THE DIFFERENCES BETWEEN WINNING AND DEFEATED FOOTBALL TEAMS WHILE PERFORMING VARIOUS ACTIVITIES WITH A BALL

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Summary
The aim of research is establishing qualitative differences between winning and defeated football teams while doing different activities with a ball. This research has shown and confirmed that successful football teams (the winner) are statistically better at activities with a ball which enabled them to play more successfully, i.e. the teams which are well-prepared in terms of technique and tactic and they used that in the game and finally won the game. The results of this research allow the insight into the model (character and qualitative structure) of technical and tactical efficiency of winning football teams (i.e. successful teams) taken from the games of particular groups of matches and then comparing this model with specific technical and tactical possibilities of the certain team (with necessary caution) aiming greater efficiency and qualitative restructuring technical and tactical elements in the training process of footballers in order to develop better model of the game and increase the effect of training.

Key words: *winning and defeated football teams, activities with a ball.*

INTRODUCTION

The footballers' success during the match depends on a number of factors, such as physical competences, functional possibilities of their organism, technical and strategic capabilities, the level of theoretical and psychological ability and a set of other internal and external factors. The overall activity may be followed by tests and different scanning methods used in reality. Today there is a strong need to measure footballer's activity under complex game conditions in a quantitative and qualitative way. It is a complex practice but also useful since the information needed for work programming, evaluating of possibilities of footballer's development and assessing the current ability of players will be available. In reality different tests for assessing physical abilities, character and other traits are used. Scanning methods for checking footballer's activities under game conditions is used less frequently. The movement structure in a footballer's game is different. Often, completely new and unique movements required by a situation during the match must be performed, and thus following such activities is much impeded. However, all footballers come into contact with a ball which is an intermediary among them. Therefore all the methods by which technical, strategic and other players' activities during the match are examined are directed to observing players' behaviour when the ball is carried or when they play towards the ball. The references (Lazić, N. 1991, Jovanović, D. 1996, Radosav, R. et al. 2003, Smajić, M. et al. 1999 and 2006) state the measurements where the following footballers' activities have been observed: the overall running with or without a ball during the match, pace of running, range and efficiency of technical elements, length of the match, interruption of the game and so on. With all these observed elements the organizer introduces certain specific features and registers the information he or she considers necessary. All these instances of scanning do not have harmonized methodologies, and usually range and efficiency of these technical and strategic elements are observed. The problem of this research lies in establishing the differences between winning and defeated football teams while performing different activities with a ball. Due to a problem posed in such a way, the objective of research is limited to observing technique elements (ball activities), that is those that can be monitored by video recording. The aim of research is establishing qualitative differences between winning and defeated football teams while doing different activities with a ball.

METHODS

Sample of observed matches

In this research there were 16 matches in total within the Champions League in the season 2007/2008.

Sample of variables

The sample of variables in this research consists of some elements of techniques, that is 9 variables for estimating the activities with a ball: 1. short play from the first attempt [TEKROIPD, TEKROIPP, TEKROIPU], 2. long play from the first attempt [TEDUOIPD, TEDUOIPP, TEDUOIPU], 3. short play after reception [TEKROPPD, TEKROPPP, TEKROPPU], 4. long play after reception [TEDUOPPD, TEDUOPPP, TEDUOPPU], 5. short play after controlling [TEKROPVD, TEKROPVP, TEKROPVU], 6. long play after controlling [TEDUOPVD, TEDUOPVP, TEDUOPVU], 7. goal shot from the first attempt [TEUNGIPD, TEUNGIPP, TEUNGIPU], 8. goal shot after reception [TEUNGPPD, TEUNGPPP, TEUNGPPU], 9. goal shot after controlling [TEUNGPVD, TEUNGPVP, TEUNGPVU].

The possibility of solving the problem of research successfully depends not only on the way of data collecting but also on well-chosen statistical data processing.

The appropriate statistical methods are applied for all the variables used for the objective of research.

The methods for data processing are so chosen that can enable solving the problem in the appropriate way as well as accomplishing the aim of this research. In this research two statistical methods are applied:

1. descriptive statistical parameters, which are used for all winning and defeated teams, every used technical and strategic variable and every variable of the success of football game in attack.

2. discriminative analysis is used to highlight the differences between winning and defeated football teams while doing various activities with a ball.

RESULT AND DISCUSSION

In order to determine the qualitative elements in applied variables, the discriminative analysis between winning and defeated football teams is used. This analysis groups the differences between the two above-mentioned groups of teams. Since the differences between two groups of teams is examined, one discriminative function or factor is gained. For the purposes of establishing the criterion for pointing out the differences between groups in the applied systems of manifesting variables, Wilks' lambda and values of Hi square are calculated and they are placed in the mutual relation (p). Likewise centroids for both groups (winning and defeated football teams) are calculated. The complete procedure is done for proper controlling of certain elements of activities with a ball (if the ball is passed to the player from the same team or if there is a goal shot) and for improper (different from well-performed elements) and for total (the sum of well- and badly-performed elements).

Table (1) shows that the value is p=.03 which means that the differences between winning and defeated football teams regarding the number of well-performed elements of activities with a ball is statistical important, that is the isolated discriminative function is statistically significant.

Comparing the centroids of the group with the average values of each manifesting variable (Tables 2a and 2b) it is seen that the discriminative function belongs to winning teams, that is winning teams are statistically different regarding well-performed activities with a ball. Hierarchically greatest differences are caused by the variable or element of goal shot after controlling (TEUNGPVD), then goal shot after reception (TEUNGPPD) and long play after reception (TEDUOPPD). These variables contribute most to discrimination between groups.

Table 1. The structure of discriminative function between winning and defeated football teams in a well-performed activities with a ball

VARIABLE		FUNCTION
TEKROIPP		.010
TEDUOIPP		-.000
TEKROPPP		.000
TEDUOPPP		**-.306 ***
TEKROPVP		.024
TEDUOPVP		-.146
TEUNGIPP		.218
TEUNGPPP		**.360 ***
TEUNGPVP		**.381 ***
SQUARE OF CANNONIC CORELATION (LAMBDA)		.483
HI – SQUARE TEST		18.510
THE LEVEL OF SIGNIFICANCE (p)		.029
CENTROIDS	***WINNERS***	.999
	DEFEATED	-.999

Table 2a *Descriptive statistic parameters of well-performed activities with a ball of winning football teams*

VARIABLES	MIN	MAX	VWIDTH	AR.MEAN	ST.DEV.	ST.MIST.	Sk	Kt
TEKROIPD	92.000	184.000	92.000	122.750	28.202	7.050	.775	-.273
TEDUOIPD	6.000	29.000	23.000	16.625	6.682	1.670	-.038	-.475
TEKROPPD	52.000	212.000	160.000	133.375	54.232	13.558	-.092	-1.322
TEDUOPPD	8.000	28.000	20.000	15.813	5.844	1.461	.415	-.467
TEKROPVD	33.000	156.000	123.000	70.375	30.135	7.533	1.566	3.570
TEDUOPVD	6.000	19.000	13.000	12.063	3.957	.989	.264	-1.098
TEUNGIPD	1.000	9.000	8.000	4.687	2.626	.656	-.014	-1.111
TEUNGPPD	0.000	4.000	4.000	1.875	1.500	.375	.241	-1.579
TEUNGPVD	0.000	4.000	4.000	1.750	1.064	.266	.189	.213

Table 2b. *Descriptive statistic parameters of well-performed activities with a ball of defeated football teams*

VARIABLES	MIN	MAX	VWIDTH	AR.MEAN.	ST.DEV.	ST.MIST.	Sk	Kt
TEKROIPD	69.000	180.000	111.000	122.125	30.037	7.509	.141	-.227
TEDUOIPD	6.000	29.000	23.000	16.625	7.182	1.795	.070	-1.075
TEKROPPD	69.000	242.000	173.000	133.313	50.976	12.744	.948	.449
TEDUOPPD	9.000	34.000	25.000	20.188	8.248	2.061	.553	-.799
TEKROPVD	30.000	124.000	94.000	68.938	28.983	7.245	.480	-.854
TEDUOPVD	3.000	26.000	23.000	13.688	6.769	1.692	.666	-.181
TEUNGIPD	1.000	9.000	8.000	3.563	2.529	.632	1.018	.165
TEUNGPPD	0.000	3.000	3.000	.938	1.062	.265	.900	-.258
TEUNGPVD	0.000	3.000	3.000	.937	1.062	.265	.900	-.258

Statistically significant differences between winning and defeated football teams regarding the number of wrong activities with a ball are not determined. Table 3 shows discriminative function with p= .55, which is not statistically significant and more detailed interpretation of this function does not have particular significance. By comparing centroids of the groups and average values of every manifesting variable (Tables 4a and 4b) it is possible to point out only possible remark that the greatest projections of manifesting variables on discriminative function belong to defeated teams, that is the defeated teams differ most in badly-performed activities with a ball especially with the element long play after controlling (TEDUOPVP), long play after reception (TEDUOPPP) and goal shot after reception (TEUNGPPP).

Table 3. *The structure of discriminating function between winning and defeated football teams in badly-performed activities with a ball*

VARIABLES		FUNCTION
TEKROIPP		.089
TEDUOIPP		.267
TEKROPPP		-.130
TEDUOPPP		**-.482 ***
TEKROPVP		.174
TEDUOPVP		**-.548 ***
TEUNGIPP		-.177
TEUNGPPP		**.436***
TEUNGPVP		.287
SQUARE OF CANNONIC CORELATION (LAMBDA)		.735
HI – SQUARE TEST		7.836
THE LEVEL OF SIGNIFICANCE (p)		.550
CENTROIDS	***WINNERS***	.580
	DEFEATED	-.580

Table 4a. Descriptive statistical parameters of badly-performed activities with a ball of winning football teams

VARIABLES	MIN	MAX	VWIDTH	AR.MEAN	ST.DEV.	ST.MIST.	Sk	Kt
TEKROIPP	11.000	46.000	35.000	24.000	10.398	2.599	.619	-.438
TEDUOIPP	13.000	51.000	38.000	29.375	10.333	2.583	.238	-.276
TEKROPPP	5.000	28.000	23.000	13.938	5.949	1.487	.880	.674
TEDUOPPP	11.000	26.000	15.000	17.813	4.847	1.211	.243	-1.188
TEKROPVP	2.000	34.000	32.000	12.500	8.197	2.049	1.252	2.051
TEDUOPVP	5.000	22.000	17.000	10.688	4.798	1.199	.919	.583
TEUNGIPP	1.000	9.000	8.000	3.938	1.806	.451	1.346	3.497
TEUNGPPP	0.000	4.000	4.000	1.500	1.154	.288	.593	-.065
TEUNGPVP	0.000	10.000	10.000	2.250	2.516	.629	2.143	5.640

Table 4b. *Descriptive statistical parameters of badly-performed activities with a ball of defeated football teams*

VARIABLE	MIN	MAX	VWIDTH	AR.MEAN	ST.DEV.	ST.MIST.	Sk	Kt
TEKROIPP	9.000	40.000	31.000	23.063	7.270	1.817	.335	1.224
TEDUOIPP	11.000	59.000	48.000	25.563	13.956	3.489	1.243	.982
TEKROPPP	8.000	21.000	13.000	14.688	3.682	.920	-.008	-.715
TEDUOPPP	8.000	32.000	24.000	21.250	7.197	1.799	-.063	-.876
TEKROPVP	5.000	18.000	13.000	11.188	4.036	1.009	-.093	-.916
TEDUOPVP	6.000	23.000	17.000	13.938	5.384	1.346	.449	-.494
TEUNGIPP	1.000	11.000	10.000	4.438	2.920	.730	.971	.010
TEUNGPPP	0.000	3.000	3.000	.937	1.062	.265	.900	-.258
TEUNGPVP	0.000	7.000	7.000	1.500	1.932	.483	1.774	3.403

Table 5 shows statistically significant discriminative function at the level p= .01 which means that winning and defeated football teams differ considerably in term of statistics regarding the elements with a ball. The structure of discriminative function is heterogeneous alongside the forename which means that winning teams have been more successful in case of some elements but the defeated teams have been better in case of the others. Comparing the centroids of the groups with the average values of every manifesting variable (Tables 6a and 6b) it is seen that the winning teams differ considerably from the defeated ones by the absolute number of elements for estimating the activities with a ball although much bigger value in the variables goal shot after reception (TEUNGPPU) and long play after reception (TEDUOPPU) is seen. The previous analyses show that the winning teams had fewer wrong activities with a ball so it is logical that total value in the whole system of variables is smaller, and logically these are positive results, that is they contribute to better performance of winning teams.

Table 5. *the structure of discriminative function between winning and defetead football teams in all* activities perfromed with a ball

VARIABLE		FUNCTION
TEKROIPU		-.021
TEDUOIPU		-.100
TEKROPPU		.005
TEDUOPPU		**.312 ***
TEKROPVU		-.037
TEDUOPVU		.252
TEUNGIPU		-.073
TEUNGPPU		**-.442 ***
TEUNGPVU		-.262
SQUARE OF CANNONIC CORELATION (LAMBDA)		.437
HI – SQUARE TEST		21.095
THE LEVEL OF SIGNIFICANCE (p)		.012
CENTROIDS	***WINNERS***	-1.098
	DEFEATED	1.098

Table 6a. *Descriptive statistical parameters of all performed activities with a ball of winning football teams*

VARIABLES	MIN	MAX	VWIDTH	AR.MEAN.	ST.DEV.	ST.MIST.	Sk	Kt
TEKROIPU	105.000	230.000	125.000	146.750	33.347	8.336	1.163	1.438
TEDUOIPU	20.000	70.000	50.000	46.000	15.130	3.782	-.191	-.776
TEKROPPU	64.000	227.000	163.000	147.313	55.911	13.977	-.116	-1.290
TEDUOPPU	20.000	49.000	29.000	33.625	9.149	2.287	.144	-.814
TEKROPVU	36.000	190.000	154.000	82.875	36.989	9.247	1.583	3.993
TEDUOPVU	13.000	39.000	26.000	22.750	7.707	1.926	.767	-.437
TEUNGIPU	3.000	14.000	11.000	8.625	3.180	.795	-.076	-.822
TEUNGPPU	1.000	8.000	7.000	3.375	1.668	.417	1.282	3.225
TEUNGPVU	0.000	12.000	12.000	4.000	2.851	.713	1.478	3.144

Table 6b. *Descriptive statistical parameters of all performed activities with a ball of defeated football teams*

VARIABLES	MIN	MAX	VWIDTH	AR.MEAN.	ST.DEV.	ST.MIST.	Sk	Kt
TEKROIPU	78.000	205.000	127.000	145.188	33.560	8.390	.107	.224
TEDUOIPU	19.000	88.000	69.000	42.187	19.291	4.822	1.026	.578
TEKROPPU	78.000	261.000	183.000	148.000	53.400	13.350	.935	.381
TEDUOPPU	22.000	65.000	43.000	41.438	13.226	3.306	.245	-.829
TEKROPVU	40.000	134.000	94.000	80.125	30.192	7.548	.359	-.937
TEDUOPVU	15.000	49.000	34.000	27.625	9.769	2.442	.761	.170
TEUNGIPU	3.000	16.000	13.000	8.000	4.412	1.103	.771	-.858
TEUNGPPU	0.000	4.000	4.000	1.875	1.408	.352	.250	-1.079
TEUNGPVU	0.000	10.000	10.000	2.438	2.555	.638	1.877	4.425

CONCLUSION

On the basis of analysis of the results of examining the difference between winning and defeated football teams in doing various activities with a ball where discriminative statistical procedure has been used, the following can be pointed out:

1. All isolated discriminative functions belonged to winning teams and their structures show that all qualitative differences belong to winning teams, i.e. all the winning teams differ from the defeated ones regarding good performance of almost all activities with a ball.
2. The winning teams performed all the activities with a ball better than the defeated ones.
3. All obtained discriminative functions are statistically important in the level of .00 and they convey all the information about the structure of differences between winning and defeated football teams in applied activities with a ball.
4. This overall analysis of data and obtained results lead to the conclusion that the quality of the game is highly influenced by the performance of the activities with a ball and, of course, the number of successful attempts.
5. This research has shown and confirmed that successful football teams (the winner) are statistically better at activities with a ball which enabled them to play more successfully, i.e. the teams which are well-prepared in terms of technique and tactic and they used that in the game and finally won the game.
6. The results of this research allow the insight into the model (character and qualitative structure) of technical and tactical efficiency of winning football teams (i.e. successful teams) taken from the games of particular groups of matches and then comparing this model with specific technical and tactical possibilities of the certain team (with necessary caution) aiming greater efficiency and qualitative restructuring technical and tactical elements in the training process of footballers in order to develop better model of the game and increase the effect of training.

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RAZLIKE IZMEĐU POBJEDNIČKIH I PORAŽENIH FUDBALSKIH TIMOVA U IZVOĐENJU RAZLIČITIH AKTIVNOSTI S LOPTOM

Originalni naučni rad

Sažetak
Cilj rada je utvđivanje kvalitativnih razlika između pobjedničkih i poraženih fudbalskih timova prilikom različitih aktivnosti s loptom. Ovo istraživanje je pokazalo I potvrdilo da su pobjednički timovi bolji u aktivnostma s loptom što omogućava timovima da igraju uspješnije tj. da timovi koji su bolje tehnički i taktički pripremljeni iskoriste tu prednost i na kraju pobijede. Rezultati istraživanja dopuštaju pogled na model (karakter i kvalitativnu strukturu) tehničke i taktičke efikasnosti pobjedničkih timova (tj.uspješnih timova) uzetih iz utakmica posebnih grupa mečeva te zatim poređenje ovog modela sa specifičnim tehničkim i taktičkim mogućnostima pojedinih timova (s neophodnim oprezom) s ciljem veće efikasnosti i kvalitativnog restruktuiranja tehničkih i taktičkih elemenata u trenažnom procesu fudbalera kako bi se razvio bolji model igre i povećao efekat treninga.

Ključne riječi: pobjednički i poraženi timovi, aktivnosti s loptom.

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