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The effect of special exercises in repetitive training method on the development of reaction speed of u17 football players.

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Abstract

The study aims to identify the effectiveness of special exercises in the repetitive training method in developing the reaction speed of football players under the age of 17. For this purpose, we used the empirical method on a sample of 20 players from the abnaa Titteri team, divided into two groups: experimental and controlled groups. The participants were chosen in an intentional manner. The researchers used the Nelson test to collect data. After collecting the findings and processing them statistically, there were statistically significant differences for the pre-post tests of the experimental group and in favor of the post test. On this basis, the study recommended that trainers must be interested in developing the speed of reaction with the use of advanced devices to achieve that.

I. Introduction

Football is one of the team sports that has drawn a wide audience at the global level in general and in Algeria in specific, so those responsible for it have researched and planned ways to develop the planning aspects and methods of play, whether it was offensive or defensive. Shasho et al also stated that recent scientific research in the field of sports training in general and the field of football in specific is interested in providing solid scientific data and facts in order to realize the best results and achievements (Shasho et al, 2018). Hajjab mentions as well that the game of football has evolved in the recent years and the character of play has shifted due to the multiplicity of modern modes of play (Hajjab, 2019). Football training is a targeted and addressed educational process with scientific planning aims to prepare players in a multifaceted setting; physically, technically, skillfully, strategically and psychologically to reach the highest possible level and each level has its ways and methods. (Boukratm & Madani, 2019) also mention that reaching high performance in football requires full physical preparation because the good outcomes attained by the athlete require him high fitness and must be controlled during the competition period. The speed of reaction is considered as an essential physical abilities in most sports activities. The football player is in the greatest need for this physical ability during the course of play to move inside the field and very quickly with or without the ball, and since the player in football is required to retrieve the ball and attack, he must use the speed of reaction for varying periods and different crises. The player who cannot react quickly is deficient from an important factor and may negatively affect the team and be the reason for his defeat, because the speed of reaction is one of the main factors of achievement in the field of fitness where its importance in the game of football is shown through its decisive impact, and also shown in the process of building a rapid attack during the course of play or in the bilateral abrupt conflicts (Munther & Al Khayat, 2000). In order to develop the speed of reaction, there must be ways and methods to train players, and this is what made us think of one of the most important training methods used, which is the method of repetitive training that is one of the most important training methods to develop the speed of reaction among football players. Through what the researcher noted of the decrease in the level of players when following the course of the games and the format of the exercises, the researcher found that the formula of playing characterizes by slowness and

lack of response in spreading and moving from one place to another. This inspired the researcher and directed his thinking to plan exercises for the repetitive training method to develop the reaction speed of the football player descendant from the Cubs Category.

Many studies have dealt with such a topic, including:

*__Hossam Sharit Study (2012) entitled__: Proposing a sports program based on repetitive training to develop the maximum speed and responsiveness of football players under the age of 20. The study aimed to identify the effectiveness of the proposed sports program based on repetitive training in increasing the maximum speed of football players under the age of 20 years, as well as the effectiveness of the proposed sports program based on repetitive training in increasing the speed of movement response among football players under the age of 20 years. In this study, the researcher used the empirical method using pre and post-measurement on a purposeful sample of 24 players as well as relying on Arabic and foreign sources and references, tests and measurements, devices and pedagogical tools. The most important results of the study were as follows:

- The existence of statistically significant moral differences between the pre and post-tests at the level of maximum speed of football players, where the result was in favor of the post-test and this indicates the contribution of the sports training program and its positives in helping the players to increase their maximum speed.
- The existence of statistically significant differences between the post and pre-tests on the level of the movement speed response among football players. This shows that the sports training program has an effective role in improving the speed of the players' response, which is manifested by habituating them on various alerts and stimulation of fast muscle fibers and shortening the transmission time of neuromuscular transmission.

*__Study of Ben Othman Mohamed (2007) entitled__: Speed of movement response among football players by lines of play (defense, center, attack), category (16-18) years. The study aimed to highlight the importance of knowing the speed of the movement response and the extent to which it affects football players of (16-18) years. The researcher used the descriptive approach of scanning method for its appropriateness of the research nature. The research was conducted on a purposeful sample consists of (48 players), distributed according to the play lines of the teams: Amal Boussada and Nadjm Magra. The researcher also relied on the use of Nelson's test, devices and pedagogical tools. Among the most important results obtained, the

researcher found no moral difference in testing the speed of movement response between the lines of play (defense, center and attack).

On this basis came this study, which its importance has been evident in building exercises dedicated to the method of repetitive training in the development of reaction speed among the Cubs football players. From this point of view, it can be asked the following general question:

*Are there any statistically significant moral differences in the speed of reaction between the pre and post measurements of the empirical group?

*Are there statistically significant moral differences in the reaction speed between the empirical and control groups in the post-measurement?

Based on the above, we say that the special exercises proposed in the repetitive training method have an impact on the development of the reaction speed of the Cubs football players. This makes us think about proposing temporary solutions to the aforementioned ambiguity:

*There are statistically significant moral differences in the speed of reaction between the pre and post measurement of the empirical group.

*There are statistically significant moral differences in the reaction speed between the empirical and control groups in the post measurement.

Through this study, we aim to achieve the following objectives:

* Learn how repetitive training exercises affect the speed of reaction.

* Raise the physical level of football players in order to keep up with the high level.

* Highlight the repetitive training method as an appropriate way to train the reaction speed.

II. Method and Materials :

2-1- The sample and its selection method:

The research sample was selected in purposeful manner. It consists of 20 players from Abnaa Titteri team who are active in the state championship in Medea, and are between the ages of 15 and 17 years, have been randomly divided into two groups, the first group is the empirical group of 10 players to which the training program proposed by the researcher was applied, and the second is the control group of 10 players to which the regular training program applied with the coach.

2-1-1- Coherence and equivalence of the two sample groups:

Table 01: Shows the statistical parameters of the two research groups' coherence and equivalence.

Variables	The empirical group			The control group			T	Sig
	Mean	Std.deviation	Sk	Mean	Std.deviation	Sk		
Age(years)	15.42	0.97	0.27	15.28	0.75	-0.59	0.3	0.76
Weight(Kg)	54.85	6.12	0.88	54.85	8.09	1.04	0.00	01
Height(cm)	168.42	8.61	-2.04	174.28	7.95	0.78	-1.32	0.21
Nelson test (s)	1.95	0.28	-1.72	2.18	1.20	2.54	-0.48	0.63

It is noted from the table above that all the values of the twisting coefficient for the following variables: age, weight, height and Nelson test of the empirical and control groups are limited between (-3, 3+). That indicates the moderation of sample distribution in these variables. Through the results recorded in table 01, which shows the results of the variables on which has been relied on the equivalence of the empirical and control groups, we note that there are no statistically significant differences between the two groups and this is in all the variables adopted in the equivalence of the two groups: age, height, weight and Nelson's test where the value (probability value) (sig) was greater than the level of significance (0.05).

2- Research/study procedures:

2-1- Method: The researcher relied on the empirical method because it fits with the problem studied.

2-2- Identify variables and how to measure them:

***Independent variable:** exercises dedicated to the repetitive training method.

***continuous variable:** reaction speed.

2-3- Research tool:

Nelson's reaction speed test:

- ✓ **Purpose of the test:** measuring the reaction speed (ability to respond according to the designated exciter) (Sharit, 2013).

2-4- The scientific foundations of the tool:

A- Stability of the test: In our research, the method of testing and re-testing on a sample of the same age phase of 5 players from the same team where the physical test was applied to them. Then we calculated the Pearson correlation coefficient in which the result was 0.752 and this confirms that the test has a high degree of stability.

B- The honesty of the test: The self-honesty of the test was calculated by calculating the square root of the stability coefficient and the result was 0.867, which indicates that the test has a high degree of honesty.

2-5- Statistical tools: In our research, we have relied on the following statistical means: computational medium, standard deviation, simple correlation coefficient (Carl Pearson), student's t-test. This was done with the use of the statistical package program spss23.

2-6- Scientific foundations in the development of the special exercise program: The researcher relied on references, studies and similar research in the planning and preparation of a program of special exercises as we relied on the opinions of specialists in the field of physical preparation. The researcher during the stage of building the program of special exercises relied on:

a) Special exercise goals: The main objective of special exercises is to develop the reaction speed of football players.

b) Special exercise vocabulary: special exercises used are the best method for training the reaction speed because they represent the real modes of play that we find in the games and because they greatly simulate the technical path of skill. In the development of special exercises, we relied on the principles of sports training and related sciences, we also took into account all the conditions and characteristics of raising the training load, as (Othman, 1987) stressed that it is necessary to work to gradually raise the training during the training plan and must note the change in size and then intensity and duration of relaxation to guarantee the adjustment that ensures the improvement of the level. (Ibrahim, 2008) mentioned Oslin's suggestion that the special training or exercise methods implemented to achieve an effective training effect should be in two types:

- Exercises taken from the game or sports event in which the athlete specializes, where a set of muscles work in a way that is close to the speed and direction of movement played by the muscles in the exercise event.
- Exercises used for the development of movement capabilities and serve special exercises. In light of this, we have used scientifically based exercises in accordance with the phosphate energy production system (ATP-CP), where (Al-Basati, 1998) believes it contributes to the process of adaptation with its effective influence by controlling its variables and determining the direction of training.

This system is the fastest in the production of energy, and is responsible for the production of energy for physical activities that lead at a near-maximum speed to the maximum in the absence of oxygen. This system is used to extend energy for all activities characterized by speed, making it a rapid exhaust system. (Abdel Fattah, 2003) states that the effect of anaerobic phosphate training increases the capacity of this system, as the ATP-CP stock increases under the influence of training and the level of maximum anaerobic capacity is associated with the amount of ATP-CP phosphate compounds, as well as the speed of their consumption. These indicators increase under the influence of training and increase the activity of ATP-CP enzymes (ATPase). (Al-Bashtawi & Al Khawaja, 2005) add that the best method for forming successive loads grades during any training course must follow the ripple form, meaning that successive training loads must be raised and decreased and not proceed at the same pace, and in order to develop the reaction speed of the football players:

- We are adhered to the principle of continuity and regularity in practicing special exercises proposed in order to reach the desired benefit.
- The exercises used are arranged according to their difficulty gradually from easy to hard.
- The implementation of special exercises vocabulary was based on the principle of diversity and change in training as the vocabulary of exercises change throughout the week and the difficulty of exercises are gradually increased. The progress of the exercise level in the training dose depends on the correct performance of the exercises and is not determined by the degree of fatigue. From this point of view, we relied on the gradual work of intensity, which is the exerted effort to perform a particular duty and controls the intensity in special exercises through the type of the executed exercise that ranges from easiness to extremely complex difficulty. The difficulty to perform exercise was (90-100%). The ripple was used in loads for the purpose of activating and arousing the muscle.

III. Results

1- View and analyze the results of the reaction speed test of the empirical group in the pre and post-measurement:

Table 02: Shows the results of the pre and post- test of the empirical group:

Variable	Pre-test		Post-test		T	sig	Statiscal significance
Nelson test	Mean	Std.deviation	Mean	Std.deviation	4.19	0.006	statistically significant
	1.95	0.28	1.48	0.14			

It is clear from table 02 data that the arithmetic mean of the pre-test results related to the reaction speed was 1.95 with a standard deviation of 0.28, which is higher than the arithmetic mean of the post test results 1.48 with a standard deviation 0.14, as well as the result of the test (T) 4.19 with a probability value (sig) 0.006 Smaller than the level of significance (0.05), which indicates a statistically significant moral differences at the level of significance (0.05) between the average of pre-test results and the average results of the post test of the reaction speed variable, in favor of the smallest in the averages (the post measurement).

2 - View and analyze the results of the reaction speed test for the empirical and control groups in the post measurement.

Table 03: Shows the results of the post-test for the empirical and control groups:

Variable	The empirical group		The control group		T	sig	Statiscal significance
Nelson test	Mean	Std.deviation	Mean	Std.deviation	-7.23	0.000	statistically significant
	1.48	0.14	1.98	0.10			

It is clear from table 03 data that the arithmetic mean of the post-test of the empirical group related to the reaction speed was 1.48 with a standard deviation of 0.14, which is smaller than the arithmetic mean of the post- test of the control group results 1.98 with a standard deviation 0.10, as well as the result of the test (T) (-7.23) with a probability value (sig) 0.000 Smaller than the level of significance (0.05), which indicates a statistically significant moral differences at the level of significance (0.05) between the average of the post-test of the empirical group results and the average results of the post test of the control group of the reaction speed variable, in favor of the smallest in the averages .

IV. Discussion

- Discussion of the first hypothesis: Through the statistical treatment of the raw results of the empirical sample, it was noted that there are statistically significant differences between the results of pre and post-measurement of the empirical group, in favor of post measurement, as illustrated in table no. (02), where this result corresponds to the majority of research of similar studies. According to the researcher opinion, the explanation of the obtained result is that the method of repetitive training in the performance of reaction speed exercises had an effective effect on the development of this group for its exercise of extreme intensity and interface rest periods that contributed to the recovery of the player. Hence, Issam Abdul Khaleq emphasizes that there is a basic rule through which the reaction speed can be developed that requires using a load intensity of up to 90-100% from the maximum degree of person and also using the system of full comfort (Abdul Khaleq, 2000). Amer Father states that one of the most important methods of training the speed of reaction is repetitive training with the change of time between the situation of preparation and signal launch (Amer Father, 2014). As Faghlol states that we as specialists in the field of sports training, when underline a program to be in accordance with the requirements and needs of the sports body as well as according to the goal we seek, where the capacities and preparations vary from one individual to another (Faghlol, 2014). As Mahfoudi et al pointed out the high level of training that characterizes many players in football did not come from a coincidence, but is the product of a special training for those players (Mahfoudi & al, 2015). From this point of view, we emphasize that the exercises of the repetitive training method contributed positively to the development of reaction speed and therefore the first hypothesis achieved.

- Discussion of the second hypothesis: Through the statistical treatment of the raw results of the empirical sample, it was noted that there are statistically significant differences between the results of the post measurement of the empirical and control groups; this is illustrated by table no.(03). Hence, this result is consistent with the majority of the results of similar research studies. The researcher explains that by the integrity and validity of the scientific foundations in legalizing the training method implemented by following all scientific field principles in training the players with special training exercises (repetitive training). This led to a difference between the empirical and control groups, in favor of the empirical group. It is consistent with al-Taie Ali stating that training in

football is characterized by planning, organization and continuity on scientific grounds, thus ensuring the positive impact on the level of the player and the continued progress at various aspects of football with the principle of graduality in the high training load and the correct timing of its repetition (Al-Taie, 2001). Abu Abdo also states that due to the rapid reaction to the rested nervous system and the non-stressed muscles, their training should be given at the beginning of the main part of the daily training unit immediately after introduction and warm-up (Abu Abdo, 2008). This is what is confirmed by Winck, who says that sports practice has clearly shown that high results cannot be achieved unless there is a solid base structure during childhood and adolescence (Hadjar Kherfane, 2011). He also agrees with Bengoua that football is a long-term and structured game for high-level sports and a stage of appropriate growth (Bengoua, 2001), and also agrees with Masaliti, who stated that most studies on training programmes indicate that Algerian football lacks carefully prepared and well-planned physical preparation programmes (Masaliti, 2012). From this point of view, we emphasize that the exercises of the repetitive training method have contributed positively to the development of the reaction speed and therefore the first hypothesis achieved.

V. Conclusion

We started this work by selecting the subject of the study and then collecting data for the subject of the study, as we started it with problematic assumptions and now we finish it with solutions and results. At the end of our research, we will try to provide the essence of the topic and the ability of researchers to make future assumptions that help researchers to continue research or re-study it in other aspects. The main objective of this study is to know the impact of repetitive training exercises in developing the speed of reaction and to try to know the advantages of this training method, especially when it comes to training younger age groups, as well as the appropriate periods of the sports season to use this method. Among the important points on which the study relied on is to build special exercises and determine the time required to implement them. Further, adjust them according to the target load. In addition to arrange them and place them in a manner consistent with the method of repetitive training, then the appropriate selection of the study sample.

Through our presentation and discussion of the results of our study, we concluded that there are statistically significant differences for the pre and post-tests in favor of the post-test. We also deduced the existence of statistically significant differences between the control and empirical groups and in favor of the empirical one, and there are a number of suggestions recommended by the researcher mentioned in the following:

- The need for coaches to be interested in developing the speed of reaction due to its importance to football players in the movements and deployment in the stadium.
- The need to do research and exercises to develop the speed of reaction.
- The need to use sophisticated devices to measure the speed of reaction, such as Electric Photo Cells.

Among the future hypotheses proposed by the researcher is the study of the correlation between the speed of reaction and some skills of football players.

VI. References:

1-Abu Abdo, S. (2008). *physical preparation of football players.* Alexandria: Al-Fath for Printing and Publishing.

2- Abdul Khaleq, I. (2000). *Sports Training Theories and Applications* (3 ed.). Cairo: Dar Al-Maarif.

3- Al-Basati, A. A. (1998). *Rules and Foundations of Sports Training and its Applications.* Cairo: Al-Maarif Publishing House.

4- Al-Bashtawi, M., & Al Khawaja, A. (2005). *Principles of Sports Training* (1 ed.). Amman: Dar Wael.

5- Al-Taie, M. Y. (2001). The impact of two training programs in the style of complex exercises and playing exercises in certain physical qualities and skills of football(doctoral thesis). Mosul University: faculty of sports education.

6- Ameur Father, S. (2014). *Sports Training Science: Training Systems for Senior Levels* (1 ed.). Amman: Al-Mujtamaa Al-Arabi Labararay for Publishing and Distribution.

7- Bengoua, A. (2001). Setting the standard levels for testing talented young people to practice football of age group (11-12 years). *Journal of Science and Technology for Physical And Sports Activities, 3*(3), 4-16.

8- Boukratm, B., & Madani, M. (2019). The impact of a Biometry training program on the development of the two speed courses Maximum and fitness

for football players under the age of 19. *Journal of Science and Technology for Physical and Sports Activities, 16*(2), 235-250.
9- Faghlol, S. (2014). The ball's built-in training method to develop some of my players' physical qualities Football is under 18 years. *Journal of Science and Technology for Physical and Sports Activities, 11*(11), 186-208.
10- Ibrahim, M. R. (2008). *Field Application of Sports Training Theories* (1 ed.). Baghdad: Al-Fadhli Library.
11- Hajjab, I. (2019). The Effectiveness of Training using the Mini-Games in the Developing the basic Skills for the Football Players under 17 years. *journal of sport science technology and physical activities,16*(2), 45-65.
12- Hadjar Kherfane, M. (2011). The impact of a proposed training program in the : Roduced land to develop some of the physical attributes and basic skills for emerging football. *Journal of Science and Technology for Physical and Sports Activities, 8*(8), 80-88.
13- Mahfoudi, M., Kacmi, F., & Belkbiche, K. (2015). The strategy of creating high-level players in Algerian football schools. *Journal of Science and Technology for Physical And Sports Activities, 12*(12), 275-294.
14- Masaliti, L. (2012). The impact of a proposed physical training program integrated in the development of power and speed on the development of basic football skills of the midterm 16-17 year-old. *Journal of Science and Technology for Physical and Sports Activities, 9*(9), 116-130.
15- Muhannad, A.-B., & Ahmed, A. K. (2005). *Principles of Sports Training* (1 ed.). Amman: Dar Wael.
16- Munther, H., & Al Khayat, A. (2000). *Fitness Rules in Football.* Amman: Curriculum House for Publishing and Distribution.
17- Othman, M. A. (1987). *Motor learning and sports training.* Kuwait: Al-Ilm Publishing House.
18- Sayed, A. A. (2008). *physical preparation of football players.* Alexandria: Al-Fath for Printing and Publishing.
19- Sharit, H. a.-D. (2013). proposal of a sports program based on repetitive training to develop the maximum speed and responsiveness of football players under the age of 20(master's thesis) . University of Algiers3: Institute of Physical and Sports Education.
20- Shasho, S., Hadjar Kherfane, M., & Hawar, A. E. (2018). The status of tests and scientific measures in the process of selection of football players U18. *journal of sport science technology and physical activities, 15*(15(1)), 18-97.