



The effect of training with rubber ropes at maximum speed and some physiological variables for my runner 100 m

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1. Introduction:

The great progress made in the sport of the enemy 100m and the figures achieved did not come from a vacuum but were achieved due to the use of modern training according to scientific foundations and expanded vision to achieve training goals and move away from traditional methods as well as the orientation of modern training towards integration with other sciences to achieve the best results and achieve achievements in sports competitions.

The process of preparing a 100m freestyle runner requires a lot of efforts by the player and the coach alike, and is the process of training scientifically systematic in the technical, physical and physiological aspects general and private to bring the player to the highest level in order to achieve achievement, and important for the player is to enjoy a high level of elements of public and private fitness as well as the efficiency of the work of the functional devices to meet the requirements of successful and distinguished performance, We see many coaches using various training methods and methods in order to gain time and achieve the desired training goals and improve the level of work of the functional equipment and fitness elements of the player.

Training with rubber ropes is one of the types of training that varies, which means changing the training intensity during the one repetition of the exercise, i.e. the start of the exercise is low and begins to escalate until it reaches the required level targeted by the trainer and then begins to give up to the end of the exercise, "when performing the exercise in this way the amount of resistance that the working muscles work against increases as the movement's motor path progresses from the end, so that the flexible resistance used in any kind, whether rubber rope or Sando's tapes are characterized by increased resistance as they become more compact and stretched during the central movement of the exercise" (Hossam Mohammed Hidan: 2009:70), rubber ropes are one of the important training resistances that do not need large areas or material requirements such as weight training, in which the amount of resistance is constant from the beginning of the movement to the end, and the exercises of rubber ropes are aimed at To develop the muscle strength of the arms and legs as well as to develop the physical abilities of the type of sports activity practiced, which reflects positively on the general physical level of the athlete.

The importance of research lies in the use of additional variable resistances during the performance of a single exercise represented by rubber ropes in speed exercises and the legalization of training loads according to the requirements of the training objectives to be achieved for the runner, and the aim of the research is to prepare exercises for the development of the maximum speed of the runner 100 m free using rubber ropes, and to know the effect of these exercises on maximum speed and some physiological variables in the members of the research sample, and the researcher assumes the existence of moral differences between pre- and post- measurements in the tests of research variables.

2. Research methodology and field procedures:

2.1 Research approach:

The researcher adopted the experimental approach by designing the same group with pre- and post- tests to suit it and the objectives of the research.

2.2 Search sample:

The research sample included (6) of the 100m freestyle runners selected in the intentional manner, and the homogeneity was performed on the research sample and the output showed that the value of the twisting factor was limited to (± 3) and this indicates the homogeneity of the sample in the research variables and there is no effect of individual differences on the final research results, as shown in table.1

Table (1)
Sample homogeneity in search variables

Variables	Q	and	\pm	for
Top speed	63.238	63.250	0.920	0.761
HR pulse rate	72.4	72	1.14	0.466
COP Cardiac Output	11.992	11.95	0.175	0.302
PWC170 Physical Efficiency Index	1121.10	1228.75	5.01	0.02

2.3 Devices and tools used in the research:

- Arab and foreign sources
- Physical and physiological tests
- CASEO electronic timer
- Smart wristwatch to measure pulse type (TSHAWME)
- Tradamel device
- Rubber ropes
- Enemy track
- DELL laptop
- FOX Whistle
- Measuring bar

2.4 Tests used in the research:

HR pulse rate measurement:

The pulse rate was measured by a German-born TSHAWME smartwatch worn on the wrist and given an accurate reading of the laboratory's pulse rate.

COP: (Abu Ala:2003: 405)

The heart product is the volume of blood paid by the left ventricle, which is measured through the following accelerator:

$$Q = HR \times SV$$

Measuring the functional efficiency index:

Harvard's step test was used to measure my agency's functional efficiency index:

1. The laboratory stands in front of the wooden box and waits for the start signal by the tester.
2. After the start signal, the laboratory lifts one foot on the box, then climbs up, lifts the other foot, and then goes down to the ground, following the feet, calculating this situation one step.
3. The laboratory performs a number of steps at a regular pace and at a certain speed, the number of steps is calculated for 3 consecutive minutes, and at the end of the time the tester gives the signal.
4. At the end of time the laboratory stands and measures its pulse (10 tha/6) directly and registers in the special form with the number of steps for the runner in the first time.
5. After measuring the first pulse rate or the end of the first voltage, the runner performs the second effort directly and for the same operation or the first mechanism, as here the effort is greater to increase the speed of the step and the pulse is also faster and the number of steps and pulse rate are recorded at the end of the second voltage in the same form.
6. The value of the first and second effort was extracted according to the Kariman equation and according to the following:

$$N = 1.5 \times w.t. \times h \times n$$

N = voltage, 1.5 = fixed value, w. t = player weight, h = height of the box, n = number of steps (up and down) per minute.

The value (PWC170) is extracted according to the following equation: -

$$PWC170 = N_1 + (N_2 - N_1) \times \frac{170 - PS_1}{PS_2 - PS_1}$$

It is:

N_2 and N_1 = first and second voltage, PS_1 and PS_2 = first and second pulse.

Top speed test:

Test the 60m enemy at full speed. (Essam Abdul Khaleq:2004: 292)

Field research procedures:

2.5.1 Pre- tests:

Pre- tests were conducted on Thursday, February 11, 2021, when the functional tests were conducted at 10:00 a.m. in the laboratory of the Faculty of Physical Education and Sports Sciences/Anbar University, and the maximum speed test was conducted at 5:00 p.m. and on the field of Anbar Sports Club, and the results of the tests were recorded in a special form prepared for this purpose.

2.5.2 Rubber rope exercises:

The exercises were carried out for the members of the search sample in the next way the player stands on the tandem device wearing a wide belt on the waist area, and by a metal ring behind the back connecting the rubber rope and on the other hand the rope is fastened by a rotatable metal ball mounted on a wall, and at the beginning of the exercise determines the amount of rubber tug and gives the signal to turn on the tandem device to start the player with the enemy at the maximum speed of the specified distance. For exercise, the intensity of the exercise is determined by the tension of the rubber rope as the tension of the rubber cord is determined by the metal pulley mounted on the wall (Hossam Mohammed Haydan: 2019: 203)

2.5.3 Rubber rope exercise curriculum:

The implementation of the vocabulary of the rubber rope exercises curriculum was initiated on The Sunday, 14 February 2021, by the team coach, and the curriculum was characterized by the following features:

- The curriculum took two months to implement with 24 training units, from 14 February to 4 April 2021.
- Training was conducted at three training units per week and on days (Sunday, Tuesday, Thursday)
- The researcher took advantage of the physical part of the main section of the training unit with a rate of (25-30) minutes, and the total training volume (672) minutes.
- The repetitive training method was used to carry out training loads for rubber rope exercises.
- Adopt distances ranging from (15-30) meters to perform exercises with rubber ropes.
- Ripple of external (1-2) and internal load (1-1)
- The breaks between the repetitions were negative and enough to return to normal.

2.6 Statistical means:

The researcher used the statistical bag (SPSS) to extract the search results using the following means:

Computational medium, median, standard deviation, twisting coefficient, test (t) of associated samples.

Presentation, analysis and discussion of the results:

After obtaining the results of the pre- and post- measurements, they were statistically processed using a test (t) of associated samples to reach the search results.

3.1 Presenting the results of the pre- and post- measurements of research variables , analyzing and discussing them:

Table (2)
Computational circles, standard deviations, differences in computational circles, deviations for pre- and post- measurements, and a value calculated for research variables

Variables	Unit of measurement	Pre- test		Post- test		S.F.	P	to Calculated	Level of significance
		Q	±	Q	±				
Top speed	second	63.238	0.920	61.196	.920	2.042	.768	5.942	.004
HR pulse rate	number	72.4	1.14	69.60	.894	2.80	.447	14.0	.000
COP Cardiac Output	litre	11.992	0.175	12.726	.167	.734	.214	7.646	.002
PWC170 Physical Efficiency Index	watt	1121.1	5.01	1215.3	30.81	94.162	33.078	6.365	.003

Table (2) shows the statistical parameters of the search variables and the value of (t) calculated, reaching the maximum speed variable (5.942) below the indicative level (0.004) and the pulse rate variable of (14) below the indicative level (0.00), and reaching the output variable Cardiology (7.646) is below the indicative level (0.002), while the physical efficiency variable (6.365) is below the indicative level (0.003) and these values indicate moral differences between pre- and post- measurements in research variable tests.

The researcher attributes these differences to the effectiveness of the exercises with rubber ropes, which were developed in proportion to the goal to be achieved, which helped to develop the maximum speed of the development of physiological variables under consideration, as Osama Kamel states that "the use of auxiliary training tools and means used within training programs contributes to raising the efficiency of the athlete and ensuring full functional mobilization" (Osama Kamel 1999:58).

The moral differences in the pulse rate during rest indicate a decrease in heart rate after the completion of the exercise curriculum with rubber ropes, and this indicates the effectiveness of these exercises in raising the level of functional adjustments in the members of the research sample, as these exercises are high stressed, which makes the work of the heart muscle work in a cut or a relative approach to the kassui during the exercise to deliver Blood to muscle cells and other functional body organs to cope with the high training pressures that fall on them as a result of the implementation of these exercises, "the more intense the physical exertion the higher the pulse rate" (Ibrahim Salem: 1998: 128), which means that more blood reaches the muscles because the muscles work under high pressure, which requires the need for energy building materials and get rid of the waste resulting from constriction and simplicity, the high effort

resulting from this process improves the efficiency of work within the process. The muscle cell, in this regard, mentions Abu Ala must change the amount of blood pumped by the heart during training to meet the increased need of muscles of oxygen, and as a result of adjustments in the body of the athlete the end result is a decrease in the heart rate during rest (Abu Ala Abdel Fattah:2003: 407), in this regard mentions both (Mohammed Hassan Allawi Abu Ala Abdel Fattah:1984: 33) That there is an expellive relationship to the heart rate and physical effort, which quickly disappears with the disappearance of the effect of physical exertion and that the time period of return to normal at the end of the physical effort directly determines the efficiency of the heart and circulation as a result of regular training according to scientific methods, which in turn has improved the indicator of physical efficiency in the members of the research sample as it expresses " The amount of work performed by the player as much as the player's career improves, the more he can perform a job with the economy with the energy exerted" (Ammar Abdul Rahman Hat: 73), as the exercises with rubber ropes with high intensity aimed at developing speed as well as their effects on the functional devices of the body helped to improve the work of these functional devices and this was evident on the performance of the members of the research sample in improving the results of the maximum speed test in the post- test, as well as the identification of the indicator of the indicator of functional devices. Physical efficiency "giving a clear picture of the speed of increased heart rate in both stages of the test, which indicates the functional state of the heart and circulatory system" (Hamed, 1994: 26), and these exercises with rubber ropes contributed to improving the functional state of the periodic organ. Paid during a single pulse, and since the performance requirements in these exercises require great energy, this reflects the need for muscle cells to supply more blood to supply the materials needed to build energy and get rid of waste from severe muscle contraction, as it states (Abu Ala: 2003: 405) "During rest, the differences in cardiac output between trainers and non-trainers are very few, with cardiac propulsion ranging from 5-6 liters/dq, but during training increases. The need for muscles to consume oxygen increases the heart output of trained athletes to 30 liters/dq, which means an increase of 5-6 times the heart output during rest."

Conclusion:

After the findings of the research we conclude that the rubber rope exercises have contributed to the development of the maximum speed of the 100m freestyle runners, and that training with a codified tightening according to this goal has contributed to the development of functional indicators in question, as the efforts made by the 100m freestyle runners are very large and need functional devices that work efficiently, so it is necessary for the trainer to be aware of the level of competence of the functional devices of the athlete through periodic tests and not content with physical or skill tests because the information is not satisfied with the information. It is highly possible to contribute to the development of general and special training features of the training curriculum developed by him and the use of training methods and means that will work to modify the training path and reach the achievement of training goals and achievement.

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