THE EFFECT OF HIGH-INTENSITY INTERVAL TRAINING IN DEVELOPING THE ENDURANCE OF SPECIAL SPEED FOR YOUTH 800-METER RUNNERS

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ABSTRACT

The aim of the research is to prepare suggested exercises to develop the endurance of special speed and the achievement of running 800 meters for the members of the research sample and to identify the effect of using the proposed exercises to develop the endurance of special speed in the achievement of running 800 meters, and the supposed of the research was that there were statistically significant differences between the pre and post results for the control and experimental groups. The researchers used the experimental method in a controlled manner for its suitability and the nature of solving the research problem, as this method is one of the most accurate, best and most efficient types of approaches in reaching accurate results, as the research sample was determined which are 12 of the youth 800 meters runners. They were distributed randomly (by lottery) into two control and experimental groups, each group consisting of (6) runners. The control group used the regular training method while the experimental group used the same old training way except the high-intensity interval trainings, which it was prepared by the researchers. Physical tests were conducted, including the test of 800 meters achievement. That shows development of achievement, significant differences appeared between the two research groups in the post-test of variables. So the achievement of running (800) was better in results for the experimental group, and that because of the high-intensity interval trainings prepared by the researchers than the exercises used by the control group.

Keywords: Endurance, Special speed and High-intensity interval training.

I. INTRODUCTION:

Achieving new numbers and reaching high achievement requires change and diversification in the use of ways and training methods and continuous physiological tests to find out the weaknesses in the physiological functions of the body or the form of performance for the purpose of developing it to reach the desired goal of this process, and a long time may pass on a certain achievement without coming the new one, which requires us to think and research seriously and choose different means in an attempt to discover the cause and change the state of stalemate or stop in achieving the new achievement, and this is what we note from the difficulty of developing the achievement of Iraq’s runners for medium distances, in which development depends on the overlap of energy systems and how to legalize training loads as well as link between the nervous system the muscular system and the possibility of recruiting and stimulating the largest possible number of muscle fibers towards the required muscular work.

There are many running activities in athletics, such as short, medium and long, and the 800-meter running event is one of the athletics activities that require attention to the training aspect and choice the most useful training methods to developing the speed of this event, as the nature of its performance varies from maximum intensity, below maximum and medium, so there is specificity in the training of this event.

Research problem:
The improvement and development of an achievement that ran 800 meters is one of the tasks that occupied a lot of trainers and researchers over several years, and the Iraqi numbers are still below the level of ambition compared to global numbers, and this leaves many questions in front of those concerned and specializing in training and scientific research, who have made a lot of efforts in order to develop the achievement and the local level of this highly competitive and most exciting event in the track and field events, and the failure to achieve a high-level number equivalent to the world number, so the researchers decided to work according to the method of high-intensity interval training by targeting and developing the endurance of special speed and controlling the training program variables that have a direct impact in raising the level of sporting achievement for this event.

**Research Aims:**

1- Preparing a training program that adopts the method of high-intensity interval training in developing the endurance of special speed for youth 800-meter runners.

2- To identify the effect of the high intensity interval training method in developing the endurance of the special speed of the youth 800-meter runners.

**Hypothesis:**

There are statistically significant differences between the experimental and control groups in the post-test and in favor of the experimental group.

**Research Methodology:**

The researchers used the experimental method in a controlled manner (experimental + control) for its suitability and the nature of solving the research problem, as this method is one of the most accurate, best and most efficient types of methods in reaching accurate results.

**The research sample:**

The research sample was determined by intentional selection, as the researchers selected the research sample, who are Southern club runners (youth category for the 800-meter event), and the sample number was (12) runners who were divided into two groups in a random manner.

**Equipment, tools and means used in the research:**

1. Arab and foreign sources and Internet.

2. Tests and measurement.

3. Test results registration form.

4. (2) stopwatches that measures time to the nearest (1/100) of a second.

5. Electronic stopwatch type Casio (8 pieces).


7. Medical scale.

8. (10) cones.

9. Ropes.


11. Metric measuring tool with a length of (30) meters for measuring length and fixing distances.

**Tests:**

1. Running 600 meters (1.316).

Test name: 600m run.

Purpose of the test: measure the endurance of special speed.
Tools used: running track, stopwatches, assistants, registration forms.

Performance: The testers stand behind the specified starting line from the high starting position. A complete turn around the track in the shortest possible time, and after the runner reaches the finish line, the timekeeper stops the clock.

Registration: The time of each runner is recorded in the registration form in (minutes and parts of a second) from the moment the test starts signal until reaching the finish line.

2. Running 1000 meters (2.67).
Test name: 1000m run.
Purpose of the test: measure the special endurance.
Tools used: running track, stopwatches, assistants, registration forms.

Performance: All runners stand together behind the specified starting line (high standing position) and at the start signal, the runners set out to cross the test distance (two and a half laps), and upon reaching the finish line, the recording hours are stopped.

Registration: The time of each runner is recorded in the registration form in (minutes and parts of a second) from the moment the test starts signal until reaching the finish line.

3. Achievement test of running 800 meters.
Test name: 1800m run.
Purpose of the test: Measuring the achievement of the 800-meter event.
Tools used: running track, stopwatches with the possibility of measuring more than one record in the same time, assistants, registration form.

Performance: The test was conducted in accordance with the conditions and regulations of the International Association of Athletics Federations, as all runners were tested together for the purpose of competition, and each runner in the designated running field,

All runners behind the starting line to take the starting position from standing. When runners here starting signal, they start off by running two laps on the track to cover a distance of 800 meters.

Registration: The recorder records the time from the moment of the start of the test signal until reaching the finish line, and records the time in minutes and seconds to the nearest tenth of a second.

Pre-tests:
Pre tests were conducted on the research sample (experimental and control group), which numbered (12) runners, with an (6) runners for each group.

The assistant work team and under the supervision of the researchers, recorded the age and measurements of height and weight, and then conducted physical tests related to endurance of special speed and achievement.

Training Curriculum:
For the purpose of achieving the goal of developing the endurance of special speed in the experimental group of the South Clubs for the category of youth 800-meter runners, a training curriculum was prepared based on the use of the high-intensity interval training method to develop the endurance of special speed, as the researchers relied in its preparation on some scientific sources and references, as well as from taking the opinions of a group of experts in track and field games and sports training. In the training curriculum, the researchers took into account the level of physical susceptibility of the research sample, the tools used, the method of implementation, and the economic conditions. The training curriculum included the following procedures:
• Standardize the training curriculum in terms of intensity, and rest.
• The curriculum targeted the youth category for the 800-meter event.
• The application time for the training curriculum lasted (8) weeks.
• Number of training units per week (3) training units.
• The total training units amounted to (24) training units.
• Each training unit took a time ranging between (40-45) minutes from the time of the main section of the training unit.
• Work was limited to the experimental group during the time allocated by the main section of the training unit, while the remaining time of the training unit was used by the control group with coach.
• The control group works with they are coach from the beginning of the training unit to its end.
• The method of high-intensity interval training was used to develop the endurance of special speed, by setting up three training units per week, as (Abu El-Ela and Ahmed Nasr El-Din) mention that " the speed endurance exercises are given 2-3 times in a week " (3.170). And the intensity levels used The training units ranged between (80%-95%) for speed endurance exercises, and (60%-75%) for strength endurance exercises. The wavy method was adopted to form degrees of intensity in a ratio of (1: 2), that is, conducting a training unit with a low degree of intensity, followed by conducting two training units with a degree of intensity higher than the first, and the two units are different in degree of intensity from one another.
• The total intensity of the exercises used ranged between (75%-90%), using the high-intensity interval training method. Interval training is the " successive exchange of load and rest " (4.379).
• Giving an appropriate rest period between repetitions according to the nature of the exercise.
• Give appropriate rest time after exercise.

Post-tests:
Post-tests and measurements were conducted on the research sample after the completion of the training program and in the same manner in which the pre-tests and measurements were conducted.

Statistical means:
The statistical data was processed using the ready-made software system (SPSS).

II. RESULT:

Table 1
Control Group

<table>
<thead>
<tr>
<th>#No</th>
<th>Tests</th>
<th>measuring unit</th>
<th>Mean</th>
<th>S.D</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>600m run</td>
<td>M/S</td>
<td>0.005</td>
<td>0.005</td>
<td>2.236</td>
<td>0.076</td>
</tr>
<tr>
<td>2</td>
<td>1000m run</td>
<td>M/S</td>
<td>0.025</td>
<td>0.038</td>
<td>1.576</td>
<td>0.176</td>
</tr>
<tr>
<td>3</td>
<td>800m run</td>
<td>M/S</td>
<td>0.000</td>
<td>0.012</td>
<td>0.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Table 2
Experimental Group

<table>
<thead>
<tr>
<th>#No</th>
<th>Tests</th>
<th>measuring unit</th>
<th>Mean</th>
<th>S.D</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>600m run</td>
<td>M/S</td>
<td>0.020</td>
<td>0.006</td>
<td>7.746</td>
<td>0.001</td>
</tr>
<tr>
<td>2</td>
<td>1000m run</td>
<td>M/S</td>
<td>0.026</td>
<td>0.015</td>
<td>4.339</td>
<td>0.007</td>
</tr>
<tr>
<td>3</td>
<td>800m run</td>
<td>M/S</td>
<td>0.310</td>
<td>0.216</td>
<td>3.507</td>
<td>0.017</td>
</tr>
</tbody>
</table>
III. DISCUSSION:

It is clear from the table (1) and (2) that the training program targeting the experimental group had better achievements than the control group and that the effect is sure because the new training program because the new method focused on developing special speed endurance through exercises of high-intensity interval training, while the traditional program followed the old ways of training and without using the periodic tests to identify kinks in order to avoid them and then reach better results, as well as the noticed difference between Means and S.D. so it was better to the experimental group. In addition that the significance of the t-test shows that the training program the new one was more useful, since all of its values were closer to zero. Thus, it is clear that the traditional program followed has a positive effect.

The researchers suggest that because the improvement in effectiveness is very slight, as it is one of the fast activities, in addition to the fact that the sample is from the youth group and has not reached full maturity, and therefore they are unable to bring out their full capabilities.

Therefore, the training program prepared by the researchers by adopting the method of high-intensity interval training and focusing on the development of both the characteristics of endurance of speed and special speed in the first degree had an effect, as this program included various and complex exercises as well as exercises for physical strength in which the researchers adopted scientific methods in developing physical ability. In terms of the rated loads according to the level of the players, as the rest periods between repetitions and between training units were appropriate for the effort exerted, as well as the gradual training load in a scientific manner, which led to the emergence of positive results in the post-tests of the experimental group, as he mentions (Zuhair Al-Khashab, 1999) "Indicating that gradation to reach the best level of performance has become an important rule in training, and gradation means the progress of the training plan according to the following" (5.34):

Gradient from easy to hard.

Gradient from simple to complex.

(Kamal Al-Rabadi, 2001) see "The important thing in developing the endurance of speed is the gradual use of intensity from low to medium to pre-maximal to extreme" (6.47), moreover, it is mentioned (Qasim Hassan Hussein and Mansour Jamil, 1988) “that it can be used Speed exercises with high intensity in improving the endurance of speed because of their importance in that "(7.81), so "the lack of care in choosing exercises that achieve the goal of training delays the players' arrival to the level of performance required during the specified period of training" (8.17), and the researchers attribute this to The validity and effectiveness of the prepared training program that adopted the high-intensity interval training method, which most scientific sources and references in the field of sports training indicated its preference in developing endurance, speed and special speed among other training methods, as the total intensity of the exercises used in this method ranged between (80-95%). And these exercises had a similar characteristic to the running states that occur during the race. It is characterized by the runner’s movement by maximal and semi-maximum sprinting, in addition to the fact that the exercises work to strengthen some special muscle groups in order to develop both qualities of endurance of strength and endurance of speed, due to the great correlation between the elements of physical fitness, especially the elements of strength and speed, as "the more The greater the muscular strength, the greater the resistance, the greater the speed" (9.162). The researchers attribute the development in the special endurance speed test (600 meters) less than the racing distance, to the exercises used, as it had a high correlation with the endurance of the special speed, which was linked to the development of the target speed, as the speed gradually increased with the short distance, which contributed to the excitation of the largest number of muscle fibers and physiological changes in the body. As Macardle points out, "the specificity of training creates special adaptations that are generated by the special effects of the training process" (10.268). As for the results of the (1000-meter) running test, the researchers attribute this development in the post-tests and in favor of the experimental group in the (1000-meter) running test more than the race distance to the effectiveness of speed-endurance rated exercises, which contributed to the development of the time of this test. An achievement (800 meters), which is due to the special endurance exercises used by the researchers, which tended to develop the abilities to endurance speed and special speed and as a result of the repetitions and intensity specified for each distance, which led to the body bearing physical burdens as a result of its fatigue in order to create special adaptations for functional devices that were reflected in the development of The level of performance of this group in performing the maximum possible degree of intensity of running and for the longest possible period of time,
As (Ibrahim Al-Basri) confirms that "experiments have proven that the endurance of the body and its stress in exercise, especially special endurance exercises lead to the body’s imprint on effort gradually and thus affect the ability of the heart and circulation system (11.35).

In addition, special exercises have been prepared to develop speed endurance, which are performed with working times "longer than (20) seconds, according to what is known as interval training, so that functional effects can be obtained, provided that the rest times are between one repetition and another in a ratio of (2:1) of the work period until The other repetitions can be performed with the same intensity, and between one group and another (5-7) minutes" (12.200 ).

IV. CONCLUSIONS:

1- There is an effect in the training program followed by the experimental group in improving and developing the achievement.

2- There were significant differences between the two research groups in the post-test for the research variables.

3- High-intensity interval exercises prepared by the researchers and used by the experimental group produced better results than the exercises used by the control group.

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