## THE IMPORTANCE OF OFFENSE CORNER KICKS IN FOOTBALL WITH REGARD TO 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 determined the importance of offense corner kicks with regard to final outcome of the match and the competition. Using Mann-Whitney test and Pearson correlation coefficient we gathered data about how corner kicks as situational efficacy indicators do not distinguish significantly between winning and defeated teams (p=0,29), but they show a relatively high positive correlation with final placement in league system of competition (r=0,79). Gathered results point to importance of controlling the spatial and time relations inside of the match - the optimal flow of technical and tactical elements during game stops.

Key words: corner kick, notational analysis, situational efficacy, football

## Introduction

Team and individual sports or martial arts combats can be observed as complex dynamic systems where two opponents clash (two teams or two individuals) and their performance is determined by the level of abilities, skills, and knowledge which players and competitors use in order to eventually win. In football, this clash occurs during a match.

Observing the football match you can notice many characteristic events which can be recognized and noted, and which show the degree of situational efficacy of player and team, and the level of their performance. Analysis of these events can show why a certain team had a competitive advantage and how the final score was acquired. Corner shot is a game event performed by kicking the ball (pass or center shot) from the place where horizontal and vertical lines meet - where there are a corner flag and a corner angle. The referee judges the corner kick when the ball touched a defense player and went over the sidelines via ground or air without scoring a goal.

There are four types of corner shots based on their type and outcome: corner center shot - goal scored (offense player directs the ball from corner to coplayers in the offense end zone with the directive of creating opportunity for scoring a goal, after which a co-player from as much as a third contact with the ball scores a goal, or has a one-on-one with the goalie and then scores a goal regardless on ball contact number); corner center shot - successful (offense player directs the ball from corner to coplayers in the offense end zone with the directive of creating opportunity for scoring a goal, after which the co-player reaches the ball first and directs the ball to the goal door (with no goal scored) or after the center shot there is some other offense action(receiving, passing, dribbling); corner center shot - unsuccessful (offense player directs the ball from corner to co-players in the offense end zone with the directive of creating opportunity for

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scoring a goal, but no one of the co-players reaches the ball and the ball ends at opponent's defense players, opponent goalie, or outside of the field); corner kick done by passing the ball to co-player from the corner (short pass)) (Bašić et al., 2015). Analyzing the parameters of offense corner kick we can establish relevance of mentioned situational efficacy indicator with regard to final outcome of the match and league system of competition.

## Methods

#### Material for analysis

Research was conducted on 88 matches of Max TV first Croatian football league. For the needs of this study we analyzed a half-season consisting of 90 matches. Due to certain technical issues, one match was not filmed, and one ended in 3:0 score because the rules were not upheld.

#### Sample

Entities of this research are teams. First Croatian football league has 10 clubs.

#### Variable sample

Matches were described using notated performance indicators (variables) of the corner shots (Bašić et al., 2015).

#### Data collection

Matches were filmed to HDD/DVD in the form of video. Using a special computer tool called Courteye, matches were analyzed and prepared for data study. Five notators worked on analyzing the matches.

#### Statistical analysis

For determining the reliability of gathered data, we used the intra-observer variability for differences between data gathered by the same notator on two different occasions (Hughes et al., 2002, 2003, 2004).

For corner shots we gathered 94% reliability. For determining the differences between winning and defeated teams, we used t-test and Pearson correlation coefficient to establish the connection between performance indicators and final outcome of the competition.

## Results

Based on analyzed matches we can see the relation between *corner kicks* as situational efficacy indicators and the final placement in league system of competition and establish whether there are statistically significant differences between winning and defeated teams in the observed parameter.

Table 1. Final ranking of teams after a half-season (TEAM), total number of matches played (NM), number of wins (WIN), draws (DRAW) and losses (LOS), as well as the number of points (PTS), number of points per match (P/M) and total number of corner kicks (CK), arithmetic mean of corner kicks (AM-CK) and correlation coefficient of offense corner kicks and final placement (r)

TEAM	NM	WIN	DRAW	LOS	PTS	P/M	СК	AM-CK	
Dinamo	17	13	4	0	43	2,53	122	7,18	
Rijeka	18	12	3	3	39	2,17	103	5,72	
Hajduk	17	8	5	4	29	1,71	109	6,41	
Lokomotiva	18	7	4	7	25	1,39	79	4,39	
Zagreb	18	6	6	6	24	1,33	65	3,61	
SI. Belupo	17	5	5	7	20	1,18	70	4,12	
Split	17	3	8	6	17	1,00	83	4,88	
Istra 1961	18	3	7	8	16	0,89	57	3,17	
Osijek	18	4	3	11	15	0,83	89	4,94	
Zadar	18	3	3	12	12	0,67	71	3,94	
r=0,79									

Table 2. Arithmetic mean (AM) and standard deviation (SD) of offense corner shots of winning (WIN) and defeated (LOS) teams andz-value (z) for determining the significance or differences and errors (p)

	АМ	SD	z	р
WIN	<b>5,11</b> 3,22		1.05	0.20
LOS	4,34	2,67	1,05	0,29

#### Structure of offense corner kicks depending on type



Image 1. Percentage of offense corner kicks done via center shots or ball passes.



Image 2. Percentage of center shots from offense corner kicks that were successful, unsuccessful, and that led to goal score.

### **Discussion and conclusion**

Based on results (Table 1 and 2) of a relatively high positive correlation coefficient (r=0,79) and the differences between arithmetic means of the winning teams(AM=5,11) and defeated teams (AM=4,34), which is not statistically significant (p=0,29), we can conclude that the parameter offense corner kicks, as a situational efficacy indicator, does not pose a significant difference between winning and defeated teams, but has a high degree of connection to final placement in league system of competition. Even though offense corner kick is usually considered a goal-scoring opportunity, its influence on final outcome of the match is not that significant. The average number of these kicks (AM=4,82) during the match from this study is similar to results of other studies (De Baranda and Lopez-Riquelme, 2012; Shafizadeh, Taylor and Lago Penas, 2012; Castellano, Casamichana and Lago, 2012; Siegle and Lames, 2012; Lago-Penas et al., 2010;) where the average of 4-6 offense corner kicks was noted, also the competition dependina on (league or tournament) and league quality.

There is a somewhat greater number of corner kicks with teams that win (est. 1 kick more), which can be explained by greater higher technical quality. There is a higher probability for more offense corner kicks for the teams that control the ball, have more ball possession during the game, and more ball passes, and also spend more time at opponent's side of the field (in offense end zone sub-phase). These results are in accordance with the study done by Castellano, Casamichana and Lago (2012) where we can see a slightly greater number of offense corner kicks by the winning team. It is also possible that the losing teams take a greater risk (because they are losing and want to beat the negative score) and play more offense, spend more time at opponent's goal door, and note a higher number of offense corner kicks, while the winning team can regress their offense in some parts of the game - slow down the game towards the offense end zone sub-phase, and keep the ball in their possession in order to keep the current score.

This distribution of corner kicks, slightly more on the side of losing teams or those who are at a draw, is possible in certain matches or in tournament system of competition - this was studied by Lago-Penas et al. (2010) and De Baranda and Lopez-Riquelme (2012). In the league system of competition there is no significant impact of the number of offense corner kicks to final outcome of the match. One must bear in mind that offense corner kicks can be a product of organized combinatorics which transfers the ball into offense end zone sub-phase, but also the average number of corner kicks per team (4,82) can be a product of more defense play with applied counter-offense and quality reaction time during the positive transition on the field. As we can see from Image 1, the greatest number of offense corner kicks is done as direct center shot in front of opponent goal (87%), while only a smaller percentage is played as pass and play at smaller distance from co-players (13%).

These results match those achieved by De Baranda and Lopez-Riquelme (2012) who analyzed offense corner kicks and proved that almost all corner kicks are done in some form of center shot (diagonally forward, parallel, diagonally backward) or passes in front of opponent goal door into central space. This data can be explained by offense players taking the risk because a greater number of players come to the opponent's goal door and are usually led by the best jumpers who are the base of defense play. In this situation, additional passes and performing simple or complex combinations from corner kicks without the combo being done immediately after the ball reached central space in front of opponent goal door, enhances the possibility for losing the ball and gives advantage to opponent's players to attack the other goal door in a positive transition after winning the ball (the team performing a corner kick has less players defending their own goal door). However, when they wish to disturb the opponent's defense during the corner kick or cannot directly center the ball in goal space because they have less quality jumpers, teams usually decide on some type of ball pass followed by a center shot or an attempt to transfer and receive the ball further.

Also, sometimes offense players decide on corner kick by pass in order to secure the ball possession and control the remainder of the game. Performing certain combinations after corner kick passes, as well as direct center shots, takes a high level of skill and synchronicity of players involved directly or indirectly in those actions. Based on Image 2 which shows the structure of center shots according to the outcome, we can see that 1% of offense corner kicks ends in goal score, while in 33% of cases the offense player makes contact with the ball, 66% of center shots are not successful. The results on los efficiency of offense corner kicks are in accordance with results of other studies that also show a 2,6% efficiency in tournament competitions (De Baranda and Lopez Riquelme, 2012), and 2,47% in league system of competition (Taylor, James and Mallalieu, 2004).

Data from older tournament competitions shows a greater efficiency of corner kicks (Jinshan et al., 1993; Pappas, 2002) – even more than 20% – which leads to a conclusion that the quality of the defense game during corner kicks has significantly changed. Research conducted by De Barranda and Lopez Riquelme (2012) shows that in 23,77% of cases corner kick leads to a goal kick – pointing to generally low efficiency of offense corner kicks – which is in accordance with this study.

Low efficiency of offense corner kicks shows the importance of offense players being synchronized with each other – the one performing the corner kick and those who participate in them. These results point to the need for more practice of offence corner kicks or finding alternative solutions when the game comes to a stop. Based on the results gathered for variable *offense corner kicks* we can conclude that they do not pose a significant difference between winning and defeated teams.

The said event needs to occur many times during the game to result in possible goal score. On the other hand, better ranked teams have a greater number of offense corner kicks, which points to better and more stable control of elements of the game during a longer period of time – throughout many matches.

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# VAŽNOST PREKRŠAJNIH KUTNIH UDARACA U NOGOMETU OBZIROM NA KRAJNJI ISHOD **UTAKMICE I SUSTAVA LIGE NATJECANJA**

#### Sažetak

Na temelju 88 utakmica prve Hrvatske nogometne lige sezona 2014/2015 utvrđivana je važnost napadačkih kutnih udaraca s obzirom na konačan ishod utakmice i natjecanja. Primjenom Mann-Whitneyjevog testa i Pearsonovog koeficijenta korelacije dobiveni su podaci da napadački kutni udarac kao situacijski pokazatelj efikasnosti statistički značajno ne razlikuje pobjedničke od poraženih ekipa (p=0,29), ali da je relativno visoko pozitivno povezan s krajnjim plasmanom u ligaškom sustavu natjecanja (r=0,79). Dobiveni rezultati ukazuju na važnost kontrole prostorno – vremenskih odnosa u igri, odnosno optimalno provođenje tehničko – taktičkih elemenata tijekom prekida igre u utakmici od strane igrača.

Ključne riječi: kutni udarac, notacijska analiza, situacijska efikasnost, nogomet

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