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Analysis of Goals Scored from Crossing in the English Premier League for the 2020-2021 Season.

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Abstract

Objective: The aim of this study was to analyze of Goals Scored from Crossing in the English Premier League for the 2020-2021 season, with specific reference to the typology and characteristic of the crosses. Method: A total of 269 goals scored from open play crosses and 51 from set play were observed from all 1.024 goals scored on 380 matches. The tagging panel of the Dartfish 10 Pro S software allowed us to study the following variables (Type of cross and target location in the penalty area). Results: The results revealed that the players used all types of crosses with different forms of passing delivered to the 2nd 6 yard to scoring goals. Conclusion: This analyze indicate that the goals scored following a cross from the third attacking area are more on open play and using frequently the driven passes. Coaches should reflect on the variables presented and the impact they have on crossing outcomes.

I. Introduction

Technological advancements have led to new possibilities, allowing coaches the ability to analysis a skill and tactical performance (Carling et al., 2008). In the domain of performance analysis in soccer, analyst and research teams support staff members with information primarily to enable understanding of performance, and to improve training regimes and decision-making. (Mat. H et al, 2021).

Many coaches are interested in statistical information on the key (or final) actions before a goal or try is scored. In soccer, the majority of goals are preceded by actions such as pass and crosses. These actions accounted for around 70% of goals scored in the 2006 soccer World Cup (Breen.A et al, 2006).

In other research conducted by (Carling.C et al, 2005), found that the majority of goals during the 2002 World Cup were preceded by either a pass or a cross. The proportion of goals scored following a pass was significantly lower in 2002 than in the 1998 World Cup, where (47%) of goals were scored following a pass assist. In contrast, the proportion of goals scored from crosses was much higher in 2002 (29%) than in 1998 (18%).

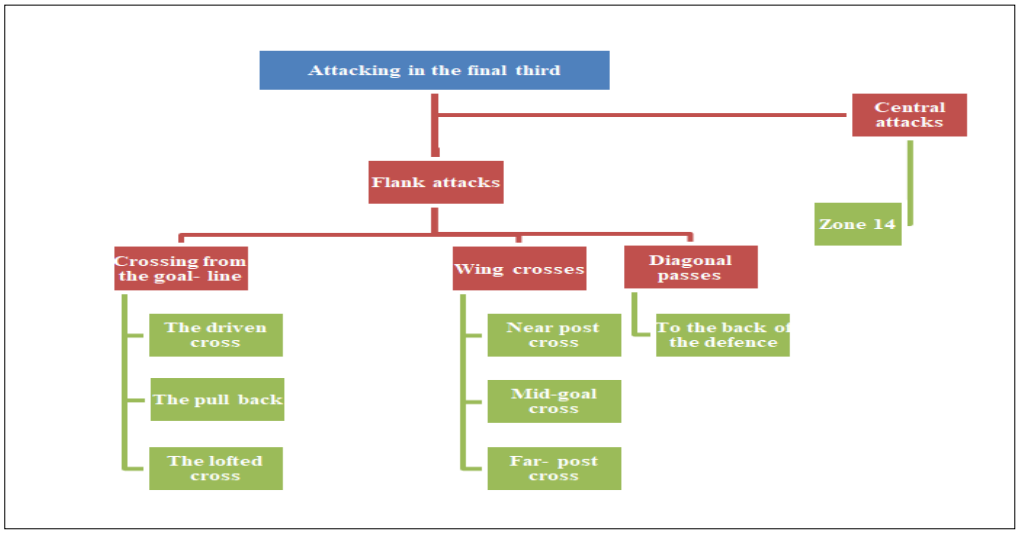

Figure 1. Organisation chart showing the options of attacking in the final third (Hughes. C, 1987)

Specifically, Mara et al, (2012) reported that 24% of goal outcomes resulted from crosses in the 2010/2011 Women League football competition. Smith and Lyons (2017) analysed open play goals across four FIFA World Cups (2002 - 2014 inclusive), and found that the percentage of open play goals originating from crosses ranged from 13% (2006 & 2010 World Cups) to 29% (2002 World Cup).

The importance of cross has been supported by scientific research which observed that the goals were likely to be scored from an attack through the wing followed by a cross (Hughes, M. et al.2005 & Yiannakos, A. et al .2006).

Using Dartfish 10 Pro S data, makes it possible to locate the result of a cross pass provided there is an action. The real intention of the cross is lost if the ball passes through untouched by forward or also if the cross is blocked by the defender.

Partridge and Franks (1989a; b), reported that we can track not only the location of the next action after a cross, but also identifies the type of crossing (delivery side, delivery type, delivery location). These will be split into the near post and far post as well as 3 principle locations within the area between the widths of the 6-yard box out to the edge of the 18-yard box.

In addition, Jacquet et al, (2002) found that the preferred area for scoring goals was between the penalty spot and the 5.5m (43.5% of goals in 2002). Long range shots accounted for 14.9% in 2002 but when defences are dense, shots from outside the penalty area can be an effective weapon.

However, cross to the prime target area is an effective way to score. If the penalty area were to be divided into three six yard boxes, the second six, sometimes referred to as the danger area, is the space between the six yard box and penalty spot, 6-12 yards from goal. This is a prime location for aiming crosses. Franks and Hughes (2004) identified that approximately four-fifth of all cross scores involved play in this area. Headed goals require brilliant delivery and great movement by receivers. It’s just too far from the goal for the keeper to be entirely trusting, and close enough to be deadly for the attack.

That is why our analysis focuses only on the goals scored after a cross pass (which results in a goal), without taking into consideration the movements of the attackers in the penalty area.

However, due to the obvious similarities between crossing and corner kicks, the corner kick literature can be used to inform the approach by which crosses can be examined i.e. delivery side, delivery type, delivery location etc.

Nesti and Sulley (2015) stated that the average number of crosses performed by a team per match during the 2010/2011 English Premier League season was 16. Furthermore, Garry Gelade, (OptaPro Analytics Forum, 2017) analysed 35,000 crosses from open play in the Premier League, from 2013 to 2015. Crosses from open play led to assists for 414 goals – a dismal 1.2% success rate.

Based on these different observations, we realise that the crosses are an indispensable condition for the performance of the footballer. Thus, within this descriptive analysis, we will focus on the goals scored during the English Premier League season 2020-2021.

One of the first questions concerns: Cross pass an effective form of attack and particularly in English Premier League? Teams don't score more goals because they cross less they cross less because they score more? What is the most effective type of cross? Where should a team cross from, and where should they direct their crosses to goals scored?

For that, the purpose of this article is to Analysis of Goals Scored from Cross in the English Premier League for the 2020-21 Season by identifies characteristics of type of cross.

II. Method and Materials

2.1. Sample

Total of 1.024 (2.69 per match) goals scored post crosses from English Premier League season 2020-2021 matches were observed , post download video clips in Wyscout Platform. A total of 269 open play crosses and 51 set piece play crosses were observed. The inclusion criteria dictated that only crosses delivered into the 18-yard box and which start from the attacking

third and which resulted in goals scored were analyzed. As such, crosses from set piece play were excluded from the study.

2.2. Materials

We have downloaded all videos of the matches by Wyscout Platform® (Italy). Data collection was performed through observational analysis using Dartfish®10 Pro S software. (Figure 2).

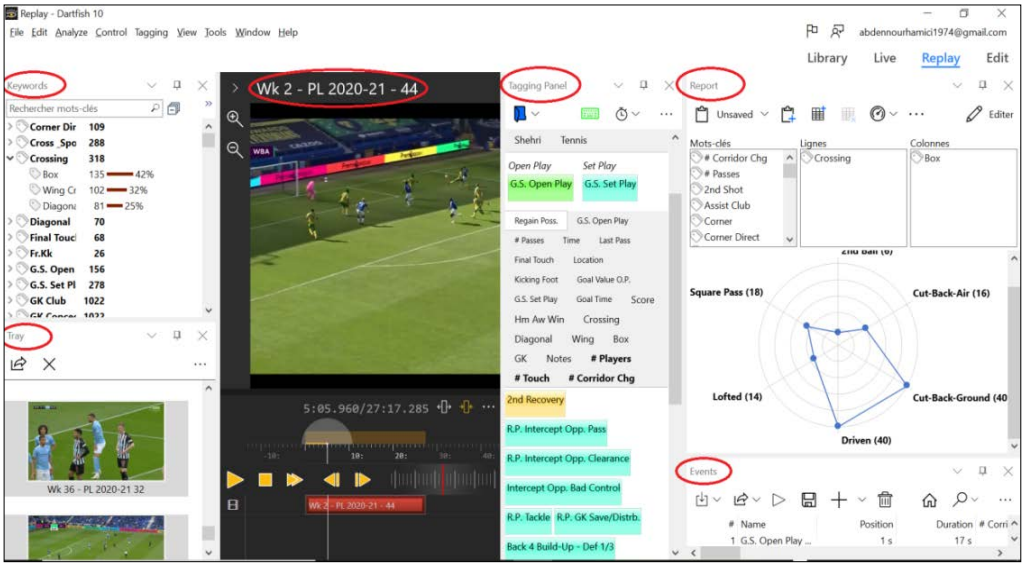

Figure 2. Screen capture from Dartfish® 10 Pro S software used.

2.3. Design and Procedure

With the Dartfish®10 Pro S software give the ability to create customized tagging “panels”, users are able to tag videos and extract relevant information. After download 1.024 goals scored from Wyscout platform; all video clips can be extracted and creating statistical reports. Creating events (variable) and applying descriptors to variables our study.

The event/value system locates the exact event you choose to view - depending on how you have constructed your tagging panel. And all this information can simply be exported into Microsoft Excel®2019 (Microsoft Corporation, Redmond, WA, USA) for the creation of intricate tables and creative graphs.

Reliability of the observation protocol

As the observer was part of the data collection method, a study conducted by Robinson, G., & O'Donoghue, P. (2007) proposed a protocol to verify reliability.

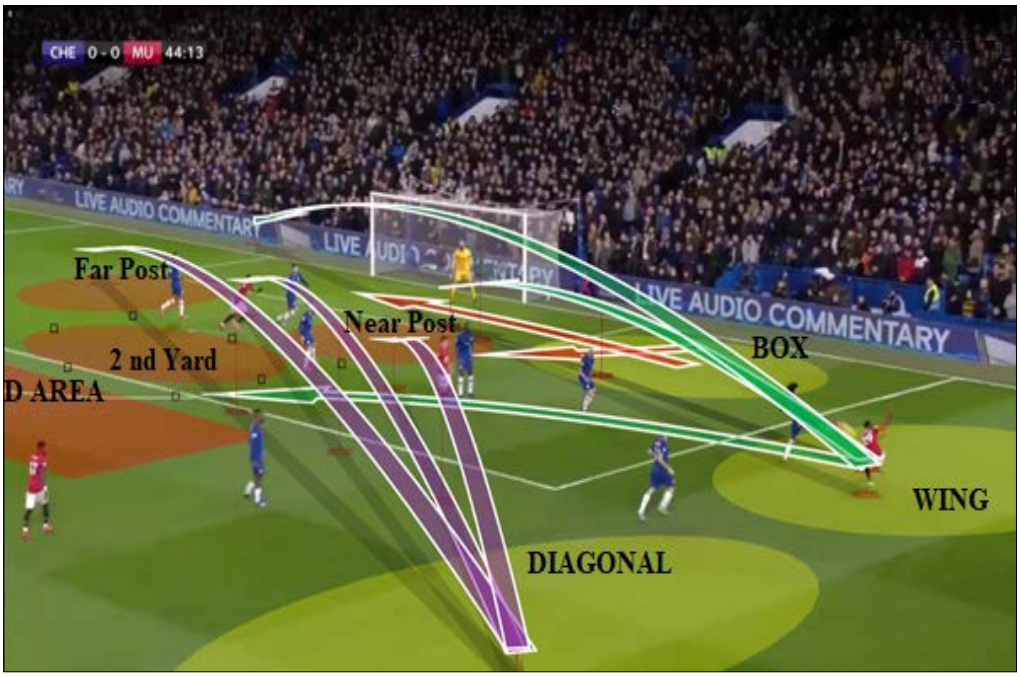

Figure 3. Type of Cross and Location (start and end)

Specifically (Hadji. A et al. 2019, 2020) has verified that the Dartfish Software guarantee good reliability for this kind of study with the same protocol used.

To facilitate a detailed depth of analysis, the following variables for each cross were recorded :(1) box cross; (2) wing cross; (3) diagonal cross.

Each of the variables was given a strict operational definition and, where possible, cross-validation with existing research (see Table 1).

All events were recorded using a tagging panel and the entire list of events was exported as a Microsoft Excel Data.

Table 1. Operational definitions of the variables.

Variables		Definition /Description
(1) Box cross* *(Half Space of the Box)*	***Half space – Box: is an area of the penalty area that fits It's between the outer lines of the 6 yard box and the outer line of the 18 yard box.***	
	Driven	A ground pass which is powered and is faster than a normal ground pass. This type of pass has better accuracy, but your pass receiver needs to put more effort to control it.
	Cut-Back Air *A pass back from near the goal line*	Pass used by a player who reaches the end of the pitch and passes the ball back towards his forwards in the box In the air
	Cut-Back Ground *A pass back from near the goal line*	Pass used by a player who reaches the end of the pitch and passes the ball back towards his forwards in the box in the Ground
	Square *Passing and receiving players are basically in line with each other shoulder-to-shoulder.*	A pass made by a player to a teammate running parallel him or her.
	Lofted *A lofted pass is something between a lobbed pass and a driven one.*	A short ground pass which flies low and close to the ground in order to avoid the interceptions by defenders.
(2) Wing cross* *(Using the width of the field)*	***Using the width of the pitch is a great way to launch attacks on your opposition defence***	
	Far Post	The goal post farthest from the ball
	2nd 6 yard	The space between the six-yard box and penalty spot
	Near Post	Goal post nearest to the ball - this same post can become the far post as the ball moves to the other side of the field.
	D-Area (Penalty arc)	The penalty arc (the D) is marked from the outside edge of the penalty area, 9.15 metres (10 yd.) from the penalty mark
(3) Diagonal cross*	**The pass with the angle between pass direction and the parallel of side-line is {(15°, 75°), (105°, 165°)}.**	
	Far Space	A penetrating pass generally made farthest in front of a defender
	Center Space (2nd 6 yard)	A penetrating pass generally made center in front of a defender
	Near Space	A penetrating pass generally made nearest in front of a defender
	D-Area (Penalty arc)	The penalty arc (the D) is marked from the outside edge of the penalty area, 9.15 metres (10 yd) from the penalty mark
	2nd Ball	The first ball is a cross. If the ball isn't cleanly controlled or dealt with there may be a "second ball". Basically it refers to flick ons and knock downs from all type of crosses when the ball is still there to be won.
Results of crosses Actions	**Success**	Sequence finished in goal (Goals scored**)**

(*) Left or Right side

2.4. Statistical Analysis

Using only a descriptive analysis of the data was done (frequency, average, percent). Microsoft Excel®2019 (Microsoft Corporation, Redmond, WA, USA) was used for data analysis.

3. Results

In total, 1024 goals were scored in 380 matches of the English Premier League season 2020-2021 which is, on average, (6,75 ± 4,13) goals per match from Box cross,(4,05 ± 2,58) goals per match from Diagonal cross and (5,1 ± 2.34) goals per match from Wing cross.

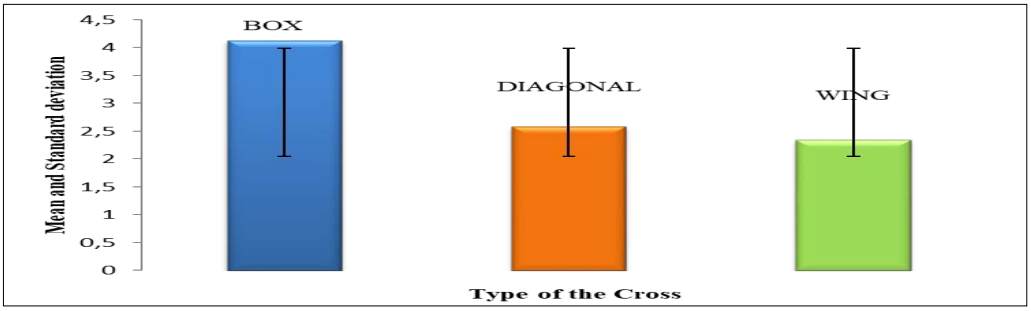

Figure 4. Mean Frequency values of goals scored open play in EPL season 2020-2021 according to type of Cross.*(Total = 1024 goals); (N= 269 Cross open play) ;(N= 51Cross set- play)*

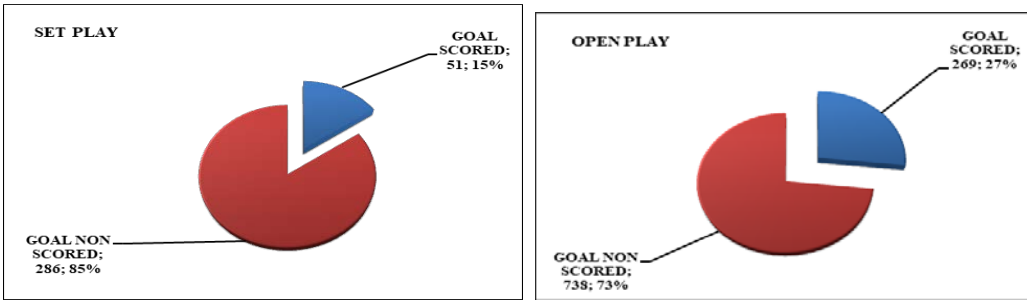

Figure5. Percentage of action prior to goal scored and no scored in open and set-play

Figure5. Reveal that more goals were scored from open play than from set pieces. Open play yielded a total of 269 (27%) goals while set pieces directly and indirectly led to 51 (15%) goals.

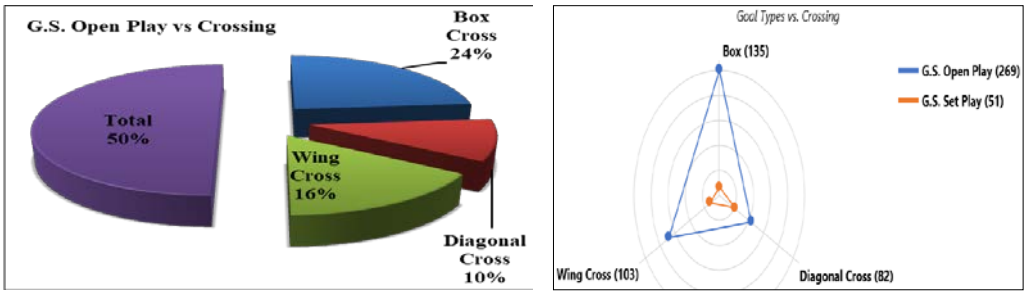

Figure 6. Type of the Cross prior to goal scoring

It is clear from the figure 6. that of the box area was the most of the field scoring 24 %, then followed by wing area, where the goals scored during the EPL reached 16% and from diagonal area amounted to 10% goals scored.

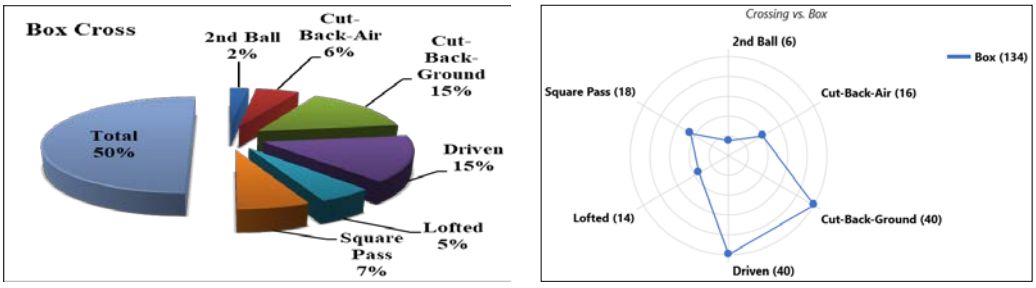

Figure 7. Percentages of box cross prior to goal in open play

As far as the technical performance to used cross box that lead the goal are concerned, the analysis presented that 15% of the goals were resulted from driven pass, 15% from cut back ground, 7% from square pass, 6% from cut back air and finally 6% from lofted pass (Figure7).

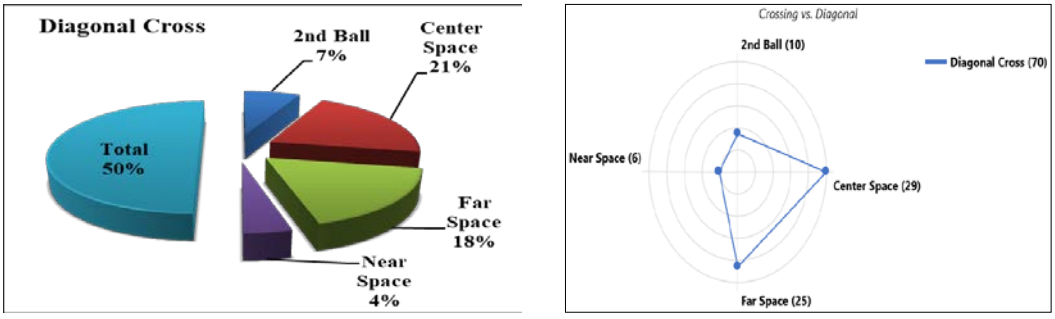

Figure 8. Percentages of diagonal cross prior to goal in open play

Regarding the diagonal cross prior to goal in open play goals, 70 goals were scored from diagonal cross, 29 from center space, 25 from the far space, 6 from near space and 10 from 2nd ball. Data analysis showed statistical differences between locations of the diagonal cross.

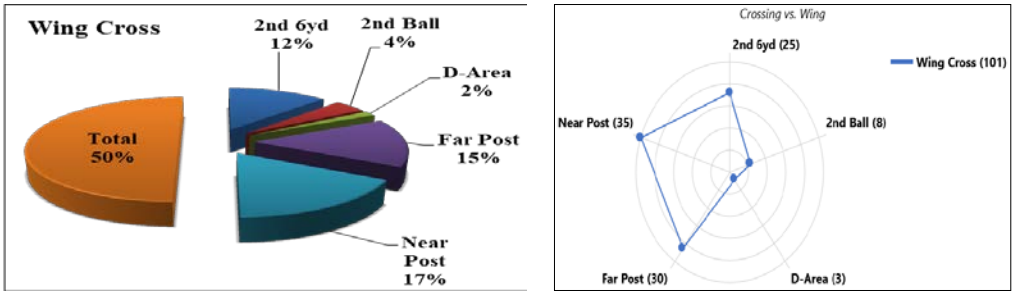

Figure 9. Percentages of wing cross prior to goal in open play

The results showed that 101 goals emanated from wing cross; 35 from near post, 30 from far post, 25 from 2nd 6 yard, 8 from 2nd ball and 3 from D Area.

Table 2. Frequency values of Cross type prior to goal (scored and conceded) by clubs in EPL season 2020-2021

Goals For	Box	Diagonal Cross	Wing Cross	Grand Total	Goals Against	Box	Diagonal Cross	Wing Cross	Grand Total
PL-Arsenal 20-21	11	1	5	17	PL-Arsenal 20-21	6	5	3	14
PL-Aston Villla 20-21	12	7	6	25	PL-Aston Villla 20-21	5	1	6	12
PL-Brighton 20-21	5	2	5	12	PL-Brighton 20-21	5	4	10	19
PL-Burnley 20-21	5	5	2	12	PL-Burnley 20-21	12	2	6	20
PL-Chelsea 20-21	10	4	6	20	PL-Chelsea 20-21	4	2	2	8
PL-Cryst. Palace 20-21	4	4	8	16	PL-Cryst. Palace 20-21	11	6	9	26
PL-Everton 20-21	11	4	10	25	PL-Everton 20-21	8	4	2	14
PL-Fulham 20-21	2	1	3	6	PL-Fulham 20-21	8	6	7	21
PL-Leeds 20-21	5	3	6	14	PL-Leeds 20-21	3	1	6	10
PL-Leicester 20-21	9	3	6	18	PL-Leicester 20-21	1	6	4	11
PL-Liverpool 20-21	4	12	1	17	PL-Liverpool 20-21	5	3	1	9
PL-Man City 20-21	19	5	5	29	PL-Man City 20-21	3	4	1	8
PL-Man Utd 20-21	7	6	7	20	PL-Man Utd 20-21	5	1	5	11
PL-Newcastle 20-21	4	4	6	14	PL-Newcastle 20-21	14	5	11	30
PL-Sh Utd 20-21	4	2	1	7	PL-Sh Utd 20-21	8	5	3	16
PL-Southhampton 20-21	4	2	5	11	PL-Southhampton 20-21	11	5	2	18
PL-Tottenham 20-21	5	5	6	16	PL-Tottenham 20-21	4	11	5	20
PL-WBA 20-21	3	2	3	8	PL-WBA 20-21	9	5	5	19
PL-West Ham 20-21	7	7	8	22	PL-West Ham 20-21	6	4	8	18
PL-Wolves 20-21	4	3	4	11	PL-Wolves 20-21	7	2	7	16
Grand Total	**135**	**82**	**103**	**320**	**Grand Total**	**135**	**82**	**103**	**320**

We notice in table 2 that Man City have great performance crosses in the box area (29) goals scored, while Newcastle conceded (30) goals after crosses.

III. Discussion

The basic numbers show that Manchester City attempted more crosses (29) that have generated a goal scored than any other team in the Premier League season 2020-2021. Everton (25) and Aston villa (25) ranked second. At the other end of the scale, Sheffield united (06) and Fulham (07) attempted the fewest. The average per team was 15.9 ± 6.25 crosses generated goal for and 15.9 ±5.82 crosses generated goal against attempted, which equates of average to just over 16 crosses per game prior goal scored.

In addition, several new descriptor qualifiers for crosses, delivered both during open play, are also being recorded in this study. Driven crosses, which are struck hard, straight and without swing, are allocated a Driven qualifier (15%), whilst the Cut back ground crosses (15 %) ranked second to scored goals or crosses are stood up to the far post are being qualified as Floated (18%).

According to WhoScored, a total of 659 goals were scored from open play, while 241 goals were scored from set-pieces (excluding penalties). The Opta data shows that 166 and 128 goals were scored from open play and set-pieces respectively. Thus, 25% and 53% of all goals in these categories were scored from crosses. The average number of crosses per goal scored in the 2011-2012 EPL season was 79 from open play and 28.3 from set pieces. The accuracy of crosses is also higher for set-pieces (33.9%) compared to open play (20.5%).

This shows that crosses are more effective on set-pieces than in open play. This trend was confirmed by our study, almost similar results recorded by the two most important databases dedicated to game statistics (WhoScored and Opta).

A new performance indicator, called "expected goals", is now available to objectively determine the quality of a team. The analysis of this index allows us to indicate the percentage of chance to score a goal when the attacker was in a given area of play. The third attacking is divided into several areas of play in which a percentage is given. This percentage corresponds to the probability of a player scoring a goal from that area.

In our study this is reflected in the high conversion percentage of the danger zone, the area in the penalty area in front of the goal. We have recorded that the majority of goals scored in EPL season 2020-2021 came from crosses born from inside the box area, precisely the half space (24%), using cut back ground or air cross.

However, our study showed that crosses delivered to the far post were used more often than the study conducted by Yamada, H., & Hayashi, Y, (2015), found that more than half of the crosses were aimed at the outside of the near post. This explains the run through of players to the near post.

The interesting thing about the half-space is the different types of players that can expose these areas for their team. There are many benefits of the half-space, in comparison to the central areas. It's less congested, and can open space up on the opposite side of the field. Playing in the half-space could drag opposition players out of the central area, meaning space opens up centrally. If research says that playing around the central area of the field is beneficial, then why not play in the widest zone? Well, the half-space has benefits in comparison to the widest areas too. Most notably, you are closer to the goal, you can play in more directions (both to the left and right of you) without the worry of the side-line, and it can confuse the opposition as to their role and responsibilities.

However, we can explain the tactical choices of the coaches. When a team attacks in the attacking third, there are two ways to attack generally: central attacks and flank attacks. Due to the importance of zone 14, the majority of the defenders would concentrate on defending the central area. The defenders' aim is to deflect attack toward the flanks which is away from the danger area (zone 14). As a result, a good attacking team should be able to attack effectively down the flanks. The two flanks are the areas where a team can expect to find most space in the attacking third of the field.

Teams of English Premier League, have 1024 goals scored in 2020-2021. 320 of them to be more precise resulted from crosses. And while 51 of these goals came from set-piece situations, 269 goals resulted from open play crosses which still makes (27%) of all goals scored. Since this amount clearly makes their crosses an important part of their attacking strategy and vital reason for their success.

The position from where the cross was sent in; the attacker's positions and the position of the goalscorers of the 269 goals are highlighted. As one can see, there is a great variety in terms of the crossing positions. Despite favouring an end-line breakthrough before crossing, they also send in crosses from third attacking area.

That, however, is accompanied with a lack of orientation and allows the attackers to steal away on the blind side. The so called (blind side runs) are a common strategy of teams EPL attackers to get into less crowded positions and receive the ball without the pressure of a direct opponent. As a consequence, the often move to the second post where the opposition defenders are unable to see them. And in some cases, they can even create a numerical superiority that way.

Compared to Euro 2016 and 2020, when the teams did not use lot of crosses (11 crosses and 15 per match) compared to EPL 2020-21. However, their efficiency remained high. It is the application of crosses that has changed. The ball has been often delivered to open areas behind the far center back or even the far full back. Diagonal crosses made with the inner side of foot and curled towards the goal were common. Denmark and Spain used such crosses and proved to be among the euro 2020 leaders in the total number of crosses. However, Man City has great performance crosses in the box area (29) goals scored because. We can explain why Man City put in so many crosses "Because the opponents defend with 11 players on the 18-yard box". They allowed you to go outside but not inside.

IV. Conclusion

The purpose of this study was to analyze open play goals scored in the EPL 2020-21. A total of 269 goals were scored (27%) from the 1.007 open play crosses that were observed. goals scored by using driven and cut back ground cross into the penalty area were associated with new half space philosophy and with achieving a goal scoring attempt from a cross. The delivery type, zone of the crosser and zone of the outcome were associated with a defending outcome following a cross and attackers movement in the 2nd 6 yard and far post. Coaches should reflect on the variables that influence the different crossing outcomes and how they could design practices to represent crossing scenarios that are experienced during competitive matches.

Overall, it is clear from this analysis that coaches have to focus on improving the technical and tactical build up into the penalty area; encourage more goal attempts within the penalty box; perfect different type of crosses to goal scored.

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