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The Effect of Special Fartlek Style Exercises in Developing the Speed Endurance of First-Class Football Referees

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Abstract: The research aimed to prepare exercises in the fartlek style to develop the speed endurance of first-class football referees. The researcher used the experimental method with the same design for one interconnected experimental group (pre-post), while the research sample included a sample of first-class referees (field referees and assistant referees) in Baghdad and accredited to the Central Iraqi Football Federation for the 2023-2024 football season, amounting to (30) referees who were chosen randomly, and special fartlek-style exercises were prepared at (3) training units per week for (8) weeks to develop the referees' speed endurance and passing physical tests. After processing the data statistically, the researcher concluded that the experimental group had achieved a noticeable improvement in the speed endurance variable, due to the use of the fartlek method, as the results showed statistically significant differences between the pre- and post-measurements, in favor of the post-measurement. The researcher recommended the necessity of applying exercises specific to the fartlek method due to its effectiveness and its positive impact on football referees.

Keywords: fartlek style, speed endurance, football referees

Introduction

The football game takes place on a field that is considered the largest in terms of area in team games, and therefore the speed of performance in it has become one of the requirements of modern football, including football referees, and in order for the football referee, who is one of the important pillars in this game, to be able to lead the match successfully until its end. He must have high physical fitness, which also enables him to pass the physical tests that he undergoes during the sports season. The program for the physical aspect of refereeing must be built according to the special physical abilities required by tests and matches. Therefore, we must keep up with the developments that occur in the sports training process and adopt appropriate training methods, including fartlek exercises, which are highly compatible with the performance of referees, which are characterized by speed, endurance, strength endurance, and speed endurance, which the referee needs it for a long period during the course of the match while maintaining a high level of physical fitness until the end of the match.

Fartlek exercises are used by trainers with the aim of improving speed endurance and strength endurance. Thanks to this method, numbers in running medium and long distances jumped, especially after it was modified so that the specific times and spaces decreased. In the beginning, the running player was left to set the intensity and distance however he saw fit for him (Maqsoud, 1994; Ahmed, 1999).

The importance of the research lies in using the fartlek method to develop speed endurance and to pass physical tests for football referees, thus leading to developing the level of physical performance during matches.

Research Problem

The physical tests for referees are the true standard that reflects part of the referee's readiness to lead matches, whether at the local or international level, from the point of view of the International Federation of Association Football (FIFA), and that the continuous developments of these tests are the result of the development taking place in the general level of modern football.

Through observation and the researcher's experience as a former football referee and lecturer on the physical fitness of referees, he found that many referees face great difficulty in the speed endurance test and do not reach the required repetitions, whether for arena referees or assistant referees. In addition, many coaches neglect to use the fartlek method, relying on traditional training methods. Therefore, applying the fartlek method to football referees may clearly contribute to raising the physical level to the required limits in light of the development taking place in football.

Therefore, the researcher decided to study this problem and develop appropriate solutions for it, and used special exercises with different rhythms in the fartlek style, performed inside and outside the field of play and taking the form of the referee's movements during the match, and also testing the readiness of the referees through physical tests.

Research Objectives

1. Preparing fartlek-style exercises to develop the speed endurance of first-class football referees.
2. Identify the effect of these exercises in the fartlek style to develop the speed endurance of first-class football referees.

Research Hypothesis

There are statistically significant differences between the results of the pre- and post-tests of speed endurance among the research sample.

Research Areas

- The human field: First-class referees (referees and assistant referees) in Baghdad accredited by the Central Iraqi Football Association for the 2023-2024 football season.
- Temporal scope: The period from 10/2/2024 to 15/4/2024.
- Spatial field: Al-Shaab International Stadium - Baghdad.

Methodology

The researcher used the experimental method with the design of one interconnected experimental group (pre-post), which is the most appropriate to the nature of the problem.

The research community and its sample

The research population was deliberately identified, namely all first-class referees (field referees and assistant referees) in Baghdad Governorate accredited by the Central Iraqi Football Association for the 2023-2024 football season, who numbered (70) referees. As for the research sample, it consisted of (30) referees. (15) referee and (15) assistant referees, who were chosen randomly, representing a percentage of (42.85%) of the research community, in addition to (10) referees for the exploratory experiment.

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

Arabic and foreign sources and references, tests, the World-Wide Information Network (the Internet), a football field, an electronic stopwatch to set the time, a Dell type electronic calculator, a metric measuring wheel, a loudspeaker + a sound pickup, (50) signs, a whistle (Maqsoud, 1994).

Determine the physical tests used in the research:

The test means "a method that requires research methods such as measurement, observation, experimentation, investigation, identification, interpretation, conclusion, and generalization" (Abdul-Jabbar & Ahmed, 1987), as the researcher chose tests for the physical fitness of football referees, approved by the International Federation of Association Football (FIFA), to measure the speed endurance ability of the research sample, which are:

1. Speed endurance test for referees, 75 meters, with a time of 15 seconds and a rest of 18 seconds (FIFA, 2016).

2. Speed endurance test for assistant referees, 75 meters, with a time of 15 seconds and a rest of 20 seconds (FIFA, 2016).

Exploratory experience

Conducting a reconnaissance experiment is one of the necessities of scientific research, as "it is exploring the circumstances surrounding the phenomenon that the researcher wishes to study" (Al-Kazemi, 2012). The first exploratory experiment for physical tests was conducted on Sunday, 10/2/2024 at Al-Shaab International Stadium/Baghdad, then the second exploratory experiment was conducted on Monday, 11/2/2024, on the same sample as the first exploratory experiment, consisting of (10) referees, to ensure the possibility of applying the selected special exercises and to verify the tools used. The time required to implement the exercises and overcome errors that may occur when implementing the main experiment, as well as to identify the efficiency of the assistant team's work.

Pre-test

The researcher conducted pre-tests for the sample members to perform the physical tests, under the supervision of the researcher and with the assistance of the assistant work team, on Thursday, 15/2/2024, at Al-Shaab International Stadium. Physical fitness tests were conducted for the referees at (4 p.m) in the afternoon and followed by at (5 p.m.) special physical fitness tests for assistant referees.

The main experiment

The researcher intended to begin applying the main components of the experiment on Saturday, February 17 2024, until Saturday April 13, 2024, when the duration of the exercises was (8) weeks. As Abu Al-Ela stated, quoting (Wilmer and Costel), "most of the resulting changes Training usually occurs within 6-8 weeks" (Ahmed, 1996).

The number of training units reached (24) units, at a rate of (3) units per week, namely (Saturday - Monday - Wednesday), and the exercise time during the training unit ranged from (20-35 minutes). Special exercises were applied using the fartlek method, after reviewing the literature and special sources to develop the capabilities necessary for the referee to pass the physical fitness tests. The intensity levels used in the exercises were determined according to the type of trait and ability to be developed according to the energy production system for each trait or ability, taking into account the results that appeared in the pre-tests of the research sample, and the intensity for the "speed endurance" exercises ranged between (80-90%) (Al-Kaabi & Maleh, 2017). As for the work and rest time, the researcher used speed endurance (1:1) and (2:1). The researcher took into account the structure of the exercises and their requirements in terms of intensity, volume, and rest, so that they were linked to the goals of the exercises for which they were built according to the fartlek method. Calculating the intensity of the training unit. The maximum pulse rate method was adopted to calculate the intensity of the load and the number of repetitions for each exercise in the training unit, as well as the number of training units per week and the rest periods between one repetition and another, as well as the gradation in difficulty from one exercise to another.

Post-tests

The researcher conducted post-tests for the sample members to perform the physical tests, under the supervision of the researcher and the assistance of the assistant work team, on Monday 15/4/2024 at Al-Shaab International Stadium. Physical fitness tests were conducted for the referees at (4 p.m) in the afternoon, and were followed at (5 p.m) in the afternoon by special physical fitness tests for the assistant referees. The researcher was keen that the conditions of the post-tests be similar to the conditions of the pre-tests in terms of place, time, and the assistant work team from in order to achieve accurate results.

Statistical Methods

The researcher used the statistical package (spss) to extract the statistical results: T. Test, Chi Square, Correlation Coefficient. Pearson, percentage, arithmetic mean, standard deviation, skewness, law of proportion of evolution.

Result

Presentation and analysis of results

Presentation and analysis of the results of the speed endurance test for arena referees and assistant referees

Table 1. It shows the arithmetic means and standard deviations for the judges in the pre- and post-speed endurance test

	The Test	Measuring Unit	Pre-measurement		Dimensional measurement	
			s-	p ±	s-	p ±
1	Endurance speed for referees	repetition	34.5	7.63	48.01	2.05
2	Endurance speed for assistant referees	repetition	33.4	9.56	47.30	4.57

Table 2. It shows the difference of the arithmetic means, the standard deviations, the value of (T), the significance of the differences between the results of the pre- and post-tests, and the rate of development for the judges in the pre- and post-speed endurance test

The Test	Measuring Unit	Media Difference	Difference Deviations	(T)	(sig)	Indication	Development Rate
Endurance speed for referees	Repetition	13.51	6.593	5.289	0.000	moral	28.13%
Endurance speed for	Repetition	13.9	5.864	4.741	0.002	moral	29.38%

assistant referees	

Discussion

Through Table 1 and 2, which shows the differences between the results of the pre- and post-tests and the rates of development for the research sample, it was found that there are significant differences between the results of the pre- and post-tests in the speed endurance variable for the research sample (referees - assistant referees) and in favor of the post-tests. The rate of development for the referees reached (28.13%), while the rate of development for the assistant referees reached (29.38%).

The researcher attributes this development among the research sample to the effectiveness of the exercises used in the fartlek style, as the selected exercises and the correct formation of those exercises led to the development of speed endurance, which in turn was reflected in the performance of the referees on the field of play while they were leading the matches. Taking into account that these exercises are very similar to the referee's performance on the field of play. The researcher proceeded to gradually increase the training load in proportion to the research sample and the period in which the training is conducted according to a scientific method (physical preparation has a clear effect in developing physical and motor abilities such as muscular strength, endurance, speed, agility, flexibility, and their components such as strength distinguished by speed and strength endurance) (Khaleq, 2005).

Nofal Al-Hayali confirms that "increasing the training load must occur at times that allow for functional adaptation to occur. To achieve an increase in the training load, it is preferable to gradually increase the components of the load from one week to another and from one month to another" (Al-Hayali, 1999). The researcher also attributes the change in test results to the flexibility of the fartlek method and the ability to adjust it according to the needs of the referees without being restricted to a specific shape or space. It also depends in its performance on the change in speed during the performance time. He also mentioned Hanan Muhammad Malik and Hala Attia Muhammad (1998) and Nasser Abdel Moneim (2004), who indicated that using the fartlek method increases the efficiency of the respiratory circulatory system, raises aerobic and anaerobic endurance, in addition to improving physiological aspects (Malik, 1998; Muhammad, 2004).

Conclusion

1. Special exercises have a positive effect on the percentage of most of the research sample passing physical tests.
2. The experimental group achieved a noticeable improvement in the speed endurance variable due to the use of the fartlek method, as the results showed statistically

significant differences between the pre- and post-measurements and in favor of the post-measurement.
3. Development occurred among all members of the research sample (referees and assistant referees).

Recommendations

1. The necessity of applying special exercises for their effectiveness and positive impact on football referees.
2. Focus on using the fartlek method when developing training programs because it has a positive impact on developing physical abilities, which in turn affects the performance level of football referees.
3. The necessity of emphasizing the application of special fartlek-style exercises while training other refereeing grades, as they play a major role in developing the capabilities of football referees and passing physical tests.
4. The need to search for the use of modern training methods and move away from traditional methods that contribute to the development of football referees.

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