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An eighty percent pass accuracy may be a critical level on soccer team success

Una precisión de pase del ochenta por ciento puede ser un nivel crítico para el éxito del equipo de fútbol

Erdem Subak

Department of Physical Education and Sports, Istanbul Esenyurt University, Turkey;
gulhanerdemsubak@esenyurt.edu.tr

ABSTRACT

In this research, the author analyzed the pass accuracy (PA) of center-back (CB), wing-back (WB), center-midfield (CM), wing-midfield (WM) and center-forward (CF) players, and the points of Turkish Super League (TSL) 2020-2021 season. Pearson Correlation Test was used for statistical analysis and confidence interval was settled as 99% ($p < 0.01$). The results showed that the PA average of CB and CM players was highly related to the points obtained at the end of the season. The passing accuracy of the teams finishing the league in the best places was above 80%, and it was lower in those teams with less points. In conclusion, the results demonstrated that pass accuracy affected the league rank of TSL, and a pass accuracy of 80% may be a critical level to finish in the top ranking of the league.

KEYWORDS

Pass Accuracy; Soccer Team Success; League Rank; Turkish Super League; Soccer Positions.

RESUMEN

En esta investigación, se analizó la precisión de pase (PP) promedio de los jugadores de centro (C), lateral (L), centro-medio (CM), lateral-medio (LM) y delanteros centro (CF) de los equipos de la Súper Liga Turca (SLT), así como los puntos de la temporada 2020-2021. El test de correlación de Pearson fue utilizado para el análisis estadístico, estableciendo el intervalo de confianza en 99% (p <0,01). Los resultados mostraron que el promedio de PP de los jugadores de C y CM estaba altamente relacionado con los puntos obtenidos al final de la temporada. La precisión de pase de los equipos que terminaron la liga en las mejores posiciones fue superior al 80%, y fue menor

en los equipos que terminaron en peores posiciones. En conclusión, los resultados demostraron que la precisión del pase afectó a la clasificación de los equipos de la SLT, y que un 80% de precisión de pase puede ser un nivel crítico para terminar en las mejores posiciones de la liga.

PALABRAS CLAVE

Precisión de pase; Éxito del equipo de fútbol; Ranking de liga; Superliga turca; Posiciones de fútbol.

1. INTRODUCTION

Pass accuracy (PA) is a factor that affects success in soccer (Robin et al., 2020). PA is highly related to ball possession (Burch et al., 2020). As well, the team that is in possession of the ball usually controls the game (Estember et al., 2020). The attention and precision on PA have a critical role in playmaking successfully to score (Burch et al., 2020; Estember et al., 2020).

The PA rate of teams increased in recent years (Yi et al., 2020). Yildiz showed that the PA of the qualified teams was above 80%, and the other was below (Yıldız, 2020). In parallel, the PA of players in the four major leagues of Europa was above 80% for many years (Yi et al., 2019). Zhou et al. (2020) showed that this rate was below 80% Chinese Super League between 2012 – 2017 (Zhou, Calvo, et al., 2020). Higher PA in top-ranking leagues showed the PA has relation with the quality of team play. Another factor related to PA is ball possession (Estember et al., 2020), and Zhou et al. (2020) showed that the ball possession and speed of ball possession related to teams' winning matches (Zhou, Gómez, et al., 2020). These consequences show the PA is highly related to success in soccer.

Statistical analysis has a valuable place in football (Yue et al., 2014). Exemplarily, in today's soccer, the running distance of teams reached 10.794 ± 374 meters, and this distance level becomes a precious goal for soccer clubs that want to be successful (Weston et al., 2011). Likewise, statistical analysis is estimable in the periods of personal analysis performances of players for a coach (Rusu et al., 2010), analysis of opponent team before a competition (Faria et al., 2010), setting tactics (Staufenbiel et al., 2015), transferring players (Mourao, 2016), talent selection models (Gil et al., 2014), and seasonal analysis (Broich et al., 2014). Besides the personal statistical analysis of soccer players, and football is a team game, team statistics also essential (Lago-Peñas et al., 2010). Soccer players place-specific positions in CB, RB, CM, WM, and CF (Pettersen et al., 2014). The statistical analysis of the effects of these positions on the general team success may produce beneficial results.

This study aimed to investigate how PA of different positions affects the league. For this purpose, the seasonal PA average of different position players of all teams in the TSL 2020-2021

season and the end of the season points are analyzed. The information about which positions' PA must be higher may present critical data for coaches. This research may give ancillary information about selection players to soccer clubs in the transfer seasons.

2. MATERIAL AND METHODS

2.1. Study Design

The passing accuracy (PA) statistics of the TSL 2020-2021 season analyzed in this cross-sectional study. PA averages of CB, WB, CM, WM, and CF players of all teams (n = 21) calculated. PA averages of these positions showed in Table 1 (Table 1).

Table 1. Points and pass accuracy averages of CB, WB, CM, WM, and CF positions of TSL in the 2020-2021 season.

Pos.	Team	Pass Accuracy					PTS
		CB	WB	CM	WM	CF	
1	Beşiktaş	86.925	82.420	85.775	81.257	77.600	84.000
2	Galatasaray	86.625	83.686	84.227	80.475	74.967	84.000
3	Fenerbahçe	88.200	83.338	86.744	82.509	73.014	82.000
4	Trabzonspor	88.480	82.783	84.900	80.773	76.000	71.000
5	Sivasspor	82.600	78.130	82.175	73.900	79.400	65.000
6	Hatayspor	85.075	77.600	84.100	76.067	71.993	61.000
7	Alanyaspor	87.225	84.383	86.260	83.213	79.840	60.000
8	Fatih Karagümrük	84.213	81.838	82.388	80.669	74.680	60.000
9	Gaziantep	78.933	75.283	78.970	79.880	76.400	58.000
10	Göztepe	84.338	81.280	82.075	79.300	75.975	51.000
11	Konyaspor	84.983	81.633	82.185	78.920	75.233	50.000
12	Basaksehir	89.314	84.109	84.307	78.808	75.750	48.000
13	Rizespor	84.140	80.817	81.250	78.978	75.000	48.000
14	Kasımpaşa	83.078	77.744	81.775	73.338	73.733	46.000
15	Yeni Malatyaspor	80.600	77.114	74.469	72.050	67.175	45.000
16	Antalyaspor	85.840	77.625	82.278	77.667	73.325	44.000
17	Kayserispor	82.300	77.917	78.823	74.033	65.200	41.000
18	Erzurum	81.243	78.971	82.533	75.811	75.267	40.000
19	Ankaragücü	78.217	75.133	77.857	72.700	74.300	38.000
20	Gençlerbirliği	81.571	75.471	78.308	73.083	73.571	38.000
21	Denizlispor	80.430	78.464	81.608	79.300	76.460	28.000
	Avr.	84.016	79.797	82.048	77.749	74.518	

**CB = Center Back; WB = Wing Back; CM = Center Midfielder; WM = Wing Midfielder; CF = Center Forward; PTS = Points; Avr. = Average; Pos. = Position.*

2.2. Pass Accuracy of Positions

Overall PA of players played CB, WB, CM, WM, and CF players included calculating the positional pass accuracy. Players played these positions listed for all teams. PA values of players are provided from the Mackolik website, and arithmetical averages are calculated for each position (Mackolik, 2021).

Some players played two or more of these positions in the season. A player who plays a different position even in one competition will affect the seasonal statistics of the team. This type of player's overall pass accuracy added both positions played. Players who played very few minutes in all seasons and pass accuracy was 0% and 100% excluded.

2.3. Statistical Analysis

The correlation between pass accuracy of different positions and end of the season points of the teams analyzed. In addition, the pass accuracy correlation between different positions was analyzed. Pearson Correlation Test used. Paired Samples T-Test used to compare the PA of first and last ten rankings. Confidence interval settled as 99% ($p < 0.01$). IBM® SPSS® Statistics version 25 used for statistical analysis.

3. RESULTS

The correlation between the pass accuracy average of CM players and points was highest ($r = 0.641$; $p < 0.01$). CB pass accuracy average showed a significant correlation with points ($r = 0.618$; $p < 0.01$). RB ($r = 0.588$; $p < 0.01$) and WM ($r = 0.578$; $p < 0.01$) pass accuracy average and points had significant correlations. There was no significant correlation between PA average of CF players and points ($r = 0.290$; $p = 0.101$) (Table 2).

Table 2. Pearson Correlation test results of the pass accuracy and points of CB, WB, CM, WM, and CF positions in TSL 2020-2021 season.

Position	Pearson Correlation (*r*)	Sig. (*p*)
Center Back	0.618	0.001*
Wing Back	0.588	0.003*
Center Midfielder	0.641	0.001*
Wing Midfielder	0.578	0.003*
Center Forward	0.290	0.101

** $p < 0.01$ denotes a significant correlation*

The PA average correlations between various positions showed in Table 3 (Table 3). The PA average of CM ($r = 0.552$; $p < 0.01$) and WM ($r = 0.517$; $p < 0.01$) players showed significant correlations with PA average of CF players.

There was a statistically significant difference of PA average of first (81.178% ± 4.192) and last (77.977% ± 4,542) ten rankings ($p < 0.001$).

Table 3. Pearson Correlation test results of CB, WB, CM, WM, and CF positions with each other (Darker boxes denote a significant correlation of $p < 0,01$).

		PTS	CB	WB	CM	WM	CF
Pearson Correlation (*r*)	**PTS**		0.618	0.588	0.641	0.578	0.290
	CB	0.618		0.855	0.818	0.639	0.235
	WB	0.588	0.855		0.778	0.775	0.366
	CM	0.641	0.818	0.778		0.753	0.552
	WM	0.578	0.639	0.775	0.753		0.517
	CF	0.290	0.235	0.366	0.552	0.517	
Sig. (*p*)	**PTS**		0.001	0.003	0.001	0.003	0.101
	CB	0.001		0.001	0.001	0.001	0.152
	WB	0.003	0.001		0.001	0.001	0.051
	CM	0.001	0.001	0.001		0.001	0.005
	WM	0.003	0.001	0.001	0.001		0.008
	CF	0.101	0.152	0.051	0.005	0.008	

**CB = Center Back; WB = Wing Back; CM = Center Midfielder; WM = Wing Midfielder; CF = Center Forward; PTS = Points; r = Pearson Correlation; p < 0.01.*

4. DISCUSSION

High correlations presented that the pass accuracy average of CB and CM players affected the team ranking in TSL 2020-2021 season.

An eighty percent may be a critical level for the pass accuracy rate. As can be seen in Table 1, the PA averages of various positions are above 80% in top-ranking teams and below in low-ranking (Table 1). The fact that this ratio is above 80% in the major leagues of Europe strengthens this statement (Yi et al., 2019). Paying attention for clubs to 80% pass accuracy of players while transferring players to certain positions may improve team success. Otherwise, personal training of players to increase their PA above 80% may beneficial to more contribute to team success. Coaches may design special training to increase PA above 80% critically for CB and CM positions. In addition to all these, Herold et al. (2021) showed that the PA rate during training did not reflect in

competitions, and the PA average was lower in matches than in training (Herold et al., 2021). Researches showed the use of techniques like stroboscopic vision or spatial occlusion beneficial to improve the pass accuracy of players (Beavan et al., 2021; Dunton et al., 2020). General averages in Table 1 showed the PA of CB and CM positions was above 80% in TSL (Table 1).

The PA average of CF players did not affect the points. However, correlations in Table 3 show that the PA of CF players was higher in the teams that had a higher PA of CM and WM players (Table 3). Burch et al. (2020) underlined that the CB and CM players had high PA than CF because the CB and CM players were under lower pressure than CF players (Burch et al., 2020). Parallelly, the PA of CB and CM players was higher than CF players in TSL. Improving the PA of CM and WM players may help to enhance the PA of CF players. That may help coaches who want to play the game in the opposite half of the field and more ball possession. The team with have highest PA of CF players in TSL was Alanyaspor (79,84%), and the PA of other positions was above 80% (Table 1). Moreover, Table 3 shows a high correlation between the PA of CB and WB players (Tablo 3). This result showed the PA of CB players significantly affects the PA of the team.

Lee et al. (2021) did not find a relation between PA and winning or losing in the 2018 World Cup but asserted that further researches were essential about this topic (Lee & Kim, 2021). The result of this study showed the PA average of CB and CA players affected TSL ranking. In the biggest competitions as World Cup, numerous star players participating, and the personal performances of star players affect the results. Moreover, players train together in a short period in these competitions. On the contrary, players train together for long periods in national leagues and participate in more competitions. Because of that, the importance of "team play" higher in national leagues. Therefore it is natural that there are some differences between international and national tournaments.

In football, whose performance level is increasing day by day, the statistical analysis may provide beneficial information. This study showed that, besides the team statistics, the investigation of positional statistics separately also be helpful. This type of statistical analysis may determine which regions the teams have more problems in, which areas they are at a better level, and which areas need improvements (more training, new transfers). In cases where the cause of the problem in the team cannot find, it may be a different method to analyze the squad by breaking it into pieces.

5. CONCLUSIONS

The most critical result of this research is; raising the pass accuracy above 80% for all positions may increase the quality of teams. An eighty percent and above pass accuracy may be valuable criteria on the player preference of teams, talent selection periods, transfer periods, and training

planning. Concurrently, the results of this study show which positions' pass accuracy affects others in soccer. These findings may be beneficial for planning training programs and developing strategies to disrupt the opponent's game.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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