

Analysis of Goal Scoring Pathway for the Winners in UEFA Champions League Competition

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Abstract In soccer, goal scoring becomes the main factor in distinguishing between the winning and losing teams. One of the most crucial components of a soccer team's offensive performance is the goal-scoring path since it has been correlated with a higher likelihood of winning games. Therefore, the study aims to investigate the pathway of goal scoring among the winning teams in the previous seven consecutive seasons (2015/2016 – 2021/2022) in the UEFA Champions League competition. A total of 216 goals from the UEFA Champions League competitions in seven prior seasons (2015/2016 - 2019/2020) were examined. The pathway of goal scoring has been divided into long sequence passing, short sequence passing, and others. All the data have been recorded by using hand notational analysis and analyzed by using one-way ANOVA. A total of 216 goals were scored throughout the competition showing that 108 goals were from long sequence passing, 57 goals were from short sequence passing, and 51 goals came from others. The result indicated that there was a significant difference in the goal scoring sequence toward goal success among the winners, $p > 0.00$ which showed long sequence passing had the highest amount of goal scoring. As a summary, this demonstrated that the winning teams in 7 consecutive seasons of the UEFA Champions League competition

(2015/2016 – 2021/2022) used long sequence passing frequently as their main attacking style to score a goal, which directly led them to win the championship. Therefore, the findings of this study may also be useful to coaches for educational reform in the soccer sports since they may allow them to make predictions about the best team tactics and goal-scoring strategies. It is suggested that future research examine teams of varied rankings to determine how goals are scored differently on each side.

Keywords Goal Scoring, Long Sequence Passing, Short Sequence Passing, UEFA Champions League

1. Introduction

According to the International Federation of Football Association (FIFA), there are over 224 million active players registered with national organizations in 204 nations, making soccer the most popular, influential, and commonly known sport in the world [1, 2, 3]. Soccer can be described as the competition between teams involving moments of attacking movements to create an imbalance in player position and numbers with a homeostatic

environment of rapid re-organization towards control, possession, and stability [4] as well as having the reverse roles towards the pattern between order and disorder [5] that is played in 90 minutes of match duration [6] and can be performed by men and women, children and adults with different levels of expertise [7]. There are several soccer tournaments at the club level, including the UEFA Champion League, an annual event run by the Union of European Football Associations (UEFA). UEFA Champions League is the world's most popular tournament for soccer teams at the club level as certainly billions of people around the globe follow the matches live on television [8]. Also, it has a reputation for being the top club competition in European football and one of the most high-profile in world sport [9] due to the selection into the competition is limited to the highest-performing clubs from each European nation, where countries with a deeper history of success are allotted more slots [10].

Goal-scoring and preventing the opposition from scoring goals are the teams' two primary aims in soccer [11]. Goals are one of the most difficult and attractive aspects of soccer due to their relative scarcity and the permanent expectation they create as a single goal can have a decisive impact on the outcome of a match [12] as scoring goals is the ultimate determinant of successful soccer team performance and has received extensive attention among researchers [13, 14, 15]. This is prompted by the fact that goal scoring is paramount for any team's success [16] and also can be the ultimate determinant of success when the goals have been scored more than the opponents [17].

Soccer goal scoring may occur in a variety of ways, including long sequence passing [14], short sequence passing [18], dead ball situations, opponent errors, and own goals [1]. Tenga et al. [14] demonstrated that longer passing sequences were considered to be more effective than the shorter sequences for counterattacks when playing against an imbalanced defense. Additionally, winning teams are mainly differentiated by the ability to be offensively organized through the long sequence of passing until penetrating the opponents' penalty area [19] and it also might attempt to break the balance with the opponent team and directly can increase the number of shooting opportunities [20]. Moreover, the FIFA World Cup of 1990 also showed that the winning side employed a longer sequence passing since it resulted in more goals per possession than a shorter sequence [21]. According to Reep and Benjamin [18], 1 out of every 10 shots on goal tends to result in a goal for short sequence passes, contributing to around 80% of goals scored. Apart from that, Hughes [22] showed that 87% of the goals that had been recorded in 109

top level matches were scored after short sequence passing. Furthermore, according to research by Acar et al. [1] that looked at how goals were scored during the FIFA World Cup 2006, 54 percent of goals were the result of short sequences of passes.

Despite the fact that there have been a lot of studies on goal scoring in soccer, there is still a lack of investigation on how the goal was scored by the champion in the competition. Therefore, this study intends to investigate the pathway of goal scoring among the winning teams in the previous 7 consecutive seasons (2015/2016 – 2021/2022) in the UEFA Champions League competition.

2. Materials and Methods

A total of 216 goals scored by the champions of each season in the last seven UEFA Champions League seasons (2015/2016 - 2021/2022) have been analyzed. The pathway of goals scoring has been divided into 3 categories that are:

- (a) long sequence passing (≥ 4 passes before scoring a goal),
- (b) short sequence passing (≤ 3 passes before scoring a goal), and
- (c) others (excluding from long and short sequence pass).

It then has been analyzed by using the video from UEFA's official website and YouTube channel highlights. Hand notational analysis was used to record all of the data.

2.1. Reliability Testing

Data reliability was assessed through intra- and inter-observer testing procedures. While inter-rater reliability indicates the variance between 2 or more raters who assess the same set of individuals, intra-rater reliability is defined as the variation of data measured by 1 rater over 2 or more trials [23]. To examine the inter-observer agreement, 2 observers (lead and second observer) watched a video of three randomly selected practice sessions alone at separate times during a single week while for the intra-observer, the lead observer watched the video on two separate occasions, with a one-week gap between the observations to prevent memory bias [24]. The Intraclass Correlation Coefficient (ICC) was used to calculate the reliability of dependent variables. Table 1 shows the existence of a strong association between observations on different occasions and between observers, which proves the intra- and inter-observer reliability in using these performance indicators.

Table 1. Intra- and inter-reliability (ICC) values for pathway of goal scoring

| Rater | Intraclass Correlation Coefficient (ICC) |
|----------------|--|
| Intra-observer | 1 |
| Inter-observer | .997 |

2.2. Statistical Test

All the data have been described as descriptive statistics, with mean and standard deviations as analysis of variance (ANOVA) being used to compare variables since the data was normally distributed. The level of significant was being set as $p \leq .05$.

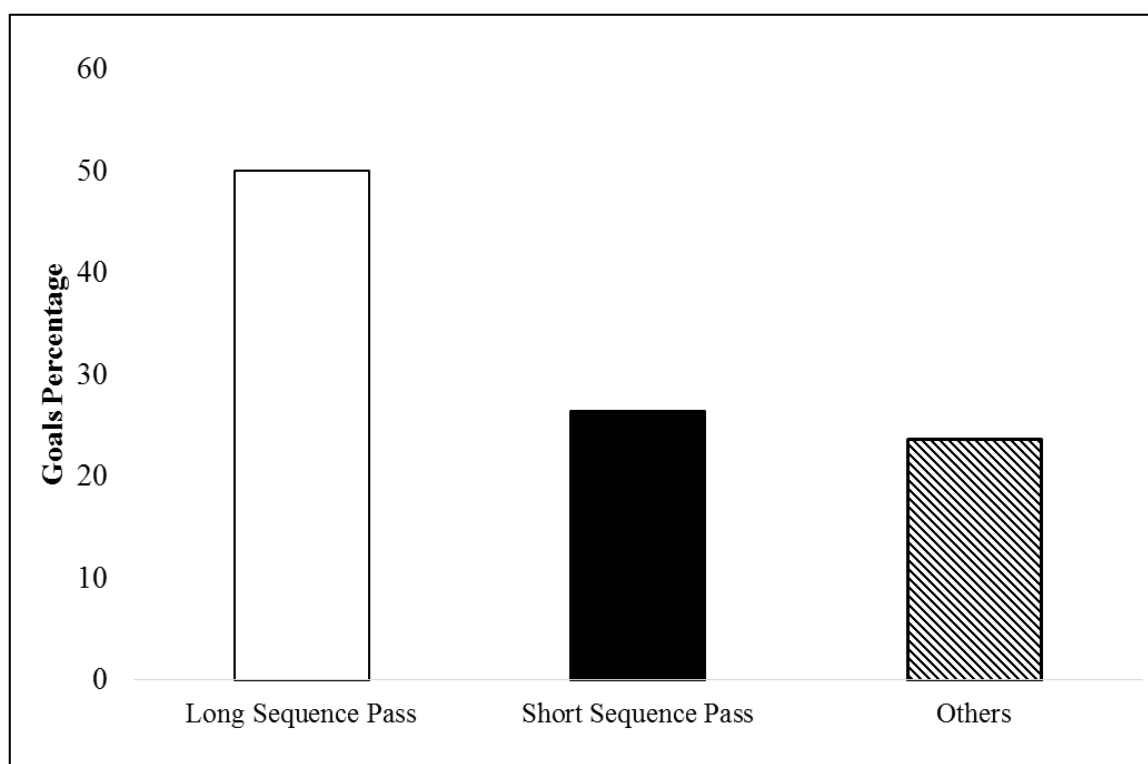
3. Results and Discussion

3.1. Result

Figure 1 showed the descriptive statistics distribution of goal scoring pathway. Among a total of 216 goals that have been scored by the winners of the UEFA Champions League competition, 108 goals (50%) came from long sequence passing, 57 goals (26.4%) from short passing sequence, and 51 goals (23.6%) from others.

Figure 2 showed that all the winners of UEFA

Champions League for 7 consecutive seasons have a higher percentage of goal scoring pathway on long sequence passes. Beginning with the 2015/2016 season, the pathway of goal scoring for Real Madrid was 10 goals (35.8%) coming from long sequence passing, 9 goals (32.1%) from short sequence passing, and 14 goals (32.1%) from others. For the following season, Real Madrid scored 18 goals (50%) from long sequence passing, 18 goals (38.9%) from short sequence passing, and 14 goals (11.1%) from others during the 2016/2017 season. In the 2017/2018 season, Real Madrid who had won for the third consecutive season scored 15 goals (45.4%) from long sequence passing, 9 goals (27.3%) from short sequence passing and 9 goals (27.3%) from others. Moving to the 2018/2019 season, the champion, Liverpool scored 16 goals (66.7%) from long sequence passing, 3 goals (12.5%) from short sequence passing, and 5 goals (20.8%) from others. Then, Bayern Munich – the winners in the 2019/2020 season, scored 19 goals (44.2%) from long sequence passing, 15 goals (34.9%) from short sequence passing, and 9 goals (20.9%) from others. Then, Chelsea (2020/2021) scored 12 goals (52.2%) from long sequence passing, 3 goals (13%) from short sequence passing, and 9 goals (20.9%) from others. Lastly, the current winner Real Madrid (2021/2022) scored 18 goals (62.1%) from long sequence passing, 4 goals (13.8%) from short sequence passing, and 7 goals (24.1%) from others.

**Figure 1.** Descriptive statistic of goals scoring pathway

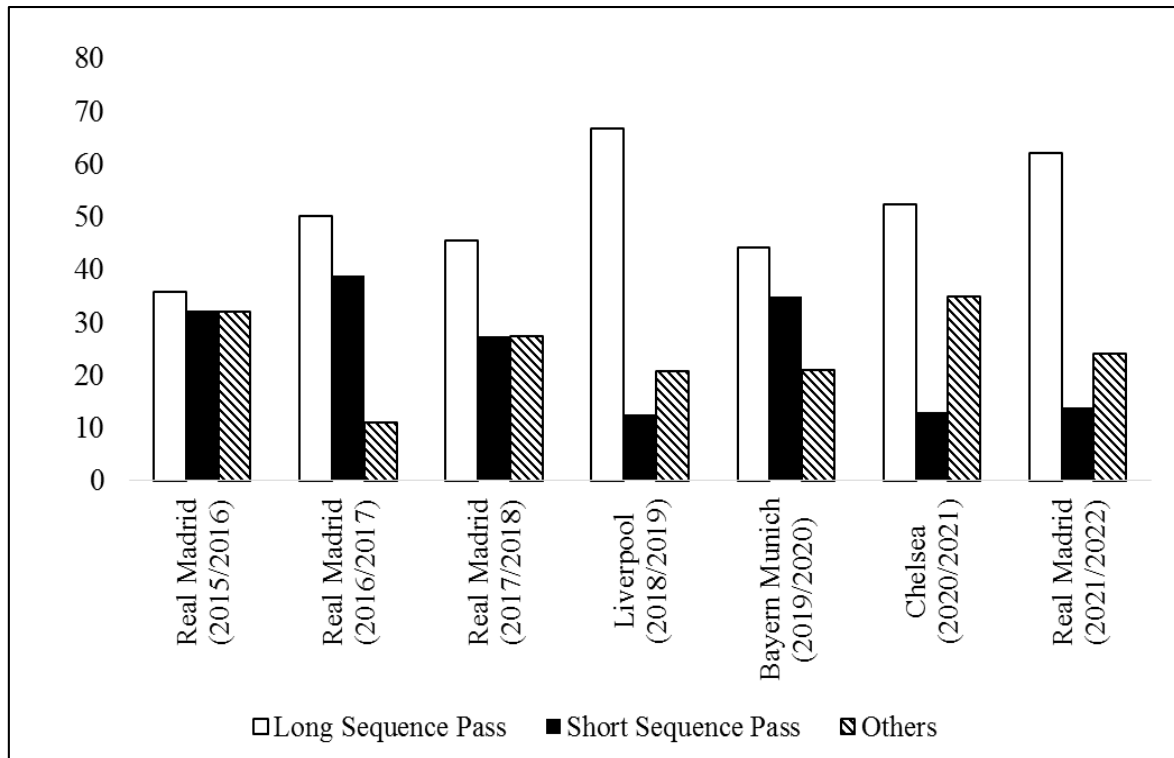


Figure 2. Descriptive statistic of goals scoring pathway according to season

Table 2. One-way ANOVA test

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 468.667 | 2 | 234.333 | 17.107 | .000 |
| Within Groups | 246.571 | 18 | 13.698 | | |
| Total | 715.238 | 20 | | | |

Table 2 showed that there was a significant difference between the goal-scoring pathways among the winning team in 7 previous UEFA Champions League competitions (2015/2016 - 2021/2022), $F(2,18) = 17.107$, $p = .000$. Therefore, this indicated that long sequence passing led the highest number of the goal scoring pathway followed by short sequence pass and others among the winners of the UEFA Champions League competition.

3.2. Discussion

This study aims to investigate the pathway of goal scoring among the winning team in the previous 7 consecutive seasons (2015/2016 – 2021/2022) in the UEFA Champions League competition. Based on the results, there was a significant difference between goal scoring pathways where the highest goal scoring came from long sequence passing (108 goals), followed by short sequence passing (57 goals while another 51 goals came from other sources among a total of 216 goals). The results of this study run similarly with previous research reporting that teams scored more goals after a sequence of long sequence passes

during European Championship 2012 [25]. A possible factor might be the pattern of play from the majority of these European teams that emphasize more on ball possession or well-known as “tiki-taka” as it becomes one of the most common attacking styles of playing soccer [11] that directly contribute to the higher number of goal scoring from long sequence passes. As continuity, currently European soccer clubs and national teams are also able to conquer the world as they have become the champion in FIFA Club World Cup tournament for 9 consecutive years (2013 – 2021) and FIFA World Cup for 4 consecutive editions (Italy – 2006, Spain – 2010, Germany – 2014 and France – 2018). Surprisingly, their local league is being considered as top 5 leagues in Europe. In addition, having a greater duration of ball possession might increase more scoring opportunities as being highlighted by Carling et al. [26] that the critical incidents in contesting ball possession usually were likely to increase goal scoring opportunity. This had been agreed by current previous study from Rodenas et al. [27] who concluded that longer possessions (≥ 5 passes) were more effective to achieve goals than shorter possessions (≤ 4 passes). In addition, Sgrò et al. [28]

also pointed out that the winning teams tried to maintain a high percentage of ball possession using more accurate and longer pass sequences.

Another possible factor might be the tactic of the coaches. Playing in a high-level tournament needs the team to have a range of tactical plans since they might be altered based on the multiple factors such as player's current performance, the number of players on the field, the number of goals scored or allowed, and many other factors. Depending on the coach's instructions, it can also be changed during or between games with the aim of scoring a goal and winning the game. It can be said that the application of the tactic might be advantageous for the teams as it can either help to control the tempo of the game, maintain ball possession, perform variations in ball circulation, change the pace of the game, and materialize tactical actions by aiming to break up opponents' balance and, consequently, lead to the increase in chance to score a goal [29, 30]. Furthermore, a prior study by Lago-Peas and Dellal [31] found that teams in the Spanish La Liga preferred to play counter-attacking or direct play when their team was winning momentum because it decreased possession while teams increased possession when they were losing momentum because they were permanently attempting to score the opponent's goal with a more elaborate play due to the opponent's more defensive style of play. However, since only the champions' goal-scoring pathway was compared in the study, this became a limitation of the study. More studies are warranted to be done in performance analysis to enhance the knowledge and information that can help in deciding the games [32, 33] and also the influencing factors that can contribute to the changes of physical abilities that can also affect the games pattern [34, 35].

4. Conclusions

In conclusion, the winning teams in 7 consecutive seasons of the UEFA Champions League competition (2015/2016 – 2021/2022) used long sequence passes as their main attacking style in order to score a goal and that directly led them to win the championship. In fact, Spain national team managed to win the European Championship 2008, World Cup 2010 and European Championship 2012 consecutively with this attacking style and remains the only nation to do it. Therefore, the findings of this study may also be useful to coaches since they may allow them to make predictions about the best team tactics and goal-scoring strategies. It is suggested that future research examine teams of varied rankings to determine how goals are scored differently on each side.

Supporting Agencies

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Disclosure Statement

The authors declare that they have no competing interests.

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