ANALYSIS OF DIFFERENCES IN INTESITY AND MOVEMENT QUANTITY BETWEEN CENTER AND GUARD DURING THE WATER POLO GAME

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Abstract

On the representative sample of 360 water polo quarters that represent entities, 21 originally measured variables were applied and 8 of them derived. Based on the primary analysis of the central and dispersion parameters of all the variables, for the final analysis eleven varables were left, that had normal or approximate normal distribution. The aim of this paper was to determine whether in the structure of motion in the vertical and horizontal phase of the game during a water polo match in situ conditions regarding to modes, intensities, frequencies and time as the determinants of the load equivalent in the game, can be established and analyzed the differences between players performing various tasks , defined by the role of the center and the guard. For this purpose, statistics of all variables were calculated, variance analysis (ANOVA) was performed. The canonical discriminatory analysis was performed, the positions of the centroids for both groups and the structure of the discriminatory function were calculated. The obtained results suggest that it is possible to register and identify the differences in the game of center and guard in water polo, by measuring in situational conditions, which is also a confirmation of the aim of research set in this paper. The results obtained, except for contributing to the theoretical explanation of this otherwise less elaborate area in top sports, will be the basis for a practical approach to water polo coaches working with centers and guards.

Key words: *water polo, guard, center, analysis of variance, discriminant analysis.*

Introduction

Water polo is classified into the category of polystruktural complex sports games. Regarding the tasks that players play in the game or their roles in the team, it is necessary to determine special overlapping coefficients for players with different roles in the game, which means different training for each position in the game(Lozovina 1984, 1995).

The game of guard in the water polo, holding or covering the rival according to expert opinion, is the first and most important element of water polo. Successful coverage of an opponent does not allow him to gain the advantage and to accomplish it, and additionally he spends the attack time limited by the rules. Guard can cover his opponent in the place and the movement, using different techniques. In a place in a vertical or quasi-vertical position, guard can cover the opponent from the back, from the side and the front, depending on the current situation of the chosen tactic. In the movement, the opponent's position is subject to the same legalities. The guard must at all times be at the centerline between the opponent whose team owns the ball, ie the player in the attack he holds, the player with the ball, ie the ball and the center of his own goal. Certain variations in the coverage of the opponent by the guard arise from the choice of collective tactics in defense, especially in the case of zone defense. Defensive tasks include elementary techniques: water polo crawl, water polo bicycle, all catching and holding opponents, swim with the ball when necessary, all ball handling techniques including passing and shoting, block with one hand, start with vertical jump and take away ball and finally light foul. The dominant role of the guard starts from the moment the center "sat" at two meters. The basic characteristic and primary task of the guard play is the choice of a good position in the first phase of defensive action, which in the second phase of the defending play allows him effective defensive action in the spirit of the rules of the game with reduced risk of major foul and disqualification. Guard must be particularly well trained for this task in the vertical phase of the game. Efficiency of its action is directly measured by the number of major fouls and goals scored in the direct duels with the center. In the event of the loss of the ball possession of the attacking team, the task of guard is to swim with the center to two meters on the opposite side of the field in counter attack. In case the offensive attack does not end with a shot or a goal then the guard takes an agreed position in the position attack. The attacking role of the guard (usually occupying the position of an second line attacker) is manifested through a shot from the second line of the attack on the opponent's goal in the last moments of the attack, which is often successful because of the great shot power, and less with swimming towards opponent's goal. In the guard play over-maximal and maximal loads are dominant in the vertical phase of the game, in the duel and game with player more or less, but

also a large amount of swim especially with maximal and submaximal intensity, therefore very high intensities in the horizontal stage of the game, which is said to be extremely high frequencies of this type players. To properly perform such complex defense and overall tasks in the game must be specially prepared (Lozovina et al. 2003a, 2003b; Lozovina, 2009).

The center from the moment when „sat" on two meters continuously carries the guard on his back. The conditions and the complex balance in the water are now more complicated and there is really a need for special training to endure this load. This is why even the best prepared centers play a little more than two quarters in the game, playing at an extremely high level of load. In such a time in the game are efficient. Centers that are forced to play longer time, are less efficient and effective in the game, and those who force the game to play the whole game in principle are ineffective, which is logical. They can not be prepared to show such high intensity during the whole game. Playing spontaneously at a lower level of load, the efficiency in the game significantly decreases.

A special part of cener play is the game with the player more or less, which is treated as the maximum load type in the vertical position. Regarding to the excellent preparation of the first-league teams today, the center's demands from the energy point of view is extremely high. In the horizontal component(swimming in the water polo), the center mostly swim short distances(20-25 m) but with high speed and intensity. For this part of the game(transition from the phase of attack to the defense phase and vice versa) the center needs to be specially and specifically prepared. A particular problem facing a player in a center position is the choice of position in the duel with the defensive player covering it. It seems to be the most energy demanding role in water polo(Lozovina & Pavičić, 2004; Lozovina, 2009).

Authors Lozovina and Pavicic, in the works of (2002, 2003, 2004, 2006) inaugurated the methodology for the assessment of vertical and horizontal components of the situational conditions of the game in water polo. Similar problem in terms of characteristics modeling activities water polo in a vertical position during the game dealt with and authors Bratuša et al. (2002 and 2003).

Aim and hypothesis

The aim of this study is to determine whether the structure of the movement in the vertical and horizontal phase during the game in situational conditions with regard to methods, intensity, frequency and time, as equivalent for effort in the game, it is possible to determine the differences between the players who perform various tasks in the game defined by role of guard and center.

H1 - It is assumed that it will be possible to establish differences in play of guard and center in water polo with respect to the different tasks they perform during the game.
H2 – It is assumed that the play of center will be mainly defined by a vertical phase of the game, and the level of loading amount of movement therein.
H3 – It is assumed that the play of guard will be predominantly defined by horizontal phase in the game and the level of loading amount of movement therein.

Research metods

Description of the experiment

In the experimental phase, the following were objectively registered during official water polo games: quantities, means, frequencies and intensities of players' activities in the roles of wing and guard. Data collection was carried out on the official games of the International Adriatic Water Polo League in the season 2009/10. Registration and data sampling was performed by five qualified surveyors, professors of kinesiology, and experienced water polo trainers. In the game, during the time the player spent playing, all his movements, intensities and positions of the body (horizontal and vertical) were recorded. The criteria for estimation of work intensity, namely ofburden, were: maximal, sub maximal and slight. They were determined on the basis of swimming speed in the course of actions. The vertical phase in the play was registered using frequencies and time spent in duels as over-maximal load as well as frequencies and time spent in man up/down situations as maximal load . The measurers were trained in measuring the same player on 10 games. The survey was carried out only after a complete concordance among surveyors was achieved. They were positioned on high-visibility positions, which enabled optical coverage of the whole playing field. Standard water polo markers (2 m, 5 m, goal out line, center, etc.) enabled precise recording of swimming distances at various intensities of players. Each official recorded all activities of their designated player. At every moment, they had full view of the official time clock, which showed a down count of the official, clean game time and of smaller time clocks that showed ball possession and attack time. Each official consecutively recorded every action taken by his designated player. In case a player was thrown out of the game or had not been in the game (excluding time or change of players), time was measured when the player exited the game and re-entered the game.

Entity Sample

The basic information carriers in this experiment or entities are parts of a water polo match. According to the propositions, the water polo match duration

is four quarters for eight minutes of pure play, or about 17 minutes of real time per quarter. Every quarter starts in the same way, swimming on the ball that the referee puts into the game at the center of the court, and ends with the announcement of the sound signal from the court table at the end of the time. For these reasons, a quarter can be treated as a closed whole, so it is justified to use it as a measurement entity, that is, the source of information in a methodological sense. The sample of entities in this study represents 360 water polo quarters.

Sample variables

The activity of the players on the match is monitored by recording the amount and intensity of movement of the water polo player in different positions or roles in the game. This is achieved by recording frequencies, that is, the frequency of occurrence and the amount of playground space in meters.

Different activities were realized in different swimming techniques (crowl, backstroke and breaststroke) as well as different intensities with modalities light, submaximum and maximum. In addition to the above mentioned indicators, a game with a player more or less is recorded, as the number and duration of the duel. In the time spent by the water polo player in the game, the movements and intensity in the horizontal and vertical phase of the game were recorded successively. The vertical component evaluation is performed over three indicators: Duel, defined as overweight load in the vertical phase, game with player more/less, defined as maximum load in the vertical phase of the game. The total time a player spent playing during the match was also recorded. Based on the directly measured variables, new variables were introduced relating to the intensity, frequency and time spent playing with the player more/less, the total number of actions and the total amount of distances in meters.

Table 1. Authentic measured variables.

FKRMAX	frequency unit crawl, maximal
FLEDMAX	frequency unit backstroke, maximal
FKRSMAX	frequency unit crawl, sub maximal
FLESMAX	frequency unit backstroke, sub maximal
FKRLAG	frequency unit crawl, easy
FLELAG	frequency unit backstroke, easy
FPRLAG	frequency unit breaststroke, easy
FDUEL	frequency of duels
FIGVIS	frequency of actions with players more
FIGMAN	frequency of actions with players less
MKRMAX	distance in crawl in maximal speed in meters
MLEMAX	distance in backstroke in maximal speed in m
MKRSMAX	distance in crawl in sub maximal speed in meters
MLESMX	distance in backstroke in sub maximal speed (m)
MKRLAG	distance in crawl at easy speed in meters
MLELAG	distance in backstroke at easy speed in meters
MPRLAG	distance in breaststroke at easy speed in meters
MDUEL	time duration of duels in seconds
SIGVIS	time duration with players more in seconds
SIGMAN	time duration with players less in seconds
SUKUPNO	total time spent in play in seconds

Table 2. Derived variables.

FMXSMX=FKRMAX+FLEMAX+FKRSMAX+ FLESMAX
Total of frequency units in crawl and backstroke in maximal and sub maximal
MMXSMX=MKRMAX+MLEMAX+MKRSMAX+ MLESMAX
Total distance in meters in crawl and backstroke at maximal and sub maximal
FLAGAN=FKRLAG+FLELAG+FPRLAG
Total frequency units in crawl, backstroke, and breaststroke at easy
MLAGAN=MKRLAG+MLELAG+MPRLAG
Total distance in meters in crawl, backstroke, and breaststroke at easy
FIGVM=FIGVIS+FIGMAN
Total frequency with players more or less during the quarter
SIGVM=SIGVIS+SIGMAN
Total seconds played with players more or less
FAKCIJA=FMXSMX+FLAG+FIGVM
Total frequency units of distances at sub maximal, maximal, and easy plus frequency with players more or less
METARA=MMXSMX+MLAGAN
Total distance in meters in maximal, sub maximal and easy intensities

Table 3. Variables retained for final analysis.

FDUEL	Frequency of duels
MDUEL	time duration of duels in seconds
SIGVM	Total seconds played with players more or less
SUKUPNO	total time spent in play in seconds
FMXSMX	Total of frequency units in crawl and backstroke in maximal and sub maximal
MMXSMX	Total distance in meters in crawl and backstroke at maximal and sub maximal
FLAGAN	Total frequency units in crawl, backstroke, and breaststroke at easy
MLAGAN	Total distance in meters in crawl, backstroke, and breaststroke at easy
FIGVM	Total frequency with players more or less during the quarter
FAKCIJA	Total frequency units of distances at sub maximal, maximal, and easy plus frequency with players more or less
METARA	Total distance in meters in maximal, sub maximal and easy intensities

Methods and Procedure for Data Processing

Statistics of all originally measured variables and 11 variables left in the final anaysis are calculated: arithmetic mean, standard deviation, skewness and kurtosis of all variables for the position of the center and the guard in the game. Analysis of variance(ANOVA) was performed. The discriminant canonical analysis was performed. Pozition of group centroides and the structure of the discriminatory function were calculated.

Results and discussion

On the sample of 168 entities (quarters at the position of the guard in water polo), statistics of all originally measured variables (Table 4) were calculated. Results in Table 4. showed that the variables FLEMAX, FLESMAX, MLEMAX, MLESMAX and MLELAG were markedly removed from the normal distribution, which is due to their rare frequency in the game. The minimum results show that almost all of the directly measured variables have the results zero (0), it means that they do not appear in each of the observed quarter. Extremely high frequencies have variables in which crawl tehnique swimming in maximal, submaximal and light modalities was followed, as well as time spent in the game with the player more / less. The statistics of the groups of derived variables show that all have approximate normal distribution. By analyzing the central and dispersive parameters it is possible to conclude that guard in quarter spend 4.53 minutes of pure game, ie 18.14 minutes in the match, slightly more than two quarters of pure game. At this time, the guard swim 665.56 meters on average or 166.39 meters in quarter, with submaximal and maximal intensity 433.84 meters, or 108.46 meters in quarter. With a light intensity guard swim 231.68 meters on average or 57.92 meters in one quarter. With the player more / less (vertical component), the guard spend 105.56 seconds, ie 26.39 seconds per quarter.

In duels the guard spend 1.34 minutes during the whole match, or 20.11 seconds per quarter. In the vertical position at maximum load (player more / less) and overmaximal load(duel) guard spend 3.7 minutes ie 55.50 seconds per quarter.

Table 4. Authentic measured variables - Descriptive Statistics for the position Guard.

	N	Minimum	Maximum	Mean	Std.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std.	Statistic	Std.
FKRMAX	168	0	13	2,57	2,88	1,59	0,19	2,32	0,37
FLEMAX	168	0	4	0,18	0,48	4,05	0,19	24,23	0,37
FKRSMAX	168	0	20	6,14	4,36	0,81	0,19	0,52	0,37
FLESMAX	168	0	5	0,46	0,89	2,33	0,19	5,96	0,37
FKRLAG	168	0	19	5,05	4,02	0,91	0,19	0,71	0,37
FLELAG	168	0	9	1,43	1,78	1,70	0,19	3,65	0,37
FPRLAG	168	0	7	1,27	1,53	1,46	0,19	1,87	0,37
FDUEL	168	0	9	2,82	2,14	0,59	0,19	-0,22	0,37
FIGVIS	168	0	5	0,99	1,11	1,07	0,19	0,69	0,37
FIGMAN	168	0	4	0,72	0,85	1,16	0,19	1,07	0,37
MKRMAX	168	0	191	28,40	36,44	2,14	0,19	4,89	0,37
MLEMAX	168	0	13	0,61	1,73	3,83	0,19	18,38	0,37
MKRSMAX	168	0	285	77,49	57,43	0,82	0,19	0,53	0,37
MLESMAX	168	0	22	1,95	4,19	2,76	0,19	8,01	0,37
MKRLAG	168	0	166	45,15	37,27	0,82	0,19	0,08	0,37
MLELAG	168	0	58	6,70	10,03	2,57	0,19	8,58	0,37
MPRLAG	168	0	38	6,07	7,39	1,59	0,19	2,90	0,37
MDUEL	168	0	75	20,11	16,95	0,73	0,19	0,01	0,37
SIGVIS	168	0	106	14,85	17,62	1,51	0,19	3,66	0,37
SIGMAN	168	0	59	11,54	14,23	1,19	0,19	0,99	0,37
SUKUPNO	168	0	480	272,11	147,83	-0,24	0,19	-0,79	0,37
FMXSMX	168	0	28	9,35	6,63	0,67	0,19	-0,09	0,37
MMXSMX	168	0	379	108,46	78,05	0,88	0,19	0,77	0,37
FLAGAN	168	0	27	7,75	5,91	0,84	0,19	0,45	0,37
MLAGAN	168	0	203	57,93	44,63	0,77	0,19	0,05	0,37
FAKCIJA	168	0	50	18,81	11,20	0,22	0,19	-0,35	0,37
METARA	168	0	474	166,39	98,84	0,29	0,19	-0,12	0,37

On the sample of 192 entities (quarter on the position of the center in water polo) statistics of all originally measured variables (Table 5) were calculated. Results in the Table 5. showed that the variables FLEMAX, FLESMAX, MLEMAX, MLESMAX, FPRLAG, FKRMAX MKRMAX were markedly removed from the normal distribution, which is due to their rare frequency in the center game. The minimum results show that all directly measured variables also have the results of zero (0),

meaning they do not appear in each of the observed quarters. Extremely high frequencies have variables of swimming with crawl technique in modalities maximum, submaximum and easy.

Table 5. Authentic measured variables - Descriptive Statistics for the position Center.

	N	Minimum	Maximum	Mean	Std.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std.	Statistic	Std.
FKRMAX	192	0	9	1,30	1,64	1,97	0,18	4,45	0,35
FLEDMAX	192	0	1	0,05	0,21	4,32	0,18	16,85	0,35
FKRSMAX	192	0	18	5,85	3,55	0,52	0,18	0,35	0,35
FLESMAX	192	0	2	0,16	0,48	3,01	0,18	8,09	0,35
FKRLAG	192	0	17	5,02	3,38	0,39	0,18	-0,28	0,35
FLELAG	192	0	4	0,90	1,04	0,99	0,18	0,11	0,35
FPRLAG	192	0	5	0,48	0,84	2,06	0,18	4,95	0,35
FDUEL	192	0	10	3,84	2,20	0,32	0,18	-0,28	0,35
FIGVIS	192	0	5	0,98	1,04	1,09	0,18	1,41	0,35
FIGMAN	192	0	4	0,75	0,84	1,09	0,18	1,04	0,35
MKRMAX	192	0	94	11,78	16,50	2,10	0,18	5,24	0,35
MLEMAX	192	0	4	0,11	0,53	5,16	0,18	27,70	0,35
MKRSMAX	192	0	275	82,91	53,02	0,55	0,18	0,03	0,35
MLESMAX	192	0	25	0,85	3,02	4,75	0,18	26,97	0,35
MKRLAG	192	0	213	51,29	38,10	0,73	0,18	0,76	0,35
MLELAG	192	0	29	4,06	5,74	1,71	0,18	2,67	0,35
MPRLAG	192	0	21	2,41	4,28	1,92	0,18	3,54	0,35
MDUEL	192	0	78	23,89	15,38	0,66	0,18	0,27	0,35
SIGVIS	192	0	94	14,06	16,39	1,67	0,18	4,19	0,35
SIGMAN	192	0	71	11,44	13,89	1,28	0,18	1,62	0,35
SUKUPNO	192	0	480	247,85	113,05	-0,15	0,18	-0,30	0,35
FMXSMX	192	0	24	7,36	4,51	0,67	0,18	0,76	0,35
MMXSMX	192	0	281	95,65	57,25	0,40	0,18	-0,30	0,35
FLAGAN	192	0	19	6,40	4,10	0,39	0,18	-0,35	0,35
MLAGAN	192	0	215	57,76	41,29	0,62	0,18	0,25	0,35
FAKCIJA	192	0	43	15,49	7,46	0,22	0,18	0,52	0,35
METARA	192	0	343	153,41	74,56	0,05	0,18	-0,16	0,35

The statistics of the groups of derived variables(Table 6) show that all have approximate normal distribution. By analyzing central and dispersive parameters it is possible to conclude that the center spend 4.13 minutes of pure play per quarter, ie 16.52 minutes wich is slightly over two quarters of pure game in match. At that time, the center swim 613.64 meters on average ie 153.41 meters per quarter, with submaximal and maximal intensity 382.6 meters on average ie 95.65 meters per quarter. With light intensity, he swims 231.04 meters, ie 57.76, meters per quarter.

With the player more / less (vertical component) the center spend 102 seconds in game, ie 25.5 seconds per quarter. In the duels the center spend a little time, 1.59 minutes throughout the game, or 23.89 seconds per quarter. In a vertical position at maximum load(more / less player) and overmaximal load(duel) center spend 3.29 minutes or 49.39 seconds per quarter.

The analysis of variance(Table 6) showed that the variables: FDUEL, MDUEL, FMXSMX, FLAGAN and FAKCIJA statistically significantly differ guard and center roles at the significance level of 0.05.

Table 6. Statistics, Analysis of variance on the variables retained for final analysis (F-test).

	GUARD						CENTER								
	MIN	MAX	MEAN	S.D.	A3	A4	MIN	MAX	MEAN	S.D.	A3	A4	Wilks	F-test	p
FDUEL	0	9	2,82	2,14	0,59	-0,22	0	10	3,84	2,20	0,32	-0,28	0,95	19,8	0,00
MDUEL	0	75	20,11	16,95	0,73	0,01	0	78	23,89	15,38	0,66	0,27	0,99	4,9	0,03
SUKUPNO	0	480	272,11	147,83	-0,24	-0,79	0	480	247,85	113,05	-0,15	-0,30	0,99	3,1	0,08
FMXSMX	0	28	9,35	6,63	0,67	-0,09	0	24	7,36	4,51	0,67	0,76	0,97	11,3	0,00
MMXSMX	0	379	108,46	78,05	0,88	0,77	0	281	95,65	57,25	0,40	-0,30	0,99	3,2	0,07
FLAGAN	0	27	7,75	5,91	0,84	0,45	0	19	6,40	4,10	0,39	-0,35	0,98	6,5	0,01
MLAGAN	0	203	57,93	44,63	0,77	0,05	0	215	57,76	41,29	0,62	0,25	1,00	0,0	0,97
FAKCIJA	0	50	18,81	11,20	0,22	-0,35	0	43	15,49	7,46	0,22	0,52	0,97	11,2	0,00
FIGVM	0	7	1,71	1,65	0,91	0,43	0	7	1,73	1,43	1,01	1,34	1,00	0,0	0,87
SIGVM	0	129	26,39	26,89	1,14	1,52	0	139	25,50	23,30	1,50	3,65	1,00	0,1	0,74
METARA	0	474	166,39	98,84	0,29	-0,12	0	343	153,41	74,56	0,05	-0,16	0,99	2,0	0,16
	N=168						N=192								

(S.D.- standard deviation, A_3-skewness, A_4-curtosis, p-level of significance, N-entity)

The results of the canonical discriminative analysis (Table 7) is one statistically significant discriminatory function.

Table 7. Significance of canonic discrimination function.

Test of Function(s)	Eigenvalue	% of Variance	Canonical Correlation R	Wilks' Lambda	Chi-square	Coeficient of Detemination R^2	df	Sig,
1	0,32	100	0,49	0,76	98,34	0,24	9	0,00

Table 8. Funtions at Group Centroids.

Position	Function
	1
Guard	0,60
Center	-0,53

Table 9. Structure of discrimination function.

	Function
	1
FDUEL	-0,42
FMXSMX	0,31
FAKCIJA	0,31
FLAGAN	0,24
MDUEL	-0,21
MMXSMX	0,17
SUKUPNO	0,16
METARA	0,13
SIGVM	0,03
FIGVM	-0,01
MLAGAN	0,00

The calculated structure of the discriminative function (Table 9) unambiguously indicates that the centers are defined and from the guard differed by variables FDUEL (-0.42) and MDUEL (-0.21), negative oriented, which describe the overmaximal load in the vertical phase in the game of center. Guards are defined and from centers differed by variables: FMXSMX (0.31), Factor (0.31) and FLAGAN (0.24), ie the frequency of distances swim at submaximal and maximal intensity, the total frequency of the actions and the frequencies of distances swim at a light intensity,frequency of action at intensity in modalities maximum, submaximum and lightl in the horizontal phase of the game. What is possible to declare common and what makes the minimum difference between the guard and the center are the variables: MMXSMX (0.16), SUKUPNO (0.16) and METARA (0.13), therefore the meters swam with maximal and submaximal intensity, total time spent in the game and the total distances swam

Calculated centroides of groups(Table 8) indicate that the guard and the center positions differ significantly between each other.

during the match. What does not distinguish center and guard in the game and it's practically the same are variables SIGVM (0.03) and MLAGAN (0,00), time played with an uneven number of players and distances swam in easy intensity.

Conclusion

The chosen system of originally measured and derived variables as well as the system of variables left for the final analysis proved to be very efficient.

The aim of this study to determine if the structure of movement in the vertical and horizontal phase of the game during a match in situational conditions with regard to modes, intensity, frequency and time, as the determinants of the load equivalent in the game, can be determined by differences between players performing different tasks in the game is fully confirmed in this paper. The hypothesis that it is likely to be possible to determine the differences between the game of guard and the center in the water polo with regard to the various tasks performed during the match is confirmed in this paper. The hypothesis that the game of center is supposed to be predominantly defined by the vertical phase of the game, the levels of load and the amount of movement in it is also confirmed in this paper. The set hypothesis that the guard game will be dominately defined by the horizontal phase of the game: frequencies, load levels and the amount of movement in it is also confirmed in this paper. A set of indicators constructed to collect data according to the results obtained can be recommended for further use and analysis of different aspects of player loading at any position in the water polo, which is a direct and significant scientific contribution. The practical importance of this work is manifested in the ability to directly apply the results in sports practice by planning, programming and performing the training for water polo players entrusted to the role of the center and the guard.

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