

The Effect Of Using A Proposed Training Device On Developing Explosive Power And Speed And Achieving The Effectiveness Of (100m) Youth

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Abstract: The last period witnessed a great development in all sports games and events as a result of studies and research in various sciences that are in the interest of sports achievement, including the free running event (100m), which is one of the activities of the enemy that witnessed a great development in the level of technical, physical, psychological and other aspects, which led to Achieve new numbers that could not have been registered before this period.

The requirement to reach the highest levels of the effectiveness of a sprint (100 meters) is free to impose on the trainers and workers on this event to find new and modern training methods that would accelerate the process of raising the level of the player and add a new training environment that would create a situation similar to the actual performance with training conditions that impose training burdens on the runner. New or different from the one that was previously trained in, thus moving away from what is ineffective and reaching positive results in the training process.

It is noticeable that there is a wide range of aids in training athletes athletes and according to the type of activity practiced by the athlete, as we notice, for example, that short distance runners use the withdrawal of certain weights attached to the runner's body for the purpose of developing the element of strength characterized by speed and the use of iron shirts with high weight and weights Legged and others.

As the equipment and training auxiliary means are the focus of attention of many workers in the training field because of their importance and a great role in accelerating the process of development and integration in the physical and skill aspects of the athlete to bring him to higher levels, and that these devices, means and tools have their own goals, including what goes into the process Correcting the movement paths, including what is included in the physical aspects, including what combines the two by facilitating the performance and isolating extraneous movements and contractions that would negatively affect and thus delay the achievement of the ideal level for the player.

Through the observation and experience of researchers, it was found that there is a lack of use of modern scientific devices, tools and means that have a positive impact in raising the level of sports performance and achieving the required achievement, and the trainers 'dependence on some traditional training tools and their lack of modern techniques in the training process that contribute and help the athlete in raising his level of All aspects (physical, skill, and psychological) as well as economics with time, effort and financial resources to achieve good results, hence the importance of research in manufacturing a training device with different training resistances that can be controlled according to the

type of exercise and intensity required for training, and its use is similar to the ideal enemy method and style and by applying a variable pull resistance It would help the sprinter to reach the higher levels by developing explosive power and velocity required for a free running (100m) sprint.

The study aims to manufacture a training device aimed at developing explosive power, speed, and achievement for runners with an enemy activity (100 meters) free youth, and to prepare exercises using the factory training device to develop explosive power and speed and the achievement and achievement of enemy runners (100 meters) free youth. Identifying the effect of exercises using the manufactured device in developing explosive power and speed, and the achievement of runners with the effectiveness of (100 meters) free youth ..

The researchers also assume that the manufactured training apparatus has a positive effect on the physical abilities under investigation and the achievement of the activity of the enemy (100 meters) free for the members of the research sample, and also the researchers assume that there are significant differences between the pre and post tests in explosive strength and speed and the achievement of the running effectiveness (100 meters) free youth For the post test.

1. RESEARCH METHODOLOGY AND FIELD PROCEDURE:

Research methodology: The researchers used the experimental approach to suit the nature of the problem in the manner of the control and experimental groups for its suitability to the nature of the problem to be solved.

2.2 The research sample: The research population was chosen by the intended intentional method, and the hostile Diyala Sports Club represented the group of young people effectively (100 meters) free and the number of (9) runners and whose ages ranged from (18-19) years. They were divided into two control and experimental groups, and each group included (3) runners, and three runners were excluded for their use in the pilot experiments.

Table (1) shows the homogeneity of the study variables for the research sample

Variables	Arithmetic mean	standard deviation	Value (T)	error percentage	The level of significance
Explosive power	2.302	0.055	.025	.877	Random
Withstand speed	20.392	0.968	.167	.691	Random
Speed Transition	4.485	0.075	1.891	.199	Random
Achievement	13.207	0.376	.189	.673	random

Table (2) Equivalence of the control and experimental groups in the research variables.

Groups		Arithmetic mean	standard deviation	Value (T)	error percentage	The level of significance
Explosive power	Control group	2.278	0.051	761	.464	random
	Experimental group	2.302	0.055			
	Experimental group	35.500	2.510			

Withstand speed	Control group	20.777	1.014	.673	.516	random
Speed Transition	Control group	4.532	0.138	.726	.485	random
	Experimental group	4.485	0.075			
Achievement	Experimental group	13.330	0.329	.604	.559	random

Devices and tools used in the research:

1. Electronic signal device.
2. A-B resistance lever
3. Resistance tape (50 meters)
4. Resistance tape reel.
5. Automatically controlled electric motor for resistor return.
6. Shave the balance to stabilize the device.
7. 12 volt rechargeable battery.
8. Squeeze pulley to release resistance. (B)
9. The resistor shed image of a face (B) is the other of the device
10. The weight of the device is 75 kg

The proposed training equipment, a laptop (DELL), a Sony video camera, one, a Sony photographic camera, one, a Canon laser printer, one, a device for measuring height and weight, one, one for measuring the pulse, one One, two electronic stopwatches, a scientific calculator, number 1, the athletics field, a cloth tape to measure the distance, 10 signs, two whistles, colored flags, a wooden bench, a tape.

4.2. Description of the training machine:

Resistance Shedding Reel:
 It is a metal disc of heavy steel iron with a diameter (25 cm) and a width (5 cm) fixed in its center the iron axle that can rotate, and installed on the top of this disk a spring lever holds a wheel of compact plastic that presses on the metal disk in order to apply the resistance as required Through a bolt to control the amount of resistance through it.

Resistance Tape Roller:
 It is a reel made of light faux material with a diameter of (45 cm) hollow from the inside with a diameter of (20 cm). The electric motor, rotates the reel and winds the tape by electronic electrical control.

Resistance Tape Roller Return Control Motor:
 It is an electric motor with a power (300 watts) and works on a battery (12 volts), its speed can be controlled by connecting an electronic system with it. cm).

Bra and resistance tape:
 It consists of straps designed on the torso in a way that governs the chest and back area and can be enlarged and zoomed out according to the size of the player's body. There are semicircular metal rings in the middle of the back fixed with special strings that can withstand pull and pull in two areas, one of the top of the hip and the second in the middle of the thoracic vertebrae to focus the tension At the point closest to the player's center of gravity, which is in the torso area when running.

Electronic signal device:
 It is an electronic device that is an electronic circuit consisting of an electronic card and a group of special resistors and is linked with the electric motor by a rechargeable battery (12 volts) that can be controlled by using a special Raymont up to a range of (50 meters) to be with the player to operate the device remotely and switch it off To wrap the tape at the end of the exercise and repeat it again.

Electronic resistance measuring device:

It is an electronic device designed to measure the tensile or pulling force in kilogram units and its parts and from the two ends of the device through one fixed and the other moving and accurately displayed on the digital screen of the device with high accuracy and it is of Chinese origin and a standardized measuring method used to measure force previously as follows.

The resistance tape exiting the machine is fixed with the fixed end.

We stabilize the resistance to be trained with a wheeled lever that presses the resistance pulley to impede the rotation speed.

We gradually withdraw the moving end of the measuring device from stability or connect it with the player's body and observe the appearance of the first movement of the tape or the rotation of the resistance tape reel, as it is an indication calculated for the level and value of the specified resistance.

Tests used in research:

First: Test the strength of the leg muscles (the long jump from stability): (Allawi and Radwan: 95: 1994).

The purpose of the test: to measure the explosive force of the two men.

Tools used: Test yard, tape measure, starting line (5 cm) wide.

Performance description: The tester stands behind the starting line, then bends and extends the knees and bounces to the farthest distance.

Recording method: the measurement is from the starting line to the last part of the body that touches the ground, then the measurement is recorded in the test registration form.

Fourth: Running test (150 meters): (Wisal Karim: 90: 2010).

The purpose of the test: to measure the speed tolerance.

Tools used: Athletics court, stopwatches, whistles, banners, registration form, support staff.

Performance description: After determining the distance from the start of the start to the end of the distance (that is, from the start of the (200 m) run, and after the start of the distance (50 m) from the specified distance, the distance becomes 150 m), the laboratory is stopped from the high position and with the whistle being heard indicated by the flag For the two timers to start timing and start quickly to the end of the specified distance.

Scoring method: To calculate the time of the run from the moment of starting until the stopwatches are stopped, when the player reaches the end of the distance, the time is calculated to the nearest tenth of a second, and more than one player runs when taking the test.

Fifth: Test the enemy 30 m from the high start: (Majeed: 1991: 273).

The purpose of the test: to measure the translational velocity.

The tools used: a test yard in which the start and end line are defined and the distance between them is (30) meters, and two fields for running, the width of each field is (1.22) meters, an electronic stopwatch number (2), a whistle number (2), flags number (2).

Performance description: The laboratory is standing behind the starting line from the high starting position, and when the start signal is heard, the laboratory runs at the maximum possible speed and in a straight line within its range until it crosses the finish line, and after starting the start, the time taken to travel the distance is recorded in the registration form. The test is between two labs together, and one try is given to each laboratory.

Registration method:

The tester records the time taken to travel the test distance to the nearest (1/100) of a second.

Sixth: The test of achievement of a 100-meter sprint.

The purpose of the test: measuring the achievement of an enemy (100 meters) free.

Tools used: Athletics court, stopwatches, whistle, banners, registration form, support staff.

Performance description: The laboratory stands at the beginning of the (100 m) line, which represents the starting line of the (100 m) runner, after determining the distance from the start of the start to the end of the distance, the laboratory is stopped from the low position and with hearing the beeper and the flag signal for the timers to start the timing, the start is made at the maximum Speed to the end of the specified distance.

Scoring method: To calculate the time of the run from the moment of departure until the timing hours are stopped when the player reaches the end of the distance and the time is calculated to the nearest tenth of a second and the test begins with more than one player.

Pilot experiments:

The researchers conducted the first exploratory experiment on an exploratory sample consisting of (3) players from the same research community on 10/24/2017 at nine o'clock in the morning at the Diyala Athletics Club Stadium, the purpose of which was to identify the method and mechanics of the device's work and how to determine the resistances used in training And how to determine the training intensity to be implemented on the research sample and determine the appropriate time spent exercises and rest time.

The researchers conducted the second exploratory experiment at nine o'clock in the morning on Saturday 9/12/2017 at the Diyala Sports Club stadium and on a sample of young players and their number was (3) players and then they were excluded from the main experiment and the aim of this experiment was to find out the suitability Tests for the level of members of the research sample and to ensure the validity of the test location And its suitability for carrying out the tests and knowing the extent of the sample members' understanding of the tests used, as well as knowing the time required to carry out the tests and the time taken to execute each test.

Pre-tests:

The pre-tests were conducted for the members of the research sample (the control and experimental groups), and to ensure obtaining real scores that represent the reality of the sample members, the tests were distributed on Friday and Saturday on 15-16 / 12/2017 at the Diyala Sports Club Stadium with the help of the auxiliary work team. Examinations were conducted for each of the sample individuals at nine o'clock in the morning, and all were photographed, and the best achievements were recorded, and they were as follows:

The first day, the aim of which is: Conducting an achievement test and physical abilities tests for the effectiveness of an enemy (100m) free (100m achievement, explosive power, velocity).

The second day, the aim of which: Conducting tests of the physical abilities of the effectiveness of an enemy (100) meters free (strength characterized by speed, endurance force, endurance of speed).

Exercises used in research (machine training):

The working mechanism of the training apparatus is represented by obstructing the player from launching forward freely and trying to impose resistance from the back on the player, represented by a maximum resistance (weight) (8.75 kg-9 kg) that is controlled by a screw axis to determine the amount of resistance imposed on the player. The player's chest of the device, which is related to the resistance ball, and the player is one meter away from the device, and the start is either from standing or sitting and according to the type of ability to be developed and begins to carry out the exercise according to the distance and the resistance chosen according to the physical ability to be targeted in the training unit and the intensity of the exercise was chosen according to the intensity The total device and the total intensity of the device is 9 kg, so if we want to train severely 70%, for example, we use the aforementioned equation and after completion, the player presses the remote control device to

return the tape to its first position and after taking a rest (returning the pulse to its normal state before performing the exercise) begins Perform subsequent iterations in the same way. To determine the training intensity for each exercise, a measurement was made to calculate the maximum intensity for each member of the experimental sample by setting the device to the maximum resistance and a distance of (50 meters) and according to this intensity, the intensity was extracted for each exercise.

Example: a player of maximum strength on the training machine (9 kg), what is the amount of resistance if he trains hard (50%)?

$$\%100 = 9\text{kg} \times 100$$

$$50\% = x / 9\text{kg} \times 100$$

$$\text{So } Q = 9 \text{ kg} \times 0.50 = 4.5 \text{ kg}$$

The intensity can be increased or decreased by controlling the running distance and according to the formation of the load for each of the targeted physical abilities.

- Researchers prepared the exercises using the proposed training device and were applied to the experimental group during the special preparation period, as the implementation of the exercises began on Sunday 12/17/2017 and continued until Saturday, 2/17/2017.
- The implementation of the exercises using the training device took a period of (8) weeks, at (3) training units per week, and the total number of units was (24) training units during the period of the experiment.
- The total training unit time took (90) minutes, while the training time using the device ranged from (40-45) minutes in each training unit and from the main section.
- In preparing the exercises, the researcher used the repetitive training method and the low and high intensity interval training method.
- The researcher took into consideration the progression of the training load while controlling the number of repetitions, their intensity, and the duration of rest between repetitions and groups.

The ripple of pregnancy (3: 1) was used, meaning the use of three weeks of high pregnancy and a week of lower pregnancy, as the pregnancy was raised for the first, second and third weeks and reduced in the fourth week to be a stage of overcompensation, and it was raised in the fifth, sixth and seventh week and reduced in the eighth week in preparation for the post-tests.

Dimensional tests:

The researchers conducted the dimensional tests on Monday 18/19/2018 at the Diyala Sports Club Stadium at nine in the morning, and the researchers were keen to provide the same conditions and requirements in terms of place, time and other application procedures.

. Statistical methods: The researchers used the Statistical Package (SSPS) to process the results.

Presentation, analysis and discussion of results.

Presentation and analysis of pre and post results in the control group search tests:

Table (3) the values of the mean and standard deviations of the search variables for the control group.					
Variables	the test	Arithmetic mean	standard deviation	Standard error	measuring unit
The explosive power of the legs	Pre-test	2.278	.051	.021	meter
	Post-test	2.360	.025	.010	meter
Withstand	Pre-test	20.777	1.014	.414	Second

speed	Post-test	20.448	.954	.390	Second
Speed Transition	Pre-test	4.532	.138	.057	Second
	Post-test	4.443	.163	.067	Second
Achievement	Pre-test	13.330	.329	.134	Second
	Post-test	13.363	.307	.125	Second

Table (4) the statistical parameters of the (T) test between the pre and post measurements of the control group.						
Variables	measuring unit	س ف	ع ف	Value (T)	error percentage	Significance
Explosive power	meter	.082	.044	4.593	.006	SIGN
Withstand speed	Second	.328	.400	2.012	.100	NON-SIGN
Speed Transition	Second	.088	.134	1.616	.167	NON-SIGN
Achievement	Second	.033	.140	.582	.586	NON-SIGN

Presentation and analysis of the pre and post results in the search tests of the experimental group:

Table (5) The values of the arithmetic mean, standard deviations, and the effect size of the independent variable in the research variables of the experimental group.					
Variables	the test	Arithmetic mean	standard deviation	Standard error	Effect size
Explosive power	Pre-test	2.302	.055	.022	5.29
	Post-test	2.593	.170	.070	
Withstand speed	Pre-test	20.392	.968	.395	2.037
	Post-test	18.420	.428	.175	
Speed Transition	Pre-test	4.485	.075	.031	4.96
	Post-test	4.113	.095	.039	
Achievement	Pre-test	13.207	.376	.154	1.343
	Post-test	12.702	.343	.140	

Table (5) The values of the arithmetic mean, standard deviations, and the effect size of the independent variable in the research variables of the experimental group.					
Variables	the test	Arithmetic mean	standard deviation	Standard error	Effect size
Explosive power	Pre-test	2.302	.055	.022	5.29
	Post-test	2.593	.170	.070	
Withstand speed	Pre-test	20.392	.968	.395	2.037
	Post-test	18.420	.428	.175	
Speed Transition	Pre-test	4.485	.075	.031	4.96
	Post-test	4.113	.095	.039	
Achievement	Pre-test	13.207	.376	.154	1.343
	Post-test	12.702	.343	.140	

Table (6) the statistical parameters of the (T) test between the pre and post measurements of the experimental group.					
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Variables	measuring unit	سَف	ع ف	هـ	Value (T)	error percentage	Significance
Explosive power	meter	.292	.127	.052	5.624	.002	Sign
Withstand speed	Second	1.972	.688	.281	7.023	.001	Sign
Speed Transition	Second	.372	.104	.043	8.737	.000	Sign
Achievement	Second	.505	.142	.058	8.688	.000	sign

Presentation and analysis of the results of the dimensional tests of the research variables between the control and experimental groups and their analysis:

Table (7) the statistical parameters of the (T) test between the two dimensional measurements of the control and experimental groups.

Variables	Groups	Arithmetic mean	standard deviation	Value (T)	error percentage	significance
Explosive power	Control	2.360	0.025	3.316	.008	Sign
	Experimental	2.593	0.170			
Withstand speed	Control	20.448	0.954	4.750	.001	Sign
	Experimental	18.420	0.428			
Speed Transition	Control	4.443	0.163	4.286	.002	Sign
	Experimental	4.113	0.095			
Achievement	Control	13.363	0.307	3.523	.006	Sign

The values of the arithmetic mean difference and their deviations, the calculated (t) value, and the error rate for the search tests between the pre and post measurements of the experimental group are shown through Table (5 and 6), since all the calculated (t) values have an error rate of less than (0.05) and these results indicate that The presence of significant differences in favor of the post-tests in all research tests, and this fulfills the first research hypothesis, which assumes the existence of significant differences between the pre and post tests in the research tests of the experimental group, as Table (7) shows the values of the calculated t between the two dimensional measurements of the control and experimental groups in the research tests, As the results showed that all the calculated values of (t) correspond to an error ratio less than (0.05), and this indicates that there are significant differences between the control and experimental group tests in the post-measurement and in favor of the experimental group.

The researchers attribute these moral differences to the effectiveness of the training apparatus and the nature of the exercises used according to the formation of the loads of the physical abilities of the effectiveness of a free sprint (100 meters), as well as the nature of the implementation of most of these exercises in a manner similar to the actual performance of the enemy and therefore the effect was significant on the members of the experimental sample.

With regard to the explosive force, the researcher attributes the development occurring in it to the nature of exercises using the training device, which is represented by jumping and rebound exercises and rebound exercises that work to lengthen the muscle and then shorten it that works to generate an explosive force to fulfill the performance of these exercises. There was no delay between the action of the decentralized contraction (prolongation) and the central contraction (shortening). The amount of work performed under this condition is translated into an elastic energy released in the muscle during stretching "(1984: 26:

CrosslyG), and this is what was emphasized in the exercises used from Before the members of the research sample, it was emphasized to perform the performance by descending down to a medium distance by bending both knees and thus jumping forward to the top with maximum strength or performance and regular stability with an emphasis on bending and extending the knees in the same way, and it is mentioned (Hara: 172: 1990) The high quality of the exercise, which increases the effect of the training, is the direct link to the high jump after landing, and the landing phase in such jumps has its effect as a preparatory section for high jumping that forces a strong and severe contraction.

Also, the use of a variety of exercises with variable intensity and an accelerated movement rhythm to perform strength exercises characterized by speed for the two legs using the training device by focusing on the nature of muscle contractions similar to performance with the addition of moderate-intensity resistance impeding the movement of the player represented in the force of pulling the player during the course of the enemy significantly helped in the development of this The physical ability of the members of the research sample, as it is mentioned (Amralullah Ahmad Al-Basati: 42: 1998), "as this is developed through the development of the speed of muscle contraction by means of resistors close to the upper limit of the average speed of performance appropriate to produce the best force characteristic of speed." Table (10) shows the existence of significant differences in the strength endurance test and in favor of the post test. The researcher attributes this development to the nature of exercises using the training device, as the training device has variable resistances that are controlled by the trainer according to the nature and type of the characteristic to be developed, as these exercises were It is characterized by moderate intensity with more frequent work, as Laith Ibrahim mentioned, according to Zarzis (2008), "The most important exercises that are used to reach muscle strengthening of the type that work against resistance are the various weights, medical balls and external resistances" (Jasim: 120: 2010).

Also, exercises using the manufactured training device require the player to exert a successive effort with resistance on working muscle groups with stresses ranging between (50-70%) with increasing size without focusing on the speed of performance. He helped to develop strength endurance, as both Hassanin and Ma'ani are mentioned. (1998) that, "The true meaning of enduring force is the continuation of the effort exerted against resistances of medium intensity so that the greatest burden falls on the muscular system" (Hassanein and Maani: 1998: 22).

As for enduring speed, the researcher attributes the development occurring in it to the nature of the exercises used by using the training device according to the intensity of a load in line with the development of this important physical ability for a free (100m) runner through the use of exercises of less than maximum intensity and sometimes to maximum intensity and short distances without The occurrence of fatigue or tension in the working muscles of the members of the research sample, as the ability of the athlete develops when training in the rhythm of the steps was during the speed-bearing training of a runner (100 meters) (Salah Naja: 224: 1998).

As for the transitional speed, the researcher attributes the development occurring in it to the nature of the exercises used by using the training device according to the standardization of the severity of the load in line with the development of this important physical capacity for a free runner of (100 meters) through the use of exercises of less than maximum intensity and sometimes to maximum intensity and distances Short without the occurrence of fatigue or tension in the working muscles of the members of the research sample, as it is mentioned (Adel Abdel-Basir Ali: 109: 1999), "For transitional speed training, it is recommended to use a speed less than the maximum and even the maximum speed with the use of short distances in training so that fatigue does not lead to a drop." In the level of velocity, as the exercise distance ranged between (30-50 m) and with different intensities ranging from below the

maximum resistance of the device and the amount of (6-9) kg, and that these distances and resistances helped in the development of the transitional speed of the members of the research sample, and confirms (Mufti Ibrahim Hammad: 205: 2001) "High-speed exercises that include typical applications of speed in specialized sports that work to reach speeds higher than usual speeds lead to the process of neuromuscular compatibility through the compatibility of muscle contraction and relaxation) and It is what is produced by the nerve signals) which enable better rates of speed.

As for the completion of (100 meters) free, the researchers attribute the development occurring in it to the nature of the exercises used by using the training device according to the standardization of the intensity of the pregnancy in a manner consistent with the development of the special physical abilities of the (100 meters) free runner through the use of exercises of less than maximum intensity and sometimes to intensity Maximum distances and short distances without the occurrence of fatigue or tension in the working muscles of the members of the research sample, as the nature of work in the training apparatus is very similar and the nature of the actual performance of the effectiveness of (100 meters) free with different resistances during training and according to each physical ability targeted in the training unit and thus the integration Building the special physical capabilities of a free (100m) runner whose outcome comes in achieving achievement and upgrading the digital level of individuals. (Jamal Sabry: 121: 2012) indicates that "the best that can win and win by achievement can be achieved when the key parts of training are as close as possible. When he works in competition, the more specific the training, the greater his impact on achievement, and this is a proven fact in running and muscular strength training.

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