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Original Article

Operationalization of tactical thinking of football players by main game roles

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Abstract:
The article considers the main characteristics of the types of tactical thinking of football players. The aim of the article is empirical research and theoretical substantiation the operational elements of tactical thinking of football players in the main game roles. Differences in the main indicators of tactical thinking of football players of different game roles have been determined. Participants of the research are: 72 football players were involved as subjects. The footballers represented four teams from different regions of Ukraine: "Naftovyk-Okhtyrka" Football Club (Okhtyrka, Ukraine), "TSK Agribusiness" Football Club (Romny, Ukraine), "Romny" Football Club (Romny, Ukraine), "Crystal Football Club" (Kherson, Ukraine). The following psychodiagnostic techniques with experimental scales were used: "Study of the profile of athletes' thinking", "Prediction ability" by L. Regush. Empirical results of the research of tactical thinking are presented. According to the results of empirical research, we can state there are significant differences between the answers of football players of different game roles. The level of tactical thinking of attackers is much higher than that of other players. Defenders differ significantly from goalkeepers by more pronounced general predictability (t = 2.08) and flexibility (t = 4.51); from attackers by less analyticity (t = 2.72) and flexibility (t = 2.61). Midfielders have significantly more developed awareness (t = 2.76) and profoundness (t = 4.85) than goalkeepers, but, at the same time, less developed than the attacker's analyticity (t = 5.05), flexibility (t = 5.2), profoundness t = 5.2) and prospectiveness (t = 2.67). The attackers are significantly ahead of the defenders by the indicators of analyticity (t = 2.72) and flexibility (t = 2.61). Attackers and goalkeepers differ the most among the studied game roles, namely concerning general predictability (t = 3.28), analyticity (t = 5.67), flexibility (t = 5.26) and prospectiveness (t = 3.07). It has been found that the level of manifestation of the main properties of tactical thinking of defense is significantly lower than in other game roles.
Key words: tactical training, tactical and technical actions, game role, predictability, flexibility, prospectiveness..

Introduction

At the present stage, football is a sport in which there is a need for maximum realization of technical and tactical capabilities of football players in conditions of high game and motor activity. This requires a consideration of morphological, functional indicators and differences in motor activity of representatives of different game roles (Lebediev et al, 2019; 2020); study of the general and specific level of physical fitness (Strykalenko et al, 2021), in particular, speed and strength training (Bolotin et al, 2017a, Marques et. al, 2011; Kozina et al, 2019), as well as the development of dynamic tools for assessing tactical-oriented game test situations (Memmert, 2010). In recent years, innovative trends aimed at changing the structure of the game have become noticeable in youth football. These trends are characterized by a significant expansion of the zones of functional action of football players, they are aimed at universalization and interchangeability of players. The number and quality of improvised actions of football players has increased due to the due to the increase of pre-prepared programs of coalition tactical actions (Schcerbak, 2016).

Trends in the development of modern football show that the tactical training of players is becoming one of the main among other types of training. It determines the target orientation and content components of the work on physical and technical training of football players. Tactical training helps to operationalize the functional responsibilities of players in the team, helps in choosing the system of attack and defense, specifies the parameters of the models of teams and players in competitive activities (Shestakov, M. & Shestakov, I., 2001). In the scientific literature it has been established that the lack of tactical training at the initial stage and its lack at the previous basic stage lead to significant losses in the formation of tactical thinking (Frolova et al., 2007). Footballers begin to master tactical tasks quite mature young men, at the stage of special basic training. At this time, athletes have mastered the stable technique, its application is hampered by inability to combine it with tactical actions (Polishkis et al, 1986).

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Thus, the loss of the sensitive period or delay negatively affects the overall result of the formation of tactical thinking of athletes. Gaming activity involves the appropriate conduct of competitive struggle, i.e. it has the connection with tactics. Tactics are usually understood as the appropriate conduct of competitive struggle by an individual subject (individual tactics) and the team as a whole (team tactics). The player must be tactically literate, on the one hand, in order to realize his physical, technical, psycho-emotional, theoretical potential effectively, and on the other hand, to complicate the actions of the opponent.

E. Ilyin (2008) assigns the main role to tactical thinking, considering mental processes in order of their importance in mastering tactical skills. The term "tactical thinking", described by G. Gagaeva (1969) is used in sport practice as a search for ways to implement pre-planned tactical plans with a forecast of changes in the tactical scheme of the game in the nearest future. The concept of tactical thinking has been considered in many scientific papers and made it possible to identify different approaches to its interpretation. Tactical thinking is considered as a high level of operational, game, situational thinking based on the study of Z. Kozina et al. (2019), M. Polishkis et al. (1986), L. Frolova et al. (2007). It is characterized by the ability to plan activities, to anticipate the development of game situations, to respond not to the last action of the opponent, but to analyze the logical chain of activities.

In modern interpretation, the tactical thinking of players is defined as their ability to quickly assess and effectively resolve game situations in the implementation of numerous tactical tasks of the team. Tactical thinking of the athlete is characterized by the fact that it proceeds inseparably from motor actions and direct perception of visual images and phenomena in a rigid time limit, in the process of intense physical stress, during various experiences and taking into account the probability of expected events (Shestakov et al., 2001).

Players of the team implement the general tactics of the game and perform their individual functions during the match. It is the most important to consider when determining a possible game role, as usually one player is better at creative actions, the other is better at destructive; one athlete shows himself more as an organizer, the second – as a dispatcher, the third – as a lateral, the fourth – as a winger. That is, each player is inclined to a certain role. Obviously, the accurate and earliest identification of a football player with a playing role will significantly increase the efficiency of his playing activities.

Thus, the trends in modern football indicate the need to find ways to optimize the training process and increase the efficiency of management of football players, in particular by taking into account the indicators of tactical thinking.

Hypothesis. We consider that the research of the operationalization of tactical thinking of football players on the main game roles will provide significant empirical results, which should be used in the tactical training of athletes in team sports.

Purpose. The purpose of the research is to empirically investigate and theoretically substantiate the clarified operational elements of tactical thinking of football players by their main game roles.

Material and methods

Methodology. Methodological statements of research with significant differences is a proven set of psychodiagnostic tools that have been used in such studies in sports psychology with the establishment of significant differences is a proven set of psychodiagnostic tools that have been used in such studies in sports psychology (Blynova et al., 2020; Shalar et al., 2019). The proposed research of the operationalization of tactical thinking of football players by the main game role is based on a number of key methodological patterns related to self-regulatory personality abilities (Popovych et al., 2021a; 2021d; 2021e; 2021f), the psychological semantic parameters of the respondents' adaptability (Blynova et al., 2019), nervous-mental stability (Pshenychna et al., 2019b), stress resistance of the athlete's personality (Cheban et al., 2020; Kuslenko et al., 2017; Prontenko et al., 2017a; 2017b; 2019). The introduced methodology has been tested in researches of self-efficacy of future athletes (Popovych et al., 2020c; 2021b) and in measurements of motivation of professional development of a personality (Popovych et al., 2019a).

In the context of our study, it is of scientific interest to build an algorithm for studying mental states of expectations in sports (Popovych et al., 2019b; 2020a; 2020b; 2021c), educational and professional (Kobets et al., 2021a; 2021b; Popovych & Blynova, 2019a; 2019b) and other related human activities accompanied by physical and mental overload (Mamenko et al., 2022; Nosov et al., 2020a; 2020b; 2021a; 2021b; Popovych et al., 2019c; Solovey et al., 2020; Zinchenko et al., 2020; 2021; 2022). Interesting in the context of the research topic is the relationship of different game roles with the individual psychological characteristics of athletes (Pshenychna et al., 2019a) and the characteristics of tactical thinking (Shcherbak, 2016).

The analyzed empirical research, and the initial methodological principles proposed by us contributed to the qualitative selection of relevant psychodiagnostic and statistical methods for measuring empirical facts. The proposed logic is statistically confirmed. The research of the operationalization of tactical thinking of football players by the main game role allowed obtaining significant scientific facts.

Participants. 72 football players were involved as subjects of the research. Footballers represented four teams from different regions of Ukraine: Football Club "Naftovyk-Okhtyrka" (Okhtyrka, Ukraine), Football

Club "TSK Agribusiness" (Romny, Ukraine), Football Club "Romny" (Romny, Ukraine), Football Club "Crystal" Kherson, Ukraine). The average age of respondents was 23.7 years.

Procedures and Instruments.

During the study we have used the following psychodiagnostic methods: "Study of the profile of athletes' thinking" (Hanzen et al., 2001); method "Prediction ability" (Regush, 2008). The method "Study of the profile of athletes' thinking" (Hanzen et al., 2001) allows to determine the psychological semantic parameters of thinking and creativity that are inherent to athletes. The profile of thinking is built according to certain parameters and level of creativity. The method contains seventy-five questions divided into five scales: Subject Thinking (SbT), Symbolic Thinking (SmT), Logical Thinking (LM), Visual Thinking (VsT) and Creativity (Cr). The α-Cronbach index was α=.763.

The "Prediction ability" test (Regush, 2008) allows to determine the prognostic ability through the characterization of the qualities of cognitive mental processes (sensory, mental, etc.). These processes form the core of prognostic ability. The psychodiagnostic test has twenty statements, which are divided into six scales: general predictability (GP), analyticity (A), awareness (Aw), flexibility (F), Prospectiveness (Pr) and Profoundness (Pf). The α-Cronbach index has been determined at the level of α = .865. We state that the obtained α-Cronbach data are of an acceptable level of .7-.9.

Organization of Research. The first stage of the research by the main roles of football players has been carried out during the autumn of 2020, after the official restoration of the Ukrainian football championship. The main game roles include: goalkeeper, defender, midfielder and attacker. We did not introduce more detailed differentiation in these game roles to establish significant differences in tactical thinking. If a player of the team did not have a stable game role, then the dominant type of role was established by the time spent on the football field. If the dominant type was difficult to establish, the data of such respondents were removed. This approach allowed to ensure the validity and reliability of empirical research. The reliability and openness of the respondents' answers was ensured by the voluntary participation of football players in the research and the confidentiality of the data obtained. The empirical study was performed in compliance with the Ethical Standards of Helsinki Declaration (2013).

Statistical Analysis. Statistical processing of empirical data and graphical presentation of results has been carried out using statistical programs "SPSS" v. 26.0 and "MS Excel". Student's t-test correlation coefficient has been used to determine the significance of the relationships. Differences between psychological semantic parameters, which were set at the level of $p \leq .05$ and $p \leq .01$ were considered statistically significant.

Results and discussion

Based on the theoretical provisions, and in accordance with the tasks defined at the beginning of our work, research has been conducted and an initial analysis of the data has been performed. Frequency characteristics on the scale "Subject Thinking" (SbT) by the method "Study of the profile of athletes' thinking" are given (Hanzen et al., 2001). Frequency characteristics allowed to determine the levels of subject thinking of football players by their main game role (Tabl. 1).

Table 1. Frequency characteristics and levels of subject thinking of football players of different game roles (n = 72)

Game roles	Subject Thinking (SbT)				
	M*	SD	Levels (%)		
			H	M	L
Goalkeepers	8.22	3.99	33.3	44.4	22.3
Defenders	6.10	2.57	15.0	60.0	25.0
Attackers	12.90	4.56	81.8	9.1	9.1
Midfielders	9.47	6.07	52.3	14.3	33.4

Note: M* – arithmetic mean; SD – standard deviation; levels: H – high; M – medium; L – low.

Thus, the following results were obtained: among the representatives of the four game roles, subject thinking is the most developed in attackers (M*=12.90; H=81.8%) and midfielders (M*=9.47; H=52.3%). This can be explained by the greater need to transform information in time and space through actions and sequential operations with the ball. Indicators of subject thinking of goalkeepers and defenders are mostly of medium level (M*=8.22; M=44.4%, 6.10 and 60.0% respectively).

Goalkeepers and defenders specialize in performing defensive functions (personal, zonal or goal defense). Therefore, compared to attackers and midfielders, they do not have such an inseparable connection with the ball. The lowest percentages were found for goalkeepers (M*=8.22; L=22.3%) and defenders (M*=12.90; L=9.1%).

Frequency characteristics on the scale "Symbolic Thinking" (SmT) by the method "Study of the profile of athletes' thinking" are given (Hanzen et al., 2001). Frequency characteristics allowed to determine the levels of symbolic thinking of football players by their main game role (Tabl. 2).

Table 2. Frequency characteristics and levels of symbolic thinking of football players of different game roles (n=72)

Game roles	Symbolic Thinking (SmT)				
	M*	SD	Levels (%)		
			H	M	L
Goalkeepers	6.33	2.21	0.0	77.7	22.3
Defenders	6.95	4.67	15.0	60.0	25.0
Attackers	9.31	4.70	36.36	54.54	9.1
Midfielders	4.9	2.77	0.0	66.7	33.3

Note: M* – arithmetic mean; SD – standard deviation; levels: H – high; M – medium; L – low.

The average level of symbolic thinking prevails in most players of all game roles, which indicates the unity of their intellectual, behavioral and emotional components of activity. Therefore, their assimilation of information occurs mainly through symbols. Defenders (M*=6.95; H=15.0%) and attackers (M*=9.31; H=36.36%) have a high level of symbolic thinking.

The process of transforming an object into a symbolic image by the representatives of these game roles is not the result of simple interaction, but a productive, creative process, as a result of which there is a transformation of the objective situation. The largest number of athletes with a low level of symbolic thinking is among midfielders (M*=4.9; L=33.3%). Therefore, they are not characterized by productive activities to form the content of the symbolic image of the game situation.

Summarizing the results, we can conclude that most of the respondents have a fairly high score on each of these scales. Forwards and midfielders have the highest level of subject thinking, which is an integral part of the success of the athlete's playing activities. Symbolic thinking detected at a high level in defense and attacking indicating their ability to convert obtained information using the rules of a manipulation of symbols.

Frequency characteristics on the scale "Logical Thinking" (LgT) by the method "Study of the profile of athletes' thinking" are given (Hanzen et al., 2001). Frequency characteristics allowed to determine the levels of logical thinking of football players by their main game role (Tabl. 3).

Table 3. Frequency characteristics and levels of logical thinking of football players of different game roles (n = 72)

Game roles	Logical Thinking (LgT)				
	M*	SD	Levels (%)		
			H	M	L
Goalkeepers	6.66	6.61	33.3	11.1	55.6
Defenders	6.55	2.33	-	75.0	25.0
Attackers	8.86	4.29	31.8	68.2	-
Midfielders	7.9	1.94	14.3	66.7	19.0

Note: M* – arithmetic mean; SD – standard deviation; levels: H – high; M – medium; L – low.

The analysis of the received data shows that (M*=6.66; L=55.6%) of goalkeepers have the least developed indicator of logical thinking. The explanation for this is the fact that the representatives of this game role have a need only to develop tactical actions in defense, as other players have it in the development of such actions in attack. The majority of defenders (M*=6.55; M=75.0%), attackers (M*=8.86; M=68.2%), midfielders (M*=7.9; M=66.7%) showed an average level of logical thinking.

This allows us to say that the representatives of these game roles are characterized by the ability to determine the general patterns of game situations, solve problems, build theories, to find justification for many situations and phenomena, to build their judgments competently, to highlight the important, to separate it from the secondary, to find relationships and draw conclusions.

Frequency characteristics on the scale "Visual Thinking" (VsT) by the method "Study of the profile of athletes' thinking" are given (Hanzen et al., 2001). Frequency characteristics allowed to determine the levels of visual thinking of football players by their main game role (Tabl. 4).

Table 4. Frequency characteristics and levels of visual thinking of football players of different game roles (n = 72)

Game roles	Visual Thinking (VsT)				
	M*	SD	Levels (%)		
			H	M	L
Goalkeepers	5.55	1.66	-	55.6	44.4
Defenders	7.8	3.20	15.0	75.0	10.0
Attackers	12.0	4.35	68.2	31.8	-
Midfielders	9.61	3.22	33.3	66.7	-

Note: M* – arithmetic mean; SD – standard deviation; levels: H – high; M – medium; L – low.

Representatives of all game roles, except attackers (M*=12.0; H=68.2%) are characterized mainly by the average level of development of visual thinking, in particular (M*=7.8; M=75.0%) of defenders, (M*=9.61; M=66.7%) of midfielders, (M*=5.55; M=55.6%) of goalkeepers. Thus, we can state that almost all respondents tend to transform the obtained information through actions with images and imaginary pictures. The largest number of players with a high level of visual thinking among the attackers, so the representatives of this game role most fully reproduce the variety of characteristics of the object, and can also establish unusual combinations between objects and their properties.

Frequency characteristics on the scale "Creativity" (Cr) by the method "Study of the profile of athletes' thinking" are given (Hanzen et al., 2001). Frequency characteristics allowed to determine the levels of creativity of football players by their main game role (Tabl. 5).

Table 5. Frequency characteristics and levels of creativity of football players of different game roles (n = 72)

Game roles	Creativity (Cr)				
	M*	SD	Levels (%)		
			H	M	L
Goalkeepers	9.6	3.59	33.3	55.6	11.1
Defenders	9.85	2.28	40.0	60.0	-
Attackers	10.45	3.05	40.9	59.1	-
Midfielders	10.71	4.49	52.4	47.6	-

Note: M* – arithmetic mean; SD – standard deviation; levels: H – high; M – medium; L – low.

Among the representatives of all game roles, the midfielders have the highest rate of creativity (M*=10.71; H=52.4%). These players are capable of constructive, non-standard and creative solutions to complex problems. At the same time, all respondents' creativity is developed mainly at the average level. Low creativity was found only in goalkeepers.

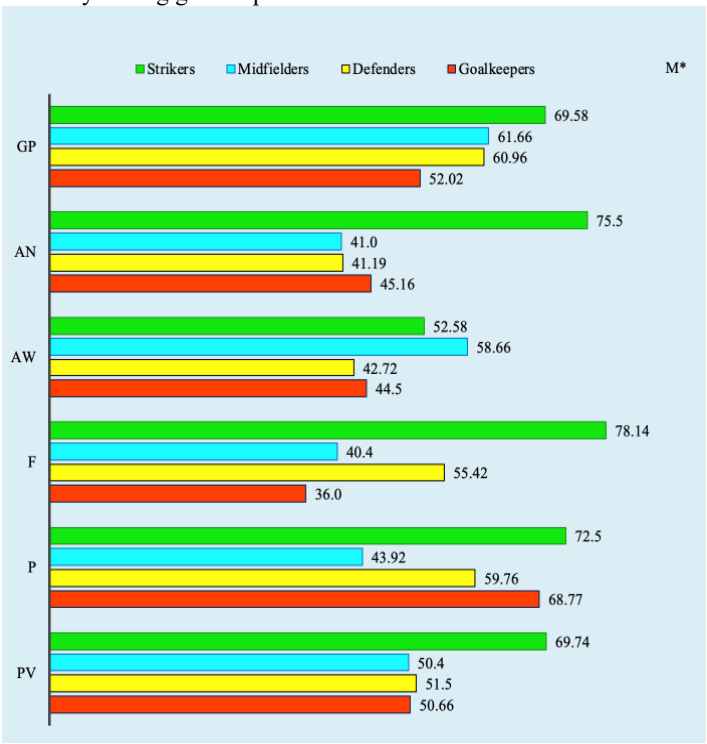
The research of the predictive capability of football players has been carried out according to the method "Prediction ability" (Regush, 2008). We have studied the first level of the predictive capability, namely cognitive: analyticity, awareness, flexibility, Prospectiveness, profoundness. The diagram of differences between the studied game roles of football players is clearly shown (Fig. 1).

Analysis of goalkeepers' indicators. The analysis of the results obtained has showed an average level of development of analyticity among goalkeepers (M*=10.71; M=50.0%). It means that the representatives of this game role are able to find causal links between phenomena and most actions within game situations. Based on the results obtained by the "Awareness" indicator, we can conclude that the low level is present in half of the respondents. It means that these players can be severely distracted by past or future events without focusing on the present. A high level is a characteristic of (M*=44.5; H=16.6%) goalkeepers, which indicates a high ability to orientate in the surrounding reality. An analysis of the results obtained during the research showed that most goalkeepers (M*=36.0; M=83.04%) have an average level of ability to react quickly, it is easy to find new different solutions to any problem.

A high level of flexibility is characteristic of some representatives of this role (M*=36.0; H=16.6%). It allows us to state that they have the ability to freely dispose of available resources (material, information), identify patterns, make associative connections, be able to think and act in a wide range of opportunities. Most goalkeepers (M*=52.02; M=83.4%) have an average level of "Prospectiveness", so they are characterized by the ability to construct any segment of the future, with different distances from the present. According to our data, the average and high level of profoundness of thinking is equally characteristic (M*=68.77; H=50.0%; M=50.0%) of goalkeepers.

These respondents can reflect fundamentals of objects and phenomena of the world, substantiate opinions and establish their truth or falsity. Indicators of low level were not found. The average level of

"General predictability was found in all studied goalkeepers (M*=52.02; M=100.0%), i. e. representatives of this game role are able to solve various types of prognostic tasks. There are no indicators of a low and high levels of general predictability among goalkeepers.



Note: GP – General predictability; AN – Analyticity; AW – Awareness; F – Flexibility; P – Profoundness; PV – Prospectiveness; M* – arithmetic mean;

Figure I. Diagram of differences between goalkeepers, defenders; attackers, midfielders according to the researched parameters of L. Regush method

Analysis of defenders' indicators. Consider the indicators of the level of predictive capability of defenders. It was found that components of defenders' predictive capability (except profoundness) are expressed at the average level. According to the "Analyticity" scale, the indicators of average (M*=41.19; M=50%) and high (M*=41.19; H=12,5%) level prevail, so defenders are able to analyze the assessment of each option separately, its pros and cons, use logic in analyzing information and making decisions. More than a third of the researched defenders have a low level of awareness (M*=42.72; L=35,7%), these players have a low ability to control their thoughts. A high level of awareness was found in (M*=42.72; H=12.5%) of defenders. They have such traits as: confidence, determination, openness. "Awareness" allows them to feel a positive emotional state, regardless of the circumstances. The lack of low-level indicators and the predominance of medium-level indicators (M*=55.42; M=87.5%) on the "Flexibility" scale indicates the ability of defenders to make the right choice, find non-standard solutions in difficult situations, as well as be able to resolve their contradictions and internal conflicts. According to the "Prospectiveness" scale, the majority of defenders (M*=51.5; M=50.0%) are characterized by an average level of prospects and the ability to imagine their own future. More than half (M*=59.76; H=62.5%) of the researched defenders have high scores on the "Profoundness" scale (P), they have the ability to substantiate their opinions, to establish their falsity or truth, using other considerations. The average level of profoundness is typical for (M*=59.76; M=12.5%) of defenders and the low level for (M*=59.76; L=25.0%) of representatives of this game role. The average level of "General predictability" is found among (M*=60.96; M=62.5%) of defenders. Respondents have psychological characteristics that help them to carry out successful prognostic activities as well as athletes with a high level M*=60.96; H=37.5%).

Analysis of attackers' indicators. Medium and high level analyticity indicators were equally distributed (M*=75.5; M=50.0%; H=50.0%). Therefore, we can claim the interviewed attackers are able to break down information into individual components and make an in-depth comprehensive analysis of its components. No low levels were detected. Since the majority of attackers (M*=52.58; M=50.0%) have an average level of awareness, we can state that the representatives of this game role are not distracted by the events of the past or future and at the same time attach the main importance to the present. (M*=78.14; H=50.0%) of attackers have a high level of flexibility, so they can predict not only all possible solutions of a problem, but also its consequences. The average level of flexibility is (M*=78.14; M=30.0%) of respondents. On the scale of "Prospectiveness", more than half of the attackers (M*=69.74; H=60.0%) have a high level, so these players

have a clear idea of their future and themselves in it, can easily predict possible game situations. The ability of attackers to clearly express their opinions is evidenced by indicators on the "Profoundness" scale: (M*=72.5; M=50.0%) of the middle level and 50.0% of the high level. No low-level indicators were found. Attackers are able to carry out quite successful prognostic activities. This is evidenced by the average level of "General predictability" in most representatives of this game role.

Analysis of midfielders' indicators. According to the indicator "analyticity", the majority of midfielders (M*=41.0; M=66.7%) is characterized by an average level of development. Therefore, the representatives of this game role can more efficiently and quickly solve complex problems and draw correct logical conclusions. Indicators of "awareness" of these players indicate the high development of their actions, skills and habits in their own lives. The results were distributed as follows: the average level is (M*=58.66; M = 66.7%) and the high level is observed among (M*=58.66; H = 33.4%) players. The search for new ways to solve problems and issues, the development of the ability to think about what is happening here and now, today is characterized by a high ability to flexibility of thinking and is observed at a high level of (M* =40.4; H = 66.7%) respondents and at an average level of a third of players. Indicators of "Prospectiveness" were distributed equally between the values of medium and high levels and amounted to (M*=50.4; M=50.0%; H=50.0%) each. It means that players see their future, achieve their goals and make plans now, rather than postponing them. There are no indicators of a low level of prospectiveness. We obtained the highest percentage results on a scale of "Profoundness" within the average level, which allows us to conclude that all interviewed midfielders logically verify the truth of the messages and arguments. Among the indicators of "General predictability" we can see that the highest values are within the average level (M*=61.66; M=66.7%). This testifies to the rather good results of the ability to make predictions both for the future and for the present. There are no low indicators.

Student's t-test was used to establish a statistical difference between the researched groups (Table 6).

Table 6. Differences between football players by the arithmetic mean of the studied parameters

Scale	**Goalkeepers (n=9)**	**Defenders (n=20)**	***t-criterion***	**Level of significance**
General predictability	52.02	60.96	2.08	p < .05
Analyticity	45.16.	41.19	0.92	–
Awareness	44.50	42.72	0.41	–
Flexibility	36.0	55.42	4.51	p < .05
Profoundness	68.77	59.76	1.45	–
Prospectiveness	50.66	51.50	0.2	–
Scale	**Goalkeepers (n=9)**	**Midfielders (n=21)**	***t-criterion***	**Level of significance**
General predictability	52.02	61.66	1.88	–
Analyticity	45.16.	41.0	0.81	–
Awareness	44.50	58.66	2.76	p < .05
Flexibility	36.0	40.4	0.86	–
Profoundness	68.77	43.92	4.85	p < .05
Prospectiveness	50.66	50.4	0.05	–
Scale	**Goalkeepers (n=9)**	**Attackers (n=22)**	***t-criterion***	**Level of significance**
General predictability	52.02	69.58	3.28	p < .05
Analyticity	45.16.	75.5	5.67	p < .05
Awareness	44.50	52.58	1.51	–
Flexibility	36.0	78.14	5.26	p < .05
Profoundness	68.77	75.5	1.08	–
Prospectiveness	50.66	69.74	3.07	p < .05
Scale	**Defenders (n=20)**	**Midfielders (n=21)**	***t-criterion***	**Level of significance**
General predictability	60.96	61.66	0.13	–
Analyticity	41.19	41.0	0.04	–
Awareness	42.72	58.66	2.02	–
Flexibility	55.42	40.4	1.90	–
Profoundness	59.76	43.92	2.01	–
Prospectiveness	51.50	50.4	0.21	–
Scale	**Defenders (n=20)**	**Attackers (n=22)**	***t-criterion***	**Level of significance**
General predictability	60.96	69.58	1.98	–
Analyticity	41.19	75.5	2.72	p < .05
Awareness	42.72	52.58	1.91	–
Flexibility	55.42	78.14	2.61	p < .01
Profoundness	59.76	75.5	1.46	–
Prospectiveness	51.50	69.74	1.84	–
Scale	**Midfielders (n=21)**	**Attackers (n=22)**	***t-criterion***	**Level of significance**
General predictability	61.66	69.58	0.57	–
Analyticity	41.0	75.5	5.05	p < .05
Awareness	58.66	52.58	0.89	–
Flexibility	40.4	78.14	5.2	p < .05
Profoundness	43.92	75.5	4.18	p < .05
Prospectiveness	50.4	69.74	2.67	p < .05

Based on the obtained data, defenders differ significantly: from goalkeepers by more pronounced general predictability (t = 2.08) and flexibility (t = 4.51); from attackers – by less analyticity (t = 2.72) and by flexibility (t = 2.61). Midfielders have significantly more developed awareness (t = 2.76) and profoundness (t = 4.85), than goalkeepers, but, at the same time, less developed than the attackers' analyticity (t = 5.05), flexibility (t = 5.2), profoundness (t = 4.18) and prospectiveness (t = 2.67). Attackers are significantly ahead of defenders by indicators of analyticity (t = 2.72) and flexibility (t = 2.61). Attackers and goalkeepers are the most different among the game roles, namely by indicators of general predictability (t = 3.28), analyticity (t = 5.67), flexibility (t = 5.26) and prospectiveness (t = 3.07).

The next level of comparative analysis was related to establish the reliability of differences between the indicators of players of different game roles using other statistical criteria. It allowed us to establish direct links between the main indicators. In order to establish the presence/absence of the relationship between the profile of thinking, predictability, flexibility of athletes' thinking, we used the methods of mathematical statistics: Mann-Whitney U-test; Wilcoxon test (W); Z-test; asymptotic significance (Sig. 2-tailed) (Tabl. 7).

Table 7. Indicators of average grades on the scale of psychodiagnostic techniques: defenders and midfielders

Reliability parameters	Evidence	Rigidity coefficient
Mann-Whitney U-test	13.500	20.000
Wilcoxon test (W)	34.500	56.000
Z- test	-1.411	-.554
Asymptotic significance Sig. 2-tailed	.158	.580

There were no significant differences between the researched football players of such game roles as defenders and midfielders.

Table 8. Indicators of average grades on the scale of psychodiagnostic techniques: defenders and attackers

Reliability parameters	Subject thinking	Visual thinking	Analyticity	Flexibility
Mann-Whitney U-test	13.500	17.000	10.000	18.000
Wilcoxon test (W)	49.500	53.000	46.000	54.000
Z- test	-2.374	-2.069	-2.799	-2.048
Asymptotic significance Sig. 2-tailed	.018	.039	.005	.041

Significant differences on the scale of subject thinking were found among players of such game roles as defenders and attackers according to the indicators of tactical thinking of conducted methods. It indicates that the attackers have a more pronounced level of subject thinking than the defenders. This is due to the fact that attackers better absorb information through movement and have good motor coordination.

Attackers have significantly expressed indicators of visual thinking. This is characterized by a high visual perception of reality. Such thinking allows for a multifaceted and diverse reflection of objective reality. Attackers are characterized by more developed analyticity than defenders. It indicates the existence of several options for solving the tasks, which are based on the analysis of previous steps. The level of flexibility is more pronounced in attackers. It is necessary for a person to make the right choice in any situation, to find non-standard solutions to difficult situations as well as to be able to brilliantly resolve contradictions and interpersonal conflicts in sports and everyday life.

There were no significant differences between the indicators of tactical thinking of defenders and goalkeepers according to the methods: "Study of the profile of athletes' thinking", "Prediction ability" by L. Regush. Consider indicators of midfielders and attackers.

Table 9. Indicators of average grades on the scale of psychodiagnostic techniques: midfielders and attackers

Reliability parameters	Analyticity	Profoundness
Mann-Whitney U-test	7.500	10.500
Wilcoxon test (W)	28.500	31.500
Z- test	-2.661	-2.263
Asymptotic significance Sig. 2-tailed	.008	.024

There are differences by the indicator of analyticity, which is pronounced in the attackers. Thus, they can more efficiently and quickly solve complex problems (life, professional, etc.) and draw correct, logically substantiated conclusions even in case of lack of information. The level of profoundness of midfielders is lower than the level of profoundness of attackers, so attackers tend to use logical reasoning, in the process of which the truth of the thesis is deduced from the arguments.

Consider the performance of indicators of attackers and goalkeepers according to psychodiagnostic methods (Tabl. 10).

Table 10. Indicators of average grades on the scale of psychodiagnostic techniques: attackers and goalkeepers

Reliability parameters	Visual thinking	General predictability	Analyticity	Flexibility	Prospectiveness
Mann-Whitney U-test	7.500	11.500	10.000	8.500	16.000
Wilcoxon test (W)	28.500	32.500	31.000	29.500	37.000
Z- test	-2.468	-2.054	-2.309	-2.406	-1.589
Asymptotic significance Sig. 2-tailed	.014	.040	.021	.016	.112

According to visual thinking, the attackers got the highest results. The variety of objects characteristics is more fully reproduced with it, unusual combinations of objects and their properties are established. Attackers have a more pronounced general predictability than goalkeepers. This indicates the formed ability to make predictions for both the future and the present.

The attackers have a pronounced level of analyticity. This allows them to divide the information into individual components and make a comprehensive analysis of these components, as well as the initial information as a whole.

Attackers' indicators of flexibility of thinking and prospectiveness expressed at a high level. It indicates the ability to predict options for solving the game situation and its consequences.

Thus, according to the results of the method "Study of the profile of athletes' thinking" defenders are characterized by: the average level of subject thinking, the average level of symbolic thinking, the average level of logical and visual thinking, and creativity.

Midfielders are characterized by such types of thinking as highly developed subject thinking, they are characterized by an average level of symbolic, logical and visual thinking, and high levels of creativity.

The attackers have pronounced indicators of objective thinking, which are at a high level, the average level of symbolic and logical levels, a high level of visual thinking and an average level of creativity.

Goalkeepers are characterized by: average level of objective and symbolic thinking, low level of logical thinking, visual thinking divided equally between low and middle levels, creativity is at the middle level.

Indicators according to the method of "Prediction ability" (Regush, 2008) were distributed as follows: goalkeepers are characterized by a medium level of general predictability and analyticity, low awareness, medium level of prospectiveness, and the profoundness was divided between medium and low levels.

Defenders are characterized by: an average level of general predictability, analyticity, awareness, flexibility, prospectiveness and a high level of profoundness.

Peculiarities of attackers' prediction are that they have an average level of general predictability, analyticity is divided between medium and high levels, awareness is at medium level, flexibility is at high level, prospectiveness is at medium level, and profoundness is divided between medium and high levels.

Midfielders had average levels on scales: general predictability, analyticity, awareness, flexibility, prospectiveness, and profoundness were divided equally between medium and high levels.

Similar results have been presented in research of the relationship between intellectual ability and competitive activity among handball players. As it is in our study, the authors point to the development of the properties of the intellectual sphere of the team at the middle level. However, other aspects of the intellectual sphere of players, depending on the role and competitive activity are studied. In particular, the central players demonstrate the highest indicators of associative and operational thinking, which affects the effectiveness of competitive activities in general. For goalkeepers, abstract thinking is most characteristic. According to the authors, such differences will contribute to the implementation of complex tactical combinations and intellectual readiness of athletes (Strykalenko et. al., 2020).

The research of T. Badari et al. (2020) is interesting from the standpoint of studying tactical training. In this study, the authors assess the tactical effectiveness of the athlete's behavior through the study of game comprehension and decision-making skills, which in our opinion are manifestation of tactical thinking. Researchers claim that tactical behavior is implemented differently in offensive and defensive situations, so, we generalize that it requires the use of different aspects of tactical thinking (Badari et. al., 2020).

Conclusions

1. Tactical thinking of players is the ability to quickly assess and effectively solve game situations in the implementation of numerous tactical tasks of the team. It proceeds inseparably from motor actions and perception of visual images and phenomena in the conditions of a rigid time limit, in the process of intensive physical stresses, with a variety of experiences and taking into account the probability of expected events.

2. Peculiarities of tactical thinking are the visual, effective, critical and situational nature of thinking, its speed, flexibility, purposefulness, independence, depth, breadth. It is characterized by improvisation, probability of decisions.

3. The identified statistically significant differences allow us to state that attackers have the most differences from representatives of other game roles in tactical thinking. Attackers significantly exceed the representatives of all other game roles by analyticity and flexibility of thinking (midfielders ($t = 5.05$ and $t = 5.2$), defenders

(t = 2.72 and t = 2.61), goalkeepers (t = 5.67 and t = 5.26)). They are characterized by a more pronounced Prospectiveness compared to midfielders (t = 2.67) and goalkeepers (t = 3.07). The high level of profoundness of the attackers' thinking distinguishes them from midfielders (t = 4.18), and the general predictability distinguishes them from goalkeepers (t = 3.28). Such aspects of tactical thinking of goalkeepers as general predictability and flexibility are less pronounced compared to defenders (t = 2.08 and t = 4.51, respectively). The tactical thinking of goalkeepers is inferior to the thinking of midfielders by the indicators of awareness and profoundness (t = 2.76 and t = 4.85, respectively).

4. The level of a manifestation of the basic properties of tactical thinking in defense is significantly lower than it is in attack. High-skilled players have higher tactical thinking in attack. It has been established that the tactical thinking of football players is interrelated with the chosen game role. It significantly affects their game efficiency.

5. We state that the research of the operationalization of tactical thinking of football players by the main game roles allowed to obtain significant empirical results. The obtained results should be introduced into the tactical training of team sports athletes.

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Conflict of Interest. The authors declare that there is no conflict of interest.

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