Expert assessment of competitive activities of highly qualified field hockey players

Viktor Kostiukevych[ABCDE], **Tetiana Vozniuk**[ABCDE], **Maxim Perepelytsia**[BCDE], **Victoria Bohuslavska**[BCDE], **Sergey Voitenko**[BCDE], **Natalia Svirshchuk**[BCDE]

Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia, Ukraine

Author's contribution: A – Research design; B – Data collection; C – Statistical analysis; D – manuscript preparation; E – Fundraising

Corresponding author: Viktor M. Kostiukevych, kostykevich.vik@gmail.com

Abstract

Background and study aim. In team game sports, including field hockey, one of the most effective types of control over competitive activities is expert evaluation. Purpose of the study is to develop a methodology for expert assessment of competitive activities of highly qualified field hockey players.

Material and methods. The study involved 16 highly qualified field hockey players, aged from 19 to 37 years. The average age of the players is 27.3±5.06 years. Sports Qualification: Master of sports of Ukraine. All players were given informed consent to participate in the study. The study was conducted in 2024 during the 2024 Olympic field hockey qualification competition (the city of Valencia, Spain). The research was carried out on the basis of the following methods: theoretical analysis and generalization of scientific and methodological literature; pedagogical observation; video recording of competitive activities; method of expert assessments; methods of Mathematical Statistics.

Results. The author's methodology for expert assessment of competitive activity of field hockey players has been developed based on a 10-point scale, consisting of 5 criteria in the ball ownership phase and 5 criteria in the ball picking up phase.

Each of the criteria is rated from 1 to 10 points. The fluctuation of the average values of the expert assessment of players of the national team of Ukraine in the matches of the Olympic qualification 2024 is in the range from 4.2±0.45 to 6.6±0.49 points.

Conclusions. The developed methodology of expert assessment of competitive activity of highly qualified field hockey players is appropriate for effective management influences in the process of competitive activity of club and national teams in the Olympic sport – field hockey.

Keywords: field hockey, Olympic qualification 2024, selection and ball ownership phases, fielders, management influences.

Анотація

Експертна оцінка змагальної діяльності висококваліфікованих хокеїстів на траві

Віктор Костюкевич, Тетяна Вознюк, Максим Перепелиця, Вікторія Богуславська, Сергій Войтенко, Наталя Свірщук

Передумови та мета дослідження. У командних ігрових видах спорту, включаючи хокей на траві, одним із ефективних видів контролю змагальної діяльності є експертна оцінка. Мета дослідження – розробити методику експертної оцінки змагальної діяльності висококваліфікованих хокеїстів на траві.

Матеріал і методи. У дослідженні брали участь 16 висококваліфікованих хокеїстів на траві віком від 19 до 37 років. Середній вік гравців 27,3±5,06 років. Спортивна кваліфікація – майстер спорту України. Від усіх гравців було отримано інформаційну згоду для участі в дослідженні. Дослідження проводилося у 2024 році під час змагань олімпійської кваліфікації 2024 з хокею на траві (м. Валенсія, Іспанія). Дослідження здійснювалося на основі таких методів: теоретичний аналіз та узагальнення науково-методичної літератури; педагогічне спостереження; відеозйомка змагальної діяльності; метод експертних оцінок; методи математичної статистики.

Результати. Розроблена авторська методика експертної оцінки змагальної діяльності гравців у хокеї на траві на основі 10-бальної шкали, що складається з 5-ти критеріїв у фазі володіння м'ячем та 5-ти критеріїв у фазі відбору м'яча. Кожен із критеріїв оцінюється від 1-го до 10-ти балів. Коливання середніх значень експертної оцінки гравців національної збірної команди України у матчах олімпійської кваліфікації 2024 знаходиться в межах від 4,2±0,45 до 6,6±0,49 балів.

Висновки. Розроблена методика експертної оцінки змагальної діяльності висококваліфікованих хокеїстів на траві є доцільною для ефективних управлінських впливів у процесі змагальної діяльності клубних та збірних команд з олімпійського виду спорту – хокею на траві.

Ключові слова: хокей на траві, олімпійська кваліфікація 2024, фази відбору та володіння м'ячем, польові гравці, управлінські впливи.

Introduction

Competitive activity in team game sports is multi-vector in relation to the manifestation of different levels of readiness of players [1, 2, 3].

The multi-vector nature of competitive activity of Game athletes is analysed on the basis of various types of control – motor activity, technical and tactical indicators, integral assessment of group and team interactions of players, etc [4, 5, 6].

One of the most efficient and effective types of control over competitive activities in team game sports is integrated assessment of technical and tactical activities [7, 8] and expert analysis, which is carried out on the basis of agreed expert opinions [9, 10, 11].

The components of expert analysis of competitive activity of athletes are expert assessment of specialists [12, 13, 14] and self-esteem [6, 15].

The subject of our research is an expert assessment of the competitive activity of athletes, carried out by specialists directly during the competition.

Purpose of the study is to develop a methodology for expert assessment of competitive activities of highly qualified field hockey players.

Material and methods

Participants

The study involved 16 highly qualified field hockey players, aged from 19 to 37 years. The average age of the players is 27.3±5.06 years. Sports Qualification: Master of sports of Ukraine. All players were given informed consent to participate in the study. The study was conducted in 2024 during the 2024 Olympic field hockey qualification competition (the city of Valencia, Spain).

Procedure

Research methods: theoretical analysis and generalization of scientific and methodological literature; pedagogical observation; video recording of competitive activities; method of expert assessments; methods of mathematical statistics.

Based on the theoretical analysis and generalization of scientific and methodological literature, the relevance and purpose of the research were determined, as well as a working hypothesis of scientific research was formed.

Pedagogical observation was carried out in order to control and analyze the competitive activity of players.

Video recording of competitive activities made it possible to analyze the competitive activity of players and teams in the phases of ball possession and ball picking up in accordance with the chosen tactics of the game. Video recording was carried out with a SONY digital video camera model DCR-SX65E.

Expert assessment of the competitive activity of players at the 2024 Olympic qualification tournament in field hockey was carried out in several stages:

• defining expert evaluation criteria;

• selection of experts;

• mastering the assessment methodology by experts;

• conducting an expert examination;

• determining the consistency of expert opinions (using mathematical statistics methods);

• expert opinion on the level of competitive activity of players.

Expert assessment of competitive performance of field players in field hockey is based on ten criteria that characterize the tactical aspects of the game (Table 1).

The level of competitive activity of players and teams in field hockey based on an expert assessment is presented in Table 2.

During the entire 2024 Olympic field hockey Qualification Tournament, three specialists conducted an expert assessment of the competitive performance of field players (Table 3).

An expert assessment of the competitive performance of field players was carried out after each of the five official matches of the 2024 Olympic field hockey qualification. Each of the experts independently completed the protocol (see table 1), on the basis of which the average values of the expert assessment were determined.

The consistency of experts' opinions on the expert assessment of competitive performance of players was determined on the basis of the Kendall concordance coefficient. The following algorithm was used.

Step 1. Determination of expert assessment of competitive activities. The data of each expert is entered in special protocols (see table 1).

Step 2. Determination of the average value of the

Table 1. Criteria for expert evaluation of competitive performance of field players in field hockey

Pos. No.	Last name, first name of the player	Role	Ball possession phase						Ball picking up phase						$\bar{X}_3$
			Criteria and points					$\bar{X}_1$	Criteria and points					$\bar{X}_2$	
			1	2	3	4	5		1	2	3	4	5		
1	B. O.	ST													
2	- // -	RD													
3	- // -	RCD													
4	- // -	Ins													
5	- // -	LD													
6	- // -	RD													
7	- // -	DM													
8	- // -	LCD													
9	- // -	Ins													
10	- // -	ST													
11	- // -	ST													
12	- // -	RCD													
13	- // -	RD													
14	- // -	RM													
15	- // -	LM													
16	- // -	ST													
$\bar{X}$															
S															
V															
			Transition from defense to attack	Opening	Interaction with partners	Individual skill level	Participation in attacking actions		Transition from attack to defense	Control of the opponent's players	Ball picking up	Interception of the ball	Interaction with partners		

Note: each of the criteria is evaluated from 1 to 10 points; B. O. – last name, first name of the player; game roles: RD – right defender; LD – left defender; RCD – right central defender; LCD – left central defender; RD – right defender; LM – left midfielder; DM – defensive midfielder; ins-inside; ST – striker; $\bar{X}_1$ – arithmetic mean of the expert assessment in the ball possession phase; $\bar{X}$ – arithmetic mean (team-wide) value; S – mean square deviation; V – coefficient of variation (%); $\bar{X}_1$ – arithmetic mean of the expert assessment in the ball possession phase; $\bar{X}_2$ – arithmetic mean of the expert assessment during the ball picking up phase; $\bar{X}_3$ – total arithmetic mean of the expert assessment.

Table 2. Level of competitive activity of players and teams in field hockey based on expert assessment

Pos. No.	Level of competitive activity	Points
1	Low	≤3,5
2	Below average	3,5 – 4,9
3	Average	5,0 – 6,4
4	Above average	6,5 – 7,9
5	High	8,0 – 10,0

Table 3. Criteria for professional training of experts for determining the expert assessment of field hockey players

Pos. No.	Last name, first name of the expert	Sports title	Academic degree, scientific title	Practical experience in field hockey	Team position	Experience working with hockey teams as:
1	K. V.	HCU	Doctor of science, professor	27 years old	Head of ISG	head coach of the club and national teams
2	M. P.	MS, HCU	-	29 years old	Head coach	head coach of the club and national teams
3	K. M.	MS	-	26 years old	Coach	head coach of the club and youth national teams

Note: ISG – integrated scientific group; HCU – honored coach of Ukraine; MS – Master of sports.

Preliminary mastering of the method of determining the expert assessment of field players was carried out by experts in the matches of the Ukrainian Championship, as well as immediately before the official matches of OK 2024 in control games with the national teams of Egypt (11.01.24) and Scotland (12.01.24).

expert assessment of three experts for each criterion of competitive activity (from 1 to 10 points).

Step 3. Assigning each average value of an expert assessment of the corresponding rank. The highest value of the expert assessment is the 1st rank, then the 2nd, 3rd rank, etc.

Step 4. The average sum of ranks is calculated ($\bar{X}$) by the formula:

$$\bar{X} = \frac{\sum_{i=1}^{n} \chi i}{n}, \qquad (1)$$

where: $\sum_{i=1}^{n} \chi i$ – the sum of ranks that players received from experts, n is the number of players.

Step 5. The deviation from the average sum of ranks is calculated from the value of each rank, the average sum of ranks is subtracted.

Step 6. The square of deviation is calculated. For example, if the deviation of a certain rank from the average sum of ranks is 5, the square of the deviation will be 25.

Step 7. The sum of the squares of deviations (S) is calculated.

Step 8. The Kendal concordance coefficient (W) is calculated using the formula:

$$W = \frac{12\,S}{m^2(n^3 - n)}, \qquad (2)$$

where: S is the sum of the squares of deviations;
m – number of experts;
n – the number of athletes.

Step 9. The statistical probability of the Kendall concordance coefficient is estimated using X^2 – chi-square of the criterion.

$$X^2 = m\,(n-1)\cdot W, \qquad (3)$$

where: X^2 – calculated chi-square value of the criterion;
m – number of experts;
n – number of players.

Step 10. The number of degrees of freedom (V) is determined by the formula:

$$V = n-1, \qquad (4)$$

where: n is the number of players.

Step 11. According to the table of critical values of X^2 N. Bailey (1963) finds the tabular value of X^2 – chi-square of the criterion.

For example, if the number of degrees of freedom V=15 and the significance level A is 0.05, the table value of X^2 – the criterion will be 25.

Step 12. Wording of the conclusion. If the calculated value is X^2 – if there is more than a tabular criterion, then we can say that the opinions of experts are statistically reliable ($P<0.05$; $p<0.01$; $p<0,001$).

In the case when the calculated value of X^2 if the criterion is equal to or less than the table value, then the consistency of experts ' opinions is considered statistically unlikely ($p \geq 0.05$).

General statistical indicators of consistency of experts' opinions on the export assessment of players of the national team of Ukraine in the matches of OK 2024 in field hockey are presented in Table 4.

Statistical analysis

The results of the study were processed on the basis of qualimetry methods [16, 17]. The following were determined: arithmetic mean ($\bar{X}$), mean square deviation (S). Consistency of experts' opinions was carried out on the basis of Kendall's concordance coefficient.

Statistical processing of the study results was performed on an IBM PC-Pentium-IV personal computer using the Microsoft Excel XP I Statistica 10.0 application software packages developed by Microsoft (Stat Soft, USA).

Results

The final part of any expert examination is the analysis of the indicators on the basis of which the ex-

Table 4. Statistical indicators of consistency of experts ' opinions on the export assessment of competitive performance of field players of the national team of Ukraine in the matches of the Olympic qualification 2024 in field hockey (Valencia, Spain)

Matches (n = 5)	Experts (m=3)						$\bar{X}$	S	W	V	X^2	$a_{1,}v$	R
	K. V.		M. P.		K. M.								
	EA	R	EA	R	EA	R							
Ukraine – Ireland	5,3	8,5	6,1	8,5	5,8	8,5	25,5	2000,9	0,653	15,0	29,3	25,00	<0,05
Ukraine – Japan (group tournament)	5,5	8,5	5,4	8,5	5,8	8,5	25,5	2767,0	0,904	15,0	40,68	30,58	<0,01
Ukraine- Belgium	5,7	8,5	3,5	8,5	5,3	8,5	25,5	2937,5	0,959	15,0	93,15	30,58	<0,01
Ukraine – Austria	5,9	8,5	6,1	8,5	5,9	8,5	25,5	2748,0	0,898	15,0	40,41	30,58	<0,01
Ukraine – Japan (match for 7-8 places)	5,9	8,5	4,1	8,5	5,2	8,5	25,5	2402,8	0,785	15,0	35,3	30,58	<0,01
Average value	5,7	-	5,0	-	5,6	-	-	-	-	-	-	-	-

Note: EA – expert assessment, points (average data); R – rank (average data); $\bar{X}$ – average sum of ranks; S – sum of squares of deviations from the average; W – Kendall's concordance coefficient; V – number of degrees of freedom; X^2 – chi-square criterion; $a_{1,}v$ – Table value X^2 – square of the criterion; p – indicator of statistical probability.

pert assessment was carried out.

The 2024 Olympic field hockey qualification is one of the most prestigious international competitions in this sport. Therefore, the working hypothesis of our research was to determine the level of competitive activity of players of the national team of Ukraine in the Olympic qualification (OK) 2024, which will allow more effective correction of the training process, taking into account the trends in the development of the Olympic sport – field hockey.

Indicators of expert assessment of competitive performance of field players of the national team of Ukraine in the matches of OK 2024 in field hockey are presented in Table 5.

The overall expert score of players in OK 2024 matches is 5.5±0.68 points. In the ball possession phase, the expert rating value is 5.8±0.68 points (52.7%), and in the ball picking up phase – 5.2±0.65 points (47.3%).

Analysis of the table 5 allows us to state that the range of values of the expert assessment (EA) of field players ranges from 4.3±0.60 to 6.7±0.90 points (35.8%) in the ball possession phase, and from 4.1±0.39 to 6.4±0.52 points (35.9%) in the ball picking up phase is quite large. EA indicates a certain inferiority of the national team of Ukraine.

This is confirmed by the data in Table 6. As can be seen from the table, 25.0% of players' competitive activity is characterized by a lower-than-average level, which generally does not meet the requirements for a player of the national team of Ukraine. Another problem is that 62.5% of players showed an average level in the OK 2024 competition. As for the above-average and high levels, it should be noted that only two players (S. O. and L. D.) reached them, some players reached this level in individual matches. For example, in the possession phase in matches with the Irish national team, the EA was 7.1 points for S. O., L. D., Sh.V., 6.9 points for K. B.

The most effective from a tactical point of view for

Table 5. Indicators of expert assessment (average data) of competitive activity of field players of the national team of Ukraine in the matches of the Olympic qualification 2024 in field hockey (Valencia, Spain)

| Players	Game roles	Ball possession phase (points)							Ball picking up phase (points)							Total	
		Ireland	Japan (group tournament)	Belgium	Austria	Japan (match for 7-8 places)	X̄±S	rank	Ireland	Japan (group tournament)	Belgium	Austria	Japan (match for 7-8 places)	X̄±S	rank	X̄±S	rank
S. O.	RD	7,1	7,1	5,5	7,8	6,2	6,7±0,99	2,5	6,3	6,1	5,6	7,1	5,8	6,2±0,64	2	6,5± 0,75	2
Y. N.	LD	6,7	6,5	5,2	7,2	5,3	6,2±0,82	6	6,3	5,9	5,3	6,3	4,7	5,7±0,69	5,0	5,9± 0,81	6
Ko. V.	LD	4,5	4,6	3,9	5,2	4,0	4,4±0,30	15	4,4	4,3	3,9	4,9	4,5	4,4±0,43	13	4,4± 0,42	14,5
P. V.	RCD	6,8	6,9	5,4	7,6	6,0	6,5±0,94	5	6,1	5,9	5,5	6,9	5,8	6,0±0,60	3	6,3± 0,70	3
L. D.	LCD	7,1	6,6	5,6	7,7	6,5	6,7±0,90	9,5	6,7	6,4	5,8	7,0	6,1	6,4±0,52	1	6,6± 0,49	1
Zh. V.	RCD	5,4	5,2	4,7	6,4	4,9	5,3±0,64	12	5,4	5,1	4,8	6,2	5,0	5,3±0,60	8,5	5,3± 0,62	10
Sh. V.	RM	7,1	6,8	5,5	7,7	6,4	6,7±0,94	2,5	5,9	5,6	5,5	6,3	5,2	5,7±0,47	5,0	6,2± 0,81	4,5
K. B.	LM	6,9	7,1	5,7	7,8	6,2	6,7±0,90	2,5	5,9	5,9	5,2	6,2	5,1	5,7±0,47	5,0	6,2± 0,88	4,5
H. D.	PP	4,3	4,3	3,7	5,1	4,0	4,3±0,60	16	4,1	3,9	3,8	4,7	3,9	4,1±0,39	16	4,2± 0,45	16
K. A.	DM	6,1	6,1	4,9	7,0	5,9	6,0±0,47	7	5,3	5,4	4,9	6,0	5,0	5,3±0,47	8,5	5,7± 0,68	7,5
K. V.	Ins	8,5	5,6	5,0	7,1	5,5	5,8±0,90	9	5,2	5,3	4,7	5,7	4,4	5,1±0,56	10	5,4± 0,88	9
M. Yu.	Ins	5,6	5,4	4,3	5,7	5,0	5,2±0,60	13	5,3	3,9	4,5	5,4	4,8	4,9±0,39	11	5,1± 0,45	12
O. M.	ST	5,9	6,1	5,0	6,9	5,8	5,9±0,82	8	5,7	5,5	4,7	5,9	5,1	5,4±0,52	7	5,7± 0,71	7,5
P. O.	ST	5,5	5,7	4,7	6,2	5,4	5,5±0,64	10	4,9	4,9	4,2	5,3	4,7	4,8±0,47	12	5,2± 0,65	11
B. O.	ST	5,3	5,1	4,4	6,9	5,3	5,4±1,07	11	4,4	4,3	4,2	4,3	4,4	4,3±0,09	14	4,9± 0,88	13
YA. O.	ST	4,7	4,9	4,1	5,3	4,3	4,7±0,52	14	4,6	4,1	4,0	4,7	3,7	4,2±0,43	15	4,9± 0,52	14,5
	X̄	5,9	5,9	4,9	6,7	5,4	5,8	-	5,4	5,2	4,8	5,9	4,9	5,2	-	5,5	-
	S	0,74	0,79	0,57	0,54	0,71	0,68	-	0,62	0,71	0,48	0,76	0,68	0,65	-	0,68	-
	V,%	12,5	13,4	11,6	8,1	13,1	11,7	-	11,5	13,7	0,10	12,9	13,9	12,5	-	12,4	-

Note: RD – right defender; LD – left defender; RCD – right central defender; LCD – left central defender; RD – right defender; LM – left midfielder; DM – defensive midfielder; ins – inside; ST – striker.

Table 6. Distribution of field players of the national team of Ukraine by the level of competitive activity in the matches of the Olympic qualification 2024 in field hockey (the city of Valencia, Spain)

Competitive activity level, points	Fielders	Total	%
Low (<3,5)	-	-	-
Below average (3.5-4.9)	Co.V., G. D., B. O., YA. O.	4	25,0
Average (5.0-6.4)	Ya. M., P. V., Zh. V., Sh. V., K. B., K. A., K. V., M. Yu., O. M., P. O.	10	62,5
Above average (6.5-7.9)	S. D., L. D.	2	12,5
High (8.0-10.0)	-	-	-

the players of the national team of Ukraine (NTU) was the match with the national team of Austria. In this match, the level of competitive activity was higher than average for 10 players – S. O., Ya.M., P. V., L. D., Sh.V., K. B., K. H., K. H., K. V., O. M. and B. O.

The dynamics of expert assessment indicators in the phases of possession and selection of the ball by NTU players in the matches of the Olympic qualification 2024 in field hockey is shown in Fig. 1.
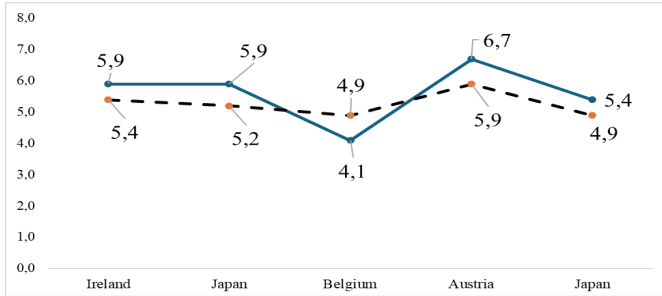
Figure 1. Dynamics of team-wide indicators of expert assessment (EA) in the ball ownership Phase (1) and in the ball picking up phase (2) of players of the national team of Ukraine in the matches of the Olympic qualification 2024 in field hockey (the city of Valencia, Spain).

As can be seen from fig. 1 NTU played the 1st Best Match of the tournament with the Austrian national team. The lowest EA scores were determined in matches with the national teams of Belgium and Japan (match for 7-8 places).

In general, the game with the Austrian national team can be considered to a certain extent a model for the national team of Ukraine, describing the potential of players, which for various reasons was not fully realized in the OK 2024 competitions.

The overall rating of competitive activity of NTU field players in OK 2024 field hockey matches, determined on the basis of an expert assessment, is of interest (fig. 2). From fig. 2 it can be seen that out of the top six places in the rating, four belong to defenders: 1st place – L. D., left central defender; 2nd – S. O., right defender, 3rd – P. V., right central defender; 6th: Ya.M., left defender. The rating of right midfielder S. V. and left midfielder K. B. does not fully correspond to the skill of these players. By expanding their tactical Arsenal, primarily increasing the combination style of play, these players can lead the overall ranking in the team in subsequent competitions. This applies in particular to players such as defensive midfielder K. A. and forwards O. M. and P. O. It is worth noting the rather optimal rating of K. V.'s inside, as a fairly young player.

This also applies to young players such as B. O., Y. O., and Ko.V., H. D., who made their debut as a member of the national team of Ukraine in competitions of such a high level as the Olympic qualification 2024.

One of the objectives of this study was to identify the correlation between values of Integral and expert assessments of competitive performance of highly qualified field hockey players.

Spearman's rank correlation coefficient was chosen for this purpose.

A high degree of correlation is established between the values of Integral and expert assessments of the competitive activity of players of the national team of Ukraine in the matches of the Olympic qualification 2024 in field hockey (P0,001) (indicators of the integral assessment of players of the national team of Ukraine in the matches of the Olympic qualification 2024 in field hockey are not considered in this article).

So, the use of expert assessment of competitive activity of athletes is a criterion for improving the effectiveness of managing a hockey team in competitions of various levels.

Discussion

Expert assessment of competitive activity primarily characterizes the tactical aspects of players. In con-

Players	Rank (rating)															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
L. D.	▪															
S. O.	▪	▪														
P. V.	▪	▪	▪													
Sh. V.	▪	▪	▪	▪	▪											
K. B.	▪	▪	▪	▪	▪	▪										
Ya. M.	▪	▪	▪	▪	▪	▪										
K. A.	▪	▪	▪	▪	▪	▪	▪	▪								
O. M.	▪	▪	▪	▪	▪	▪	▪	▪	▪							
K. V.	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪						
Zh. V.	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪					
P. O.	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪				
M. Yu.	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪			
B. O.	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪		
Ya. O.	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	
Ko.V.	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	
H. D.	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪	▪

Figure 2. Matrix of the rating of field players of the national team of Ukraine based on an expert assessment of competitive performance in the matches of the Olympic qualification 2024 in field hockey (the city of Valencia, Spain).

trast to the integral assessment of competitive activity, which is based on quantitative and qualitative indicators of technical and tactical actions, expert assessment is aimed at determining the level of tactical thinking of players, the feasibility of moving around the field, interaction with teammates, etc.

That is, expert assessment is a necessary component of comprehensive control of competitive activities of athletes of Team game sports. It is also important to note that the expert assessment most fully reflects the tactical level of the player who effectively interacts with teammates during the phases of possession and selection of the ball. In our study, the expert assessment consists of 10 criteria used to evaluate the player's competitive activity.

Field hockey is a team sports game in which players equally need to act effectively in the attacking and defensive phases of a match.

In our study, for the first time in field hockey, the expert assessment of field players was determined taking into account two phases of the game.

In the phase of possession of the ball was evaluated: the speed of switching from defense to attack and tactical expediency; expediency and rational movement around the field in order to get the ball himself or create favorable conditions for attacking actions of teammates; accuracy, timeliness, expediency of interaction through passing the ball; effectiveness of performing technical techniques – stops, passes, leads, strokes, shots at the goal; aggravation of game situations due to strokes or passes of the ball, aggressiveness and rationality at the end of attacking actions.

In the phase of reflect was evaluated: duration of switching and tactical expediency; quick switching to the player's care, the ability to "keep" him under control until the end of the game Episode; activity and aggressiveness in the selection of the ball, the ability to select the ball without violating the rules, effective pressure on the player who owns the ball; ability to play ahead, tactical expediency of participation in interceptions of the ball ability to intercept the ball without violating the Rules; safety net, switching to the guardianship of another player, blocking the game space.

This approach to determining the expert assessment of competitive activity of players allows you to increase the effectiveness of management influences both in an individual match and in a series of games in competitions of various levels.

In comparison with the research of the designated problem [18, 19, 20] the originality of our research is due to:

• determination of the most optimal criteria for expert assessment of competitive activities of highly qualified field hockey players, on the basis of which the expert assessment reflects the complex nature of the player's participation in the match;

• attracting specialists who have extensive experience in coaching with highly qualified athletes to conduct an expert examination of competitive activities;

• determination of statistically probable consistency of experts' opinions when conducting an expert examination of competitive activities of a sufficiently large (n=16) number of athletes.

The practical significance of our research is characterized by the expediency of using the developed methodology for expert assessment of competitive activities with players of various qualifications.

In general, the results of the study expand the capabilities of the coaching staff to effectively manage the competitive activities of athletes.

Conclusions

1. In team game sports, competitive activity is characterized by a multi-vector manifestation of the level of physical, technical, and tactical skill. This encourages the development and use of various methods of monitoring competitive activities.

One of the most effective methods of monitoring the competitive activity of athletes in field hockey is expert evaluation.

2. Expert assessment of the competitive performance of highly qualified field hockey players is based on 10 criteria, each of which is rated from 1 to 10 points. In the phase of possession of the ball: 1) transition from defense to attack; 2) opening; 3) interaction with partners; 4) level of individual skill; 5) participation in attacking actions. In the ball picking up phase: 1) transition from attack to Defense; 2) control of the opponent's players; 3) selection of the ball; 4) interception of the ball; 5) interaction with partners.

3. The value of the expert assessment of competitive activity of highly qualified field hockey players is determined: low level – 3.5 points; below average level – 3.5-4.9 points; average level – 5.0-6.4 points; above average level – 6.5-7.9 points; high level – 8.0-10.0 points.

4. In the 2024 Olympic field hockey qualification competitions, the competitive activity of field players of the national team of Ukraine was characterized by the following expert assessment values: in the ball possession phase – 5.8±0.68 points; in the ball picking up phase – 5.2±0.65 points; the average value in the match – 5.5±0.68 points. Among 16 field players, 4 players (25.0%) showed a level below average, 10 players (68.5%) – an average level, 2 players (12.5%) – a level above the average expert assessment of competitive activity.

The prospect of further research on this problem will be aimed at determining the indicators of expert assessment of competitive performance for teams of different qualifications in field hockey.

References

1. Kostiukevych V, Imas Ye, Borysova O, Dutchak M, Shynkaruk O, Kogut I, Voronova V, Shlonska O, Stasiuk I. Modeling of the athletic training process in team sports during an annual macrocycle. Journal of Physical

Education and Sport. 2018; 18(1): 327-334. https://doi.org/10.7752/jpes.2018.s144

2. Kostiukevych V., Shchepotina N., Shynkaruk O., Kulchytska I., Borysova O., Dutchak M., Vozniuk T., Yakovliv V., Denysova L., Konnova M., Khurtenko O., Perepelytsia O., Polishchuk V., Shevchyk L. Training process construction of the qualified volleyball women players in the preparatory period of two-cycle system of the annual training on the basis of model training tasks. *Journal of Physical Education and Sport*. 2019; 19 (Supplement issue 2): 427-435. https://doi.org//10.7752/jpes.2019.s2063

3. Mitova O. The concept of forming a control system in the process of multi-year improvement in team sports games. *Physical culture, sport and health of the nation*. 2016; 1: 353-359.

4. Shchepotina N., Polishchuk V., Sikorska L., Tereshchuk O. Management of the training process of highly qualified volleyball players based on control of competitive activity. *Physical culture, sport and health of the nation*. 2020; 9(28):305-312.

5. Voitenko S. Relationship of indicators of group self-esteem with indicators of group effectiveness of women's and men's volleyball teams. *Physical culture, sport and health of the nation*. 2019; 7:147–153. https://doi.org/10.31652/2071-5285-2019-7-26-147-153

6. Voronova V, Mikhnov A. Topical research directions of self-esteem of highly qualified hockey players. *Physical culture, sport and health of the nation*. 2017; 3: 231-238.

7. Kostiukevych V, Shchepotina N, Adamchuk V, Abalașei B, Vozniuk T, Bohuslavska V, Drachuk A, Mezhvynskyi A. Integral assessment of football team tactics. *Slobozhanskyi Herald of Science and Sport*. 2023; 27.4: 175-184. https://doi.org/10.15391/snsv.2023-4.002

8. Kostiukevych V, Shchepotina N, Vozniuk T. Monitoring and analyzing of the attacks of the football team. Physical Education Theory and Methodology. 2020;20(2):68-76. https://doi.org/10.17309/tmfv.2020.202

9. Bezmylov M, Shynkaruk O. The influence of integral indices on the evaluation of the effectiveness of the competitive activity of basketball players of various roles. *Theory and methods of physical education and sports*. 2012; 3: 3-8.

10. Voitenko SM. Comparative analysis of the competitive activity of volleyball teams with different levels of group efficiency. *Physical culture, sport and health of the nation*. 2016; 1: 271–278.

11. White AD, MacFarlane NG. Analysis of international competition and training in men's field hockey by global positioning system and inertial sensor technology. *The Journal of Strength & Conditioning Research*. 2015;29(1):137-143. https://doi.org/10.1519/JSC.0000000000000600

12. Borysova O, Nahorna V, Mytko A. Training programs for highly qualified European billiard players: expert assessment. *Physical culture, sport and health of the nation*. 2018;5:160–166. https://doi.org/10.31652/2071-5285-2018-5-24-160-166

13. Nosko MO, Deikun MP, Zaichenko IV. Methods of controlling the tactical readiness of basketball players. *Bulletin of the Chernihiv State Pedagogical University. Series. Pedagogical sciences.* Chernihiv DPU named after T.G. Shevchenko. 2018; 28: 66-69.

14. Perepelytsia M, Perepelytsia O. Expert evaluation of the components of tactical skills of qualified field hockey players. *Physical culture, sport and health of the nation*. 2022; 13(32): 212-221.

15. Serebriakov O. Ways of analyzing competitive activity in hockey: foreign experience. *Physical culture, sport and health of the nation*. 2017; 3: 405-410.

16. Antomonov MIu, Korobeinikov HV, Khmelnytska IV, Kharkovliuk – Balakina NV. Mathematical methods of processing and modeling the results of experimental research: a study guide. Kyiv. Olympic literature; 2021.

17. Denysova LV, Khmelnytskaia YV, Kharchenko LA. Measurements and methods of mathematical statistics in physical education and sports: textbook. Kyiv: Olympic literature; 2001.

18. Bezmylov NN, Shynkaruk OA. Evaluation of competitive activity of high-class basketball players during the game season: monograph. Kyiv: LLC «NPC Polygraphservice»; 2013.

19. Kostiukevych VM. Model indicators of collective interactions of highly qualified football players during the game. *Health, Sport, Rehabilitation.* 2019; 5(4): 33-40. https://doi.org/10.34142/HSR.2019.05.04.04

20. Pertsukhov A, Shalenko V. Model characteristics of leading football players of different positions. *Slobozhanskyi herald of science and sport.* 2021; 9(1): 88-105. https://doi.org/10.15391/snsn.2021-1.007

Supplementary Information

Article details

Authors details

Viktor Kostiukevych: https://orcid.org/0000-0002-9716-134X, kostykevich.vik@gmail.com
Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia, Ukraine

Tetiana Vozniuk: https://orcid.org/0000-0002-5951-7333, TV_Vinnitsa@ukr.net
Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia, Ukraine

Maxim Perepelytsia: https://orcid.org/0000-0003-4283-2596, maks83star@gmail.com
Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, Vinnytsia, Ukraine

Viktoriia Bohuslavska: https://orcid.org/0000-0003-3609-5518, vik.bogusl@gmail.com
Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University,

Vinnytsia, Ukraine

Sergey Voitenko: https://orcid.org/0000-0003-0025-1064,
serhii.voitenko@vspu.edu.ua
Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University,
Vinnytsia, Ukraine

Natalia Svirshchuk: https://orcid.org/0000-0001-6997-1778,
svirshchuk83@gmail.com
Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University,
Vinnytsia, Ukraine