobic system has an effective role in developing speed endurance as well as in electrolyte indicators, and use of gradation and ripple with high load has an effective role in developing the digital achievement of the sample. One of the most important recommendations recommended by the researchers is that: Ensuring the use of speed endurance exercises in a variety of distances in the 800-meter run and conducting research using high-intensity interval training on young men and boys.

**Keywords:** Effect of exercises, endurance of the special speed, blood electrolytes, running

### Introduction

After the development taking place in the world at the level of all fields in general, and in particular in the field of technological development and the development of sports physiology and sports training through the existence of high capabilities in the development of functional and physiological devices in the training process that raises the level of players in all physical and skill capabilities, especially athletics events from Through the upgrading of the training intensity and the occurrence of physiological adaptations, which puts the runner at the forefront of training by enduring the upgrading of the high intensity in the training units.

As training is one of the modern sciences that witnessed great development through its association with other sciences, and among these sciences is the physiological one. Regarding the level of the player and his tolerance for various types of pressures and physical difficulties and the psychological states that aim to adapt the players in a way that makes them achieve the achievement, especially the effectiveness of 800 meters, have special physical requirements and capabilities that have a high correlation in the blood electrolyte variables and compensate them through recovery processes and the development of variables related to the type of training and effectiveness for the purpose of reaching the runner for the longest possible distance in carrying the speed of performance delaying the appearance of fatigue through the work of the circulatory system, stimulating these components of the blood, and providing the cells of the body with nutrients through training to achieve the best achievements.

### Research problem

The 800-meter event is one of the athletics activities and is characterized by special physical capabilities, as it is a distance of two rounds around the stadium or the track.

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Especially young people, there is a decrease in the level of maintaining speed in the last third of the distance that decides the situation for the runner, and this appears clearly when completing the distance, as well as shortening the steps at the end, which makes the runner more slow and does not shorten the time. The researcher decided to go into putting exercises in endurance of the special speed and upgrading the anaerobic high intensity for the purpose of avoiding shortening the steps and slowing down with speed and its impact on the achievement under study.

### Research objective

- Preparing special exercises to develop speed tolerance and blood electrolytes, and to complete the 800-meter run for young.
- Identify the effect of the use of exercises in endurance speed, blood electrolytes, and achievement of running 800 m for youth.

### Research hypotheses

- There are statistically significant differences between pre and post-tests for endurance speed and blood electrolytes.
- There are statistically significant differences between the pre and post-tests in the achievement of running 800 m for young.

### Research fields

- Human field: A group of young runners in Wasit province
- Time field: (25/10/2022) to (15/1/2023)
- Spatial field: Al-Kut Olympic Stadium.

### Research methodology and field procedures

#### Research Methodology

The experimental approach was used with one group design with a pre and post-test due to its suitability to the nature of the research.

#### Community and sample research

The research community was determined from the runners of the youth clubs of Wasit Governorate by the intentional method, as the research community consisted of six runners representing the clubs (Kut, Al-Nahrain, Damok, Wasit, Al-Azza, Al-Mowafaqia), a player for each club, and homogenization was conducted as in Table (1).

**Table 1:** Shows the homogeneity of the sample

Variables	Measuring unit	Mean	Std. Deviations	Median	Skewness
Length	Cm	165,444	7,195	163,600	0,686
Mass	Kg	61,557	6,110	60,000	0,699
Age	Year	18,336	0,498	18,000	0,522
Training age	Year	34,110	5,851	38,000	-0,899

#### Devices and tools

- Mass and length measuring device (German made)
- Chinese electronic stopwatches (6)
- Lenovo electronic calculator
- Whistle number (2)
- Medicinal materials
- Medical syringes of 5 cm<sup>3</sup>, number (15)

- Medical Cotten
- Alcohol
- Tubes containing anticoagulant

### Physical variables

First / a test of running (600) meters, endurance speed from the high start:

- Description of the test: The tester stands at the starting line from the standing position and gets ready when the whistle is heard. He starts so that he takes a lap and a half around the legal track (400 m), i.e. the total distance becomes (600) m. At the finish line, the tester holds and then records the time taken for the distance of 600 m to the nearest 0.01 part per second.

### Second / Achievement Test Run 800 m

- **Description of the test:** The tester stands at the starting line from the standing position, the high start, and takes the position of preparation when the whistle is heard. That is, the total distance becomes 800 meters at the finish line, and the tester catches it, then records the time taken to the nearest 0.01 part per second.
- **Method for measuring electrolyte indicators:** An amount of 5 mm blood serum is withdrawn from the runner's arm, then shaken well and placed in a special tube for preserving blood, then in the laboratory in special tubes for sodium, potassium and calcium for the purpose of mixing them with special chemicals for each variable for the purpose of interaction and placed in a spectrophotometer at a wavelength of (572) nm, and then the device records the result of reading each variable of blood serum, and the reading is recorded for the purpose of statistical treatment.

### Pre-tests

Pre-tests were conducted for the research sample over two days, on 10/27-28/2022, on the athletics track in the Al-Kut Olympic Stadium. The first day's test included drawing blood, then the achievement test, running 800 meters, and then giving a rest for 36 hours. Then, on the second day, a test was conducted. 600 m speed endurance at six o'clock in the afternoon.

### Training curriculum

The training curriculum was prepared, which included speed endurance exercises for the high-intensity interval training method. The curriculum was applied at the rate of two (2) units per week on Monday and Thursday on 5/11/2022 for a period of eight weeks, and it was completed on 7/1/2023, taking into account the ripple Graduation in curriculum units.

### Post-tests

After completing the training curriculum for a period of eight weeks, the post-tests were conducted for a period of two days in the same method and conditions as the pre-test on 10-11/1/2023.

**Statistical methods:** The search data was processed through the Statistical Package for the Social Sciences (SPSS) (Mufti Ibrahim Hamadeh. (2001) <sup>[2]</sup>.

## Results and Discussion

### Presentation, analysis and discussion of results

**Table 2:** Shows the results of the physical variables and the items for the pre and post-test and the t-value and significance

Variables	Measuring unit	Pre-test		Post-test		T value	Type sig
		Mean	Standard deviation	Mean	Standard deviation		
Calcium	Mg/dl	7,887	0,669	9,088	0,772	1,890	sig
Potassium	Mmol/l	3,055	1,002	4,776	0,432	0,002	sig
Sodium	Meg/l	130,080	7,556	145,350	4,334	0,008	sig
600 m speed endurance test	m/s	1,29	0,001	1,28	0,008	4,644	sig
800 m achievement test	m/s	2,01	0,06	1,59	0,002	1,77	sig

### Discuss the Results

Through the results that appeared in the table for the pre and post-tests in the research variables and in favor of the post-tests, especially in speed endurance and achievement, and this is a result of the anaerobic exercises that the sample trained according to the high intensity that requires the development of speed endurance and therefore the supply of anaerobic oxygen to the muscles through hemoglobin in the blood, which in turn nourishes the muscles. Through the various distances of the training curriculum that causes adaptations in the muscles and blood as well as energy productivity as a result of the high-intensity training load and distance programming with repetitions that cause changes in the level of runners as well as physiological changes through training adaptations (Qassem Hassan Hussein. 1990) [1] also confirmed that the exercises lead to an improvement in the biochemical processes in the muscles, as the muscular work is rapid or for a medium period of time. Also, sports training leads to changes in the blood, like the rest of the other organs and systems of the body, and the degree of those changes is related to many factors, the most important of which is the duration of training. It may be either permanent or temporary. And (Muhammad Hassan Allawi, Abu Al-Ala Ahmed. 2000) [3] indicate that they are changes that occur in the blood as a result of regular training in a certain period, which leads to the adaptation of the blood to perform physical training. These changes include an increase in blood volume, hemoglobin, red balls, and other changes in blood components.

This is because the result of the special physiological capabilities of the type of activity that is compatible with the nature of the performance leads to improving the work of the heart and the cardiac impulse, which in turn nourishes the muscles and improves the work and efficiency of the sodium and potassium pump, which is responsible for the rate of regulation and concentration of sodium and potassium outside and inside the cells, and the need to pay attention to proper nutrition that contains these necessary elements. By adequately supplying the body with sodium and potassium, in addition to the initial effort exerted during the training units.

### Conclusions and recommendations

#### Conclusions

- Speed endurance training according to the anaerobic system has an effective role in developing speed endurance as well as in electrolyte indicators.
- Use of gradation and ripple with high load has an effective role in developing the digital achievement of the sample.

#### Recommendations

- Ensuring the use of speed endurance exercises in a variety of distances in the 800-meter run.
- Conducting research using high-intensity interval training

on young men and boys.

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**Appendix 1:** Shows the training curriculum

Weeks	Days	Repetition (m)	Intensity	Rest
First	Monday	400 × 2 + 600 × 2	80%	5 min
	Thursday	5 × 300		
Second	Monday	400 + 250 × 2	85%	5 min
	Thursday	600 × 3		
Third	Monday	600 + 400 + 300	90%	5 min
	Thursday	350 × 3		
Fourth	Monday	400 × 4	80%	5 min
	Thursday	600 + 400 + 300 + 250		
Fifth	Monday	300 × 3	90%	5 min
	Thursday	600 × 300		
Sixth	Monday	400 × 2	95%	7 min
	Thursday	600 × 300		
Seventh	Monday	600 × 1	97%	5 min
	Thursday	800 × 1		
Eighth	Monday	600 + 400 + 300	90%	5 min
	Thursday	600 + 500 + 400		