IMPORTANCE OF RED CARDS IN FOOTBALL CONSIDERING FINAL OUTCOME OF THE MATCH AND LEAGUE SYSTEM OF COMPETITION

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Abstract

Based on 88 matches of 2014/2015 First Croatian football league we established the importance of red cards considering the final outcome of the match and the competition. Using Mann-Whitney test and Pearson correlation coefficient we concluded that red cards as situational efficacy indicators do not pose a statistically significant difference between the winning and the defeated team (p=0,44), whereas there is a moderate negative relation to final placement in league system of competition (r=-0,54). These results show that warning the player, especially in the case of a red card which disqualifies them, does not influence the match outcome itself, but there needs to be a control system throughout league system of competition.

Key words: *red cards, notational analysis, situational efficacy, football, warnings*

Introduction

Matches, team or individual sports or martial arts competitions can be observed as complex dynamic systems in which two opposing entities fight for a win (two teams, two pairs, or two individuals). The performance of these entities and its success are determined by level of abilities, skill, and knowledge of players participating in the result of the competition- victory as the final goal. In football, this happens in a match. Systemic observation of the football match shows many characteristic events in the play which repeat themselves, are recognizable, and can be noted down. These events and their outcomes show a degree of situational efficacy of players and the team, and the level of their performance. Analyzing these events can show why a certain team won, or how the final result of the match was achieved.

A red card is a disciplinary measure utilized by the referee according to the match rules when a player breaks rules in a significant way, or due to accumulated warnings (second yellow card). This disqualifies the player from further play. There are two modalities for describing a red card based on the role a certain player had in rule-breaking. First, the red card or the second yellow card is ascribed to the player actively breaking the rules, disqualifying him from the play. Second, the red card or the second yellow card is ascribed to the player that was in a passive position of the rule-breaking (Bašić et al., 2015). Analyzing the red card parameter we can determine if the mentioned situational efficacy indicator is relevant and related to final outcome of the match and league system of competition.

Methods

Analysis material
Research was done on 88 matches of Max tv First Croatian football league.

We analyzed one half-season consisting of 90 matches. Due to certain technical difficulties, one match was not recorded, and one ended in 3:0 due to rule-breaking.

Sample
Entities in this research are teams. First Croatian football league consists of 10 clubs.

Variable sample
Matches were described using notated performance indicators (variables) – red cards (Bašić et al., 2015)

Data collection
Matches were filmed on HDD/DVD in form of video. Using a special computer tool named Courteye the matches were analyzed and prepared for data analysis. Five notators worked on match analysis.

Statistical analysis
To determine reliability of gathered data we used the *intra-observer variability* for differences between different data gathered by the same notator (Hughes and assoc., 2002, 2003, 2004). For red cards we determined a reliability of 100%. For determining differences between winning and defeated teams, we used Mann-Whitney test and Pearson correlation coefficient to determine the connection between performance indicators and final outcome of the competition.

Results

Based on analyzed matches we can see the relation between *red cards* as situational efficacy indicators and final placement in league system of competition, and establish if there are any statistically significant differences between winning and defeated teams considering the said parameter.

Table 1. Final placement of teams after the half-season (TEAM), total number of matches played (NM), number of wins (WIN), draws (DRAW) and defeats (LOS), as well as the number of points (PTS), number of points per match (PTS/M) and total number of red cards (N-RC), arithmetic mean of red cards (AM-RC) and correlation coefficient of red cards and final placement (r).

TEAM	NM	WIN	DRA	WIN	LOS	PTS/M	N-RC	AM-RC
Dinamo	17	13	4	0	43	2,53	1	0,06
Rijeka	18	12	3	3	39	2,17	1	0,06
Hajduk	17	8	5	4	29	1,71	0	0,00
Lokomotiva	18	7	4	7	25	1,39	1	0,06
Zagreb	18	6	6	6	24	1,33	1	0,06
Slaven Belupo	17	5	5	7	20	1,18	0	0,00
Split	17	3	8	6	17	1,00	1	0,06
Istra 1961	18	3	7	8	16	0,89	2	0,11
Osijek	18	4	3	11	15	0,83	3	0,17
Zadar	18	3	3	12	12	0,67	6	0,33
r=-0,54								

Table 2. Arithmetic mean (AM) and standard deviation (SD) of red cards of winning (WIN) and defeated (LOS) teams, and z-value (z) for determining significance differences and errors (p).

	AM	SD	z	p
WIN	0,04	0,21	-0,76	0,44
LOS	0,13	0,33		

Discussion and conclusion

Based on results (Table 1 and 2) of correlation coefficient (r=-0,54) and difference in arithmetic mean between winning (AM=0,04) and defeated teams (AM=0,13), which is not statistically significant (p=0,44), we can conclude that *red card*, as a situational efficacy indicator, does not pose a difference between winning and defeated teams and is not related to final placement in league system of competition. These results match those of other authors (Lago-Penas and Lago-Ballesteros, 2011; Lago-Penas et al., 2010). Red card represents a high level of rule-breaking in football, but it is a rare event, so there is no significant influence to final outcome and placement in league system of competition, even though there are individual examples of teams with one less player due to red cards which results in imbalance and negative result of this particular match. We should mention that red cards have a more significant influence in tournament system of competition where a single match decides on placements (Castellano, Casamichana and Lago, 2012). Also, in league system of competition there can be a team that „plays dirty" because their players are lacking defense skills and utilize unallowed moves (breaking the rules). In this case the number of red cards shows a lower level of technical and technical functioning in defense phase. Also, because a match represents a certain psychological pressure and demands emotion control, receiving a red card for behaviour not directly related to a defense tool but some other form of rule-breaking (arguing or physically attacking the opponent) points to errors in psychological preparation and not enough psychological qualities for functioning in extreme conditions of a match. Based on results for variable *red card* we can conclude that it does not pose a significant difference between winning and defeated teams. Even though it points to a certain (not significant) negative relation to final placement, it is not significant as a situational efficacy indicator.

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VAŽNOST CRVENIH KARTONA U NOGOMETU OBZIROM NA KRAJNJI ISHOD UTAKMICE I SUSTAV LIGE NATJECANJA

Sažetak

Na temelju 88 utakmica prve Hrvatske nogometne lige sezona 2014/2015 utvrđivana je važnost crvenih kartona obzirom na konačan ishod utakmice i natjecanja. Primjenom Mann-Whitneyjevog testa i Pearsonovog koeficijenta korelacije dobiveni su podaci da crveni kartoni kao situacijski pokazatelj efikasnosti statistički značajno ne razlikuje pobjedničke od poraženih ekipa (p=0,44), dok je umjereno negativno povezan s kranjim plasmanom u ligaškom sustavu natjecanja (r=-0,54). Dobiveni rezultati ukazuju da opomena igrača, posebice kada se radi o crvenom kartonu koji je isključujuč, ne utječe na ishod same utakmice, ali postoji potreba kontrole kroz ligaški susatv natjecanja.

Ključne riječi: *crveni kartoni, notacijska analiza,situacijska efikasnost, nogomet, opomene*