Thi Qar University Journal of Physical Education Vol 2 Issue 3 P1

مجلة جامعة ذي قار لعلوم التربية البدنية

مجلة علمية محكمة تصدرها كلية التربية البدنية وعلوم الرياضة

The effect of exercises using the SAQ method on special endurance and biochemical and physical variables in the achievement of the 100 m sprint for youth

Emad Farag Badrawi [1] **Ali Hussein Saghir** [2]

imad.badrawi@uobasrah.edu.iq [1]
asagheer@uowasit.edu.iq [2]
University of Basrah Department of Student Activities [1]
Wasit University College of Physical Education and Sports Sciences 2

Article history:
Accepted: 20/ 5/ 2025
Published online: 20/6/ 2025

Keywords:
SAQ style
sprint for youth,
construction.

ABSTRACT

Research Title: The effect of exercises using SAQ style on special endurance and biochemical and physical variables in the completion of the 100 m sprint for the alumab

The importance of research: The achievement of many factors, but the knowledge and analysis of the characteristics and features of effectiveness and specialized qualities facilitate the process of construction and adaptation and improve achievement Hence the preparation of exercises proposed by the researchers to improve speed by developing the strength characteristic speed and neuromuscular compatibility and training withstand lactate their impact on the short distance run (100 m) The researchers also believe that many trainers neglect Sakyo exercises or does not give her enough time in the training circle The researchers used the experimental approach and included The sample is contestants from the youth category in the race (100 m) and the experimental variable was implemented on the experimental group for a period of (three months)

Research Objectives: The research aims at the following:
Preparing Sakyo exercises to develop the short distance run for the youth category

Research Areas: Human field: 4 runners from Zubair Club in the event (100 m) for youth.

Conclusions: The most important recommendations of the researchers:
The exercises prepared by the researcher have a positive role in the development of (neuromuscular compatibility strength characteristic of speed).

1- Definition of research :

1.1Introduction

The progress we see in sports achievements, includingsprint events ... It is the result of concerted efforts for all workers in the field of training and solving problems through the movement of scientific research by employing basic sciences and assistance, including (physiology, kinesiology, mechanical sciences), which are a major part of the science of modern sports training.

Therefore, it requires all trainers to know how to translate the sports training literature and the sciences associated with it as a science (biochemical, physiology, tests, measurement...) To the reality of the training unit and the training curriculum, and that speed and its different types are one of the important physical qualities to improve achievement in the effectivenessof T (100 m) enemy and the importance of Sakyo exercises, hence the importance of research with the exercises developed and prepared by the researchers in the forms of speed and how to technicians loads during the prepared training curriculum, as well as the nature of the sequence of speed forms and the content of their exercises during the implementation of the prepared curriculum in addition to ensuring the impact of those exercises on immediate responses andCumulative for the contestants on the physical, functional and hormonal side (1:13).

1.2Problem

In most of the training curricula, especially in the two events (100 m), there are some shortcomings in the exercises to develop the short distances and we are far behind the surrounding and regional countries that reached the world and in a very short period if they are compared with the Iraqi numbers, which are considered shameful to some extent to the extent that we have not yet descended under the barrier (10 seconds) in the (100 m) race in terms of the time of its implementation in the training circuit and to the site of its application in the training unit or the stage of numbers, as there was no Clarity in the use of the appropriate method in speed training and how to form training loads in terms of their intensity and rest time between repetitions and groups and their duration of time, as there is no correction and assurance in achieving the objectives of the curriculum and training units through tests, especially physical, functional and biochemical.

The problem can therefore be formulated with the following question:

Question: Do exercises in the SAQ style prepared by the researchers improve the level of achievement and speed of performance and have positive effects on the short distance run?

1-3 Research Objective : The research aims at the following:

1_ Preparing exercises in the SAQ style to develop the short distance run for the youth category .

2_ Identify the differences in the pre- and post-tests of the research variables.

1-4 Research hypotheses : The researchers assume the following:

1_ The existence of significant differences in the pre- and post-tests of the research variables of the experimental group under research and in favor of the post-tests in the variables (physical, biochemical and the completion of 100 m).

2 The development of achievement in the 100 m sprint after the implementation of the SAQ method prepared by the researchers

1-5 Research Areas:

1-5-1 Human field: 4 runners from Zubair Club in the event (100 m) for youth.

1.5.2 Spatial area: Zubair Olympic Stadium, Zubair General Hospital.

1.5.3 **Time Domain**: The period from 15/7/2024 to 20/10/2024

3.1 Research Methodology

The researchers used the experimental method.

1 – 2 Research population and sample:

The research community determined the distance of 100 m runners for the youth category of Zubair Sports Club for the 2024 sports season / registered in the Iraqi Central Athletics Federation

And their number (4) hostilities. And those whose recorded time is in the 100 m (11.6011.55) sprint.

The researcher homogeneized the sample in (age, height, mass and training age).

Table (1)

Arithmetic mean, standard deviation, median and torsion coefficient for each of the anthropometric variables and the training age of the research sample members

Torsion coefficient	Broker	Standard deviation	Arithmetic mean	Unit of measurement	Variable	t
0	18	0.53	18.5	year	lifetime	1
1.34	174.5	5.26	175.14	poison	Length	2
- 1.48	72.5	6.12	68.84	kg	Weight	3
0.75	2.4	0.68	3.7	year	Training age	4

Table (1) shows that the number of members of the research sample (4) players with an average age of (18.5 ±0.53), average height (175.14, ± 5.26), average weight (68.84, ±6.121) and average training age (3.7, ± 0.681).

In addition, the torsion dependents of the research sample members in each of the variables were confined between the torsion coefficient (± 3), which indicates the moderation of the frequency curve and the homogeneity of the members of the research sample.

Training Program:

A training program has been prepared for a period of three months (4 days a week) after conducting public and private warm-ups.

The researchers focused on designing the exercises using training methods and means to improve the level of (neuromuscular compatibility and strength characteristic of speed of the legs and endurance performance).

The researchers relied on the training method (modern SAQ) as the research sample is young and has the ability to respond and implement exercises with high efficiency.

The training ranged between 80% 90% and taking into account the appropriate training size, which is distributed over (three months), which is sufficient to some extent for the effects on the physical sports body systems.

The sample members have implemented the proposed exercises prepared by the researchers uniformly in terms of intensity, size and comfort.

3 – 3 Tools used in research:

- Medical scale to measure weight.
- Tape to measure the length .
- Sony stopwatch number 3.
- Whistle number 3.
- Chalk for circuit planning.
- Athletics field.
- German-made device for measuring blood lactate

3 - 4 tests and measurements used in the research:

(Test of the strength characteristic of speed of the legs, neuromuscular compatibility test of the legs and measurement of blood lactate).

3 - 4 - 1 pre-tests:

On 9/7/2024, at five o'clock in the afternoon, at the Zubair Olympic Stadium, the researchers conducted the two tests (neuromuscular compatibility, strength characteristic of speed)

1 Neuromuscular compatibility test: drawing circles on the field numbered from (15) and non-sequentially, the laboratory jumps on the circles and sequentially from No. (1) to No. (5) after hearing the start announcement by the researcher and the

time recorded during the implementation of the test is calculated, and each laboratory is given (3) attempts and the best attempt is calculated.

2 Test of the strength characteristic of speed: extending and bending the legs standing for a period of (30) seconds when hearing the start signal, and the number of times that the laboratory was able to implement during the specified time is calculated, and each laboratory is given (3) The best attempt is calculated **.**

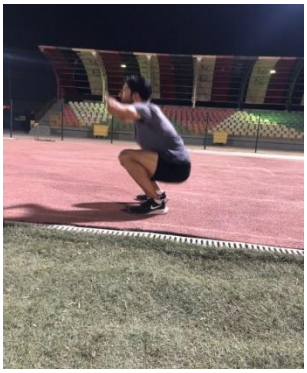
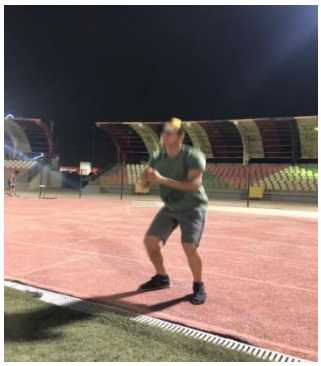
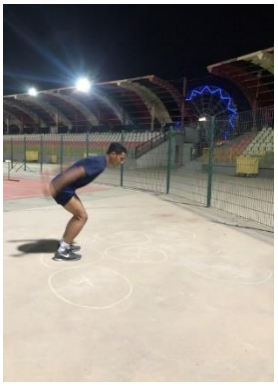
3 Biochemical measurements:

A measurement of the percentage of lactate in the blood. alif

B test 100 m achievement and then measured blood lactate by (3) minutes.

3 - 4 - 2 tests and dimensional measurements:

The researchers conducted the post-tests after the completion of the experimental variable and the same mechanism for the pre-tests and the same conditions as the pre-tests.


3.5 Statistical methods:

- Arithmetic mean.
- Standard deviation .
- Analysis of variance
- Tests

4 – View the results, analyze and discuss the results

Table (2)

Shows the arithmetic means and standard deviations of the research group in the pre- and post-tests before and after the training program

Indication Type	Significance Level *	Calculated value (t)	Post-Test		Pre-test		Unit of measure	Statistical milestones / auditions
			on	Going to	on	Going to		

							ment	
Moral	**0,01**	**4.62**	**0.7**	**17**	**0.95**	**11.5**	**number**	**Strength characteristic of speed of the legs**
Moral	**0,02**	**3.96**	**0.28**	**4.39**	**0.45**	**5.89**	**Tha**	**Neuromuscular compatibility**

* At a degree of freedom (5) and a probability of error ratio (0.05).

Table (3)

After me	Before me		After me BC S	Before me BC S
4.73	5.44		18	**13**
4.12	5.19		15	**11**
4.18	6.72		18	**9**
5.33	5.28		17	**13**

It is clear from Table No. (3) that there are differences in the test (T) analysis of variance between the pre- and post-tests of the experimental group (neuromuscular compatibility strength characteristic of speed) and in favor of the post-test and the effect of exercises developed by the researcher, which had a direct impact on the development of the level in the two tests mentioned.

The researchers believe that the results of the tests (neuromuscular compatibility strength characteristic of speed) used with physical variables, evidence of increased efficiency of functional organs and development, which is reflected in the physical qualities and abilities.

The researchers also believe that the superiority of the experimental group because the process of preparation for the type of trait to be developed is consistent with the type of comfort, intensity, size and relationship between them.

As the training methods according to the type of external load in the numbers of special exercises for a period of (three months), and the goal of the physical characteristic to be developed through exercises Sakyo and this is confirmed by Amr Saber (9:4).

Table No. (4)

Shows the significance of the differences between the pre- and post-measurement in the concentration of blood lactate for the experimental group

Tabular T-value	Differences	Standard deviation	Telemetry	Standard deviation	Pre-measurement	Blood lactate
2.97	2.58	1.25	22.26	1.26	24.83	Before the effort
10.36	5.40	1.70	30.76	0.734	36.15	After the effort

Table (4) shows that there are statistically significant differences between the pre-measurement and the post-measurement of the experimental group in the rate of blood lactate concentration before and after the implementation of physical exertion and in favor of the post-measurement at the level of significance (0.05).

Second: Contesting the results:

Abdul Rahman Zaher (2011) stated that there is a percentage of blood lactate in the human body during rest and without doing physical effort, and this percentage increases from its normal level while doing any effort, and as the intensity of physical performance increased, with which the rates of lactate rose from their normal level and increase with the increase in the concentration of lactic acid, and there is lactic acid in the blood at rest by no more than (10 mg / 100 mBlood) i.e. about (1 mmol / l) and this percentage increases when runners perform a high load Intensity , and the concentration reaches its maximum level when the load lasts for a period of 1 to 3 minutes. (5 :13) .

The researchers believe that the main reason for the occurrence of the phenomenon of fatigue is blood lactate, which is the products of lactic acid salts and Hua, which hinders the passage of blood loaded with oxygen and nutrients to the muscles.

The above table also shows that there are statistically significant differences between the averages of the pre-measurement and the post-measurement of the sample members in the rate of concentration of blood lactate at rest in favor of the post-measurement, where the significance appeared at a significant level (0.05).

The previous results indicate a decrease in the rate of lactate concentration at rest time after the application of the training program by the training program, and the researchers attribute this to the fact that the exercises prepared by the researchers codified on sound scientific foundations led to some changes in the functional organs of the bodies of the sample members and consistent with what Bahauddin Salama (103:2) said about functional conditioning and its types, whether functional adaptation that leads to improving the efficiency of the performance of the various body systems for their functions, Or morphological adaptation that occurs in the sizes and dimensions of these different organs, and it has been mentioned that among these adaptations (muscle cells and mitochondrial functions).

Emad Farag (2016) (3:112) that mitochondria are the main energy-generating plants in the cell, and are found inside the cells in medium numbers, but increase within the liver cells to exist in huge numbers of up to thousands, and contain respiratory enzymes or enzymes necessary for oxidative processes, and contain places to store energy.

This is confirmed by Kamal Jamil Al-Ridi (2004) that the ability to use oxygen and produce ATP through oxidation depends on the number and size of the muscle mitochondria, and these changes are supported by increased mitochondrial efficiency, all of which are improved by regular high-load athletic training. (6:40).

There are many factors that affect lactate levels (even at rest). Nutrition, hydration, fatigue, and a high lactate level can raise or lower lactate levels depending on the situation. Doctors know a "high level of lactate at rest" when it exceeds 2 mmol/L. If it exceeds 4 mmol/L, the patient develops lactic acidosis. In general, when a person shows high lactate levels at rest, this indicates increased dependence on glycolysis and/or decreased levels of Oxygen available. Oxygen is essential for lipid oxidation but it is also necessary for the recycling of lactate within the cell mitochondria.

In athletes, the adaptation process occurs even with high blood lactate levels. The athlete performs well without dropping the level.

5 – Conclusions and recommendations:

51 Conclusions: The most important recommendations of the two researchers:

1 The exercises Sakyo prepared by the researcher have a positive role in the development of (neuromuscular compatibility strength characteristic of speed).

2 The method of training used and the method of rest between repetitions and groups has a positive impact on the research variables.

3 The adoption of the correct scientific foundations in the training process in terms of intensity, repetitions and comfort between repetitions and groups in the numbers

of exercises in the SAQ style for the sample members has an impact on the development of (neuromuscular compatibility strength characteristic speed of blood lactate).

4 The diversity in the exercises prepared have a great impact on the tendencies and accept the sample to perform motivated.

52 Recommendations:

The researchers recommend the following:

1 The need for great attention in exercises in the SAQ style for short-distance runners.

2- The need to benefit from the exercises prepared by researchers and trainers in the field of athletics, especially short distances.

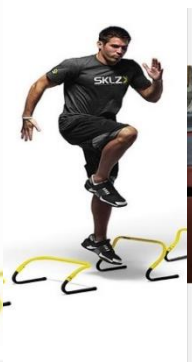
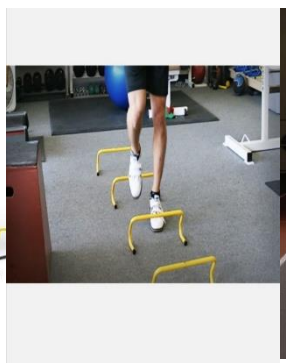
3 The type of competition must be analyzed in terms of its characteristics and advantages in physical qualities and whichever is more contributing to increase its proportions in the training curriculum.

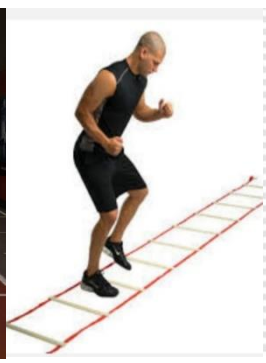
4 Conducting tests in training and for the same age group or other groups and for medium distances

5- Emphasis that the training curriculum includes lactate tolerance training.

Supplements

Training Unit Exercises




References:

1 - Abu Ela Ahmed Abdel Fattah : Sports training - physiological foundations, Cairo, Dar Al-Fikr Al-Arabi, 1997 .

2- Bahaa El-Din Ibrahim Salama: Vital Representation of Aerobic and Anaerobic Energy for Endurance and Speed Players, Athletics Magazine, Issue (24), 1999.

3- Emad Farag Al-Badrawi: The effect of a training program for special endurance and its impact on some functional, biochemical, physical and physical variables for 5000 m youth racers in Iraq, PhD thesis, Alexandria University, Arab Republic of Egypt, 2016, p. 112.

4- Amr Saber Hamza and others: Sakio Training, 1st Edition, Egypt, Cairo, Dar Al-Fikr Al-Arabi, 2017, p. 9.

5- Abdel Rahman Zaher: Athletics Strategies, 2nd Floor, Egypt, Cairo, Dar Al-Fikr Al-Arabi 2011.

6- Kamal Jamil Al-Ridi: Sports Training for the Twenty-first Century, 2nd Edition, Amman, 2004, p.40