

## Improving the technical and tactical actions of qualified football players of various positions in certain areas of the field

IHOR KARPA<sup>1</sup>, VIRA BUDZYN<sup>2</sup>, OLHA MATVIYAS<sup>3</sup>, IHOR RIPAK<sup>4</sup>, IHOR LAPYCHAK<sup>5</sup>, BOHDAN KHORKAVYY<sup>6</sup>

<sup>1,2,3,4,5,6</sup> Lviv State University of Physical Culture named after Ivan Boberskij, UKRAINE

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### Abstract.

At the present stage, football is one of the most developed and popular sports in the world. Competitive activity in football is the subject of attention of many researchers (Bayrachnuy,2008; Budzyn, 2019; Khorkavyy, 2017). The problem of building the educational and training process in football on the basis of competitive activity indices is extremely relevant, so it needs further research and improvement. The **purpose** of the study is to improve the performance of technical and tactical actions by qualified players, taking into account the specifics of the position and certain areas of the field. The **results** of theoretical analysis and experimental research have allowed us to establish that the improvement of technical and tactical actions should be due to the functional responsibilities of players depending on their position and various areas of the playing field. The program of introduction of the experimental factor provided redistribution of training work types at the stage of forming experiment. First of all, it involved technical, tactical and playing training. Implementation of the author's program is expected to improve technical and tactical actions of football players in the training process, in particular during the special preparatory period. The redistribution of the training work is as follows: general physical training - 29.1%, special physical training - 70.9%, technical and tactical training - 61, 5%, playing training - 28.4%, and competitive training - 10.1%. The ratio of types of training work in the competitive period: general physical training - 24.3%, special physical training - 75.7%, technical and tactical training - 55.6%, playing training - 35.3%, and competitive training - 9.1 %. Thus, the design of training sessions on the basis of the author's program that was developed taking into account the playing areas of the field and the functional responsibilities of players, is effective and can be used in the training process of football teams of different qualifications.

**Key words:** program, conditioning period, training sessions, playing field zones, stages of training

### Introduction.

The current stage of football development is characterized by the intensity of the game and requires the player to be able to quickly and efficiently perform technical and tactical actions in conditions of constant change, time and space limitations (Budzyn, V., Zharska, N., Matviyas, O., Rybak, L., Bazyljak, N. 2018). Players of teams that succeed at the World and European Championships have a rational technique and combine it with the speed of movements.

In recent years, we can observe increased interest in competitive activities in sports, in particular in football (Budzyn, 2018; Matviyas, 2019, Karpa, 2011), because indices of competitive activity is the main component that determines the entire system of organization, methodology and training of athletes during the training process (Bayrachny, 2008; Karpa, 2011).

Competitive activity in football is considered to be one of the complex and important objects of scientific research (Bayrachny, 2008; Karpa, 2011; Khorkavyy, 2017). The difficulty lies in the fact that the effectiveness of the game activity is not metrically measured but only the number of failed and scored goals, successful attacks, various passes, etc. is evaluated. The importance of competitive activity as an object of scientific research is manifested in the fact that its observation allows to determine the level of preparedness of players of both teams (Karpa, 2011). Modern football has not only largely changed the functions of players, but also the requirements for the level of their training. According to many researchers and football experts, the basis of football players' sportsmanship consists in their technical training and the level of their physical fitness that are very important for the outcome of the game. Achieving high sports results in modern conditions is associated with increasing the efficiency of the training process by optimizing the total volume and intensity of various training methods and by designing an effective management system of the training process (Budzyn, V., Matviyas, O., Khorkavyy, B., Karpa, I., Zharska, N. 2019, Khorkavyy, B., Ogerchuk, O., Kolobich, O. 2017) .

The rapid development of football as a competitive sport and as well as spectacular entertainment encourages constant changes in the organization of both the training process and the game itself, which is

characterized by high intensity, speed and coordination of technical and tactical actions (TTA), as well as a high degree of interaction of players of different roles in some areas of the playing field (Bayrachny, 2008; Khorkavyy, 2017). The data of the special scientific and methodical literature testify that the objective growth of volume and intensity of training and competitive physical and technical loadings necessary for achievement of high sports results, is the basis for carrying out comprehensive and thorough scientific and methodical researches on a problem of training process improvement (Khorkavyy, B., Ogerchuk, O., Kolobich, O. 2017).

The processes observed in modern football require the development and improvement of methods to optimize the level of loadings in training and competitive activities (Budzyn, 2018; Matviyas, 2019, Karpa, 2011). Solving this problem in modern conditions is possible only by intensifying and individualizing the training process, as well as by differentiating the means and methods of training footballers playing in different positions. Tactical organization of the team's activity is achieved through a clear division of functions (game specialization – a goalkeeper, defenders, midfielders, etc.) between individual players and a combination of game specializations in a certain series, in a certain system.

Thus, the improvement of technical and tactical training of qualified players, in accordance with the specifics of their positions and areas of the playing field, will increase the level of individual and team functions in competitive activities, which is reflected in the effectiveness of team play.

### Materials and Methods.

The purpose of the study is to improve the performance of technical and tactical actions by qualified players, taking into account the specifics of the positions and certain areas of the field.

Research methods: theoretical analysis and generalization of scientific and methodical literature, which allowed to characterize the training system features of qualified football players; pedagogical methods (questionnaires, timing, control, observation, and experiment) to determine the state of development and the main areas of improvement of the educational and training process, establishing the ratio of training time, determining the various aspects of players' training; development and scientific substantiation and verification of the author's program effectiveness.

Organization of the study: The study was conducted during 2017–2018 on the basis of the football club FC "Karpaty" (Lviv) and the Department of Football of the Lviv State University of Physical Culture. The pedagogical experiment was conducted during the special-preparatory stage of the preparatory period and the competitive period of qualified football players' training. The causal experimental factor of our pedagogical experiment was the level of technical and tactical training of qualified football players of various positions. The pedagogical experiment was conducted with the players of the football club "Karpaty" (Lviv) team, who play in the junior championship of the Premier League of Ukraine.

The pedagogical experiment involved 22 players who play for the junior team of FC Karpaty football club (Lviv). The forming and statement experiments took place during the special preparatory and competitive stages of conditioning for the 2017-2018 seasons.

### Results.

The analysis of the pedagogical observations results of the qualified players' competitive activities led to the conclusion that the improvement of technical and tactical actions should be due on the one hand to the functional responsibilities of players depending on the position, and on the other hand - to different areas of the playing field.

In our study, for a more focused analysis of competitive activities and more objective determination of the specificity of the TTA, the football field was divided into 12 playing zones (Fig. 1).

It should be noted that in the practice of modern football, the playing field is divided into three zones (33 m each).



Fig. 1. The scheme of the playing field divided into 12 zones

The first of them is the zone of the beginning of offensive actions, the second one is the zone of deployment of offensive actions, the third one is the zone of completion of offensive actions [5, 14, 18]. At the same time, it is important for the coach to have information on the implementation of penetrating attacks, including flank, ball passes, and effectiveness of various types of pressure, etc. to manage the competitive activities of players. That is, indices of competitive activity in only three areas of the playing field do not allow to determine the model of the game as a team as a whole and each player individually. But each player performs certain duties during the game due to his position.

Thus, the division of the football field into 12 game zones allows us to establish the following:

1) in the team aspect:

- to identify and analyze offensive actions, including positional and rapid attacks;
- to analyze game combinations;
- to determine the coalitions of players and the effectiveness of their interactions during the ball possession phase and the ball tackling phase;
- to develop algorithms for players interaction when performing standards;
- to determine the universal level of team players;

2) for players of various positions:

- to identify and analyze quantitative and qualitative indices of TTA performance depending on the playing field zones;
- to determine the activity of the player during the match, namely his actions in different areas of the field;
- to assess the level of tactical thinking and its ability to interact effectively with teammates in the process of offensive and defensive actions.

Thus, the TTA performance by players is due to the specifics of the playing field zones. Each zone is characterized by the following indices of specificity of TTA performance: intensity factor, efficiency factor, concentration factor, coordination complexity factor, quantitative composition of the coalition of players of both teams (Table 1).

**Table 1 Specific features of technical and tactical actions by qualified football players in different areas of the playing field (n = 19)**

Football field zones	Indices of specificity of TTA performance				
	intensity factor, points	efficiency factor, points	concentration factor, points	coordination complexity factor, points	coalition of players, number of players
Zones of sector "A", incl. A <sub>1</sub>	0.9 0.5	0.71 0.56	8.0 6.0	0.58 0.45	2–6
A <sub>2</sub>	1.75	0.78	10.0	0.61	10–18
A <sub>3</sub>	0.55	0.56	6.0	0.45	2–6
Zones of sector "B", incl. B <sub>1</sub>	2.1 1.9	0.76 0.69	6.7 5.0	0.29 0.27	3–6
B <sub>2</sub>	2.5	0.81	7.0	0.31	6–12
B <sub>3</sub>	1.9	0.69	6.0	0.27	3–6
Zones of sector "C", incl. C <sub>1</sub>	2.1 1.9	0.72 0.79	5.6 4.0	0.34 0.31	4–7
C <sub>2</sub>	2.5	0.68	7.0	0.39	6–12
C <sub>3</sub>	1.9	0.79	4.0	0.31	4–7
Zones of sector "D", incl. D <sub>1</sub>	0.9 0.5	0.47 0.66	7.0 6.0	0.58 0.43	2–6
D <sub>2</sub>	1.7	0.30	9.0	0.75	10–18
D <sub>3</sub>	0.5	0.66	6.0	0.43	2–6

The intensity factor (IF), efficiency factor (EF) and coordination complexity factor (CCF) were calculated according to the formulas developed by V. M. Kostyukevich (2006).

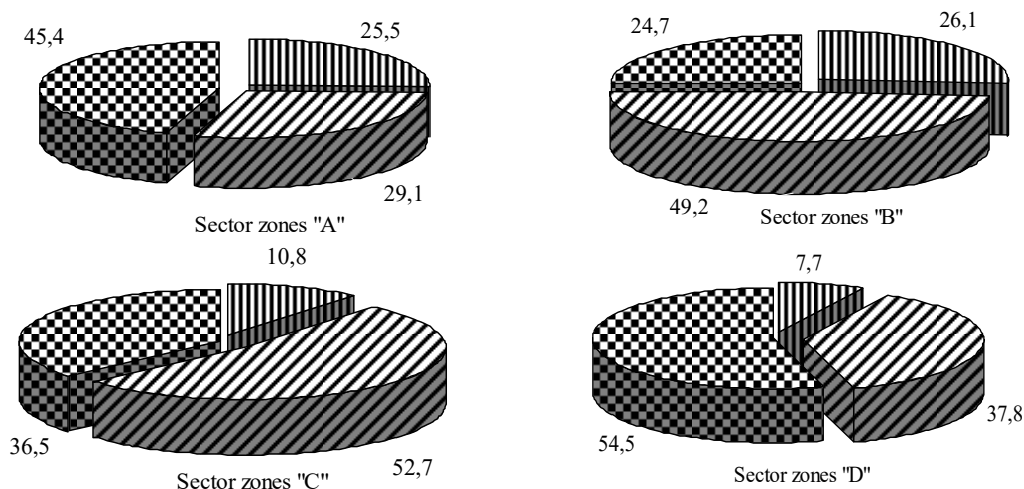
The concentration factor (CF) (points) was determined by experts.

A coalition of players is formed by the number of players of both teams, who are usually in the playing area during the attacking actions of one team and the ball tackling actions of the other.

This allows us to say that each zone is characterized by the corresponding specificity of the TTA. At the same time there is certain regularity. According to the study, the indices of the playing concentration of football players depend on the indices of coordination complexity. The highest indices of coordination complexity of TTA performance were recorded in game zones "A<sub>2</sub>" (0.61) and "D<sub>2</sub>" (0.75). That is, the players who are most active in these areas must have a high level of technical and tactical training, especially for central defenders and attackers. It should be noted that the level of technical and tactical training of football players is due to the effectiveness of playing techniques in the 2<sup>nd</sup> and 3<sup>rd</sup> modes of coordination complexity (CCM), i.e. in movement with limited space and time, as well as in conditions of active obstruction by the opponent. Therefore, it was important to determine the performance of technical and tactical actions by qualified players, taking into account the playing areas of the field and modes of coordination complexity. As mentioned earlier, the highest

coordination complexity is characterized by technical and tactical actions performed in the 3<sup>rd</sup> CCM. In the course of the research it was determined that each playing zone is characterized by a certain ratio of TTA performance in three modes of coordination complexity (Fig. 2).

In general, the greatest coordination complexity of the TTA is characterized by the playing zones of sector "D", where the TTA performed in the 1<sup>st</sup> CCM is only 7.7%, and the most TTA is performed in the 3<sup>rd</sup> CCM (54.5%). The playing zones of sector "A" are determined by the rather high coordination complexity of TTA performance, where TTA performed in the 3<sup>rd</sup> CCM are equal to 45.4%.



**Fig. 2. Technical and tactical actions performed by qualified football players taking into account the playing zones of the field and modes of coordination complexity, %:**

■ – 1<sup>st</sup> CCM; ▨ – 2<sup>nd</sup> CCM; ▩ – 3<sup>rd</sup> CCM

The direct design of the training process at the two final stages of the study was carried out on the basis of the developed structure of qualified football players' training (Table 2).

The main parameters of football training include: the number of training days, the number of training sessions, the amount of load, the number of games, general and specific physical training, technical and tactical, playing and competitive training. The main parameters of football training were determined within the calendar of competitions of the junior team of FC "Karpaty" (Lviv) in the 2017-2018 seasons. The study of the statement stage of the experiment was carried out during the special preparatory stage of the preparatory period and the competitive period of the first competition round; forming experiment - during the special-preparatory stage of the preparatory period and the competitive period of the second round of competitions.

**Table 2 The structure of qualified football players' training at the stages of statement and forming experiments**

Load parameters	Statement experiment		Forming experiment	
	s.p.s.* preparatory period	competitive period	s.p.s.* preparatory period	competitive period
Number of days	16	165	20	94
Number of training sessions	31	213	29	146
Load volume, hours	63	383	64	262
Number of calendar games	–	20	–	10
Number of control and educational games	3	1	3	1
Distribution of types of training work,%:				
general physical training	18.8	25.6	29.1	24.3
special physical training	81.2	74.4	70.9	75.7
Technical and tactical training	61.8	56.9	61.5	55.6
incl. exercises performed in the 1 <sup>st</sup> CCM	35.1	31.1	22.0	28.8
exercises performed in 2 <sup>nd</sup> CCM	47.3	44.2	43.3	42.8
exercises performed in 3 <sup>rd</sup> CCM	9.6	15.1	23.1	18.6
standards	8.0	9.6	11.6	9.8
Playing training	27.9	31.3	28.4	35.3
Competitive training	10.3	11.8	10.1	9.1

Note: - s.p.s.\* - special preparatory stage

The program of introduction of the experimental factor provided redistribution of training work types at the stage of forming experiment. First of all, it involved technical, tactical and playing training. In particular, at the special-preparatory stage of the preparatory period of the forming experiment there was an increase from 9.6% to 23.1% of exercises performed in the 3<sup>rd</sup> mode of coordination complexity, i.e. they included martial arts. In the competitive period, such exercises increased from 15.1% to 18.6%. At the same time, at the special-preparatory stage of the preparatory period and the competitive period of the forming experiment, the exercises performed in the 1<sup>st</sup> CCM decreased from 35.1% to 22.0% and from 31.1% to 28.8%, respectively.

During the forming experiment, the time for playing training of football players also increased - from 27.9% to 28.4% at the special preparatory stage of the preparatory period and from 31.3% to 35.3% in the competitive period. As for the exercises performed in the 2<sup>nd</sup> CCM, in the process of the forming experiment the introduction of these exercises decreased at the special preparatory stage of the preparatory period from 47.3% to 43.3%, and in the competitive period - from 44.2% to 42.8 %. A slight decrease in competitive training - from 10.3% to 10.1% (special preparatory stage of the preparatory period) and from 10.1% to 9.1% (competitive period) was due to the competition calendar.

The redistribution of technical-tactical and playing training of football players allowed increasing the efficiency of technical-tactical actions, as well as the general level of their sports conditioning.

The introduction of the authors' program of technical and tactical training of qualified football players helped to increase the efficiency of TTA (Table 3).

The studies of team performance showed that of the 22 players who participated in the experiment, 15 had statistically significant changes in improving the quality of TTA performance, which is 68.2%.

**Table 3 Qualitative indices of technical and tactical actions performed by qualified football players at the stages of statement and forming experiments**

Indices		Experiment stages	n	$\bar{x}$	S	$\bar{V}$	$\Delta \bar{x}_{\text{фс}} - \Delta \bar{x}_{\text{кес}}$ (%)	T	p
Number of TTA		SE *	19	0.69	0.05	7.2	0.05 (6.8)	3.3	<0.01
		FE **	11	0.74	0.04	5.4			
Pass	keeping	SE	19	0.90	0.05	5.5	0.01 (1.1)	0.5	>0.05
		FE	11	0.91	0.05	5.4			
	developing	SE	19	0.75	0.08	10.6	-	-	-
		FE	11	0.75	0.09	12.0			
	piercing	SE	19	0.32	0.06	18.7	0.05 (13.5)	2.2	<0.05
		FE	11	0.37	0.07	18.9			
Dribbling		SE	19	0.98	0.02	2.0	0.02 (2.0)	2.8	<0.05
		FE	11	1.00	0.02	2.0			
Tricks		SE	19	0.60	0.04	6.6	0.03 (4.8)	3.0	<0.01
		FE	11	0.63	0.03	4.7			
Tackling		SE	19	0.43	0.03	6.9	0.03 (6.5)	2.9	<0.05
		FE	11	0.46	0.03	6.5			
Interception	lower	SE	19	0.55	0.05	9.0	0.06 (9.8)	3.0	<0.01
		FE	11	0.61	0.06	9.8			
	upper	SE	19	0.61	0.07	11.4	0.03 (4.9)	1.5	>0.05
		FE	11	0.58	0.07	12.1			
Hand to hand		SE	19	0.55	0.03	5.4	0.02 (3.5)	2.2	<0.05
		FE	11	0.57	0.02	3.5			
Shots	playing	SE	19	0.26	0.06	23.1	0.05 (16.1)	2.5	<0.05
		FE	11	0.31	0.05	16.1			
	standards	SE	19	0.34	0.04	11.7	0.05 (12.8)	3.3	<0.01
		FE	11	0.39	0.04	10.2			

Notes: \* - statement experiment; \*\* - forming experiment.

The implementation of the authors' training program of technical and tactical training not only increased the level of technical and tactical training of football players but also helped to increase the level of their physical and functional fitness (Table 4).

Table 4 Indices of physical and functional fitness of qualified football players at the stages of statement and forming experiments

Indices	Experiment stages	n	$\bar{x}$	S	$\bar{V}$	$\Delta \bar{x}_{fe} - \Delta \bar{x}_{ce}$ (%)	t	p
High start run 30 m. s	CE*	22	4.26	0.14	3.2	0.07 (1.7)	2.33	<0.05
	FE**	22	4.19	0.12	2.5			
Run from the spot 15 m. s	CE	22	2.47	0.04	1.6	0.04 (1.7)	3.33	<0.01
	FE	22	2.43	0.04	1.6			
Accelerated run 15 m. s	CE	22	1.79	0.04	2.2	0.03 (1.7)	3.33	<0.01
	FE	22	1.76	0.02	1.1			
Running 11x30 m. c	CE	22	70.8	4.15	5.8	5.90 (8.3)	4.83	<0.01
	FE	22	64.9	3.46	6.1			
Long jump. m	CE	22	2.50	0.18	7.2	0.10 (3.8)	2.12	<0.05
	FE	22	2.60	0.16	6.1			
5-time jump. m	CE	22	12.7	0.70	5.5	0.2 (1.5)	0.12	>0.05
	FE	22	12.9	0.70	5.4			
Cooper Test. m	CE	22	3007.6	205.4	6.8	140.0 (4.4)	2.09	<0.05
	FE	22	3147.6	201.8	6.4			
PWC <sub>170</sub> . kg·m·min <sup>-1</sup>	CE	22	1302.7	59.90	4.5	42.6 (3.2)	2.35	<0.05
	FE	22	1345.3	57.20	4.2			
VO <sub>2</sub> max ml·min <sup>-1</sup> ·kg <sup>-1</sup>	CE	22	50.2	4.11	8.1	1.0 (1.0)	0.78	>0.05
	FE	22	51.2	4.19	8.2			

Notes: \* - statement experiment; \*\* - forming experiment.

First of all this is due to the influence of training exercises performed by football players in the 2<sup>nd</sup> and 3<sup>rd</sup> modes of coordination complexity.

At the stage of the forming experiment there were statistically significant changes in the indices of speed abilities by 1.7% (p < 0.01), speed and power abilities - by 3.8% (p < 0.05), speed endurance - by 8.3% (p < 0.01), and overall endurance - by 4.4% (p < 0.05).

The indices of physical performance of football players changed statistically significantly - by 3.2% (p < 0.05).

Thus, the pedagogical experiment confirmed the scientific prediction that the improvement of TTA by qualified players, taking into account the playing areas of the field and the position is effective both in terms of basic indices and the achievement of sports results. In the 2017-2018 seasons, the junior team of FC Karpaty (Lviv) took the fourth place among 12 junior teams of the Premier League.

## Conclusions.

In scientific works the problem of technical and tactical training of qualified football players is given enough attention by football experts but the issue of improving technical and tactical actions of qualified football players taking into account the specifics of the game role and areas of their operation has not been studied. Due to the processes of individualization and optimization of the training process in football, the analysis of indices of the structure of technical and tactical actions of qualified players, taking into account the functional responsibilities of the players' positions and different areas of the field requires more detailed research.

It is determined that the design of technical and tactical training of qualified football players takes place with the help of two types of special exercises: exercises without martial arts - exercises performed on the spot or at a comfortable speed (1<sup>st</sup> mode of coordination complexity), and exercises that performed in motion with limited space and time (2<sup>nd</sup> mode of coordination complexity); hand to hand exercises performed in conditions of active obstacle on the part of the opponent (3<sup>rd</sup> mode of coordination complexity).

The results of the study of technical and tactical actions of qualified players in different areas of the playing field suggest that most TTA is performed in the playing areas "B<sub>2</sub>" - 20.1% and "C<sub>2</sub>" - 17.9%, the least - in the playing areas "A<sub>1</sub>" - 2.8%, "A<sub>3</sub>" - 2.9%. As for other zones, the performance of TTA is in the range from 3.5% ("B<sub>3</sub>") to 11.4% ("D<sub>2</sub>"). In addition to quantitative indices, each zone of the playing field is characterized by certain features of TTA, namely: intensity, efficiency, game concentration and coordination complexity, as well as the predominant use of basic playing techniques – passes, dribbling, tricks, tackling, interceptions, and shots.

Regarding individual indices of TTA in qualified football players of various positions, it is established that the right defender performs the most TTA in the following zones: "A<sub>3</sub>" - 21.4%, "B<sub>3</sub>" - 14.3%, "B<sub>3</sub>" - 28.6%, "D<sub>3</sub>" - 14.2%. Similar values were recorded for the left defenders but in the areas of the left side: "A<sub>1</sub>" - 15.5%, "B<sub>1</sub>" - 35.5%, "C<sub>1</sub>" - 22.2%, "D<sub>1</sub>" - 9.1%. For central defenders, the highest indices of TTA performance

in the central zones of the field range from 10.0% in zone "A<sub>2</sub>" to 45.7% - in zone "C<sub>2</sub>". This trend is observed for midfielders. The attackers mostly perform TTA in the central zones: "C<sub>2</sub>" - 23.0% and "D<sub>2</sub>" - 38.4%. In other game zones of sectors "C" and "D" execution of TTA of the attacker is from 3.8% to 14.2%.

The results of the study allowed developing the design of the special-preparatory stage of the conditioning period and the competitive training period for qualified football players. The ratio of types of training work has been established:

a) special-preparatory stage of the conditioning period: general physical training - 29.1%; special physical training - 70.9%; technical and tactical training - 61.5%; playing training - 28.4%; competitive training - 10.1%;

b) competitive period: general physical training - 24.3%; special physical training - 75.7%; technical and tactical training - 55.6%; playing training - 35.3%; competitive training - 9.1%.

Design of training sessions on the basis of the authors' training program for qualified football players contributed to a more emphasized increase in the efficiency of the total number of TTA - by 6.8% ( $p < 0.01$ ). An increase in the indices of the main playing techniques - passes - by 13.5% ( $p < 0.05$ ), dribbling - by 2.0% ( $p < 0.05$ ), tricks - by 4.8% ( $p < 0.01$ ), tackling - 6.5% ( $p < 0.01$ ), interceptions - by 9.8% ( $p < 0.01$ ), hand to hand - by 3.5% ( $p < 0.05$ ), shots - by 16.1% ( $p < 0.05$ ), and shots from standard positions - by 12.8% ( $p < 0.01$ ).

The positive influence of the authors' program on the indices of physical and functional fitness of qualified football players is determined. There are statistically significant changes in the indices of speed abilities - by 1.7% ( $p < 0.01$ ), speed and power abilities - by 3.8% ( $p < 0.05$ ), speed endurance - by 8.3% ( $p < 0.01$ ), overall endurance - by 4.4% ( $p < 0.05$ ). The indices of physical performance of football players changed statistically significantly - by 3.2% ( $p < 0.05$ ).

#### Conflicts of interest.

All authors declare that they have no sources of support in the form of sponsorships, grants, materials and that they have no interests, including grants scholarships or commercial assistance or financial sponsorships received; or any relevant affiliation, organization or entity.

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