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Effectiveness of methods for improving the speed endurance of chief referees in football

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Abstract
Purpose: By studying and cross-comparing the performance indicators of specific tests of football chief referees of different categories, determine the effectiveness of means aimed at developing specific endurance superiority and inadequacy.
Methods: The interval method was widely used in the course of the study in the development and improvement of the fast endurance of the chief referees. In this method, the use of funds in the maximum and submaximal intensive mode was determined in the strict order of the intervals between repetitions. Also, with the help of special tests, the speed and endurance of the judges were checked, and at the end the results were summed up.
Results: A comparative analysis of the results showed that during the experiment, the participant determined that the arithmetic mean of the positive change in the results of this exercise was 1.90 seconds, the arithmetic mean of the relative change was 3.04%. At the same time, the results showed that the arithmetic mean of the group participants changed statistically significantly during the experiment ($t=1.85$ and $P>0.05$). This, in turn, shows that the method we use has a positive effect.
Conclusion: In the experiment, it was proved that the development of fast endurance is possible by accurately normalizing the load on the organization of weekly microcycles in the training process of various types of football head referees, training on the basis of selected special exercises and organizing tools with simulation of game situations. During the training of judges, a set of exercises was created to increase the overall and specific endurance, as well as methods of their application were developed, taking into account the degree of impact of loads.

Keywords: Category of football chief referees, special endurance, efficiency, load normalization, relative change.

Introduction

Today, our country is rapidly developing football with millions of games, and many reforms are being carried out to develop this sport and ensure the successful participation of our national teams in prestigious competitions. In particular, the decree of Sh. M. Mirziyoyev PD-5887 of December 4, 2019 "On measures to raise the development of football in Uzbekistan to a completely new stage" defines new tasks to be performed in this area. Among these tasks, the issue of improving the level of physical fitness of referees and preventing negative aspects of different opinions is also relevant (Ukaz Prezidenta, 2019).

The problem with improving the physical fitness of referees at a time when experiments are currently being conducted to bring the physical fitness of players up to the level of international standards is that the speed of the referees' actions by ensuring an acceleration of the pace of the game requires to accelerate the pace of movement activities. According to the results of a study of sources focused on the activities of judges, mistakes that referees made during the conduct of meetings are often associated with insufficient physical training (Turbin, 2004; UFF, 2004).

The referees can make a lot of mistakes in the last minutes of each half of the match. This is primarily due to exhaustion, which leads to a decrease in concentration and a decrease in the speed of decision-making. This increases the likelihood that the referee will make an error in the evaluation of the game episode and will have a negative impact on the quality of the game.

Therefore, one of the most pressing issues facing today's football professionals is to improve the physical fitness of referees, including indicators of motor activity during the game (Budogosskij, 2004; Solov'ev, et al., 2016).

Aim of the research is the analysis of the effectiveness of the method of increasing the operational endurance of chief referees of various categories consists in studying the impact of the training program proposed by us on the operational endurance of judges.

Methods

A total of 20 referees of the 1st and 2nd categories registered with the Football Association of Uzbekistan took part in the observations. In this case, 10 referees were formed as an experimental group. The results and their statistical characteristics, showing the results of the statistical reliability of changes in these indicators

during the pedagogical experiment, were brought to the group on the 7x50 test (seconds) and the "YO-YO" test (meters). The interval method was used in the development and improvement of the fast endurance of the chief referees. During the training of the Experimental Group, a special set of exercises was concluded, and the amount of funds aimed at rapid endurance was normalized in these tools.

Results and discussion

The following table 1 lists the weekly standard indicators of funds aimed at predicting fast endurance at the base stage of the preparatory period (Table 1). In this table, the means aimed at increasing instantaneous endurance, namely in the weekly microclimate at its basic stage, are mainly used at short distances with a maximum intensity of up to 8-10 times, typical standard indicators of the use of means adapted to the anaerobic direction are highlighted.

Table 1. Normative indicators of the use of funds at the basic preparatory stage of the preparatory period, aimed at increasing the operational endurance of the referees of the experimental group.

Week days	Summary of the exercise
I	Aerobic running 3-4 km, heartbeat 130-150 beats per minute. Running at the same pace 3-4 km, heartbeat 160 - 170 beats per minute
II	Running 12-15 times for 150 meters, heartbeat 165 -175 beats per minute
III	In anaerobic mode, run 5-6 times for 300 meters, heartbeat 180 beats per minute, recovery 2-3 minutes.
IV	Running 10-12 times for 60-80 meters, heartbeat 140 – 150 beats per minute.
V	Running at a distance of 40 meters 8-10 times with a maximum speed, heartbeat 120-130 beats per minute.
VI	Run 8 -10 times for 40-60 meters with 90% of the maximum speed
VII	Weekend

In connection with the use of the interval method in the development and improvement of rapid endurance, when using the means in the maximum and submaximal intensive mode, the interval between repetitions was strictly defined. Means aimed at rapid endurance were performed mainly in the form of running at different distances in different parts of the field, increasing the length of time and gradually reducing the rest interval.

The analysis of the performance indicators of the test standards by the chief arbitrators showed the following.

The results of the experiments on the control group presented in the table and their statistical characteristics indicate that among the participants who took part in the tests, the greatest absolute positive change (-3 s) was observed in the test "Shuttle run at a distance of 7x50 meters" in three participants, namely Nazarov, Radzhabov and Dolimov, the worst result in Juraev (+1 s) worsened) and Grigoriev (-1 s, that is, the result during the experiment improved) is observed. The remaining 5 referees showed a result of -3 s., it turned out that it had changed in a positive way. For this test, the data coefficients calculated on the basis of the results indicated by the group judge at the beginning of the experiment (V=3.79 %) and at the end (V=3.67%) showed that the level of fitness of the group participants was almost the same. (Tables 2, 3)

The greatest change in indicators at the beginning and end of the experiment on the shuttle run test called the "YO-YO" test (this test was developed by the Dane Yeng Bengsbo and the essence of its content consists of an interval test designed to determine the strength of the intensive interval from performing physical activity, that is, the development of endurance (definition) and the ability to recover after performing this load (interval recovery test)), showed Akhtamov (160 m) and the minimum positive change was shown by Kosimov (20 m). The change in the indicators of the other participants of this exercise during the experiment is 40 m. and 60 m. it varies within the limits. During the experiment, the participants reported that the arithmetic mean of the positive change in the results of this exercise was 60 meters, the

Table 2. Statistics of special endurance indicators of the chief referees of various categories (control group).

№	Full name	Category	Time (in seconds) of shuttle run at a distance of 7x50 meters				"YO-YO" test (meters)			
			Beginning of the experiment	End of the experiment	Absolute difference	Relative difference %	Beginning of the experiment	End of the experiment	Absolute difference	Relative difference %
1	Karimov	1	64	62	-2.00	3.13	720	760	40.00	5.56
2	Jurayev	1	60	61	1.00	1.67	680	720	40.00	5.88
3	Kasimov	1	61	59	-2.00	3.28	580	600	20.00	3.45
4	Nazarov	1	63	60	-3.00	4.76	740	800	60.00	8.11
5	Ismat-ullayev	2	64	62	-2.00	3.13	660	720	60.00	9.09
6	Rajabov	1	67	64	-3.00	4.48	540	600	60.00	11.11
7	Dolimov	2	59	56	-3.00	5.08	600	660	60.00	10.00
8	Fayzullayev	1	61	59	-2.00	3.28	620	660	40.00	6.45
9	Akhtamov	2	64	62	-2.00	3.13	580	740	160.00	27.59
10	Grigoriev	1	62	61	-1.00	1.61	740	800	60.00	8.11
	$\overline{X}$		62.50	60.60	-1.90	3.04	646.0	706.00	60.00	9.29
	σ		2.37	2.22			72.45	73.67		
	V, %		3.79	3.67			11.22	10.43		
	T			1.85				1.84		
	P			>0.05				>0.05		

arithmetic mean of the relative change was 9.29%. Even in this exercise, it was found that the results shown by the group participants changed the arithmetic mean without statistical confidence during the experiment (t=1.84 and P>0.05).

The results of pedagogical experiments on the experimental group are presented in Table 3 and their statistical characteristics among the participants of the tests, the greatest absolute positive change (-4 s) was observed in the test "Shuttle run at a distance of 7x50 meters" in four participants, namely Najafaliyev, Ismailov, Suyunov, Tursunov, the worst result was observed in Choriev (0 s, that is, during the experiment, the result did not change). The remaining 5 referees showed a result of -3 s. It turned out that he had changed in a positive way. For this test, the data coefficients calculated based on the results given by the group judge at the beginning of the experiment (V=4.97 %) and at the end (V=7.23%) showed that the level of training of the participants in the group was almost the same. During the experiment, the participating referees reported that the arithmetic mean of the positive change in the results of this exercise was 3.10 seconds, the arithmetic mean of the relative change was 4.91%. At the same time, the results showed that the arithmetic mean of the group participants changed statistically significantly during the experiment (t=2.20 and P<0.05).

At the beginning and at the end of the "YO-YO" test, the greatest changes in the results were shown by the judges of the experimental group Najafaliyev, Khudoiberganov and Tursunov (80 m.), and the minimum positive change to Norsafarov (40 m.) became relevant.

Table 3. Statistics of special endurance indicators of various categories of main referees (experimental group).

№	Full name	Category	Time (in seconds) of shuttle run at a distance of 7x50 meters				"YO-YO" test (meters)			
			Beginning of the experiment	End of the experiment	Absolute difference	Relative difference %	Beginning of the experiment	End of the experiment	Absolute difference	Relative difference %
1	Najaliyev	1	62	58	-4.00	6.45	660	740	80.00	12.12
2	Ismailov	1	63	59	-4.00	6.35	620	680	60.00	9.68
3	Choriyev	1	61	61	0.00	0.00	640	700	60.00	9.38
4	Rahimov	1	65	62	-3.00	4.62	540	600	60.00	11.11
5	Khudoyber-ganov	2	63	60	-3.00	4.76	640	720	80.00	12.50
6	Suyunov	1	68	64	-4.00	5.88	560	620	60.00	10.71
7	Shukrul-layev	2	59	56	-3.00	5.08	580	640	60.00	10.34
8	Norsarov	1	60	57	-3.00	5.00	580	620	40.00	6.90
9	Tursunov	2	69	65	-4.00	5.80	560	640	80.00	14.29
10	Lutfulin	1	61	58	-3.00	4.92	640	700	60.00	9.38
	$\overline{X}$		63.10	60.00	-3.10	4.91	602.0	666.00	64.00	
	Σ		3.31	2.98			42.64	48.12		
	V, %		5.25	4.97			7.08	7.23		
	T			2.20				3.15		
	P			0.05				<0.01		

The change in the indicators of the other participants in this exercise during the experiment was 60 m. During the experiment, the participants reported that the arithmetic mean of the positive change in the results of this exercise was 64 meters, the arithmetic mean of the relative change was 10.63%.

As in this exercise, the results showed that the group members were statistically significantly altered during the experiment (t=3.15 and P<0.01) with an arithmetic mean. Thus, the results of the testers-referees who participated in the experimental group, according to the tests under study, showed that the change in the arithmetic mean values during the pedagogical experiment was higher than the corresponding indicators in the control group, and a statistically significant change allowed us to confirm the high efficiency of the methods and tools used in the experimental group.

Conclusion

The results of studying the existing control tests and training programs in the process of training referees, as well as the results of studying the distances they have covered in the field, clearly demonstrated the problem of improving their physical fitness.

In the experiment, it was proved that the development of fast endurance is possible by accurately normalizing the loads when organizing microcycles during the training of judges and organizing tools in the case of modeling game situations.

During the training of the judges, exercises were completed to increase the overall and specific endurance and methods of applying the load were developed, taking into account the degree of impact.

Based on the latest results of the experiment, it was found that the indicators of the control group were statistically unreliable (P>0.05), while the results showed that the arithmetic mean of the participants in the experimental group (t=3.15 and P<0.01) statistically significantly varied during the experiment.

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