



# New Trends and Issues Proceedings on Humanities and Social Sciences



Issue 5 (2017) 66-70

ISSN: 2547-8818

[www.prosoc.eu](http://www.prosoc.eu)

Selected Paper of 7th World Conference on Educational Technology Researches (WCETR-2017) 20 – 22 April 2017 AAB  
College, Pristina, Republic of Kosovo

## Technical performance analysis of goalkeepers with respect to the sidedness in Turkish Soccer Super League

**Mehmet Akif Ziyagil**<sup>a\*</sup>, School of Physical Education and Sports, Mersin University, Mersin, 33343, Turkey.

**Mehmet Melih Kesilmis**<sup>b</sup>, Institute of Educational Sciences, Department of Physical Education and Sports,  
Mersin University, Mersin, 33343, Turkey

### Suggested Citation:

Ziyagil, M.A. & Kesilmis, M.M. (2017). Technical performance analysis of goalkeepers with respect to the sidedness in Turkish Soccer Super League. *New Trends and Issues Proceedings on Humanities and Social Sciences*. [Online]. 05, pp 66-70. Available from: [www.prosoc.eu](http://www.prosoc.eu)

Selection and peer review under responsibility of Prof. Dr. Huseyin Uzunboylu, Near East University, Cyprus & Prof. Dr. Shemsedin Vehapi, Vice Rector for Academic Issues, AAB College, Republic of Kosovo

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### Abstract

Technical performance analyses of 45 goalkeepers with respect to handedness and sidedness in Turkish Soccer Super League were monitored by hand notation method during the season of 2015 and 2016. The results of this study showed that there were significant differences in the distribution between goalkeeper's saved and scored actions in the following variables. These were as follows; catch the ball with two hands, reaching the ball with right hand at higher level, reaching the ball with left hand at higher level, penalty kick to the right side, penalty kick to the left side and reaching to right side in one on one situation. Percentages were not significantly differentiated in other variables between two groups. In conclusion, scoring a goal rates were increasing at the left side of goalkeepers in all positions. This weakness of goalkeepers can be due to higher proportions of right handedness goalkeepers.

Keywords: Goalkeeper; sidedness; technical performance analysis

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\* ADDRESS FOR CORRESPONDENCE: **Mehmet Akif Ziyagil**, School of Physical Education and Sports, Mersin University, Mersin, 33343, Turkey.

E-mail address: [mziyagil@gmail.com](mailto:mziyagil@gmail.com) / Tel.: +90 506 633 44 01

## 1. Introduction

The notational analysis determines the strengths and weaknesses of players and makes it possible to integrate individual skills and team structure in soccer composed of offensive and defensive tactics and strategies. This technical analysis makes it possible to understand the goalkeeper technical movements and side preferences better in order to prepare goalkeepers for match. The use of notational analysis also allows coaches to develop their team's game on both the individual and the collective level, and to interpret the actions of any future opposition in the game of soccer (Hughes & Franks, 2004). Same researchers (2004) have proposed that notational analysis serves five purposes: (1) analysis of movement, (2) educational use for coaches and players, (3) tactical evaluation, (4) development of a data base/modelling and (5) technical evaluation. Total 11 players have specific roles and associated functions in each specific position in order to make a successful team. Goalkeeper among 11 players had very specific role related to unexpected game positions with no tolerance to any mistakes. Technical requirements of goalkeeper include the following characteristics. These are to prevent goals, to organize defense, to be aware of every situation, to act positional play, to have short reaction times, to be calmness, to perform positive distribution and to communicate clearly and instantly (Wiemeyer, 2003).

Findings of Spalding's study (2017) suggested that most shots faced by the goalkeeper come from direct attacks, outside the box and from central positions. Goalkeepers' foot skills may be depending on with increasing experience. Over the course of three seasons, forward and lateral movements were the most common and second most common.

The technical analysis of goalkeeper's performance produces information to the coaches initially evaluate performance prior to planning and implementing practice sessions in an attempt to enhance his/her performance in the next match. Data related to the technical aspects of goalkeepers' match performance can provide valuable information on the acts performed during match play, and help classify players based on their technical efficiency.

Thus, the purpose of this study is to analyze technical performance of goalkeepers with respect to sidedness in Turkish Soccer Super League during the season of 2015 and 2016. The second purpose of this study was to characterize the technical and physical demands of Turkish goalkeepers.

## 2. Material and Method

The purpose of this study was to analyze technical performance of goalkeepers with respect to sidedness in Turkish Soccer Super League during the season of 2015 and 2016.

The broad summaries of all the matches of the goalkeepers from Turkish Soccer Super League were monitored by the researcher. All data were collected from 45 goalkeepers by hand notation method. Hand dominance was determined with respect to the throwing arm preference in long distance. The distribution of hand preferences was like that 43 participants (95.65%) were right-handed, and 2 (4.35%) were left-handed. The actions of goalkeeper were categorized with respect to the location in front of goalposts. It was assumed that the goalkeeper was located in the middle position facing the soccer field between the posts and under the crossbar. These actions for goalkeeper were categorized according to his/her right and left side position and right and left hand preferences. These are as follows; 1) blocked the ball from right upper edge by jumping, 2) blocked the ball from left upper edge by jumping, 3) blocked the ball from right lower edge by diving, 4) blocked the ball from left lower edge by diving, 5) catch the ball propelled from air with two hands, 6) punching the ball with right hand at higher level by diving, 7) punching the ball with left hand at higher level by diving, 8) penalty kick to the right side, 9) penalty kick to the left side, 10) diving to right side in one on one situation, 11) diving to left side in one on one situation.

Frequency and percentage of the goalkeepers' actions were evaluated chi square analysis with respect to saved and scored positions.

### 3. Results

The results of this study showed that there were significant differences the distribution between goalkeeper's saved and scored actions in the following variables. These were as follows; punching the ball propelled from air with right hand at higher level, punching the ball propelled from air with left hand at higher level, penalty kick to the right side, penalty kick to the left side and diving to right side in one on one situation. Percentages were not significantly differentiated in other variables between two groups (Table 1).

Turkish Soccer Super League goalkeepers had advantages to save the goals in the zone of right upper and lower sides and left upper and lower sides on target. The percentage of scored the goals was higher than saved positions in the variable of catching the ball propelled from air with two hands. The percentages of saved actions were significantly higher than scored as goal in the zone of punching the ball propelled from air with right hand and left hand. In other side, the percentage of scored the goals was significantly lower than saved shouts in the variable of penalty kick to the right and left sides. In the position of diving to right side in one on one situation, the percentage of saved actions were significantly higher than that of scored as a goal. On the other hand, no significant difference was observed between saved and scored actions in other zones and positions. The percentage of saved and scored as a goal actions were almost equal to each other in the other zones and positions. These are as follows; blocked the ball from right upper edge by jumping, blocked the ball from left upper edge by jumping, blocked the ball from right lower edge by diving, blocked the ball from left lower edge by diving, diving to right side in one on one situation, and diving to left side in one on one situation.

The percentage of scored as a goal was higher in the zone of left upper edge than right upper edge. In contrary, the percentage of scored goals was slightly higher than in the zone of left lower edge than right lower edge. Diving to right side in one on one situation was more successful than diving to left side. Penalty kick to the left side is more efficient than right side.

**Table 1. Technical performance analysis of goalkeepers with respect to the sidedness in Turkish Soccer Super League.**

Variables	Result	f	%	% diff.	X <sup>2</sup>	Asymp. Sig.
<b>Blocked the ball from right upper edge by jumping</b>	Saved	91	55,8			
	<b>Scored</b>	<b>72</b>	<b>44,2</b>	11,6	2,215	,137
	Total	163	100,0			
<b>Blocked the ball from left upper edge by jumping</b>	Saved	91	48,1			
	<b>Scored</b>	<b>98</b>	<b>51,9</b>	3,8	,259	,611
	Total	189	100,0			
<b>Blocked the ball from right lower edge by diving</b>	Saved	231	52,3			
	<b>Scored</b>	<b>211</b>	<b>47,7</b>	4,6	,905	,341
	Total	442	100,0			
<b>Blocked the ball from left lower edge by diving</b>	Saved	238	51,4			
	<b>Scored</b>	<b>225</b>	<b>48,6</b>	2,8	,365	,546
	Total	463	100,0			
<b>Catch the ball propelled from air with two hands</b>	Saved	332	88,1			
	<b>Scored</b>	<b>45</b>	<b>11,9</b>	76,2	218,485	,000**
	Total	377	100,0			
<b>Punching the ball propelled from air with right hand</b>	Saved	105	87,5			
	<b>Scored</b>	<b>15</b>	<b>12,5</b>	75	67,500	,000**
	Total	120	100,0			

	Total	120	100,0			
<b>Punching the ball propelled from air with left hand</b>	Saved	37	80,4			
	<b>Scored</b>	<b>9</b>	<b>19,6</b>	60,8	17,043	,000**
	Total	46	100,0			
<b>Penalty kick to the right side</b>	Saved	12	26,7			
	<b>Scored</b>	<b>33</b>	<b>73,3</b>	46,6	9,800	,002**
	Total	45	100,0			
<b>Penalty kick to the left side</b>	Saved	9	20,9			
	<b>Scored</b>	<b>34</b>	<b>79,1</b>	58,2	14,535	,000**
	Total	43	100,0			
<b>Diving to right side in one on one situation</b>	Saved	101	81,5			
	<b>Scored</b>	<b>23</b>	<b>18,5</b>	63	49,065	,000**
	Total	124	100,0			
<b>Diving to left side in one on one situation</b>	Saved	70	57,4			
	<b>Scored</b>	<b>52</b>	<b>42,6</b>	14,8	2,656	,103
	Total	122	100,0			

\*\*p< .01.

#### 4. Discussion

The playing position of goalkeeper is very different than outfielders with different physical and technical demands (Bangsbo, Mohr & Krustup, 2006). Hand notational is an objective way of recording performance, so that position of goalkeeper during defense in front of goalposts can be quantified in a consistent and reliable manner and hopefully aid in the improvement of sports performance (Hughes & Franks, 2004). So it can be valuable for coaches to understand the general characteristics related to body awareness including hand and side preferences in Turkish goalkeepers. This study focuses primarily on analyzing goalkeepers' technical performance and defensive movements with respect to their hand and side preferences in Turkish Soccer Super League.

Rates of saved actions were significantly higher than that of scored a goal in the catching the ball propelled from air with two hands. The percentages of saved actions were significantly higher than that of scored a goal in the variables of punching the ball propelled from air with left hand and right hand. No comparable result to our study was found in the literature relating to two hands catch and one hand punching the ball. The rate of saved actions in penalty kicks to right side was significantly higher than left side. Clearly, penalty kick to the left side is more efficient than right side. Confirming the left side penalty kick advantage of our study, Spalding (2017) reported a study examining goalkeepers' physical movements during 10 penalty kicks during the Soccer World Championships in 1990 and it was found that the anticipation level of goalkeepers was higher in right-footed penalty kicks than left-footed penalty kicks. The other factors affecting anticipation were angle of approach, foot position at contact, and hip position for the goalkeepers (Reilly, Clarys & Stibbe, 1983).

In our study, differences were insignificant between saved and scored actions in the zones including right and left upper edge, and right and left lower edge. The percentages of saved and scored as goal actions in these zones were almost equal to each other in these target zones. Although no significant difference was observed in our study, the disadvantage of left side blocking was clear. Similar to our study, Cebi et al. (2016) analyzed the European Football Championship in 2016 and they found that the proportion of scored goals was significantly higher in left lower side (25.9%) of target than upper right (24,10%), lower right (20,40%) and upper left (20,40%) sections of target. In another study of Isik et al. (2000), it was found that 27 goals (32.5%) were scored from the lower left corner of target in the analysis of 2000 European Football Championship. Similarly, it was reported that the rate of scored

goals from the lower left side was the highest 40 goals (67%) among other sections of target in 2014 FIFA World Cup.

It can be concluded that the rates of scored actions as a goal were increasing at the left side of goalkeepers in all positions. This weakness of goalkeepers can be due to higher proportions of right sidedness and handedness goalkeepers. Right handed goalkeepers tend to be successful in the actions from right side. They should focus mostly left side exercise during their training sessions. They should also use methodical training programs for low-high flying balls from both sides, punching the ball propelled from air at different levels and sides.

Further research is required to investigate long-term technical analyses of goalkeepers relating to their hand and side preferences with the large sample size in both genders.

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