

Specific Exercises and their Effect on the Anaerobic Speed Reserve and Run Achievement 400 M for Young People

¹Dr. Ali Naeem Ajeel; ²Saif Mohammad Kadhim

Abstract

The aim of the study was to prepare specific training exercises for 400 m youth, as well as the effect of qualitative training in the anaerobic speed reserve for the 400 m running efficiency of youth, while there were statistically significant differences between the pre- and post - tests to 400m running for the youth. The researcher followed the experimental approach in the design of one group with the pre and post tests, which is compatible with the nature of the problem and its objectives. The study was conducted on a randomly selected sample on the antagonists of Wasit Governorate for the 400 m class of young people. The number of (6) was selected out of (9) divided into three clubs. The researcher then conducted a homogeneity between them. The researcher applied his training curriculum for 8 weeks and 3 training modules within the main section of the session and in the preparation period for them. The specific exercises included exercises of explosive nature, quick strength, speed and endurance speed during the training units. The researcher took care of the age and grade of group. The duration of the application of the training method was carried out by the researcher to conduct posttests, in light of which data was obtained using the appropriate statistical means, which showed the evolution of both variables (Anaerobic speed reserve and completion of the 400 m run) and for the benefit of posttests. To the need to pay attention to the use of qualitative exercises and the inclusion of exercises for the Anaerobic speed reserve for events requiring speed and strength.

Keywords: *specific training, anaerobic speed reserve, 400m for youth*

Introduction

Short-distance running is one of the most important activities ever in athletics events because of its excitement, excitement and competition between runners, and the reason is due to the convergence of their levels and the short distance traveled by runners, which in turn makes it difficult for the physical and physiological differences to emerge between them. Continuous keenness on the part of those in charge of the training process for these events to develop all the requirements and variables that affect them, through study, research and delve into the minutiae of matters that contribute to achieving the difference and achievement in the effectiveness, and that it requires a high level of anaerobic capabilities due to its adoption and a very high year on my system Rapid energy (phosphatic and lactic), and what each stage of the activity adopts (reaction speed, acceleration gain, maximum speed and retention of the maximum speed) that shape the performance of this race and affect one another to different degrees. As researchers and practitioners of the sports training process sought to develop modern training methods and methods in line with the requirements for effectiveness and in a way that contributes to developing the specificity of any characteristic in order to improve achievement, and some led to the merging of more than one training method or method in order to create other adaptations that did not contribute to the traditional method In targeting and developing them,

As the two elements of maximum speed and maximum speed length are one of the basic requirements for the two events and the main determinant of achievement, and the hostility that is characterized by maximum speed and maintaining it for the longest possible period will achieve high numbers and times in the effectiveness.

The anaerobic reserve is of great importance between the anaerobic and the aerobic maximum speed, and thus gaining it will lead to a high level of maximum speed and its endurance, so it must be taken care of in short activities, including the 400- meter running event. Hence the importance of the research in the researcher's attempt to employ methods and methods of sports training during one training unit, targeting more than one target and their reflection on developing anaerobic and relative velocity reserves as a sign of

¹ Wasit University - College of Physical Education and Sports Sciences/alinaeem@uowasit.edu.iq

² Iraq / Wasit Governorate / General Directorate of Wasit Education/ www.alkotby@gmail.com

the development of the sample, as well as the achievement of the effectiveness of running 400 meters under 20 years.

The research problem was demonstrated by observing the researcher that being a practitioner yen for the effectiveness and follow up to her to your curriculum local and international tournaments in the timing of the race, which require hostility, especially in the short races to participate in the majority of these events, including the effectiveness of (200 m and 400 m , And 4 X400 m post) during a short period of time, and thus this will reflect the high effort of these races at the level of the runner, the depletion of all his anaerobic capabilities, and the interest in his training on the side of speed and endurance of speed in a large and accelerated acceleration, and low rates to endure anaerobic speed and maximum speed, so the researcher resorted There is a temporary solution to his problem, which is to conduct mixed exercises with two methods of high intensity, followed by exercises with lower intensity, interspersed with regulated rest periods between them, in order to raise the level of his anaerobic capabilities and adapt the energy systems to maintain the longest possible period of energy production under high stress.

Aim of The study

- 1- Preparing specific exercises for the effectiveness of running 400 meters under 20 years old.
2. Identify the effect of quality workouts in reserve speed Anaerobic relative speed and the completion of the effectiveness ran 400 m below 20 years old.

The study assumed that: There are statistically significant differences between the pre and posttests of the research group at the speed of anaerobic reserve , relative speed and achievement of the effectiveness ran 400 m below 20 years old.

Methodology

- **Research Methodology**

The researcher used the experimental curriculum design with pre and post tests and the one group that is best suited to the nature of the problem and objectives.

- **Research community and sample**

The researcher to identify the research community and the goal at start of ran a distance of 400 m category below 20 years in the province of Wasit and distributors on the three clubs , namely (Wasit, and rivers, and the martyr) totaling 9 runners, then the researcher to select the sample and the way random (lottery) , which were represented Short-distance runners in Wasit governorate, the young men in the 400m event , who numbered (6) runners, which constituted 66.66% of the research community and were distributed to (3) clubs, which are indeed runners from each club

For the purpose of ascertaining the homogeneity of the sample , the researcher that conducted homogeneity tests in indicators (chronological age, training and age, height and mass) , using the torsion coefficient as an indication of statistical measurement sample homogeneity between the members of the search, and according to the following table :

Table (1) Homogeneity of the research sample in indicators of chronological age, training age, height, and mass:

Pointers	measuring unit	the middle	Mediator	deviation	Coefficient of torsion
Chronological age	Month	19.52	19.65	2.887	- 0.472
Age of training	Year	4.60	4	1.005	0.583
Length	cm	176.70	176	3.860	0.372
Bloc	Kg	68.34	69.55	2.807	0.316

It is noted from Table (1) that all the values of the torsion coefficient were between (± 1), and this indicates the homogeneity of the research sample in the indicators referred to in the table, because it falls within the normal distribution curve.

2-3 data collection methods, devices and tools used:

- **Data collection methods :**

- Arab and foreign sources and references
- International information network internet
- Tests and benchmarks
- Information confirmation forms
- Personal interviews

- **Devices and tools used**

- Playground Square and Square.
- 6 stopwatches
- Stairs
- 6/6 marks.
- Medical scale.

- Medicine balls
- Rubber cords
- Boxes of various heights (20-30-40) m.

- **Determining the research variables**

The researcher said in determining the choices and then search was conducted personal interviews with a group of specialized experts in the field of sports training / athletics about the research idea and the variables to be studied, in accepting the studied variables.

- 1- Reserve anaerobic speed
- 2- Relative velocity
- 3- Achievement for the 400 m race

They are both

- Prof. Dr. Mohamed Abdel-Hassan / Athletic Training - Athletics / Al-Isra University
- a. Dr. Sareeh Abdul Karim Al-Fadhli / Training - Biomechanics - Athletics / University of Baghdad - College of Physical Education and Sports Sciences.
- Prof. Mahdi Kazem Al-Sudani / Athletic Training - Athletics / Al-Isra University
- Prof. Haidar Faiq Al-Shamaa / Training - Athletics / University of Baghdad - College of Physical Education and Sports Sciences
- A. Dr. Ihab inside Hussein // Training - Biomechanics - Athletics / University of Baghdad - College of Physical Education and Sports Sciences

- **Defining the tests used in the research**

- **The first test: the achievement of running 100 meters (IAAF: 2001: 48)**
 - *Test objective:* to travel the test distance of 100 meters in the shortest time.
 - *Test tools:* (launch pistol, 3 stopwatch, 4 signs)
 - *Performance implementation:* A 100- meter sprint test from the flying position, and each runner was tested individually until the image was clear during video shooting.
 - *Test description:* Take The runner starts the starting position from the flying position and after hearing an instruction from one of the assistants (get ready). Here the runner starts when hearing the whistle at maximum speed to travel a distance of 100 meters as the time is counted From Beginning to the moment he reaches the finish line.
- **The second test: the completion of the test ran 400 m (International Federation of Athletics : 2001: 83)**
 - *The aim of the test:* to measure the achievement of a run of 400 meters , as well as the relative speed.
 - *Tools used :* (starter, gun, stopwatch, number 6) , 4 signs
 - *Performance description:*
 - Testing begins in the first field when you hear the name of the registered name of hostility in the registration form, it takes E place behind the starting line when you hear a prompt (take your place) takes starting position to sit down and then instruct the (attend).
 - The race begins when the start signal (the beep) is heard, as the runners run each in their field in the field for a distance of 400 meters, and when the runner reaches the finish line, the clock is stopped.
 - *Recording:* The registrar records the time of each runner in a registration form prepared for this purpose in minutes and seconds to the nearest tenth of a second. Also, the first curve distance time and the second curve distance time are measured, in order to extract the relative velocity between the two distances.

- **Exploratory Experience:**

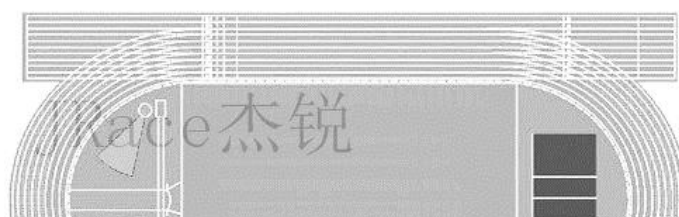
The researcher that conducted a reconnaissance on his experience from outside runners research sample, in the afternoon of Saturday , 12.15.2018 and accompanied by assistant team on track and the Olympic Stadium in Kut, for the purpose of identifying

- On the validity and suitability of the exercises used in the research for the sample.
- Knowing the validity of the tests and preparing all the requirements for their performance.
- Give special instructions on how to conduct the tests to the assistant work team

- **Pre- tests**

The pre-tests were applied to the research sample over a period of two days and accompanied by the assisting work team at three in the afternoon, on Monday 17/12/2018 and on the Olympic stadium in Kut, as the researcher took into account that the general and private warm-up process before starting the tests as well as the extent of the sample's readiness and preparations for the test procedure, and then the researcher to explain the tests, which included the first test (the test ran 100 m) and then were given the rest ranging from (45-50) minutes for the restoration of healing, and after the application of the second test (the completion ran 400 km) as The researcher approved that 3 timers for each test, and the average of the three timings was used as a calculated time for each test and laboratory.

As for the reserve of anaerobic speed, the researcher determined that in the beginning, he determined a distance of 100 meters in the first line, which represents the maximum speed in the race.



Speed reserve measurement



Figure (1) shows the set distance from a distance of 400 m for anaerobic velocity reserve measurement.

As it has been calculating the maximum backup speed by subtracting the rate of speed to cut the distance achieved in race 100 m from the average speed of 100 m second identified race achievement for a distance of 400 m, and the less reserve speed indicates that the best potential for hostility.

• **Exercises used**

The researcher said numbers of his training as special after consultation with some experts and specialists in the field of sports training and athletics based on modern scientific sources. As the researcher set out to prepare his qualitative training that aims to develop more than one physical and skill-related requirement for effectiveness within a single training unit and in a manner appropriate to conduct these exercises on the ground, by preparing special exercises for speed and rapid strength, bearing speed and maximum speed and regulating training loads in terms of intensity And the size and comfort between them, and the exercises were included in the main section of the training unit for the sample members and it was in the special preparation period, as the first unit of the training units was conducted on 12/22/2018 by three training units per week (Saturday, Tuesday and Thursday) with a total of 24 training units during The period of applying the exercises, and the researcher adopted the principle of ripple 3: 1 , as the intensity ranged from 80% to 95% , after which the exercises were completed on 2/14/2019 ,

The exercises used by the researcher that is:

- Jogging for a 40- meter course, followed by a 80% jog for 60 meters, then a light jog, followed by a 30-meter jog, followed by an 85% jogging for 40 meters, followed by a light jog.
- He ran a distance of 200 meters with an intensity of 85% , followed by a light jog for a distance of 60 meters, followed by throwing a medical ball to the farthest distance with both arms and running for it and repeated 6 times, followed by a 150- meter jog at a rate of 90%.
- Climbing stairs for 12 seconds , followed by a quick run of 30 m with a 95% intensity, followed by a light jog for a distance of 30 m, followed by a ladder climb for a time of 10 seconds , followed by a quick run for a distance of 30 m with a intensity of 90% , followed by a light jog for a distance of 30 seconds , followed by a ladder climb For 8 seconds , followed by a rapid 30 m run with a 95% intensity , followed by a light jog.
- He ran a distance of 30m at intensity of 80, followed by a walking comfort for a distance of 30m, then ran a distance of 30m at intensity of 85%, followed by a rest and so on, to an intensity of 95%.
- Run 80 meters at an intensity of 90%, followed by a rest for 30 seconds, followed by jumping with feet ranged for 30 seconds, then moving to a 60- meter run with a intensity of 90% , followed by a rest of 30 seconds , followed by jumping with feet for a period of 30 seconds , followed by a distance of 100 meters As severe as possible by the runner.
- He ran the first 200 meters at an intensity of 80%, followed by a 100- meter jog rest , followed by a 60-meter run at an intensity of 80%, followed by a 100- meter rest , followed by a 60- meter run with an intensity of 85% , to an intensity of 95% , followed by a distance of 100 meters at the maximum intensity of the athlete..
- Deep jumping on boxes with a height of 30 cm for four boxes, followed by a 30m jog , then jogging 80m with an intensity of 85%, followed by a jog to rest for a distance of 100m , followed by a 40m jog, followed by a 100m jog , then a 100m jog hard 90%.

• **Dimensional tests**

The two researchers conducted the post test on 2/15/2019. The researchers took care to conduct the tests and measurements in the same temporal and spatial conditions for the pre- test.

• **statistical methods**

The researchers used the statistical bag (spss) To extract the search results.

Results

1. Presentation and discussion of the results of the anaerobic speed reserve and achievement test. Table (1) the significance of the differences between the pre and posttests shows the physical variables and achievement

Variables	measuring	Tribal	Dimensional	P	P _e	Level of	Indication of
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	unit	Q	P	Q	P			morale	differences
Speed reserve	M / s	0.58	0.04	0.22	0.09	0.36	0.02	0,026	moral
Relative velocity	M / s	0.488	0.831	0.565	0.099	0.046	0.04	0.047	moral
Completion of 400 m	Sec.	48.31	4.28	47.98	5.34	2.18	1.99	0.013	moral

Throughout Table (1), it is indicated that there are differences in the results of the anaerobic velocity reserve and achievement in favor of the post-test.

In the anaerobic velocity reserve variable : the researcher attributes that this improvement in the level of reducing the anaerobic velocity reserve of the research sample to the effectiveness of the specific exercises prepared by the researcher in which the simulated performance component of effectiveness was mixed with rapid force and explosive strength training exercises, which targeted more than one physical requirement in one training unit On the one hand, and on the other hand, the exercises in which the exercises mixed the anaerobic capacity within the phosphogenic energy system with the lactic system, which adapted the sample members to rapid and strong performance under the conditions of the emergence and accumulation of lactic acid, which in turn contributed to raising their level of efficiency to maintain a higher level than the level they were at. In previous exercises, and this is what was indicated by (Essam Abdel-Khaleq: 1992: 102), "Working in conditions of lactic aggregation improves the efficiency and ability of muscle fibers to work in response to exertion requirements." Therefore, (Jamal Sabry: 2017: 339) indicated that the process the development of variable anaerobic velocity reserve is fundamental and essential to any sport where the fight against fatigue is required for success. "

In the relative velocity variable: The researchers attribute this remarkable improvement in the relative speed ratio in the pre-test to the post-test as a result of the exercises that were characterized by specificity, i.e. the target of the actual performance form of the activity, which led to the research sample acquiring a high level of bearing a special speed as a result of strength training and resolving strength and this is less The difference between the distances that the researchers targeted in the 400m freestyle race , which made most of the sample members reduce the difference between the speed of these distances. This is what the researchers agreed with what was stated by (Muhammad Mersal and Usama Abd al-Rahman : 2004: 68) " The exercises that are similar to the actual performance It has an effective effect on the development and development of the physical capabilities of performance , which by its nature are consistent with the performance nature of the skill or effectiveness, which is through targeting the exercises for the target muscle groups and in the skill itself and with the same movement path, time and space.

In the achievement variable : The researcher attributes that this improvement occurred at the time of completion of the 400- meter run of the individuals of the sample to the effective role of the qualitative exercises that were properly codified and suited to the research sample as well as their commitment to applying the training curriculum, which in a course of action is to improve their functional efficiency and run as quickly They can resist fatigue and the emergence of lactic acid in the body, which the researcher intends to adapt them to exercises similar to the reality of the race, and this is what was indicated by the mechanism (Raysan Khuraibet: 1997: 474), " Programmed and regular training and the use of different types of stress during one training unit and the regulation of ideal rest periods between repetitions Lead to the development of achievement in the competition "and this is explained by the researcher on the one hand,

On the other hand, the researcher believes that the exercises, which developed a variable - speed backup Anaerobic is an indicator to achieve achievement and improve race time, and this is referred to (Jamal Sabri : 2019: 79) " The backup speed can be utilized in the success of many of the events and is one of the indicators prediction of accomplishment, especially in competitions Alarcad 400 and 800 m "

Conclusions and recommendations

• Conclusions

The researcher concluded in the light of his studies

- Developing and improving the physical abilities of the 400- meter event through the specific exercises used by the researcher.
- The diversity of training methods and methods during a single training unit contributes to improving the anaerobic reserve.
- The anaerobic speed reserve is yet a real indicator to predict the achievement and some special requirements for the 400m effectiveness for youth such as the maximum speed and the speed endurance.

• Recommendations

- The necessity of using specific training in the training curriculum, as it aims to develop more than one characteristic with the performance of the game or event.
- The necessity of integrating exercises within the energy levels (phosphogenic and lactic) in activities that require speed and strength in order to improve some of the functional and physical abilities of the player.

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