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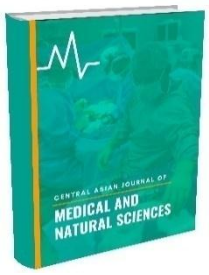

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The Effect of Rapid Endurance Training of the Production, Maintenance and Mixed Methods in Developing Explosive Strength and Speed Strength for Football Players

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Abstract: The research aimed to reveal the effect of rapid endurance training of the production, preservation and mixed methods in developing the explosive power and speed characteristic of young football players. The researcher used the experimental method by designing the three experimental groups. The research sample consisted of players of the Bazawaya Sports Club for the youth football category. The sample was divided into two groups, control and experimental, by following the random selection method using lots, with (15) players for each group. The players who participated in the reconnaissance experiment and their number (5) players were excluded. Pre-tests were conducted for the two groups. Then the training content was applied, which took (8) weeks and (3) training units per week, then the post-test. The data was processed statistically using (SPSS) program, and the researcher concluded that the production exercises carried out by the experimental group had a positive effect on the explosive power of the muscles of the legs. As for the conservation group, it did not show a significant development in physical abilities, while the mixed group showed a significant improvement in physical abilities. The researcher recommends that the training curricula should include rapid endurance training for the production and mixed methods according to the results achieved from it.

1-Introduction to the research:

1-1. Introduction and the importance of research:

Physical capabilities are the capabilities that depend on physical investment and the use of the skeletal system for control. It has been known that "physical capabilities are the achievement of ideal performance, and we can also call it a motor work between the physiological basis and the applied aspect resulting from the reaction of forces." Influential and through motor abilities that are a result of daily life, such as walking and climbing stairs. Athletic abilities develop as a result of organized

exercise, and the availability of motor abilities in players is an essential and effective element in raising levels of performance and achievement to the highest levels. Qasim Hassan says about Matthews, "What lies behind the models of successful performance of motor skills is specifically related to the individual's latent aptitudes, and that these abilities perform their functions in an interconnected, contextual, and sequential manner that ultimately results in obtaining the correct movement.

Special endurance is a complex ability that differs in the degree of endurance in relation to the degree of speed in the sporting events performed, as the endurance that an athlete needs in relation to the degree of speed in a short-distance running race differs from the endurance that an athlete needs for a middle-distance race. This ability is specific to sporting events that depend on maximum and near-maximum speed, as the athlete's ability to withstand speed is reflected in the race distance at a high speed that leads to achieving the best results (Hussein, 1998, 469). Speed endurance: is an expression of the individual's ability to Maintaining the average speed for the longest possible distance (period)" (Al-Baqal, 41), a previously mentioned source. Maintaining all speed is defined by (Ali bin Saleh Al-Harhouri) "as the player's ability to maintain speed for the longest possible period of time" (Al-Harhouri, 1994, 249). Through the above, we see the importance of the interrelation between physical and motor abilities to achieve optimal performance while maintaining the continuity of this performance efficiently as far as possible to ensure special endurance capacity. Therefore, the aim of this study was to identify the effect of rapid endurance specific to the style. Production in a number of physical variables and the complex skill performance of football players. The importance of the research lies in arriving at the design of a training program in the ability to produce in speed endurance and what it will provide to coaches that can develop players in this direction.

1-2. Research problem

Through the researcher's follow-up of many training and matches of the Bazawaya Sports Club for the youth football category, the researcher noticed a weakness in the level of endurance among the football players, especially in the last third of the match. This deficiency shows a negative impact on many technical aspects of the teams' performance and affects Noticeably on the results of the matches. Based on this context, this study aims to investigate the effect of developing the rapid endurance of the production, conservation and mixed style of football players on physical performance during matches, with the aim of improving the teams' performance and increasing the chances of achieving positive results. Hence the problem of researching the effect of using rapid endurance training of the production, maintenance and mixed methods in developing strength and speed table tennis for Bazawaya Youth Club players.

1-3. Research objectives

The research aims to reveal: The effect of rapid endurance training of the production, preservation and mixed methods in developing the explosive power and speed characteristic of the players of the Bazawaya Youth Football Club.

1-4. research hypotheses:

1. There are significant differences between the pre-test and post-test among the experimental research groups in the explosive power and power characterized by speed for the players of the Bazawaya Youth Football Club.
2. There are significant differences between the post-tests of the three experimental groups in the explosive power and power characterized by speed for the players of the Bazawaya Youth Football Club.

1-5. areas of research:

1. The human field: young players of Bazawaya Sports Club for football.
2. Temporal scope: from 4/25/2023 to 6/25/2023.
3. Spatial area: Degla Sports Stadium.

1-6 Method of rapid endurance training using production, maintenance and mixed methods: Defined by (Abu Jamil): "It is working with high-intensity physical effort that may reach (90-100%) at less than the athlete's maximum speed and within specific training distances, provided that the time of performing one repetition does not exceed more than (60) seconds and does not include work." Within the limits of accumulation." (Abu Jameel, 2015, 372-373).

2-Theoretical framework:

2-1 The concept of endurance There are many definitions of the characteristic of endurance in sports training. FadelKurdi defined it on the authority of Issam Abdel Khaleq as "the athlete's ability to continue performing a sports activity for the longest period and the greatest repetition in a positive manner without a decline in the level of performance (Al-Shammari, 2005, 11), and (Mohamed Sobhi) pointed out Hassanein and Ahmed Kasra) pointed out that "the concept of endurance means the ability to continue for the longest period of time in performing mechanical tasks without a decrease in the level of performance and to overcome a state of fatigue, which may be mental, psychological, or physical" (Hasanein, 1998, 195), and it can be defined Endurance: It is the ability of an athlete to overcome fatigue when performing a sporting activity for a certain period of time efficiently and positively and to try to maintain the level of performance for the longest possible period (Abdel Fattah, 1997, 161). The main factor that restricts the implementation of training well and at the same time affects it is fatigue. The athlete who has good endurance is the one who does not tire easily, and is able to continue training under a state of fatigue. In order for an athlete to train under such conditions, he must The functional equipment is adapted to the specificity of the training implemented (Ibrahim, 2008, 589). Endurance is a necessary physical element for performance in most sports, such as team sports, athletics events, swimming, cycling, rowing, wrestling, and others (Mahdi and Abdel-Maliki, 2011, 139).

2-2 Special endurance: Special endurance is "the athlete's ability to fulfill the requirements related to his type of specialization without a drop in the level of performance, effectively and under competitive conditions" (Al-Baqal, 40), a previously mentioned source. From what was mentioned, it can be said that special endurance is the athlete's ability to continue with physical loads that are appropriate for the specialized sports activity with high efficiency and for a specific period of time and to try to maintain the level of performance.

3- methodology:

The experimental method was used due to its suitability and the nature of the research problem, and it is considered "the most accurate type of scientific research that can affect the relationship of the independent variable and the dependent variable in the experiment, as the experimental method is the method through which the researcher can test hypotheses that relate to cause-and-effect relationships." (Abdel Hafeez and Bahi, 2002, 107). The researcher used the design of three experimental groups, where each group trained with its own training method of special endurance methods, where the first group trained according to the production method, the second group according to the preservation method, and the third group according to the mixed method that combines production and preservation together.

3-1 The research community and its sample: The research community was determined in a deliberate manner by the youth players of the Bazawaya Football Club in Nineveh Governorate for the football season (2022-2023), who numbered (35) players. The research sample consisted of (35) players from the research community, after goalkeepers and adults were excluded. Their number is (3) goalkeepers, as well as the (2) players who apologized for continuing with the team. This sample was divided into three experimental groups by following the random selection method using a lottery, with (10) players for each group.

3-2 Devices and tools used in the research: - Whistle number (6). - Number signs (50). - A sensitive electronic scale to measure body mass to the nearest (100) grams - Stopwatches (6) to measure time to the nearest one percent of a second - A tape to measure distances to the nearest centimeter, with a length of (200) metres. - Legal footballs (10).. - Legal football goals (2). - Special tapes used in skill tests. - White Bourke was used in planning physical and skill tests. - Wooden benches (2).

3-3 Methods of data collection (research tools): The following research tools were used: (content analysis, personal interview, questionnaire form, tests and standards).

3-4 Tests and standards used in the research: Physical measurements: Anthropometric measurements included two measurements: (body length measurement, and body mass measurement).

- Physical tests: Physical tests included the following:

Vertical jump test from a standstill to measure the explosive strength of the leg muscles (Al-Tikriti and Muhammad Ali, 1986, 140-141)

Testing three hop hops for the longest possible distance, for each leg separately, to measure the speed-specific strength of the muscles of the legs (Abdul-Jabbar and Bastawisi, 1987, 346).

3-5. Experimental design:

The researcher used the experimental design called (randomized group test design with pre- and post-observation) (Van Dalen, 1984, 398).

3-6 Determine the maximum intensity of physical exercises: This procedure was implemented on (4/22/2023) on (24) players to identify the maximum intensities for the time or distance of the exercise used, in order to, in light of these intensities, determine the intensity to be worked with in the three training curricula and identify the maximum values of the pulse. During the application of the test with an intensity (100%) on the three groups, the production group, they performed running for a distance of (75) metres, maintaining (150) metres, and mixed (75 meters - 150 metres).

3-7. Exploratory experiment:

"The exploratory experiment is one of the most important and necessary procedures for the purpose of implementing the requirements of precise scientific work, and in order to overcome difficulties and uneconomic measures in both material and human efforts" (Mahmoud, 2003, 38). Therefore, the researcher conducted the exploratory experiment with the help of the researcher's assistant work team, It was conducted on 4/23/2023.

3-8. Final procedures:

The pre-tests were conducted on April 27, 2023, for three days, one day for each group. Then the research sample began training according to the curricula prepared for each group and according to the timings specified for them. Then the researcher began applying post-tests in order to collect and analyze data.

4- Results:

4-1 Presentation and analysis of the results of the differences in pre- and post-tests for the first experimental group (production) in physical traits:

Table (1).

Physical attributes	Unit of measurement	Pretests		Posttests		Calculated T value	Probability level
		m.	St.d	m.	St.d		
The explosive power of the leg muscles	C.M	40.750	4.301	48.125	4.015	3.865*	0.006
The strength and speed of the leg muscles	C.M	5.450	0.375	5.981	0.241	3.158*	0.016

*Significant at error rate > (0.05), in front of degrees of freedom (7) and tabular T value (1.895)

4-2 Presentation and analysis of the results of the differences in pre- and post-tests for the second experimental group (preservation) in physical traits:

Table (2)

Physical attributes	Unit of measurement	Pretests		Posttests		Calculated T value	Probability level
		m.	St.d	m.	St.d		
The explosive power of the leg muscles	C.M	40.750	4.301	41.750	4.062	3.055*	0.018
The strength and speed of the leg muscles	C.M	5.206	0.259	5.531	0.350	2.502*	0.041

*Significant at error rate > (0.05), in front of degrees of freedom (7) and tabular T value (1.895).

Table (3)

Physical attributes	Unit of measurement	Pretests		Posttests		Calculated T value	Probability level
		m.	St.d	m.	St.d		
The explosive power of the leg muscles	C.M	39.750	4.832	42.000	4.692	13.748*	0.000
The strength and speed of the leg muscles	C.M	5.468	0.285	7.587	0.257	5.656*	0.001

*Significant at error rate > (0.05), in front of degrees of freedom (7) and tabular T value (1.895)

4- Discussion:

It can be noted that there are significant differences between the pre- and post-tests for the third group (mixed), and to a greater extent than for the first and second groups, in the results of the pre- and post-tests in the physical tests under study. The researcher attributes this difference to the fact that the third group was trained in the two approaches in which it was trained. Members of the first and second groups underwent production training and conservation training together, which gave them a better opportunity to develop compared to the other two groups. This is natural as a result of the challenge this training presented to the functional body systems of the players of the third group, which led to an increase in the level of adaptation through the development of their physical capabilities in a way that is compatible with the training load to which they were exposed and the specificity of each exercise and its objectives. It was observed by displaying the results of the muscular ability of the legs that the third group developed significantly, as the movement exercises were based on repetitions, ideal intensity, and rapid launches without a ball. These movements were all dependent on the lower extremities. This is what was confirmed by (SalehRadi Amish), who advises football coaches to develop special muscle groups so that they are in the direction of speed, that is, developing quick strength because of its importance in playing (Amish, 1990, 31), while (Barrow) believes that the link between muscular strength and speed Movement in the muscles is one of the requirements for motor performance, and this factor develops athletes. This is what Al-Rubaie emphasized, stating that the characteristic of strength characterized by speed can be developed by developing strength, speed, or both (Al-Rubaie, 1988, 95).

Table (4)

Physical attributes	source Contrast	Degree of freedom	Sum of squares	Mean of squares variance	(F) Calculated	(F) Tabulation
The explosive power of the leg muscles	Between groups	2	208.583	104.29	5.827	3.466
	Within groups	21	382.375	18.208		
	total summation	23	590.958			
The strength and speed of the leg muscles	Between groups	2	0.962	0.481	5.827	
	Within groups	21	1.733	0.083		
	total summation	23	2.695			

*Significant at error rate > (0.05), in front of degrees of freedom (7) and tabular T value (1.895)

“The training process aims to qualify and develop the level of the athlete who is exposed to training programs according to scientific methods, and the development process comes as a result of commitment to the basic principles of training science. One of those principles is the rule of gradual training, and the rule that matches the training load with the abilities and ability of the athlete.” (Melhem, 1995, 20), “Since training load is the primary means used during the training program and influencing the functional levels of the systems and organs of the human body to achieve progress in them, legalizing load has become a necessary necessity to raise the athletic level” (Melhem, previously mentioned source) mentioned it.(

Since the exercises used in the proposed training curriculum have contributed to developing and improving the results of physical tests for the members of the research sample, and since these abilities are very important for football players during the match, because the movements of the players during the football match are different, the strength exercises are distinguished by the speed that the researcher used in his approach. The training gave a positive effect on strengthening the muscles of the legs, thigh and leg, and then gave special strength to the players, thus improving their level of achievement even better. The reason for this is due to the modern scientific methods that were followed in establishing standardized training volumes and intensity and their diversity, which had a positive impact on the results. Individuals of the research sample to develop physical abilities, in addition to the rest period between repetitions and between training units appropriate to the effort expended, and the gradual progression in the training load, which also gave positive results, and agrees with these results (ZuhairQasim Al-Khashab, 1999, 16), as he mentioned that gradualism to reach Reaching the best level of performance has become an important rule in training, and gradation means the training plan proceeds according to the progression from the simple to the most difficult.

5- Conclusions and recommendations:

5-1. Conclusions:

1. The training curriculum for production exercises implemented by the first experimental group had a positive impact on the explosive power of the legs, but the power characterized by speed did not reach the level of significance.
2. The training curriculum for conservation exercises implemented by the second experimental group did not create significant differences in the physical variables.
3. The training curriculum for mixed exercises implemented by the third experimental group had a positive impact on both physical variables.

5-2. Recommendations:

1. It is necessary to pay attention to special production and mixed speed endurance training when developing training curricula for youth teams, due to the development of physical qualities shown by the research results.
2. The necessity of applying special rapid endurance exercises (production, maintenance, and mixed) with other exercises to determine their effect and importance for football players.
3. Conducting similar research and studies on different age groups and physical abilities.\

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