

Pass Appearance Time and Pass Attempts by Teams Qualifying for the Second Stage of FIFA World Cup 2014 in Brazil

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Abstract: This study aimed to clarify the difference between the not qualified teams and the qualified teams to 2nd stage in the Pass Appearance Time and passes attempted at all group stage games of World Cup 2014 and compared with World cup 2010. Results indicated changes in passing in modern football tactics. Actual playing time is represented as Net Playtime in this study. Pass Appearance Time is calculated by Net Playtime divided by passes Attempted. Pass Appearance Time of each team for the all Group stage games was calculated and compared with World cup 2010. No difference was revealed in the 2014 data between teams that did and did not qualify, though the 2010 data revealed differences. World cup 2010 data suggested that increasing passes attempts and lessening Pass Appearance Time were effective in qualifying for the 2nd stage. World cup 2014 data, however, suggested that diversity of tactics was important.

Key words: Pass Appearance Time, passes attempts, Net Playtime, group stage games.

1. Introduction

Key concepts in modern football are considered the passing game and ball possession, both of which are evidenced in Spain national team and Football Club Barcelona (FC Barcelona) play. This study was conducted to clarify the recent tendency and changes in these aspects of the game.

As shown in Table 1, FC Barcelona took first place three times in Union of European Football Associations (UEFA) Champions League between 2006 and 2011, and the Spain national team took two successive first place wins in UEFA Europe Cup, 2008 and 2012, and in the 2010 Fédération Internationale de Football Association (FIFA) World Cup, all three major international competitions held between 2008 and 2012.

In 2009, FC Barcelona became a triple-crown winner by taking first place in the domestic league,

domestic cup, and the UEFA Champions League. In 2011, the team took first place in the domestic league and UEFA Champions League, and second in domestic cup. From the mid-2000s and early 2010s, when FC Barcelona and the Spain national team were on top of their games, “possession football” was the key phrase in the football [1].

The success of FC Barcelona and the Spain national team made passing games the standard, and it was clear that it was the trend in football in the 21st century. Ball possession was thought to contribute to wins; thus, improved ball possession would mean higher winning rates [1]. FIFA World Cup 2010 in South Africa took place during the height of the possession-based football game style. Saito et al. [3] calculated the mean number of pass attempts, Net Playtime, and Pass Appearance Time in all group stage games, compared the teams that did and did not qualify for the 2nd stage, and clarified the tendencies.

As a result, teams that played in the 2nd stage in the group stage games of the World Cup 2010 passed the

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Table 1 The results of Spain and FC Barcelona in International competition in recent years.

Spain National Team	
2008	UEFA EURO Champion
2010	FIFA World Cup Champion
2012	UEFA EURO Champion
2014	FIFA World Cup Group stage did not qualify
FC Barcelona	
2006	UEFA Champions League Champion
2009	UEFA Champions League Champion
2011	UEFA Champions League Champion
2011	UEFA Champions League Quarterfinal
2015	FIFA Club World Cup Champion

ball better, made more passes, and had longer play times compared with the teams that did not qualify in the group stage games; and they exhibited a tendency toward passing games as a basic strategy.

In the 2012-2013 season of the UEFA Champions League, the ball possession rate for 10 out of 16 teams that played in the 2nd stage exceeded 50%, evidencing the tendency for all teams with a greater than 50% ball possession rate to deliver superior performances; and the win rate at the group stage for teams with a greater than 50% ball possession rate was 63% [6]. The 2012 UEFA Technical Report [5] noted, however, that “Although the trend towards possession-based football is undeniable, EURO 2012 demonstrated that the paradox remains. The Russians and the Dutch, despite averaging 56% of the ball, went home after the group stage”.

In the FIFA 2014 Brazil World Cup, the Spain national team lost in the group stage with 1 win and 2 loses. FC Barcelone took second place in the domestic league, second in the domestic cup, and lost after winning a best-eight slot in the 2nd stage in UEFA Champions League during the 2013-2014 season. Before the 2014 World Cup, possession-based football was showing signs of decline.

This study was carried out to compare the teams that did and did not qualify for the 2nd stage of the 2014 World Cup group stage games, understand the tendency of their pass attempts, playtime, and Pass Appearance Time during games, and to clarify the

changes in game style such as passing and possession-based football through comparison with the 2010 World Cup group stage games.

2. Method

2.1 Data

Study data was obtained from Data Stadium Inc., the same company the author obtained data from for a previous study on the 2010 World Cup group stage games [3].

We used the data to calculate Net Playtime and number of pass attempts, and obtained Pass Appearance Time (PAT) by dividing the Net Playtime by the number of pass attempts for all teams during each game.

2.2 Measurement Method of Net Playtime

Net Playtime was calculated by summing ball possession time reported in the first and second halves of a game for 90 minutes. Loose balls were counted as ball possession time of the team which held the ball immediately before it became a loose ball, until the ball was completely brought into the possession of the opposing team, or the ball traveled out of play. In this study, Net Playtime was considered the time a team was in possession of the ball during play because “possession time” may be misunderstood as possession rate [3].

2.3 Measurement Method of Number of Pass Attempts

Number of pass attempts was calculated by summing ball possession time reported in the first and second halves for 90 minutes. Whether successful or unsuccessful, intentional pass attempts were counted. Unintended passes such as clear balls were not counted [3].

2.4 Pass Appearance Time

Pass Appearance Time during the Net Playtime for each game and team in World Cup 2010 group stage matches was calculated by dividing the Net Playtime

by the number of pass attempts based on the Net Playtime and number of pass attempts defined in this study, and designated as Pass Appearance Time (PAT) [3].

2.5 Analytical Method

We calculated mean values of Net Playtime, number of pass attempts, and PAT for each team in three group stage games utilizing the collected data. Following this, we conducted t-test to examine the differences between mean values of all teams that did and did not qualify for the 2nd stage of World Cup 2010, and conducted correlation analysis to examine the relationship between the average means of each measurement item. In addition, we compared the data from the 2014 World Cup group stage games with the data from the 2010 World Cup group stage games to examine the changes in passing and possession-based football styles.

3. Results and Conclusion

Table 2 shows the mean values of Net Playtime, number of pass attempts, and PAT for each team in the 48 games that did and did not qualify for the 2nd stage of World Cup 2010, and Table 3 shows those in the 48 games that did and did not qualify for the 2nd stage of World Cup 2014. In order to examine the differences, we also performed t-test.

In terms of the games in World Cup 2010, mean values of Net Playtime and number of pass attempts

were higher for the teams that qualified for the 2nd stage, and the mean values of PAT were lower for the teams that qualified for the 2nd stage [3]. However, in terms of the games in the World Cup 2014 group stage games, mean values of Net Playtime and number of pass attempts were lower for the teams that qualified for the 2nd stage, and PAT was higher for the team that qualified for the 2nd stage. According to t-test, in World Cup 2010, mean values of Net Playtime ($t(30) = 2.30, P < 0.05$) and number of pass attempts ($t(30) = 2.23, P < 0.05$) for all teams that did and did not qualify for the 2nd stage showed significant differences [3] while in World Cup 2014, mean values of Net Playtime ($t(30) = 1.61, n.s.$) and number of pass attempts ($t(30) = 0.23, n.s.$) for all teams that did and did not qualify for the 2nd stage showed no significant differences. PAT did not show significant differences between the teams that did and did not qualify for the 2nd stage in both World Cup 2010 and 2014.

In World Cup 2010, Net Playtime and pass attempts were strongly correlated (teams that qualified for the 2nd stage: $r = 0.983$, teams that did not qualify for the 2nd stage: $r = 0.883$), and teams that had higher numbers of pass attempts showed longer Net Playtime regardless of whether or not they qualified for the 2nd stage. However, teams that qualified for the 2nd stage showed higher mean values for Net Playtime and number of pass attempts as well as stronger correlations [3].

Table 2 World Cup 2010 Group stage result for Net Playtime, pass attempts and Pass Appearance Time.

Items	All teams ($n = 32$)	non-qualifying teams ($n = 16$)	qualifying teams ($n = 16$)	t(df)
Net Playtime (sec)	1601 \pm 244	1508 \pm 164	1694 \pm 278	2.30(30)*
Pass attempts	477 \pm 90	444 \pm 61	510 \pm 103	2.23(30)*
Pass Appearance Time	3.40 \pm 0.21	3.44 \pm 0.23	3.36 \pm 0.17	1.23(30)

* $P < 0.05$.

(Source: Data obtained from Data Stadium Inc./Processed by the author).

Table 3 World Cup 2014 Group stage result for Net Playtime, pass attempts and Pass Appearance Time.

Items	All teams ($n = 32$)	non-qualifying teams ($n = 16$)	qualifying teams ($n = 16$)	t(df)
Net Playtime (sec)	1608 \pm 234	1615 \pm 226	1601 \pm 249	-0.16(30)
Pass attempts	486 \pm 94	489 \pm 95	482 \pm 96	-0.23(30)
Pass Appearance Time	3.31 \pm 0.22	3.30 \pm 0.22	3.32 \pm 0.23	0.24(30)

* $P < 0.05$.

(Source: Data obtained from Data Stadium Inc./Processed by the author).

According to Figs. 1 and 2, in World Cup 2014, Net Playtime and pass attempts were strongly correlated (teams that qualified for the 2nd stage: $r = 0.954$, teams that did not qualify for the 2nd stage: $r = 0.975$), and teams that had higher numbers of pass attempts showed longer Net Playtime regardless of whether or not they qualified for the 2nd stage. However, teams that did not qualify for the 2nd stage showed higher mean values for Net Playtime and number of pass attempts as well as stronger correlations

The strong correlation between the shorter PAT and more pass attempts in World Cup 2010 suggest that it is necessary to have a quick PAT to increase the number of pass attempts during playtime [3]. According to Figs. 3 and 4, teams that did not qualify for the 2nd stage showed a stronger correlation between PAT and number of pass attempts ($r = 0.903$) than teams that qualified for the 2nd stage ($r = 0.676$) in World Cup

2014.

The number of pass attempts for 11 out of 16 teams that qualified for the 2nd stage was greater than the average of all 32 teams, and PAT was shorter than the average [3]. Meanwhile, Table 3 and Fig. 3 show that teams in World Cup 2014 exceeded the mean value of pass attempts made by the 32 teams, and mean PAT is shorter for Germany, Argentine France, and Chili only.

With all these factors, many teams that qualified for the 2nd stage of 2010 World Cup showed a tendency toward more pass attempts and shorter PAT [3]; however, many teams that qualified for the 2nd stage of the World Cup 2014 did not exhibit this tendency.

These factors suggest that possession-based football and the passing game alone were not tactics for qualification for the 2nd stage in the 2014 World Cup.

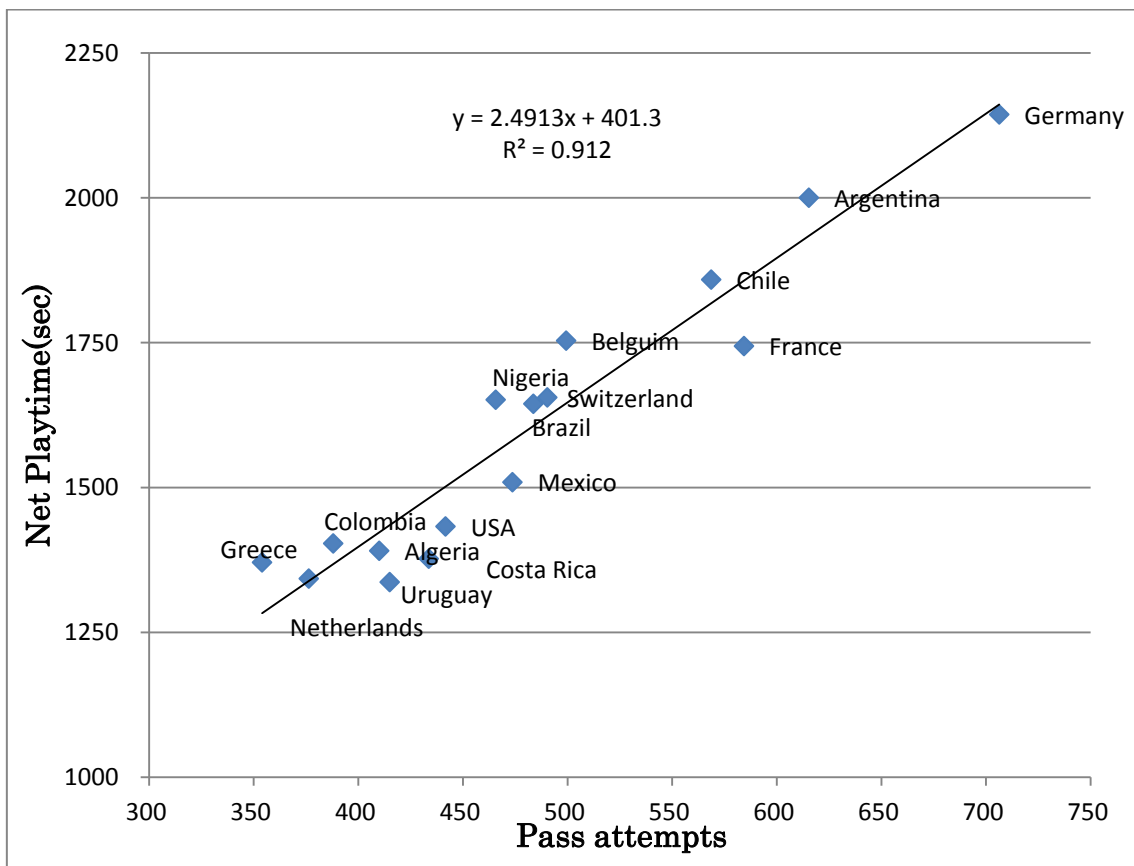


Fig. 1 The correlation between Net Playtime and pass attempts of teams qualifying for the 2nd stage in group stage matches of World Cup 2014.

Pass Appearance Time and Pass Attempts by Teams Qualifying for the Second Stage of FIFA World Cup 2014 in Brazil

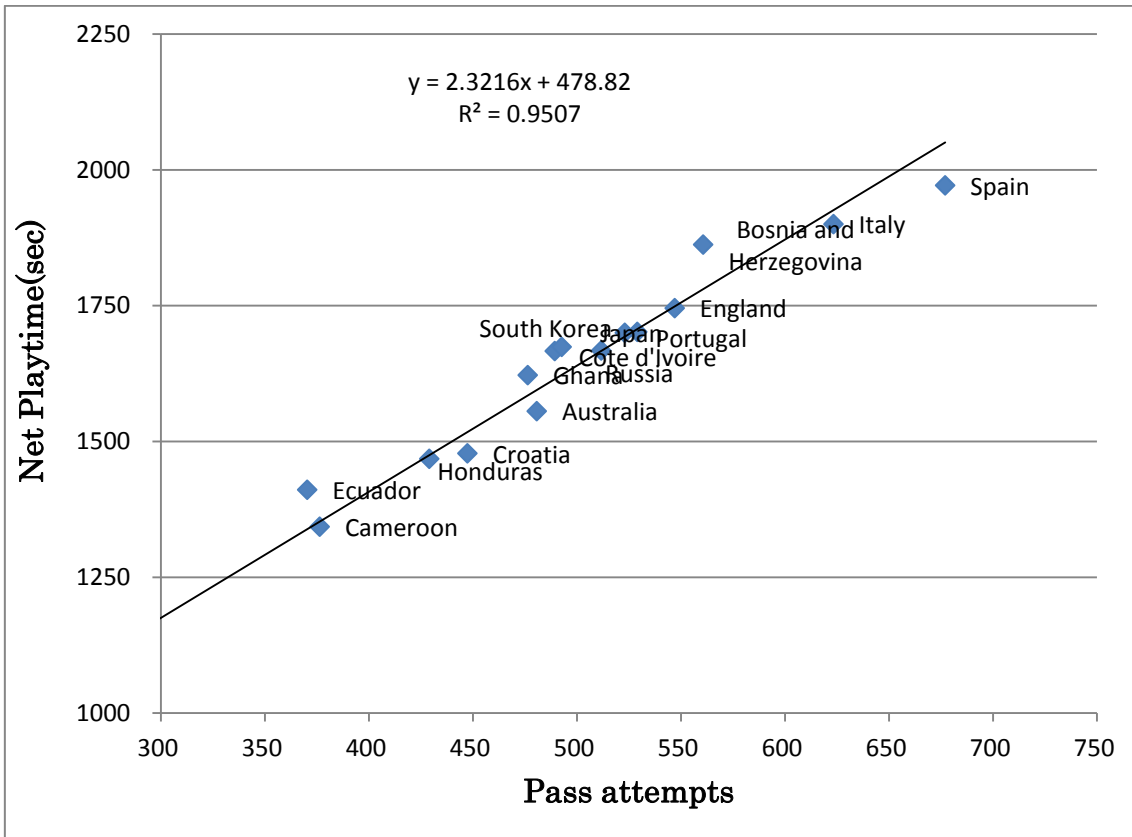


Fig. 2 The correlation between Net playtime and pass attempts of teams not qualifying for the 2nd stage in group stage matches of World Cup 2014.

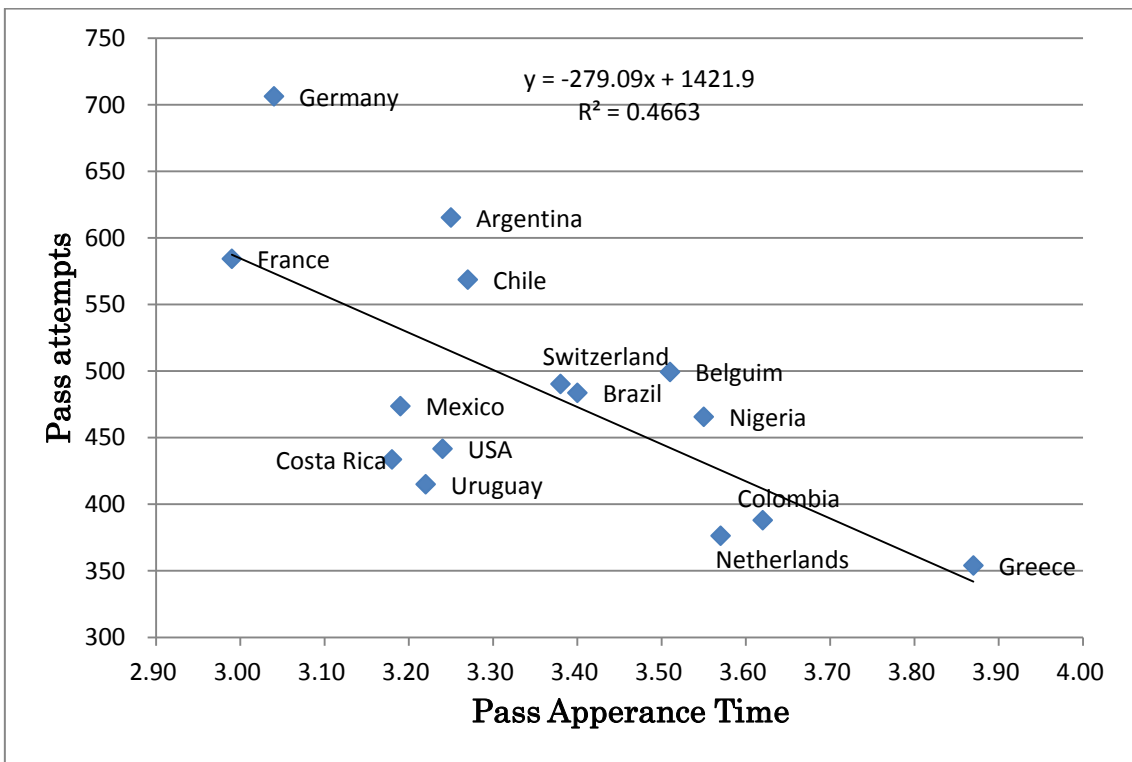


Fig. 3 The correlation between pass attempts and Pass Appearance Time of teams qualifying for the 2nd stage in Group stage matches of World Cup 2014.

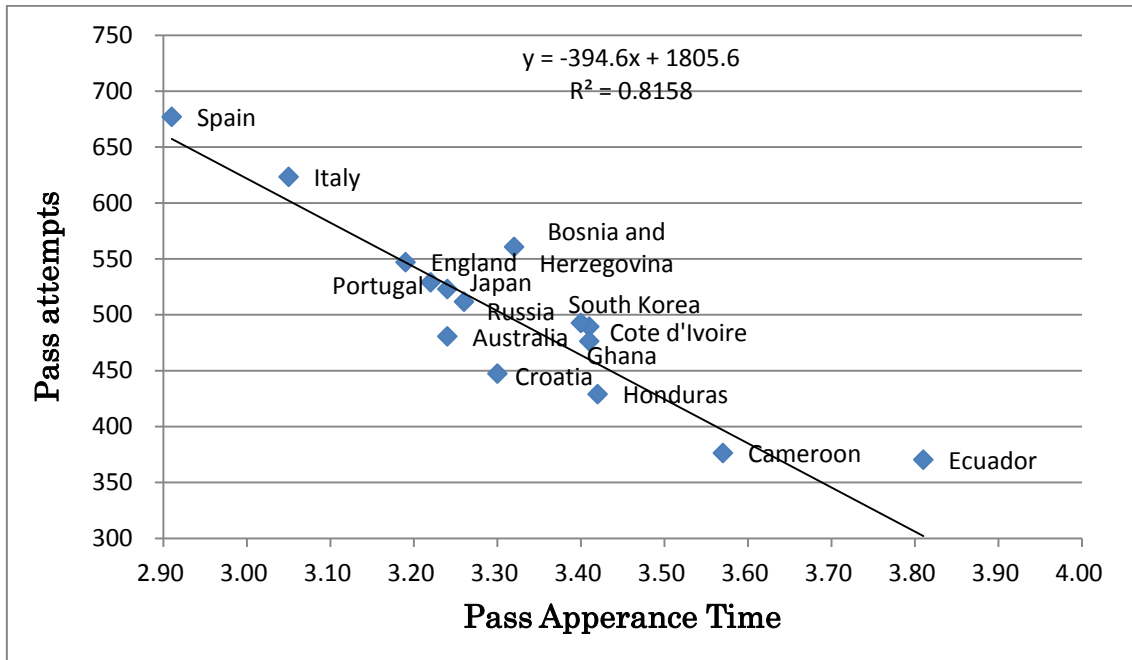


Fig. 4 The correlation between pass attempts and Pass Appearance Time of teams not qualifying for the 2nd stage in Group stage matches of World Cup 2014.

4. Conclusion

Teams qualifying for the 2nd stage in the World Cup 2010 revealed significant differences in number of pass attempts and Net Playtime compared with those not qualifying for the 2nd stage. In addition, many teams with lower PAT and a higher number of pass attempts qualified for the 2nd stage, which means that teams which tended to pass quickly and with greater frequency qualified at a greater rate for the 2nd stage.

However, in World Cup 2014, number of pass attempts, Net Playtime, and PAT did not show significant differences between the teams that did and did not qualify for the 2nd stage, and the correlation between PAT and number of pass attempts did not show any differences either.

Shoji [4] reported that 39 out of 48 games in the World Cup 2014 group stage games were wins/losses rather than draws, and 21 teams won with a greater than 50% ball possession rate (53.85%), and 34 out of 48 games in the World Cup 2010 group stage games were wins/losses rather than draws, among which 23 teams won with a greater than 50% ball possession rate (67.6%). Although more than half of all teams won

with a greater than 50% ball possession rate, there must be reasons for a reduction of nearly 15% in four years. Shoji [4] also reported that 13 national teams won three winning points although their ball possession rate was lower than their opponents in the World Cup 2014 group stage games, all 13 teams qualified for the 2nd stage, which showed that while ball control in the offense was the key to the victory four years ago, it was not a key to winning games in World Cup 2014.

The 2014 FIFA Technical Report [2] stated that particularly in the early stages of the competition, there were numerous goals scored through fast counter-attacks following a transition.

All these factors suggested that possession-based football, which is characterized by quick passing and more pass attempts were not the key tactics responsible for movement to the 2nd stage of the World Cup 2014. However, it is true that the ball possessions and passing football are also effective tactics because FC Barcelona achieved the Triple Crown in the domestic league, domestic cup, and UEFA Champions League in the 2014-2015 season after World Cup 2014; and teams from Germany, Argentina, and France, which were characterized by shorter PAT and more pass attempts

in the World Cup 2014 group stage games, qualified for the semi-final and final in the final tournament in this competition.

This study suggests that it is necessary for teams to clarify first whether their goal is to qualify for the 2nd stage, or achieve first place; and it is important to select the appropriate tactics according to each goal, analyze the opponent team's game style, and decide tactics.

It is also necessary for us to see changes in game styles in the UEFA 2016 Europe Cup, FIFA 2018 World Cup, and UEFA Champions League because more teams that did not use possession-based football qualified for the 2nd stage in the World Cup 2014. We need to see whether the passing football style will be developed because of the German and Argentine national team advance to final in the World Cup 2014 and FC Barcelona's UEFA Champions League wins in 2014-2015 season. We also need to see whether new tactics against the passing football style emerge.

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