

ELECTRICAL TRAINING OF WORKING MUSCLES AND THEIR EFFECT ON SOME PHYSICAL ABILITIES AND ACHIEVING THE TRIPLE JUMP FOR YOUTH

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DOI: 10.37648/ijrssh.v10i02.028

ABSTRACT

The study aimed to prepare special training and accompanying electrical training for the muscles working in the stages of the triple jump event, and to identify the impact of those exercises on some physical capabilities and achievement for the effectiveness, while the researchers assumed that there were significant differences between the pre and post tests in some physical capabilities and achievement of triple jump effectiveness In favor of the post test.

The study was applied to a sample consisting of 9 proofers representing the National Center for Sports Talent in Baghdad, and the arithmetic mean for their ages was (18.7) and a deviation (0.971), and an intermediate calculation for their lengths reached (179.5) and a deviation (5.502) and their weights (66.4) and a deviation (5.027) The researchers used the experimental approach to design the one group, and physical tests and achievement were applied to the research sample, as exercises were applied with electrical stimulation over a period of (8) weeks and by (24) training units, distributed over (3) units per week, as they were These exercises are within the main section of the training unit within the special preparation period and after use The researchers statistical methods, the researchers improved the appearance of out all the physical abilities and achievement of this event.

INTRODUCTION

The modern sports training process has become more special according to the type of game and effectiveness, as it depends greatly on the formation of its loads, and one of these training methods is electrical training, which is recently one of the effective methods of what distinguishes this method from achieving advanced results in developing physical capabilities and time Few, as the muscle is stimulated by electrodes or wirelessly placed or in contact with the muscle groups required to be alerted and isolated from the nervous system, in order to achieve stronger muscle contractions that are allowed

by voluntary contractions through active recruitment of all muscle fibers to contract at once and this is what It occurs only when the voluntary contraction, as part of the muscle fibers remains not contracted, as the optimal use of this method contributes to improving physical capabilities provided that it is used according to the requirements of the muscle and its functional ability and dependence on different levels of stimulation, as the codification of stimulation doses is important for the purpose of directing muscle work And investing strength for the hopper, and thus it is possible to achieve the goals according to the scientific foundations, and the effectiveness of the triple jump, which is one of the

complex activities that requires speed in performance and strength in the jump for all its stages, and as a privacy for it, its performance must be characterized by a high degree of correct linkage in m Its motor bars and physical requirements between its various stages, so that the hopper can maintain control of the correct motor path for each stage as well as maintain the speed of the motor performance of the activity, and that the correct linking of the activity requires physical and muscular capabilities to implement its own requirements and this is only done through the presence of consistency and harmony, and organization In the work of the motor units in harmony and flow very high to serve the skillful performance of effectiveness

Hence, the importance of the study lies through the researchers developing exercises with electrical stimulation of the working muscles in the effectiveness of triple jump and knowing its effect on some physical capabilities and achievement of the activity.

As for the problem of the study, it came through the experience of the researchers, as they were practitioners of effectiveness previously, to the lack of using modern methods in training, as they noticed that the majority of training for hoppers in the special preparation period are traditional exercises and are concerned only with performance and do not take into account the requirements of effectiveness in terms of physical activity, which is one of The basic requirements in the event, which in turn are extremely important in achieving the achievement, i.e. exercises consistent with the nature of skill performance and targeting and taking into account the use of general muscle groups involved in the event itself.

In a study (Herrero, Izquierdo, Maffioletti, & García-López, 2006) that concluded that electrical training and accompanying plyometric exercises showed there was an evolution in the level of running speed and maximum strength through the fourth week of training, while in the

study (Koich, 2014) that motivation The electrician has had a positive impact in developing both the explosive power and the electrical effectiveness of the muscles of the legs, in addition to the development of some basic skills in the technical gymnastics for young adults, while the study (Rashid, 2019) stated that training with electrical stimulation is an alternative to training muscle strength, and a study confirmed (Al-Jurani, 2019) The system's contributions Drebeh consisting of (special exercises and electrical stimulation), increase the output power of the muscles in order to achieve better achievement, as well as increased muscle stimulation to the values of effective internal recruitment of motor units.

So the aim of the study was:

- Preparing special exercises and accompanying electrical training for the muscles working in the stages of the triple jump event.
- Knowing the effect of these exercises on some physical abilities and effective achievement.

With the researchers assumed that

- There are significant differences between the pre and post tests in some physical abilities and achievement for the effectiveness of the triple jump, and for the benefit of the post test.

MATERIALS AND METHODS:

The researchers adopted the experimental approach with the unit group of pre and post tests, being the closest to solving the research problem, and the research was chosen in the deliberate formula for the availability of conditions and ease of implementation on a sample consisting of (9) and proving the youth who represent the National Center for Sports Talent Care in Baghdad, after which the researchers conducted a Homogeneity for them in exotic variables (length, mass, time age, training age) as shown in the table below

Table (1)

Standard error for twisting	Coefficient of torsion	Standard error for media	Mediator	standard deviation	Arithmetic mean	Statistical description
0.717	0.565	1.675	67	5.027	66.444	Exotic variants
						Mass (kg)

	0.980	1.834	178.333	5.502	179.555	Height (cm)
	0.502	0.323	18.833	0.971	18.777	Chronological age (year)
	0.420	1.663	37	5.590	36	Training age (month)
	0.210	3.050	97	9.150	96.333	Leg length (cm)
	0.493	1.252	24	3.756	42.888	Thigh length (cm)
	0.630	1.452	51.500	4.358	52.333	Leg length (cm)
	0.016	0.799	42.666	2.397	24.666	Foot length (cm)

The researchers used the following devices and tools: AQ8 type wireless electrical stimulation, number 1, stimulation set number 3, medical scale bearer to measure weight, millimeter, foot scan, fast camera at a speed of 240 images / second, camera holder, drawing scale, measuring tapes, Laptop, rubber cords, weights for feet (200 g to 1 kg, medical balls, wooden boxes of various heights, multi-barriers, stopwatch number (2), various stationery).

The tests used in the study

The researchers selected the research tests that matched the variables discussed in terms of physical and achievement.

First: A test of pushing two legs with a steel (diagonal millet) on the melting device (Albert Four, 1992).

The purpose of the test: To measure the maximum strength of the muscles of the legs.

Tools and equipment: multimeter and different iron weights.

Performance specifications: The laboratory lies on the thalamus device so that the position of the body is oblique and then places a foot on the footrest of the position and the knees bent and close to the chest. With two hands so that he can fully perform the movement of the groin, then bend the legs from the knee joint, for the purpose of lowering the iron from below and then pushing the iron upward.

Measurement method: The maximum weight the laboratory pays to the legs is recorded once.

Second: The long jump test of stability (Abdel-Reda, 2013).

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

Tools used: long jump hole, foot scan device.

Performance description: The laboratory stands on the foot scan board near the edge of the long jump hole so that the feet are comfortably spaced from each other, the laboratory flexes its knee, tilts its trunk forward with the weighted hands (behind, and forward) and then bounces forward to reach the farthest point (Distance) by exerting maximum force.

Recording: The explosive force is measured from the force platform and after the jump is completed by a foot scan, each laboratory is given three transformers, and the best between them is calculated in terms of the force exerted.

Third: A five-step jump running test (Al-Sheikhly, 2012). The purpose of the test: to measure the force marked by the muscles of the legs, and to measure the muscular capacity mechanically by means of analysis

- The tools used: flat ground, a tape measure, a fast camera that takes (240) photos / second, and a stopwatch.

- Specifications: Each player stands behind the starting line so that one of his feet is in front and the other is behind, then he starts bouncing forward by pushing the back leg and landing on the weighted leg forward, i.e. from the right leg to the left or vice versa with the exchange of these leaps so that he lands in the fifth jump in the hole The two men together.

This test is filmed with a fast video camera, so that this camera is placed on the midpoint of the player's movement, a distance of (18) meters and a height of (1.25) m, as the player's field of movement is

photographed before its start and end (1) m, to extract the distinctive force at speed.

Registration: as the player's field of motion is photographed and the distance and time of the first and last step are taken. This test is analyzed by the Kinovia program to extract rapid force. The law has used force = $k(s_2 - x_1) / (n_2 - n_1)$ (Al-Fadhli 2012)

Muscle power is extracted mechanically by extracting both the time and speed of the first and last step, as well as knowing the player's mass, and then the power of the first step and the last step is extracted by (hitting the player's mass by the speed of the step divided by the time of that step) and then after that we find The average of the two forces of the strength of the first and last step, and then the performance time of the 5 steps and the completion distance of the test are calculated, so that we can find the speed of completing the test, and finally the speed of achievement of the test is multiplied by the average of the two forces and to show us the amount of muscle power, and according to the law the ability = $s \times \text{speed}$

Fourth: The triple jump test (achievement) (International Athletics Federation, 2009)

Purpose of the test: An indicator to measure achievement.

.The necessary tools: - a legal jump field, and a tape measure -

- Performance description: - From a quick run a complete approaching distance, the player begins to perform the hopscotch, the first stage of the jump leg with the leading man, then perform the step, which is the second stage of the jumping stages, then the jump, and landing with both legs in the drop hole.

- Calculation of grades: - The distance achieved is calculated from the last impact the body left in the jumping hole and near, or closest to the rise board.

The exploratory experiment was conducted on Saturday morning (20/4/2019) and on the stadium of the Ministry of Youth and Sports for Athletics in Baghdad and the purpose of it was conducted with regard to the electrical stimulation device (AQ8) and on two of the three jump jumpers and they were randomly chosen within the research sample It is a knowledge of the mechanism of work of the (AQ8) device, and knowledge of its suitability with the members of the sample, the ability to apply the exercises prepared on the AQ8 device, knowledge of the sequence of exercises that can be applied by stimulation to avoid the occurrence of muscle strain on the members of the sample, knowledge of the time and distance of performing all exercises Through the use of a member of the sample, supervised and with assistance The specialized jump train in the triple jump event and on the ground of the Ministry of Youth and Sports Athletics Stadium, in addition to knowing the possibility of designing the training program for the exercises prepared by the device, (through training time - intermission time - motivation time - the amount of motivation) for each unit of training Units prepared by the researchers. As for the evening, the researchers and the assisting team conducted the exploratory experiment for the tests, the purpose of which was to (identify the validity of fast cameras for kinetic analysis, and to determine the dimensions of the cameras and the height of their focus.

RESULT AND DISCUSSION:

Table (1)

The test after		The test before		measruing unit	the test		sequence
standard deviation	Arithmetic mean	standard deviation	Arithmetic mean				
20.796	187.000	18.506	176.000	Kg	The maximum force		1
90.053	2422.828	121.634	2037.793	Newton	The explosive strength of the feet		2
0.348	19.020	0.518	17.423	The meter	The meter	Distinguished strength at the speed of the feet	3
396.603	17546.843	604.345	15395.830	Watts	Watts		
0.897	14.664	1.585	14.230	The meter	Achievement		4

Table (2)

indication	SIG value	Calculated value	T	P e	F.	the test	sequence
moral	0.011	4.491		5.477	11.000	The maximum force	
moral	0.009	10.224		65.229	385.034	The instantaneous relative strength of the feet	1
moral	moral	12.464		0.221	1.596	physically	2
moral	moral	4.259		822.595	2151.012	Biomechanics	
moral	0.015	3.047		0.624	0.433	Achievement	4
Significant at SIG value (0.05) if SIG level \leq (0.05)							

Through the two tables above, which shows that the emergence of significant results and for all research variables, which the researchers attribute the improvement in the quantities of maximum force and explosive power of the two men to the effectiveness of the exercises accompanying electrical stimulation by wireless stimulation device (AQ8), as the nature of these exercises were of an explosive and momentary nature which requires High ability of the muscular system to recruit muscle fibers to produce muscle strength and thus electrical stimulation contributed to achieving these requirements which is a force in muscle contraction, and speed in the processes of contraction and extroversion between the work of muscle groups for the purpose of overcoming deficiency This is achieved by adapting the players to maximum performance with the help of electrical stimulation of working muscle groups, which in turn gained the muscle groups to the character of strong momentary performance and this is confirmed (Faraj, 2019) (It is possible to develop the types of muscle strength by using electrical stimulation methods through Inclusion in the training process, especially in the development of decentralized, central and isometric capabilities, and the development of muscle susceptibility to contracting in duration, with an improvement in the level of compatibility to perform the required movements in sports, and this is one of the most important benefits gained in the quality of training with antiques Electrophoresis. While (Al-Zwaini, 2017) indicated, "The quality of training that works to develop the ability of the nervous and muscular systems to overcome resistance requires a high degree of speed of muscle contractions

and is an important factor in many activities that require muscle contraction and expansion in a short time."

What is the rapid strength variable? The researchers attribute the morale of the results and the improvement that occurred physically and biomechanically to the contents of these exercises, which are closely related to the effectiveness and its stages and with the help of electrical stimulation, which enabled the hopper to perform movements of a strong and pelvic nature and with continuous repetitions within the single kinetic performance of the exercise, as Training and accompanying electrical stimulation give members of the sample the internal ability of the nervous system from nervous stimulation of muscles in the largest possible build up of muscle fibers, especially rapid ones during performance, which in turn contributed to the performance of specific movements and exercises Linked to effectiveness with high efficiency and extreme stress, which was thus reflected in an improvement in the variable (the rapid strength of the muscles of the legs), which he mentioned (Kazem, 2016). Exercises that rely on central and decentral contraction. They mainly work to improve compatibility between the nerve nerves of the groups that perform the movement in terms of The increase in the number of frequency and speed of nerve signals, as neuromuscular compatibility is one of the most important factors that lead to the development of rapid strength, as exercises that are characterized by performing similar movements to perform effectiveness at a high speed compared to the usual speed of performance, which creates a burden on muscle groups This is because they require strong and frequent muscle

contractions during a very short period of time, which contributes to the adaptation of the nervous system to work as quickly as possible in producing a superpower with the shortest possible time, and for more than once.

On the other hand, the researchers believe that he succeeded in setting the correct frequencies for the motivational program that accompanied the specific training, as he confirms (Khreibet and Musleh, 2008) "that the implementation of mathematical movements is directly related to the amount of motor units participating in the muscular work in terms of their number, since whenever The motor units involved in muscle contraction increased, the level of muscle strength increased, and therefore due to the ability and ability of the athlete in the process of recruiting the muscle fibers involved in the motor performance process, and it is all due to the quality and style of training used, "and this is what I mentioned (Rashid, 2019)" when doing the voluntary retraction. The fiber m The first (slow) type will be stimulated first, but when electrical stimulation, the second type fibers will be stimulated first, through what electrical stimulation depends on the current that is placed externally on the nerve ends of the large motor neuron and that need a low threshold of stimulation to activate it in a way Faster."

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As for the achievement, the researchers attribute this development to the electrical stimulation exercises, which in turn contributed to improving both the physical capabilities of the competition (extreme strength, rapid strength, and explosive power), which were represented by these exercises, as they were similar to the nature of the motor performance of the competition path and this is confirmed by (Kazem , 2016) "One of the advantages of high performance of triple jump effectiveness is to maintain compatibility, balance and continuous driving force forward" and then achieve the required motor duties by working all the muscle groups working."

CONCLUSIONS:

Electrical training is one of the most effective means of strength training. -

-Electrical training is a means of facilitating the internal muscular work through. what it does to fully regulate and motivate motor units

- The training that accompanies electrical stimulation contributes to the development of achievement.

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