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The effect of positive and negative flexibility exercises to develop special strength and effectiveness of 400m youth Hurdlers

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Abstract
The research problem lies in: The use of positive and negative flexibility exercises to develop the special strength of the 400m hurdles player, that some young people face weakness and a problem in performance, which requires the need to prepare special exercises for physical and skill numbers using the types of exercises that have resilient strength, flexibility and have the effect on developing and determining the level of physical and skill performance. To develop 400m hurdles, special strength, explosive power and the characteristic velocity of arms and legs. Research aims: 1. Preparing positive and negative flexibility exercises to develop the special force and the effectiveness of 400m youth barriers. 2. Identify the effect of exercises on the development of special strength and the effectiveness of 400m youth barriers. The researcher used the experimental approach, where the research community consisted of players in the 400m youth hurdles event, which numbered (6) for the year 2018-2019. Positive and negative flexibility exercises prepared by the researcher were used. The researcher concluded: The positive and negative flexibility exercises had a positive effect on the development of the special strength of arms and legs and the results of the effectiveness of 400m youth barriers. The researcher recommends: taking the results of this study and circulating it, and emphasizing on equipping the playgrounds with modern training methods, due to the positive impact it achieves on physical development.
Keywords*: positive and negative flexibility exercises, special strength and 400m hurdles*

Introduction

In the fields of sports training, a great development has been evidently evidenced by the levels reached by countries in this field. This development was the result of the interest of many specialists in conducting research and studies to identify the best means and ways to develop the athlete's physical and skill abilities. One of these means is to use and present what is new in the field Sports training, which helps to develop special muscle strength and stomach exercises that have an important role in improving sports performance in all sports, especially in the event of 400 m youth hurdles where the player must be physically fit in terms of its components explosive strength and force characteristic of speed as well as accuracy, perception and focus during Playing in the best condition, the 400-meter hurdles event is one of the most beautiful track games. Despite the difficulty of its performance, we see the agility and ease of passing it. The numbers of the hurdles player take a long time due to the difficulty of the competition and its requirements as this requires the speed of the runners, agility, flexibility, balance and timing of the gymnasts and the recipe for accuracy and courage For competitors, one of the most important factors to consider in hurdles is speed Passing it, this means modifying the running step for the step of passing the barrier so that the player can continue to run, as the player of the 400m Youth Hurdles event must be distinguished by physical fitness through the continuous movement of small and large muscles to achieve good performance and this sport is one of those sports that require special physical abilities And skill and one of the most important of these capabilities in the special force represented in the force characterized by speed and explosive power, and that this special force that the player needs in the event of 400 m as youth hurdles, must be in the muscles of the arms and legs, especially between the competitors.Therefore, we have to develop special strength as it is one of the basic elements in the elements of physical preparation and this is achieved through the use of negative and positive flexibility exercises to develop the physical and skill abilities of most games and sporting events, including in the effectiveness of 400 m youth barriers are used to strengthen the arms and legs, so the importance of research lies in preparing exercises Positive and negative flexibility that helps develop the muscular strength of the arms and legs and the skillful performance of the 400m Youth Hurdles event.

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- ***Research problem*:** The world is witnessing a tremendous revolution of wide progress thanks to the use of modern means depending on how to take advantage of modern technologies and scientific capabilities and discover what is new to achieve the best results in training and competition, and this will only be achieved by using exercises to develop the basic physical fitness elements of the player, so we find that most of the players They face weakness and a problem in the performance of the activity of 400m Youth Barriers, which requires the preparation of special exercises for physical and skill preparation using different types of exercises of strength and flexibility that affect the development of the level of physical and skill performance and help it to develop the skillful performance thus among players that the special force distinguished by explosive strength and strength distinguished by speed for the arms And the two men, where exercises will be prepared based on modern and studied scientific foundations, and from here the research problem is focused on preparing exercises with negative and positive flexibility that help develop the special strength of the arms and legs and develop the skillful performance of the 400m youth hurdles, thus the players reach high levels and achieve records Effectively.
- ***Research aims*:** 1. Preparing exercises for positive and negative flexibility to develop the special force in the activity of 400m Youth Barriers.2. Identify the effect of exercises on the development of special strength and the effectiveness of 400m youth barriers.

Experimental design: The researcher used the experimental method for its suitability to the nature of the problem of the research, which is concerned with clarifying the reality of accidents, and determining their present facts by analyzing and evaluating for the purpose of drawing important conclusions to correct this reality, update it, or develop new knowledge about it (Muhammad, 1989).

Society and Research Sample: The research sample consisted of 400m youth hurdles players, and their number was (6) players, and they were chosen by the deliberate method, because the research objectives require the use of athletes who are good at the technical performance of the game.

Table (1) the homogeneity of the research sample is shown by testing the coefficient of torsion in some variables

Variables, mean,	unit of measure,	mean,	median	standard deviation,	coefficient of skewness
Weight,	kg	59,81	60,40	4,39	-0,28
Height	Cm	166,0	165,0	3,46	-0,16
Chronological age	years	19,8	19,5	0,91	+0,41

Confined (+1), which means that the sample is homogeneous, as shown in Table (1)

***Exploratory experience*:** The researcher conducted the exploratory experiment on 12/8/2019 in the outdoor playgrounds on (2) 400m youth hurdles from within the research sample, for special strength tests of arms and legs, and performing 400m hurdles, during their daily exercises to take into account the researcher the same experience conditions in terms of place and time And tools. The assistant work team, the necessary tools and devices required to be provided, were also identified.

***Field research procedures*:**

*Identify the most important special strength tests related to the study:*In order to determine the most important tests of special muscle strength in the effectiveness of 400 m youth hurdles, the researcher reviewed private sources and surveyed the opinions of experts and specialists in this field.

Special strength tests and characterization

- **First test: the explosive force test of the arms:**

Throwing a medical ball weighing (3) kg with one hand over the head from a sitting position on a chair (QaisNaji: 1987)

- *The purpose of the test*: to measure the muscular capacity of the arm and shoulder.
- *Tools*: medicine ball weighing (1) kg, measuring tape and chair with a small rope to fix the stem and securely.
- *Performance specifications:* - The laboratory sits on the chair, holding the medicinal ball in one hand and over the head, and the trunk must be adjacent to the edge of the chair. - A rope is placed around the chest of the laboratory so that it is held tightly from the back in order to prevent the laboratory from moving forward while pushing the ball by hand.
- *Scoring*: The tester is given three consecutive attempts. The best attempt is calculated by measuring the distance between the front edge of the chair and the closest point the ball places on the ground.

- **The second test: the explosive force (for the two men) (Laila Farhat: 2007):**

- *Test name*: broad jump from stability.
- *Test show*: measuring the explosive force of two men.

- *Tools*: a suitable place for jumping with a width of (1.5) cm, and a length of (3.5) cm, taking into account that the place is flat and free of chalk, a tape measure, and colored pieces of chalk.
- *Test description*: The tester stands behind the starting line and the feet are slightly apart and parallel so that the metatarsal touches the starting line from the outside. Arms forward.
- *Scoring calculation:* - Measure from the starting line to the last part of the body that touches the ground towards the line. - Best attempt grades are calculated for the three.

▪ **The third test: the front support for two arms (Qasem Hassan and Bastawisi: 1979)**

- The aim of the test: to measure the force characteristic of velocity with two arms.
- *Test name*: bending and extending the arms from the front support for a maximum of 10 seconds.
- *Test purpose*: to measure force characteristic of velocity.
- *Tools*: stopwatch.
- *Test description*: The laboratory takes the front support position with the arms on the ground and at the hand signal; the tester bends and extends the arms with the feet fixed on the ground.
- *Scoring method*: the number of times flexing and stretching of muscle capacity

▪ **The fourth test: strength distinguished by speed (for the two men) (Laila Farhat: 2007):**

- *Test name*: From the position of bending the knees fully, jumping up for a period of (10) seconds.
- *The purpose of the test*: to measure the force characteristic of velocity of the two men.
- *Tools*: stopwatch.
- *Description of the test*: The tester takes the standby mode and when it hears the start signal, the tester will jump upwards completely bending the knees.
- *Calendar*: The number of times you bend and extend in 10 seconds.
- *Second*: the skill test: measuring the time of the effectiveness of 400 m hurdles: the researcher measured the time of the sample individuals by timing and individually in the fourth area, where the player was launched by a sonic trigger of the divorce pistol from the low start, crossing a race distance of 400 m hurdles according to international law.

Main experience:

Pre-tests: The researcher conducted the pre-tests for both arms and legs special strength tests and the performance of 400m hurdles, on 12/1/2019 in outdoor stadiums.

Exercises used in the research: The exercises were applied to the research sample of (6) players on 5/1/2019, by the researcher. The work was carried out with the group by three units per week on days (Friday, Saturday and Monday) of each week, for the duration of (8) weeks and two months. The total of the training units reached (24) training units, the exercises for flexibility, positive and negative, are implemented at the beginning of the main section of the training unit immediately after the warm-up, with a time of 15-20 minutes, and by adopting the principle of gradual and wave between exercises and between units and between training weeks, and the exchange in the work of muscle groups Between one exercise and another, and the researcher did not interfere in the rest of the parts and sections of the training unit, she implemented negative and positive flexibility exercises as shown in Appendix (1).

Dimensional tests: After completing the exercises, the researcher conducted the post tests on 3/28/2019 in the outdoor playgrounds, and the researcher made sure that the tests were in the same conditions in terms of time, place and the tools used in the research in which the pre-tests were conducted.

Results

▪ **Presentation and discussion of the results of the first goal:**

Table (2) shows the arithmetic means, standard deviations, and the computed t-value of the special power variables

variable	measuring	mean	Slandered deviation	Calc. t value	Sign.
Two arms explosive force	**Pre**	5,1	0,16	12,9	Significant
	post	4,11	0,2		
Two men explosive power	**Pre**	2,3	0,13	-0,7	Significant
	post	2,4	0,2		
Two arms of speed	**Pre**	19,0	2,16	10,9	Significant
	post	13,7	2,0		
Two-legged force	**Pre**	20,5	1,29	5.6	Significant
	post	16,5	1,2		

The tabular value of T was (943.1) at the level of significance 05.0 and the degree of freedom 5

Results

- **Presentation and discussion of the results of the second goal:**

Table (3) Show the arithmetic mean, standard deviations, and t-value calculated for the effectiveness of 400 m barriers

The researcher attributes, according to the results shown in Table (2) and (3), that the exercises used by the researcher had a prominent role in making clear developments on the special strength variables of the arms and legs. This development contributed to the development of these muscles and that the correct use of exercises in the training units and increase its repetitions are scientifically and thoughtfully repeated. Moreover, (Fadel Sultan: 1991) pointed out that "appropriate training leads to a change in the player's ability and a gradual increase in strength."

This is confirmed by (Muhammad Mahmoud Abdel Dayem 1985), "The regulated and regular training programs according to scientific foundations work to develop the physical and skill level of the players." This is what was confirmed by his study (Abeer Inside) and that combined exercises worked to develop physical characteristics through the kinematics of the practitioner's activity, and here we must differentiate between a single physical preparation that can bring the athlete to a high level (Abeer, 2020). To develop the strength distinguished by the speed of the muscles of the arms and legs, the different exercises were in different positions of standing and sitting on the ground and with intensity differed according to the intensity of the exercise and the intensity reached by the player and these repetitions played a prominent role in increasing the pressure on the working muscles to perform exercises that need great strength and in the fastest time, which More than the muscle is the correlation between strength and speed, and this is ultimately in favor of the skillful performance. There is a close correlation between the motor skills and the physical characteristics that a player acquires in the training process (Mahmoud Abdullah et al .: 1991). Accordingly, the exercises have a clear effect on developing the muscular strength of the player, and according to his need to perform the requirements of the motor duty for effectiveness, he jumped 400m hurdles, noting that the special exercises were of ripple stresses and relatively variable repetitions, and this is what the experts agreed upon who emphasized that if we want to develop special strength we must use resistance training Therefore, it was a gradual increase in the exercises applied in training in order to obtain muscular adaptation, allowing the muscle to face repetitions and stresses to benefit from training.As there is a great correlation between strength and speed, as it is not possible for a muscle or muscle group to contract quickly unless it has sufficient strength in performance, and this ability has a very important effect as it is one of the requirements for determining the level of both strength and speed characteristics and appears during muscular work in a state Bullying and resistance and the link between them (Qasim

Conclusions and recommendations

Conclusions: - The researcher reached the following conclusions through analyzing and discussing these results:

1- Exercises of positive and negative flexibility to develop the special force had a positive effect on developing explosive power for the arms and legs.

variable	measuring	Mean	Slandered deviation	Calc. t value	Sign.
Effective 400m hurdles	Pre	57,40	7,30	2,02	Significant
	post	14,54	68,0		

2- Exercises of positive and negative flexibility to develop the special force had a positive effect on the development of strength characterized by speed for arms and legs.

3- The positive and negative flexibility exercises to develop the effectiveness of 400m barriers for youth had a positive effect.

***Recommendations*: -**

1- Taking the results of this study into circulation and emphasizing on equipping the playgrounds with modern training methods, because of the positive impact it achieves on physical development.

2- The need to pay attention to and emphasize vehicle training in developing other basic skills in the rest of the arena and field activities.

3- The need to emphasize and pay attention to the application of exercises for the legs and the trunk using the vehicle for the arena and field players of all levels and classes, because of its effective and influential role.

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Appendix (1) some positive and negative flexibility exercises

• Lie down, arms raised, one leg bent. - The foot is next to the sitz and the other along the body. - Raise the torso up, forward down, and squeeze ten repetitions.

• Lying on the back and arms up high: - He raised the legs forward high behind to touch the ground with the two metatarsus behind the head and in front of the arms ten repetitions

• Resting place. Arms aside

- The exchange of raising the two legs while turning the torso to touch the opposite arm of the raised leg ten repetitions.

• Standing back to back with a colleague. Arms up. Exchange the colleague's load by bending the torso forward fewer than ten reps.

• Long sitting. Arms up. Bend the torso forward down for a maximum range of fifteen times.

• Lying on the back, the hands are crossed below the head. Raise the torso high to touch the knees with the elbows, with the feet on the ground ten repetitions. But alternately touch the elbow to the opposite knee until the torso is wrapped on both sides fifteen times.

• Lie down on the back. Pull the right leg to the chest, keep the left leg straight and back up ten reps.

• Stand open. Arms up: The trunk curves back as far as possible.

• Lying on the stomach. Interlacing the hands behind the head. Install the two men with the hands of the colleague. Lift the chest off the ground and arch back as far as possible.

• Parking is open. Arms aside. The back is facing the colleague. Pull back and compress the arms from the wrists back by the colleague.

• Lie down on the back. The arms are intertwined behind the head. Standing open a mile above the colleague, arms intertwined under his cotton, and then lifted to the top.