Original scientific article

The Integral Assessment of Playing Tactics in National Football Teams

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Abstract

Objectives. The objective of the study was to determine the features of competitive activities among national football teams based on the integral assessment of playing tactics.

Materials and methods. The study was conducted during the 2024 European Football Championship. The competitive activities of national football teams from European countries (Germany, Spain, England, Switzerland, France, Portugal, Netherlands, Turkey) were analyzed, focusing on the playing tactics in 50 halves. In order to carry out the study, the following methods were used: theoretical analysis of literature sources; pedagogical observation of competitive activities; analysis of video materials of competitive activities; methods of mathematical statistics. The statistical analysis of the research results was conducted using descriptive mathematical statistics. The sample was characterized by determining the arithmetic mean, standard deviation (S), and coefficient of variation (V). The significance of observed differences in the indicators was assessed using the parametric Student's t-test for independent samples. Prior to this, the data's conformity to a normal distribution was verified using the Shapiro-Wilk W-test.

Results. A methodology for the integral assessment of the tactics undertaken by national football teams was developed. The integral assessment of team tactics consisted of 10 specific coefficients that reflect the main components of football players' competitive activities in the phases of ball possession and recovery. The competitive activities in 50 halves of the 2024 European Football Championship were analyzed. The average value of the integral assessment of the tactics in national football teams was determined to be 5.62 ± 0.43 points. The findings revealed significant tactical variations between the teams, with Spain's use of high pressing and creative play contributing to their championship victory. A ten-point scale for evaluating the tactics of national football teams was developed, on the basis of which the level of competitive activities is interpreted.

Conclusions. The developed methodology for monitoring and analyzing the tactics of football teams allows for targeted management influences on the competitive activities of football players at the operational, current, and stage levels.

Keywords: football, national teams, competitive activities, playing tactics, integral assessment, methodology, scale, monitoring.

Introduction

Football is not only the most popular sport, but also one of the most complex team sports, where competitive activities require a high level of technical, tactical, physical, and psychological preparedness (Qing Yi et al., 2018; Mola & Shaw, 2024). One of the most challenging problems in football is the control of competitive activities, which comprehensively evaluates the technical-tactical and physical preparedness along with the intellectual, mental, and psychological abilities of players (Kostykevich, 2019; Modric et al., 2019; Aquino et al., 2020).

The methodology for controlling and analyzing competitive activities in team sports has become the subject of scientific research by many scholars (Bezmylov, 2015; Mitova, Sidorenko, 2015). In particular, research on this issue has been conducted in basketball (Voznyuk et al., 2020; Bezmylov et al., 2024); volleyball (Shchepotina et al., 2020; Oliinyk et al., 2021); handball (Tyshchenko, et al., 2019; Solovey O., et al., 2020); ice hockey (Shynkaruk & Serebriakov, 2021); and field hockey (White & MacFarlane, 2015; Konnov, 2021; Kostiukevych et al., 2020). Regarding football, it is worth noting that the control and analysis of competitive activities in this sport are predominantly based on the integral assessment of technical-tactical activities (Shchepotina et al., 2021; Kostiukevych et al., 2022) and the monitoring of the attacking actions of football teams (Kostiukevych et al., 2020).

Thus, the analysis of literature sources allows us to determine the importance of the problem of controlling and analyzing the competitive activities of athletes in team sports, including football. At the same time, the problem of controlling the tactics of national football teams based on an integral assessment remains relevant.

The objective of the study is to determine the features of the competitive activities of national football teams based on the integral assessment of game tactics.

Materials and Methods

Participant

The study was conducted during the 2024 European Football Championship. The competitive activities of national football teams from European countries (Germany, Spain, England, Switzerland, France, Portugal, Netherlands, Turkey) were analyzed, focusing on the tactics of the game in 50 halves.

Study Organization

The following methods were used in the study: theoretical analysis of literature sources; pedagogical observation of competitive activities; analysis of video materials of competitive activities; methods of mathematical statistics.

Based on the theoretical analysis of literature sources, the research topic was identified, and the research hypothesis was developed.

The methods of pedagogical observation of competitive activities and analysis of video materials of competitive activities served as the basis for developing a methodology for determining the integral assessment of the tactics of national football teams.

The integral assessment of the tactics of a football team is based on the following points:

- The indicators of competitive activity must be recorded in two phases of the game – the ball possession phase and the ball picking phase;
- In the ball possession phase, quantitative and qualitative indicators of positional and fast attacks, as well as the number and quality of penetrating attacks, are evaluated;
- In the ball picking phase, quantitative and qualitative values of ball pickings and interceptions performed in three zones of the football field (first – low pressing, second – medium pressing, third – high pressing) are assessed;

- The integral assessment of the tactics of a football team consists of 10 specific coefficients. Five coefficients characterize the team's performance in the ball picking phase, and the other five in the ball possession phase;
- The value of each specific coefficient ranges from 0 to 1. That is, the value of the numerator is less than the value of the denominator.

The integral assessment of a football team's tactics is determined using the following formula (Kostiukevych, & Konnov, 2021; Kostykevich, et al., 2023):

$$IAtg = HPC + HPEF + LPEF + CBPE + BIEC + PAEC + SPAEC + GSS + CrC + CC \quad (1)$$

Coefficients in the ball pickup phase 1.

1. High pressing coefficient (HPC)

$$HPC = \frac{\sum_{1=1}^{n} TTA(t+i)3^{rd} - a\ zone}{\sum_{1=1}^{n} TTA(t+i)1 - a + 2^{nd} zones} \quad (2)$$

where: $\sum_{1=1}^{n} TTA(t+i)3^{rd} - a\ zone$ is the number of technical and tactical actions (tackles and interceptions) performed in certain areas of the field – 1st, 2nd, 3rd areas of the field.

2. High pressing efficiency factor (HPEF)

$$HPEF = \frac{\sum_{1=1}^{n} TTA(t+i) \div s\ in\ 3^{rd}\ zone}{\sum_{1=1}^{n} TTA(t+i) \div t\ in\ 3^{rd} zone} \quad (3)$$

where is stands for successful TTAs; and t – for total TTAs.

3. Low pressing efficiency factor (LPEF)

$$LPEF = \frac{\sum_{1=1}^{n} TTA(t+i) \div s\ in\ 1^{st}\ zone}{\sum_{1=1}^{n} TTA(t+i) \div t\ in\ 1^{st} zone} \quad (4)$$

where $\sum_{1=1}^{n} TTA(t+i): s$ – is the number of successful tackles and interceptions of the ball;

$\sum_{1=1}^{n} TTA(t+i) \div t\ in\ 1^{st} zone$ – is the total number of tackles and interceptions of the ball.

4. Coefficient of ball picking efficiency (CBPE)

$$CBPE = \frac{\sum_{1=1}^{n} TTA(t)s}{\sum_{1=1}^{n} TTA(t)t} \quad (5)$$

$\sum_{1=1}^{n} TTA(t)s$ where is the number of successful tackles during the game;

$\sum_{1=1}^{n} TTA(t)t$ is the total number of tackles during the game.

5. Ball interceptions efficiency coefficient during the game (BIEC)

$$BIEC = \frac{\sum_{1=1}^{n} TTA(i)s}{\sum_{1=1}^{n} TTA(i)t} \quad (6)$$

where $\sum_{1=1}^{n} TTA(i)s$ is the number of successful interceptions made during the game;

$\sum_{1=1}^{n} TTA(i)t$ is the total number of interceptions of the ball during the game.

Coefficients in the ball possession phase

1. Penetration attack effectiveness coefficient (PAEC)

$$PAEC = \frac{\sum_{1=1}^{n} PA(point\,s)}{\sum_{1=1}^{n} PA(point\,s) + 10} \qquad (7)$$

where $\sum_{1=1}^{n} PA(point\,s)$ is the total amount of points when performing penetrating attacks (PA); 10-number value.

2. Successful penetration attack efficiency coefficient (SPAEC)

$$SPAEC = \frac{\sum_{1=1}^{n} SPA}{\sum_{1=1}^{n}(PA + SPA)} \qquad (8)$$

where SPA means successful penetration attacks.

3. Goalscoring situation coefficient (GSS)

$$GSS = \frac{\sum_{1=1}^{n} GSO, point\,s}{\sum_{1=1}^{n}(PA + SPA), point\,s} \qquad (9)$$

where $\sum_{1=1}^{n} GSO$ is the sum of points for creating goalscoring opportunities during the game; $\sum_{1=1}^{n}(PA + SPA)$ is the sum of points for penetrating attacks and successful penetrating attacks during the game.

4. Creativity coefficient (CrC)

$$CrC = \frac{\sum_{1=1}^{n}(PA + SPA)}{\sum_{1=1}^{n}(PosA + FA)} \qquad (10)$$

where $\sum_{1=1}^{n}(PA + SPA)$ is the number of penetrating attacks (PA) and successful penetrating attacks (SPA) conducted by the team during the game; $\sum_{1=1}^{n}(PosA + FA)$ is the number of positional attacks (PosA) and fast attacks (FA) carried out by the team during the game.

5. Combinability coefficient (CC)

$$CC = \frac{\sum_{1=1}^{n} BP}{600} \qquad (11)$$

where $\sum_{1=1}^{n} BP$ is the number of ball passes during the first half of the game; 600 is a numerical value

The specific coefficients for the tactics of a football team in the ball picking phase are determined based on the application of pressing in three zones of the field.

To determine the specific coefficients in the possession phase, it is necessary to consider: from the right flank; from the left flank; from the right half flank, from the left half flank; from the central part of the penalty area (Fig. 1).
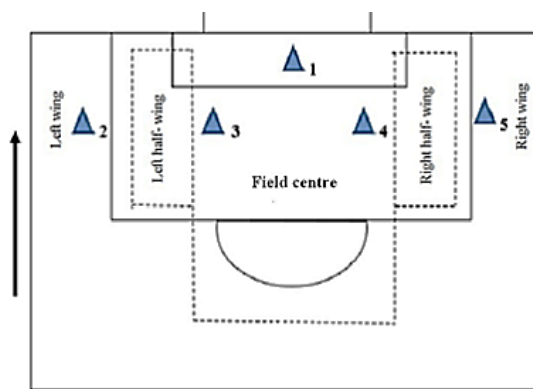

Fig. 1. Sharpening tactical moves during the penetrating attacks of a football team (Kostiukevych, et. al., 2023)

Penetrating attacks are divided into two types: penetrating attacks and successful penetrating attacks. Each successful penetrating attack ends with the awarding of a corner or free kick or a shot on goal.

Penetrating attacks are evaluated in points depending on their content (Table 1). In the development of the evaluation scale for penetrating attacks of a football team, the coordination complexity (CC) of the goalkeeper's play was taken into account. Technical-tactical actions performed by the goalkeeper using specific motor skills are classified as the 1st, 2nd, and 3rd levels of CC. The 4th level of CC includes the goalkeeper's "saves" when catching, deflecting, or intercepting the ball. The 5th level of CC includes the goalkeeper's "saves" that are performed based on high athletic skill combined with a sense of intuition (anticipation).

Table 1. Penetrating attack evaluation scale in football

Score, Points	The Nature of Penetration Attacks
1	Penetrating attack that ends in losing the ball
2	A game situation where there is an inaccurate shot on goal, or a free kick/corner kick is awarded to the attacking team
3	Penetrating attack that ends with an accurate shot on goal, but the goalkeeper controls the ball without high difficulty in coordination
4*	The game situation is characterized by a "goal-scoring opportunity," but ends with the loss of the ball
5*	A favorable game situation for a goal shot from outside the penalty area, but the shot is inaccurate
6*	A favorable game situation for a shot on goal inside the penalty area, but the shot is inaccurate
7*	An accurate shot on goal from outside the penalty area, with the goalkeeper making a save involving complex coordination
8*	An accurate shot on goal within the penalty area, with the goalkeeper making a save
9*	An accurate shot on goal within the penalty area, when the goalkeeper makes the most difficult saves combined with anticipation; a penalty kick is awarded
10*	Game situation ending with a goal

Notes: 4-10* – goalscoring situations

Based on Table 1, specific coefficients of the football team's tactics, such as PAEC, SPAEC, GSS, are determined.

GSS is determined by the ratio of the sum of points for goal-scoring opportunities to the sum of points for all penetrating attacks.

A goalscoring situation is considered when the position of the ball and the placement of the players from both teams are favorable for an accurate shot on goal. (Fig. 2).
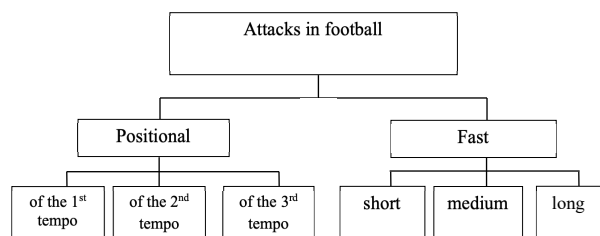

Fig. 2. Classification of attacks in football (according to Kostiukevych, et. al., 2023)

There are 1st, 2nd, and 3rd tempo positional attacks. A characteristic feature of the 1st tempo positional attack is that it is executed quickly with optimal use of the playing space. The duration of such attacks consists of 4-6 tactical moves. A 2nd tempo positional attack conditionally consists of two 1st tempo attacks (7-10 tactical moves). Long-term control of the ball (more than 10 tactical moves) characterizes the 3rd tempo positional attack.

Regarding quick attacks, they are defined by the transfer of the ball to the opponent's goal with the shortest duration and the smallest playing space. Short quick attacks start in the 3rd zone of the field, medium quick attacks begin in the 2nd zone, and long quick attacks start in the 1st zone.

The combination style of a football team's play is characterized by the coefficient of combination play CC, which is determined by the ratio of the number of ball passes in one half to a conditional number – 600.

The integral assessment is determined as the arithmetic mean of the two halves.

The control of the tactics of a football team's play is carried out based on a special protocol (Kostiukevych et. al., 2023).

Statistical Analysis

The statistical analysis of the research results was conducted using descriptive mathematical statistics. The sample was characterized by determining the arithmetic mean ($\bar{x}$), standard deviation (S), and coefficient of variation (V). The significance of differences in the indicators was assessed using the parametric Student's t-test for independent samples. Prior to this, the data's conformity to a normal distribution was verified using the Shapiro-Wilk W-test. The mathematical processing of the study results was performed using the Data Analysis package in MS Office Excel and the Statistica software. The statistical analysis of the research outcomes was carried out following the principles of descriptive statistics (Byshevets et al., 2019).

Results

During the final matches of the 2024 European Football Championship, the tactics of national football teams were recorded based on the above-described methodology. Based on the protocols of 50 halves of the teams' games, a ten-point scale was developed to assess the level of specific coefficients of the tactics of national football teams (Table 2).

The scale was designed with regard to the rule of three sigmas according to the algorithm presented below Kostiukevych et. al., 2023).

The first step is to determine of the mean value ($\bar{x}$).

The second step is to determine of the standard deviation (S).

The third step is to determine of the range (the difference between $\bar{x}+3S$ and $\bar{x}-3S$).

The fourth step is to determine of the interval between points:

$$P = \frac{(\bar{x} + 3S) - (\bar{x} - 3S)}{9} \qquad (12)$$

where: 9 is the number that corresponds to the number of columns in the scale, where the 1st column is assigned the value (–3S).

The fifth step is the formation of a ten-point scale:

1 point – value ($\bar{x}$–3S);

2 points – value ($\bar{x}$–3S) plus the value of the interval between points, and so on.

The ten-point scale of the tactics of national football teams allows for the assessment of the level of manifestation of individual specific coefficients, as well as the overall IAtg. On the other hand, graphical models of the tactics of football teams are developed based on the ten-point scale.

Analysis of the tactics of both club and national football teams allows us to assert that during a match, teams change their tactical approaches to the game in the first and second halves (Kostiukevych et al., 2020). This is primarily due to the current score of the match or a change in tactics depending on the tactics of the opposing team. Based on this, during the European Championship, the tactics of the teams were analyzed both for entire matches and individual halves (Table 3).

From Table 3, it is evident that the highest values in the structure of the IAtp are held by specific coefficients such as PAEC (0.79 ± 0.16 points); BIEC (0.74 ± 0.18 points); LPEF (0.65 ± 0.10 points); and GSS (0.62 ± 0.12 points). At the same time, HPC, CrC , and CC are sufficiently informative for characterizing the tactics of a football team. HPC reflects the team's application of high pressing, that is, ball picking and interceptions in the 3rd zone of the field. Based on the values of CrC, it is possible to determine the focus of the team's attacking actions, aiming to turn most attacks into penetrating attacks, the realization of which leads to scoring goals.

The statistical data presented in Table 4 can be considered as model benchmarks for high-level club and national teams.

One of the tasks of this study was to determine the components of the game tactics of national teams at the quarter-final, semi-final, and final stages. Table 4 presents the values of specific game tactics coefficients for the national teams in the quarter-finals of the European Championship. Practically, these are the strongest European teams, except for Belgium, Italy, and Croatia, which have high FIFA rankings but did not make it to the quarter-finals. Based on the rankings of the top three teams in the quarter-finals – Portugal (IAtg – 5.93 points) and France (IAtg – 5.63 points),

Table 2. Ten-point scale of specific performance indicators for competitive activities of national football teams

Specific Indicators	Level of Specific Performance Indicators for Competitive Activities, Points									
	Low		Below Average		Average c		Above Average		High	
	1	2	3	4	5	6	7	8	9	10
HPC	0.08	0.12	0.16	0.20	0.24	0.28	0.32	0.36	0.40	0.44
HPEF	0.24	0.30	0.36	0.44	0.52	0.60	0.68	0.76	0.84	0.92
LPEF	0.35	0.42	0.49	0.56	0.63	0.70	0.77	0.84	0.91	0.98
CBPE	0.23	0.28	0.33	0.38	0.43	0.48	0.53	0.58	0.63	0.68
BIEC	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95
PAEC	0.61	0.65	0.69	0.73	0.77	0.73	0.77	0.81	0.85	0.89
SPAEC	0.28	0.33	0.38	0.43	0.48	0.53	0.58	0.63	0.68	0.73
GSS	0.26	0.34	0.42	0.50	0.58	0.66	0.74	0.82	0.90	0.98
CrC	0.12	0.19	0.26	0.33	0.40	0.47	0.54	0.61	0.68	0.75
CC	0.29	0.33	0.37	0.41	0.45	0.49	0.53	0.57	0.61	0.65
IAtg	4.33	4.62	4.91	5.20	5.49	5.78	6.07	6.36	6.65	6.94

Table 3. Indicators of game tactics (in one half) of national teams at the 2024 European Football Championship (n = 50)

Specific indicators	Statistical indicators, points				
	$\bar{x}$	S	x_{max}	x_{min}	V, %
IAtg	5.62	0.43	6.73	4.78	7.7
HPC	0.26	0.06	0.38	0.10	23.9
HPEF	0.58	0.08	0.73	0.36	14.2
LPEF	0.65	0.10	0.82	0.35	16.1
CBPE	0.47	0.08	0.61	0.25	17.0
BIEC	0.74	0.08	0.86	0.41	10.8
PAEC	0.79	0.16	0.85	0.54	7.6
SPAEC	0.49	0.07	0.63	0.32	14.1
GSS	0.62	0.12	0.76	0.23	18.9
CrC	0.42	0.10	0.69	0.24	23.8
CC	0.47	0.06	0.63	0.34	13.7

the playing potential of these teams in upcoming high-level international competitions can be assessed. It is worth noting that neither of these teams made it to the final of the 2024 European Championship.

The average IAtg value of the national teams in the quarter-finals of the European Football Championship is 5.51 ± 0.24 points, which is the same as the average IAtg value of the teams in the quarter-finals (Table 5). This may indicate a stable level of competitive activity among the leading national teams of European countries.

It should be noted that in the semi-final matches, high pressing was used more frequently compared to the quarter-final matches, as indicated by the increase in HPC from 0.22 ± 0.08 to 0.28 ± 0.06 (21.4 %). This means that the teams participating in the semi-final matches used a more aggressive method of playing.

Choosing an active method of play, i.e., building the game based on playmaking tactics, allowed the national team of Spain to win the final match and become the champion of the 2024 European Football Championship. The IAtg of the

Table 4. Indicators of game tactics of national teams in the quarter-finals of the European Football Championship

Matches	Score *	Specific coefficients, points										IAtg	Ranking
		HPC	HPEF	LPEF	CBPE	BIEC	PAEC	SPAEC	GSS	CrC	CC		
Germany	1	0.20	0.67	0.71	0.41	0.84	0.83	0.46	0.67	0.49	0.47	5.75	2
Spain	2	0.24	0.36	0.72	0.59	0.74	0.83	0.54	0.66	0.29	0.47	5.44	5.5
England	1	0.32	0.50	0.62	0.47	0.69	0.79	0.28	0.45	0.48	0.52	5.12	8
Switzerland	1	0.23	0.36	0.72	0.38	0.74	0.81	0.37	0.77	0.39	0.45	5.22	7
France	0	0.31	0.59	0.69	0.49	0.77	0.81	0.41	0.65	0.45	0.46	5.63	3
Portugal	0	0.33	0.71	0.74	0.56	0.78	0.81	0.44	0.42	0.58	0.56	5.93	1
Netherlands	1	0.19	0.53	0.81	0.39	0.69	0.83	0.38	0.78	0.36	0.48	5.44	5.5
Turkey	0	0.11	0.77	0.73	0.34	0.56	0.84	0.59	0.75	0.43	0.45	5.52	4
$\bar{x}$		0.22	0.56	0.72	0.45	0.73	0.82	0.49	0.64	0.43	0.48	5.51	
S		0.08	0.14	0.07	0.09	0.09	0.02	0.11	0.12	0.10	0.04	0.28	
V, %		35.1	25.7	9.3	19.5	13.5	2.1	22.2	19.2	23.7	8.0	5.2	

Notes: * – score of regular game time.

Table 5. Indicators of game tactics of national teams in the semi-finals of the 2024 European Football Championship

Matches	Score *	Specific coefficients, points										IAtg
		HPC	HPEF	LPEF	CBPE	BIEC	PAEC	SPAEC	GSS	CrC	CC	
England	2	0.35	0.51	0.69	0.42	0.78	0.82	0.39	0.74	0.39	0.59	5.68
Netherlands	1	0.24	0.67	0.69	0.45	0.77	0.79	0.50	0.78	0.30	0.39	5.58
Spain	2	0.22	0.65	0.70	0.49	0.81	0.76	0.46	0.62	0.30	0.57	5.58
France	1	0.30	0.37	0.69	0.46	0.69	0.68	0.55	0.44	0.57	0.44	5.19
$\bar{x}$		0.28	0.55	0.69	0.46	0.76	0.76	0.48	0.65	0.39	0.49	5.51
S		0.06	0.14	0.01	0.03	0.06	0.07	0.04	0.17	0.13	0.09	0.24
V, %		22.8	24.9	0.7	7.4	7.8	9.1	9.2	25.7	34.1	20.1	4.4

Notes: * – score of regular game time

Table 6. Indicators of game tactics of national teams in the final match of the 2024 European Football Championship

Matches	Half Time	Score*	Specific coefficients, points										IAtg
			HPC	HPEF	LPEF	CBPE	BIEC	PAEC	SPAEC	GSS	CrC	CC	
Spain	1	0	0.24	0.50	0.71	0.30	0.88	0.82	0.32	0.71	0.46	0.46	5.40
England		0	0.21	0.56	0.89	0.50	0.80	0.74	0.50	0.72	0.21	0.38	5.51
Spain	2	2	0.29	0.74	0.67	0.41	0.87	0.89	0.70	0.86	0.48	0.48	6.39
England		1	0.17	0.33	0.56	0.47	0.65	0.85	0.27	0.87	0.41	0.34	4.92
Average game data													
Spain	-	2	0.27	0.45	0.69	0.36	0.88	0.86	0.51	0.79	0.47	0.47	5.75
England	-	1	0.19	0.45	0.73	0.49	0.73	0.80	0.39	0.79	0.31	0.39	5.27
Difference, %			+29.6	0	-5.5	-26.5	+17.0	+6.9	+23.5	0	+34.0	+17.0	+8.3

Notes: * – score of regular game time

Spanish national team was 5.75 points, which is 0.48 points (8.3 %) higher than that of the England national team (Table 6).

When considering the values of individual specific game tactics coefficients of the national teams in the final match of the 2024 European Football Championship, the most significant difference in favor of the Spanish team is observed in the values of HPC – 0.08 points (29.6 %), SPAEC – 0.12 points (23.5 %), CrC – 0.16 points (34.0 %), and CC – 0.08 points (17.0 %).

The game tactics of the Spanish national team throughout the tournament, including the final match, were based on active use of high pressing, a high level of execution of penetrating attacks, and the creative and combinatorial play.

A example of the tactical advantage of the Spanish national team's game model over the English national team's game model in the final match of the 2024 European Football Championship can be illustrated by Figure 3.

Therefore, the presented research results on the issue of control and analysis of the game tactics of national football teams are relevant to the needs of the theory and practice of high-performance sports.

Discussion

Discussion questions related to any research are primarily determined by the relevance of the problem, scientific inquiry, and the interpretation of research results concerning the identified problem.
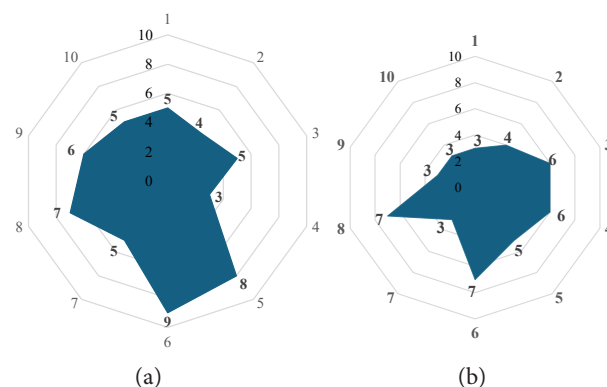

Fig. 3. Models of game tactics in the final match of the 2024 European Football Championship of the national teams of Spain (a) and England (b). Notes: 1 – HPC; 2 – HPEF; 3 – LPEF; 4 – CBPE; 5 – BIEC; 6 – PAEC; 7 – SPAEC; 8 – GSS; 9 – CrC; 10 – CC

The chosen topic of scientific inquiry is undoubtedly relevant to the development of team sports at the present stage, as confirmed by previous studies by domestic (Kostiukevych et al., 2019; Bezmylov et al., 2020; Mitova & Shynkaruk, 2022) and foreign scientists (Sarmento et al., 2014; Aguinj et al., 2020; Simons, 2019).

This research complements the theoretical foundations of monitoring competitive activities of athletes in team sports (Doroshenko, et al., 2019; Mitova, et al., 2023), particularly regarding the analysis of competitive activities in these sports

based on the integral assessment of competitive activities (Shynkaruk et al., 2020; Konnov, 2021; Kostiukevych et al., 2022).

The developed methodology for monitoring and analyzing the tactics of national football teams allows for increased efficiency in managing players' competitive activities both within the framework of the respective tournament and directly in the match. This is crucial for the operational correction of footballers' competitive activities (Perepelytsia, 2021; Kostiukevych, et al., 2023).

The structure of the integral assessment of a football team's game tactics consists of various components that characterize the technical and tactical activities of the team in the phases of possession and picking. Comparing specific indicators of a football team's game tactics over a given preparation period allows for adjustments in management interventions in the training and competitive processes of high-level footballers.

As for the interpretation of the research results, they are presented in the article according to the research objective using a specific algorithm: developing the research methodology – conducting the research – analyzing the research results.

It should be noted that an important component of the interpretation of the research results is the development of a ten-point scale for assessing the level of game tactics of national football teams. Based on this scale, the level of manifestation of individual tactical components of the team's game is determined, and graphic models of the game are formed.

Overall, the conducted research provided new knowledge regarding the management of the competitive process of national football teams.

Conclusions

Modern trends in football development require new methodological approaches to control and analyze the competitive activities of high-level club and national football teams. One such approach is the integral assessment of the team's competitive activities, taking into account the main aspects of game tactics.

The peculiarities of the competitive activity of the national teams are determined by the interaction of the players during defensive and offensive actions. The criteria for such interactions are specific indicators of the integral assessment of team game tactics. The average values of these indicators in one half are (in points): ball pickup phase – 0.26 ± 0.06 (HPC), 0.58 ± 0.08 (HPEF), 0.65 ± 0.10 (LPEF), 0.47 ± 0.08 (CBPE), 0.74 ± 0.08 (BIEC); ball possession phase – 0.79 ± 0.16 (PAEC), 0.49 ± 0.07 (SPAEC), 0.62 ± 0.12 (GSS), 0.42 ± 0.10 (CrC), 0.47 ± 0.06 (CC). The integral assessment of the teams' game tactics corresponds to a value of 5.62 ± 0.43 points.

A ten-point scale for assessing the level of game tactics of national football teams has been developed, based on which a targeted analysis of the manifestation of tactical components of the game in the phases of ball picking and possession is carried out.

The prospect of further research on the chosen problem will be determined by the search for ways to comprehensively control the competitive activities of club and national football teams based on integral and expert assessments.

Conventional abbreviations

HPC – high pressing coefficient;
HPEF – high pressing efficiency factor;
LPEF – low pressing efficiency factor;
CBPE – coefficient of ball picking efficiency;
BIEC – ball interceptions efficiency coefficient during the game;
PAEC – penetration attack effectiveness coefficient;
SPAEC – successful penetration attack efficiency coefficient;
GSS – goalscoring situation coefficient;
CrC – creativity coefficient;
CC – combinability coefficient;
IAtg – integral assessment of game tactics

Conflict of interests

The authors state that there is no conflict of interests.

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Інтегральна оцінка тактики гри національних збірних футбольних команд

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Авторський вклад: A – дизайн дослідження; B – збір даних; C – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 9 с., 6 табл., 3 рис., 32 джерела.

Мета – визначити особливості змагальної діяльності національних збірних футбольних команд на основі інтегральної оцінки тактики гри.

Матеріал і методи. Дослідження було проведено під час Чемпіонату Європи з футболу 2024 року. Змагальна діяльність національних футбольних команд європейських країн (Німеччина, Іспанія, Англія, Швейцарія, Франція, Португалія, Нідерланди, Туреччина) була проаналізована з акцентом на тактику гри у 50 таймах. Методи: теоретичний аналіз літературних джерел; педагогічне спостереження за змагальною діяльністю; аналіз відеоматеріалів змагальної діяльності; методи математичної статистики. Статистичний аналіз результатів дослідження був проведений за допомогою описової математичної статистики. Характеристики вибірки визначалися за допомогою обчислення середнього арифметичного ($\bar{x}$), стандартного відхилення (S) та коефіцієнта варіації (V). Значущість відмінностей у показниках оцінювалася за допомогою параметричного t-критерію Стьюдента для незалежних вибірок. Перед цим відповідність даних нормальному розподілу перевірялася за допомогою тесту Шапіро-Уілка.

Результати. Розроблено методику інтегральної оцінки тактики національних футбольних команд. Інтегральна оцінка тактики команди складається з 10 специфічних коефіцієнтів, які відображають основні компоненти змагальної діяльності футболістів у фазах володіння м'ячем та відбору м'яча. Було проаналізовано змагальну діяльність у 50 таймах Чемпіонату Європи з футболу 2024 року. Середнє значення інтегральної оцінки тактики національних футбольних команд становило 5,62 ± 0,43 бала. Результати показали значні тактичні відмінності між командами, причому використання Іспанією високого пресингу та креативної гри сприяло їхній перемозі в чемпіонаті. Було розроблено десятибальну шкалу для оцінки тактики національних футбольних команд, на основі якої інтерпретується рівень змагальної діяльності.

Висновок. Розроблена методика моніторингу та аналізу тактики гри футбольних команд дозволяє цілеспрямовано здійснювати управлінські впливи на змагальну діяльність футболістів на оперативному, поточному та етапному рівнях.

Ключові слова: футбол, національні команди, змагальна діяльність, тактика гри, інтегральна оцінка, методика, шкала, моніторинг.

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