THE EFFECT OF SPECIAL STRENGTH TRAINING ON SOME KINEMATIC VARIABLES AND ACCOMPLISHING THE 200 M RUN FOR YOUTH

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ABSTRACT

Through the researchers 'experience in short running activities and after reviewing a set of training curricula used in training and preparing an athlete, the National Center for Sports Talent at ages under the age of 20 years, I noticed a weakness in the preparation of training curricula, which led to a clear deficiency in achievement for short distance runners, so The researcher tended to prepare special strength training for short-distance athletes, the use of free weights, medical balls, rubber ropes, heavyweight training and its implications for developing working muscles during jogging related to the skill side and the integration of technical stages of jogging and Which ultimately reflects on achievement. The use of tools and aids to train strength is considered a means of developing the special strength of the working muscles of short distance runners through the ability to determine the strength of training and the strength of the force during performance to help the coach in raising the level of players and access to high achievement according to the mechanical conditions of performance. This study aimed to prepare special exercises to develop the special strength of the working muscles and some kinematic indicators and achievement in a race run by 200 Iraqi runners under 20 years and the effect of special force exercises on the values of kinematic indicators (step length and frequency) in running short distances for the research sample and know the impact of these exercises at the digital level For achievement for players who ran 200m for youth, learn about the rate of development of the special force, and evaluate the values of some kinematic indicators, and accomplish the running of 200m under consideration. The researchers assumed that there were statistically significant differences in the special strength and the values of some kinematic indicators in the 200-meter run between the pre and post tests of the group and in favor of the post-test. In some of the kinematic indicators and the completion of the 200-meter run in the post-test for a sample of six players who are training in the National Center for Sports Talent for Athletics of the Ministry of Youth and the Olympic Champion Project in Iraq. Their ages were under (20) years, according to forces Counting the IAAF, the researchers used the experimental approach and designed the single set of pre- and post-tests of the group to suit the nature of the problem to be solved. The sample was chosen intentionally in the pre and post tests of the group where the sample members were photographed with a video camera with a frequency of 120 images per second, and the use of the kinovea program and the performance analysis was done to extract the rate of each variable for each stage of each activity and the most important of these variables:

- Step length average: the distance traveled at each step, and is determined from the moment the foot is left at the moment of push to the moment of contact with the other foot after the end of the flight.

- Step frequency: This is the number of steps executed per second, and the steps frequency will be extracted by dividing the number of steps by the time taken for these steps in each running distance.

The two kinematic variables (step length rate and step frequency rate) are the two most important variables in the 200m competition, and each runner has special measurements between the appropriate step length and the appropriate frequency according to their physical characteristics. The study recommends the following:

- That the focus of the 200m running activity be focused on owning a highfrequency technique for the steps, and that developing the frequency of the steps needs to build explosive strength, rapid strength, and high muscle capabilities for the two men.

- Each runner must find the length of the step and the frequency of the step appropriate for him and according to his physical characteristics.

- Developing extreme, explosive and rapid force training for runners in order to perform the lowest foot contact time with the ground.

The researchers reached the following conclusions:

- The kinematic index has frequency of steps with a positive effect of achievement in the 200m youth race.

- For the kinematic index, the average length of the step has a positive effect, with achievement in the 200m youth race.

Step length and step frequency are the two most important variables in a short race.

Key words: muscle strength, kinematic indicators (step length, step frequency), and auxiliary training aids.

INTRODUCTION

The world has witnessed during the recent years a rapid and noticeable development in the level of sports achievement and of various sports in general and the games in the field and the field in particular, and that this development was not by chance but came as a result of the development of different sports science, and that the differences in sports achievements at the international level have become very few, especially in activities Short distances This is an indication that athletes possess high levels as a result of their training, which depends on the best modern training methods as well as the use of aids and which are complementary to the training process. Workers in the field of sports training do not differ. Li put the status of force are the top of the pyramid of physical qualities and the most important factor in achieving the achievement and implementation of the training requirements of the athlete, Valadilh that do not possess even a few of the force that can not be trained.

Among the activities of short distances is the effectiveness of (200 m) that needs special physical and functional specifications, as genetics in the activities of short distances play a large role in them as well as improving some other physical characteristics through continuous training and the use of some auxiliary methods in addition to the training process for the purpose of identifying the player level During training to achieve the best achievement because the conditions for this effectiveness require performance quickly and relatively high intensity.

Muscle power is a mechanical action produced by a muscle group whose type is determined by the nature of the goal to be achieved. Methods used in developing special strengths include various types of jumping exercises that include deep jumping exercises, medical balls exercises, barriers, and jumping with both legs, one leg with body weight, or with added weights, which have shown a significant impact in developing the level of achievement of the selected activity.

Therefore, the importance of the research lies in focusing on the use of special strength training in the development of kinematic variables (step length and step frequency) and their implications for performance during muscle strength training in the running and completion stages of 200 m for youth.

Research problem:

The researchers noted, through their field experience and the monitoring of short-distance trainers, that there is a lack of interest in how to determine the main points of running that must be taken into account the runner run of 200 m and the accompanying application of technical performance when running in the curve, which is often accompanied by a significant decrease in speed significantly. And since the run in the curve has a mechanical specificity, it must be understood by all those involved in the training of this competition and a follow-up of its speed and speed preservation as possible, therefore this study came to draw attention to the fact that there are mechanical variables that directly affect the stages of the race and the status of the body that the player is supposed to take when performing Running on the curve, and these variables have to do with the quality

of the exercises and aids, and trying to prepare special strength training according to the different mechanical running variables, which gives the coach an opportunity to diagnose to prepare the training curricula necessary to develop the other abilities Of this competition according Elkinmetekih indicators to maintain the continued hostility regular pace as much as possible for the longest possible distance in a scientific and standardized to contribute to the development of these indicators in the stages of the race and achieve Alanejazala.

:Research Objectives

- Preparing special force training in developing some kinematic variables (step length and step frequency) in the 200m running stages for youth.
- Knowing the effect of these training in developing some kinematic variables (step length and step frequency) in the stages of running the achievement of 200 m for youth.

:Research hypotheses

- There are statistically significant differences in the development of some kinematic variables (step length and step frequency) in the 200-meter running stages for youth.
- There are statistically significant differences in the development of some kinematic variables (step length and step frequency) in accomplishing 200 m for youth.

: Research Areas

The human field: Youth players of the National Center for Sports Talent Care / Athletics at the Ministry of Youth / Baghdad.

Timeline: 3/15/2019 to 6/17/2019.

- Spatial field: the stadiums of the National Center for Sports Talent / Athletics in Baghdad.

MATERIALS AND METHODS:

Research Methodology:

The two researchers used the experimental approach with a single experimental group system with pre and post tests which is more suitable for the research objectives and hypotheses.

Search community and sample:

The sample that the researchers chose included athletes under the age of (20), who are participating in the National Center for Sports Talent at the Ministry of Youth, and who specialize in the 200-meter running event (6) male players in the intentional way because the goals of the research require the use of athletes who are proficient in technical performance For the game, as they represent the research community sincerely, and thus the percentage of the sample is 100%.

Means of gathering information, tools and devices used in research:

Search tools and devices:

Arab and foreign sources and references -

Observation and experimentation -

- Personal interviews with experts and specialists in the field of training science and biomechanics.

Tests and measurements -

Forms to record and download data -

Special kinovia software -

:devices and tools used

:Devices

- A modern digital camera (210 photos / second), number (3), with a triple holder for the digital camera, number (3)

Japanese-style photo camera, Sony (1) -

Electronic calculator -

Electronic timing hours -

Simth Multiplexer device -

A medical scale for measuring weight

:The tools used

Various rubber ropes, especially for training lengths (5,4,3) m -

Free weights with different weights

Medical balls -

- CD (C D).

Field research procedures:

Determination of special kinematic variables in the 200-meter run.

After reviewing many (scientific sources and similar previous studies) in the field of biomechanics, arena games and the field, the most important kinematic variables for players who ran 200 meters were determined by the researchers and biomechanical variables were measured through the use of the kinovea kinetic program in the effectiveness of 200 m and the most important of these variables As follows:

Step length rate (1): meaning the distance traveled in each step, and is determined from the moment the foot is left at the moment of push to the moment of contact with the other foot after the end of the flight.

- Step frequency: This is the number of steps executed per second, and the steps frequency will be extracted by

dividing the number of steps by the time taken for these steps in each running distance.

:Tests used in the research

:Technical performance test and completion

: A test for completing a 200-meter run

Purpose of the test: Measurement of achievement for short-distance runners (200 m). This is done by imaging.

Tools: Issue Cameras (10), camera speed specification: 210 images / second, tape measure, characters (10), triple mount for a digital camera (10)

Test description: Each runner has been tested according to the activity he performs after completing the warm-up process completely and performing muscle training exercises. One attempt is given to each runner with imaging to measure the kinematic variables.

Recording: records the time for the nearest (0.01) seconds.

:Physical tests

Measuring the maximum strength of two legs

The purpose of the test: to measure the maximum strength of the two legs (without the effect of gravity because the thrust is in the horizontal position)

Tools: The LEG-SLED-602 device is a device that consists of a wheelchair without a seat with shoulder and headrests, and with a floor on which the legs are based, and the device seat is a movable horizontal attached to a wire, pulleys, and a spring with weights of up to 300 kg.

Performance description: The laboratory lies on its back, resting on the armrests of the device on its shoulders, then we determine the distance of the knees through a lever that controls the extension of the angle of the knees, as the knees may reach the full extension. The laboratory is given three attempts. We choose the best attempt, resting between one and the other 30 seconds.

Registration: the athlete's ability to measure the maximum strength of the two legs is determined by increasing the resistance (kg) to determine the maximum force to push the legs when performing.

Stem strength test

.Test goal: to measure the strength of the back muscles

Tools used: dynamometer

Method of performance: The person stands upright on the base of the device in the appropriate place in the center of the base and the hands are in front of the thighs and the fingers of the hands facing downwards. It should be noted that the knees are not bent and the arms are straight without any bending in the elbows and at the end of the test the back should be almost straight.

Recording: Score the highest number the player has achieved in the three attempts.

Exercising the strength and speed of the arms muscles

The goal of the test: to measure the force marked with the speed of the arms.

Devices and tools: Smith device

Method of performance:

The player lies on a back in an inclined seat just below the Smith machine barWe raise the arms until the hands are facing away from the body, and the hands opening is slightly wider than the shoulder width.

-The back should be straight when pushing to maintain the spine and avoid cartilage glides, taking into account the somewhat wide distance between the fists, you can use any seat provided that the angle of the footrest is {70-90} degrees.

Hold the bar tightly to the maximum, and lift it over the chest to make the arms completely firm. We stop, then lower the arms to the starting position, then continue to extend and bend the arms for 10 seconds.

Recording: Score the highest number of times in 10s.

:Exploration Experience

The two researchers conducted this exploratory experiment at exactly five o'clock in the afternoon on Saturday 3/15/2019 in the outdoor stadium of the square and the field in the National Sports Talent Center on three players outside the research sample who were randomly selected, and the goal of this experiment was the following:

- Knowing the suitability of the tests for the level of the individuals in the research sample.

.Ensure that the test venue is valid and appropriate to carry out the tests -

.Identify the extent to which the sample understands the tests used -

.Checking the number and the efficiency of the auxiliary staff -

.- Knowing the time taken to carry out the tests and the time taken to perform each test.

- Ensuring the validity of the training curriculum for the members of the research sample.

- Knowing the suitability of the exercises used in the training units for the sample level and replacing the difficult exercises with more suitable exercises for the sample level.

- Knowing the distributions of repetitive attempts and the time taken to perform the exercise, and then organizing a time limit for one training unit and the training units as a whole.

:Main experience

Tribal tests of the research sample:

:Tests for physical variables

The researchers conducted a set of tests for the tribal physical variables on the research sample at exactly eleven o'clock corresponding to 3/21/2019 in the arena and field field in the National Center for Sports Talent for the field and field after preparing the forms for the names of the players, and for each test according to the nature of its data registration to facilitate the work and record the results that Each player gets it and prepares the tools for the tests.

The tests were carried out after the two researchers explained how to perform the tests and their sequence in a brief way. The researchers worked to establish all the conditions related to the tests such as location, time, method of implementation, and the members of the assistant work team both and its location in order to work as much as possible to create the same conditions during the distance tests.

:Completion test

The tribal video was photographed in the afternoon, corresponding to 3/22/2019, at the National Center for Sports Talent for the Square and the Field, to extract the Kinematic variables and use the (kinovea) software later, at the same time, the achievement level was measured for the effectiveness of 200 m per player.

:Training Curriculum

The training curriculum was built on the basis of the results of preliminary tests. Supplies for training have been created which include (rubber ropes, medical balls, and weights).

Special exercises have been prepared for the experimental group to develop the special strength of the working muscles during running for a period of (8) weeks. These exercises were developed on the basis of the components of the training pregnancy taking into account the age stage in a manner that is appropriate to their physical capabilities and in a positive way to create additional burdens on the functional systems of the body and the muscles targeted in performance In addition to putting these exercises on mechanical basis to serve the muscular work of the research sample, devices and tools that were previously described have been used.

The training curriculum included (24) training units, at the rate of three training units per week (Sunday, Tuesday and Thursday) for the period from 7/4/2019 to 6/6/2019. The training unit time allocated to the given training curriculum will be (30 - 45) minutes and the researchers adopted in The intensity of the training is strictly ranging between 80% - 100% and the method of induction training is high in intensity and repetitive training in the special preparation period, and the application of these exercises within the main section of the training unit. These exercises were given as an integral part of the technical performance training. The researchers took into account the principle of progression in the training load, including Proportional to the athletes' physical abilities That each training module specific training objective (maximum power, strength, explosive, distinctive power of speed).

:Dimensional tests

The researchers conducted the dimensional tests according to the points followed by the pre-test in terms of location, climatic conditions, measuring tools and cameras on the day of June 15/6/2019 at the National Sports Talent Center for the square and the field.

:Statistical means

Appropriate statistical methods were used through the statistical bag (SPSS) in accordance with the research hypotheses. The most important statistical means:

- Arithmetic mean
- Standard deviation

T T-test for non-independent samples -

- Torsional coefficient

RESULT AND DISCUSSION:

Table (1)

The values of the arithmetic media, their deviations, differences and percentages of development

In the kinematic variables and achievement of (200) AD

Ratios (%)	P-Q	standard deviation	Arithmetic mean	the test	measruing unit	Variables / 200 m	sequence
2.36	54.	.68	23.39	Before	a second meter	Achievement Step length	1
		.10	22.85	after			
1.90	04.	09.	2.10	Before	Step / tha a second	Step frequency Achievement	2
		07.	2.14	after			
50.	02.	11.	4.07	Before	meter	Step length	3
		08.	4.09	after			

From Table :

All biomechanical variables and achievement for (200) m have evolved and in different proportions, the best development was achievement, then the length of the step, its number, and finally the step frequency.

Through the difference in completion time between the two tests, it led to the difference in distance at the end of (200) meters up to (3.74) meters between the player who cut it in the post-test on the tribal level.

It is also noted that the rate of evolution of the step length is greater than the step frequency, which means that the effect of its length is greater than the effect of the frequency.

2-4Discussing the kinematic variables and achievement of the effectiveness of (200) m:

All opinions agree that the development of achievement has to do with a set of kinematic variables, and these variables in our study were affected and developed as a result of the exercises used, exercises and tools that were distributed to a group of these exercises, and as a result led to the development of achievement, and what is important for us in this discussion is to highlight the importance of these variables for achievement and the training that has been used.

In the step length variable, we note its evolution of the activity under study, and its development varied according to the effectiveness requirements, as well as by the level of the sample and the type of training that they are working on previously, as well as the case for the step frequency, its decreasing fit with the length of the step and for the effectiveness of (200) m in which the step length increased and the frequency increased.

The speed is the product of the step frequency and the length of the step, however within the speed range many contestants use a specific range and frequency speed mainly restricted by the length of the step, and it has been found that the winners of the races achieve an increase in the step length greater than the frequency ratio.

This is what we observed from the results in this study and this gives the importance of the length of the step for the runners during the exercises, but this does not mean neglecting the frequency of the step, but what is intended is to balance the state of the training given to the runners or the method followed by the trainer in order to develop their hostility and reach the best achievement.

The frequency of the step may be a decisive factor for some of the aggressors, especially among the Iraqi aggressors, given the proportions of their lengths to the global ones, because the step frequency is a description of the angular velocity of the man and its increase increases the frequency and linear velocity.

The effect of frequency means changing the energy needed for acceleration, and many studies estimate that the angular velocity of a man and means the frequency contributes about (10% -30%) of achievement and changes according to the type of effectiveness and anthropometric runner measurements.

Most studies agree that the length of the step is the most important, but it is emphasized that the length of the step must not reach a stage that negatively affects the frequency because this will negatively affect race time.

The development of the frequency and the length of the step came as a result of the use of rubber bands during training. To increase the length of the step, the researcher worked on placing the rubber cords in a way that is resistant to running forward, while in the frequency I used them with the direction of running because it will accelerate the movement of the runner, which increases the frequency of the state, in addition to the absolute weights that developed Of the strength of the two men, it worked on two parts, the first is the starting stages and the second is the first acceleration, which needs a high

frequency, and affected the length of the step and its increase to other stages of the distance.

The use of rubber cords and resistors increases the resistance of body parts and is considered absolute resistance because it is proportional to the weight of the part and thus develops its strength and this works to develop starting, speed and propulsion.

Training on resistances leads to improving endurance of various kinds because it affects the development of energy production efficiency within the muscles, especially when these exercises are within periods of time ranging between (20-30) tha, as they are evolved from the speed and strength extension.

This is what was applied by the researchers and the times for using the resistors were proportional to the length and type of distance.

Displaying the values of the arithmetic mean and its deviations in the physical variables of (200) CE and analyzing them:

Table (2)

The values of the arithmetic mean and its deviations in the physical variables of (200) A.D

Ratios (%)	P-Q	standard deviation	Arithmetic mean	the test	measruing unit	Variables / 200 m	sequence
25	2-	1.41	8	Before	Repetition	Arm's distinctive force Back muscles strength	1
		1.41	10	after			
17.85	25-	0.00	140	Before	Kg	Leg muscles strength Arm's distinctive force	2
		7.07	165	after			
6.45	10-	7.07	155	Before	Kg	Back muscles strength	3
		7.07	165	after			

:From Table (10), it is clear that

That all the physical variables of the hostile (200) AD have evolved, and that the biggest development was the variable (force marked by the speed of the arms), then (the strength of the back muscles) and finally (the strength of the legs muscles)

:Discussion of physical variables for the effectiveness of (200) AD

By observing the results, it is clear that the special strength training has positively affected the physical variables of the 200m hostility. In the strength marked by the speed of the two arms, the researchers see the use of free weights as well as throwing medical balls in addition to the exercises of the heavyweights placed on the arms and rubber ropes that led to their development, so the two arms have them. A positive role in running speed in addition to the balance of hostility. It is likely that the arms should continue to the end of the distance and with high efficiency, as well as for the starting stage. Their role is large in balancing the runner for high acceleration. The development of the distinctive strength of the arms lies its primary goal in Age-weighted mode while jogging.

The arms have an important role in the accomplishment of running activities as well, as the percentage of their influence varies according to the divisions of the running stages.

As for the strength of the back muscles, which is one of the muscles whose share is few training units for most of the curricula used, and its training is a complementary condition at the end of the units accompanying abdominal exercises, despite its importance in the performance of runners, so the researchers developed exercises and a method that is commensurate with its importance, as exercises in balls Medical and putting

rubber bands or carrying certain weights during the trunk exercises had a positive role in developing its strength as well as increasing its time within the training unit in a manner commensurate with its importance, as well as the rotation between the movement of the trunk itself and the movement of the two men and its weight to the top and the development of some weight Z, which increases the difficulty of the two men on the performance of hostility that the development of the back muscles not limited importance in the requirements of achievement, but only increase the efficiency of the performance of jumping exercises, this Malahzth researcher during the performance of training modules.

CONCLUSIONS:

- The focus of the 200m sprinting exercise is to have a high-frequency technique for steps, and that the development of frequency for steps needs to build explosive strength, rapid strength, and high muscular capabilities for the two men.
- Each runner must find the length of the step and the frequency of the step appropriate for him and according to his physical characteristics.
- Developing extreme, explosive and rapid force training for runners in order to perform the lowest foot contact time with the ground.
- Adopting the special strength of body parts in building training curricula is an important indicator to avoid injury and stress to the athlete.
- Diversification in the use of assistive devices during training is an important factor in the player's failure to reach the stage of stress or boredom and give him multiple opportunities to develop his physical capabilities.

ENDORSEMENT:

- The kinematic index has frequency of steps with a positive effect of achievement in the 200m youth race.
-For the kinematic index, the average length of the step has a positive effect, with achievement in the 200m youth race.
Step length and step frequency are the two most important variables in a short race.

As for the muscles of the legs 'strength, the researcher used the exercises of the bear and the half bear in jumping, in addition to placing heavyweights and rubber ropes in resisting the body during various jogging movements, in addition to running by jumping all led to developing the strength of the muscles of the legs because it is the main part in the achievement, increasing its strength gives a positive return in speed and acceleration To the maximum hostility.
Training with heavy loads of (85% -100%) stimulates an ideal increase in strength and then enhances the effect on muscle size.

- Emphasizing the use of exercises and auxiliary tools according to running performance when training the gifted for their effectiveness in developing physical and biomechanical indicators and then achievement.
- Diversity in various and appropriate training methods to break the boredom and monotony of the kinetic style of the training used and the development of achievement in short distances.

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