

The Effect of Aquatic Exercises on Special Endurance (Strength and Speed) and Achievement Run (800m) for Youth

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Abstract

The research aims to use Aquatic exercises to develop special endurance and run (800m) for youth to identify the level of (speed endurance and force endurance) of the participants of the sample members of the experimental group. The researchers used the experimental method for its suitability to the nature of the study, and the sample was from Wasit Governorate clubs racers. The participants were (12) racers. We were divided into two control and experimental groups. The duration of the experiment was (8) weeks from (28/10/2020 to 10/3/2021). The place of the experiment is in the Al-Gharraf River (a branch of the Tigris River) and the Kut Olympic Stadium. The researchers used tests to speed endurance of a distance (600m), a test to endurance the strength of running by jumping for one minute (Bousing), and an achievement test (800m). The researchers concluded that training in the aquatic medium exercises affected the development of special endurance (speed endurance and force endurance) and it had a positive effect in completing the 800m race for youth.

Keywords: Aquatic, Medium Exercises, Special Endurance, Achievement, Run (800m).

Introduction

The 800m race is one of the track and field athletics in which performance is affected by the development of special endurance, which constitutes the most important capabilities for this race. Therefore, researchers and those interested in the field of training have tended to invent advanced training methods in order to achieve positive effects in the development of sports achievements by emphasizing special endurance. Therefore, the two researchers decided to use a new training method to develop the endurance of using a new environmental that constitutes resistance against internal strength. Increasing the water resistance raises and improves the level of the racer from the technical side and the physical side, as it shows its real importance in improving the

imbalance between the different muscle groups, as well as improving the mechanics of movement for the joint of the body⁽¹⁾.

As it is known that the resistance shown by the water medium is one of the methods that can cause the development of muscular strength through the use of exercises that are directly related to the stages of performance of the activities depending on the speed of movement of the body when using various strength exercises with body weight, the (800m) race is one of the medium distance activities that need to speed endurance and force endurance.

Therefore, the importance of the research comes through the uses of the Aquatic, which provides a better opportunity, in the opinion of the researchers, when applying different exercises to develop these qualities.

The researchers noted that most of the training units given to the athletes of Wasit Governorate clubs

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in particular and Iraq clubs, in general, did not shed light on the use of the aquatic during training despite the importance of this type of training, which leads to a great development for athletes at the level of special endurance, so it was used The researchers exercise the resistance of the aquatic with bodyweight to be an aid method in developing special endurance and running (800m).

The research objective to prepare the aquatic exercises to develop special endurance (speed endurance and force endurance) and to identify the level of special endurance for the (800m) youth athletes (experimental group).

Methods

Participants

12 of the young running players and the sample was divided into two groups in a random way by drawing by numbers (double and odd) an experimental group (6) and a control group (6) athletes. The experimental group used exercises in the water medium that were prepared and organized by the researchers, while the control group in its training, depends on the application of the training curriculum by the trainer.

Table 1. The homogeneity of research sample (age, weight, length and training age)

Basic variables	Statistical significance			
	Arithmetic mean	Median	Standard deviation	Skewness
Age (year)	17.22	18	1.231	0.732
Length (cm)	174	172	4.123	0.723
Weight (kg)	60.122	58	2.321	0.921
Training age (month)	29.5	28	3.232	0.632

The above table shows that there are not statistically significant differences between the research sample individuals in some variables (age, height, weight, and training age). the skewness is ± 1 which indicated the Homogeneity of the research sample.

The procedure of measurement: the following devices and tools were used in this study: Electronic scale for measuring weight and height PESAPERSONE, type of German origin, Metric Tape Length (50) Count (1), shot tool (1), Plastic cones (20), An athletics stadium with international legal dimensions, Electronic stopwatches of Chinese origin (12).

Main experiment: consisted of the following tests:

Pretests: The tribal tests for the research sample were conducted at exactly three o'clock in the afternoon for two days, starting from Saturday (31/10/2020) to Monday (01/11/2020) at the Kut Olympic Stadium.

On the first day: an achievement test (800m). On the second day: a running speed endurance test (600m) and a jumping power endurance test (Bousing) for one minute.

Aquatic exercises:

The training protocol contained (24) training units, it was applied to the research sample for a period of (8)

weeks, with three training units per week (Saturday-Tuesday-Thursday), the duration of one training unit is (40-50) minutes. The training protocol included exercises within the water to train the special physical abilities of the race (800 m), knowing that the heights of the water for speed-endurance exercises not more than 10 cm below the knee, and for strength-endurance exercises, the water height is not more than 10 cm above the knee. Arms and trunk Rise of the water at chest level. The researchers used the high intensity and low intensity interval training units. Was applied exercise in rural water in the pre-competition preparation period,

because in this period must be given where the exercises are similar in terms of Kinetic performance of power and speed as well as the direction of muscular work in with those movements that lead in the competition to develop the physical capabilities of active sports⁽²⁾.

Post-Test: The researchers conducted post-tests for the special physical abilities of the research sample at exactly four o'clock in the Kut Olympic Stadium, for two days on (5/1/2021) on Tuesday and (6/1/2021) on Wednesday, under the same conditions as the pretests.

Statistical Analysis : the researchers used the static bag SPSS.

Results

View and Discuss Results

Table2: It shows the results of the arithmetic means, standard deviations, the calculated t-value, the level of significance, and the type of significance of the physical variables of the pre and posttests of the experimental group.

significant	Significant level	t-test	posttest		pretest		Units	Tests
			Standard deviation	Arithmetic mean	Standard deviation	Arithmetic mean		
Sig.	0.021	4.391	1.21	86.66	2.07	89.50	s	Speed-endurance 600m
Sig.	0.003	2.821	9.93	221.67	9.50	212.67	m	Strong-endurance
Sig.	0.021	17.639	1.38	119.50	2.45	122.00	s	achievement

Table3: It shows the results of the arithmetic means, standard deviations, the calculated t-value, the level of significance, and the type of significance of the physical variables of the pre and posttests of the control group.

significant	Significant level	t-test	posttest		pretest		Units	Tests
			Standard deviation	Arithmetic mean	Standard deviation	Arithmetic mean		
Sig.	0.001	4.391	1.72	88.83	1.83	90.83	s	Speed-endurance 600m
Sig.	0.018	2.821	4.89	218.50	8.61	212.83	m	Strong-endurance
Sig.	0.00	17.639	2.00	121.00	1.60	122.17	s	achievement

Table 4: It shows the results of the arithmetic means, standard deviations, the calculated t-value, the level of significance, and the type of significance of the physical variables of the posttests of the experimental & control group.

Significant	Significant level	t-test	Control group		Experimental group		Units	Tests
			Standard deviation	Arithmetic mean	Standard deviation	Arithmetic mean		
Sig.	0.02	4.42	1.72	88.83	1.21	86.66	s	Speed-endurance 600m
Sig.	0.42	3.99	4.89	218.50	9.93	221.67	m	Strong-endurance
Sig.	0.33	3.81	2.00	121.00	1.38	119.50	s	achievement

Discussions

Tables (2-3-4) show that the results of the tests for the variable of endurance of speed, endurance of strength and achievement. We note that there is a remarkable development for the members of the research sample for the two groups between the results of the pre and post tests and for all the variables under study, and this seems clear through the significance of the statistical results and this is due to the enforcement of The training protocol developed by the trainers and their following appropriate training methods and means.

We also note that the experimental group superiority the control group in all the studied variables for the post-tests, and the researchers attribute this to the use of the aquatic exercises, as the aquatic exercises had a wonderful effect and the training load was appropriate and organized in a way that suits the development of endurance of speed and endurance of force.

The water medium is one of the external resistances imposed on the runner, and this increases the intensity of training on it. The intensity that was used within the exercises ranged between (55 - 90%) and was sufficient for the development to occur. The athlete reaches a state of fatigue, otherwise the adaptation process will not

occur, and this was confirmed by (Holman) “that the use of the appropriate training load leads to the process of fatigue that is also commensurate with the level of that load.”⁽³⁾

The exercises used depended on the number of repetitions and speed of movement, as well as the use of various exercises such as strength with body weight, jumping from one leg to another and alternating back and front stretch, which gave a positive in strengthening the muscles of the legs, thigh and leg, and through the process of effective exchange between contraction and muscle relaxation within The water medium during the exercise, this is confirmed by (Mohammed Hassan Allawi and Abu Al-Ela Abdel-Fattah) that “the ability to stretch in the muscles contributes to increasing the endurance of the speed of the motor performance of the exercises used” () and the researchers believe that the exercises that led to the development of speed endurance is a natural result of giving incomplete rest between repetitions for the purpose of Adaptation of organs and muscles to perform efficiently under conditions of muscle fatigue and this is what is characterized by endurance of speed, which was confirmed by (Hamdi) if training aims to develop and improve speed endurance, incomplete rest should be used.

As for the force endurance variable, we note that the statistical results indicate that there are significant differences between the experimental group and the control group in favor of the experimental group that used special exercises in the aquatic. The researchers also see that the ratios that were given within the exercises in the water medium were taking into account the principles of the training volume, and this is what Karim Aziz and Nass indicated that the studied and consistent training in terms of the components of the training load and identical with the possibility of the research sample in terms of application duration and formation of intensity, size and comfort will lead To develop the sample positively and that the low-intensity interval training leads to the development of strength endurance in addition to other physical abilities, which was applied in the aquatic⁽⁴⁾, The researchers believe that developing a variable endurance force for the working muscles of the body and assisting in performance is one of the basic pillars to achieve the effectiveness of running (800 m). Similar to competition exercises, and this was confirmed by (Mohamed Abdel Hassan) that strength endurance exercises are primarily done through competition exercises or special exercises where the conditions of external forces are difficult by linking them to competition exercises such as running in a difficult field such as water medium, sand or clay ground⁽⁵⁾.

As for the achievement test for the effectiveness of running (800m), the results indicated that there are significant differences between the experimental and control groups in favor of the experimental, and the researchers attribute this to the development of speed endurance and strength endurance for the players and thus led to the development of achievement as it appeared in the dimensional results of the tests as there is a high correlation between The evolution of endurance speed and endurance force and the achievement of running (800m), as this is one of the most important abilities that he focuses on in training (800m), which means maintaining speed with a high intensity and sufficiently for the length of the period of performance of physical effort by resisting fatigue, and this is what was focused

on in the exercises, as its development had an impact on improving achievement and this is what (David) confirmed that these variables are among the important pillars of running (800m) if they are used regularly and the intensity is high and the rest is short and increases when approaching the stage of competitions, (Shaker Al-Sheikhly) proved that there is a very high correlation between the development of speed endurance, endurance of force and the achievement of running (800m)⁽⁶⁾.

Conclusions

1- Exercising in the aquatic had a significant impact on the development of special physical abilities through the results obtained.

2- The training in the aquatic had an effective effect on the development of special endurance (endurance of strength and endurance of speed) and had a positive effect on the achievement of the (800m) race for youth.

Recommendations

1- Encouraging the trainers to use the water medium as a training method that was not used in the (800m) game because of its effective role in the development of special endurance.

2- Conducting similar studies using the water medium as an unused training method in the field of middle-distance running training to develop physical abilities and special endurance (strength endurance and speed endurance).

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Faculty of Physical Education and Sports Sciences and all experiments were carried out following approved guidelines.

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