



# Understanding the relationship between Goal Kick distribution and Final-third entry

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# Introduction



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**Is there a relationship between Goal Kick  
distribution-location and final-third entry?**



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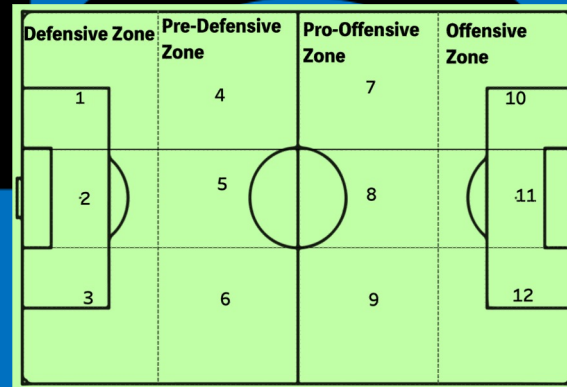


“In my teams, the goalie is the first  
attacker, and the striker the first defender”  
– Johan Cryuff.

# Literature Review

Many of the modern research surrounding the offensive process would draw their focus on the final action of the entire attacking sequence (Rathke , 2017,Gonzalez-Rodenas et al., 2019,Tuhreen and Olthof, 2022). Although goal keepers are very much apart of the offensive process with and can affect it both positively and negatively, Carmichael et al., (2000).

The type of possession start-up was found to have an impact on goal probability, with types of restarts having a particularly strong relationship. Of the restarts, goal kicks are the least territorial advanced but one of the most frequent. (Gonzalez-Rodenas et al., 2019; Siegle and Lames, 2011)



Sarmiento et al., (2018)

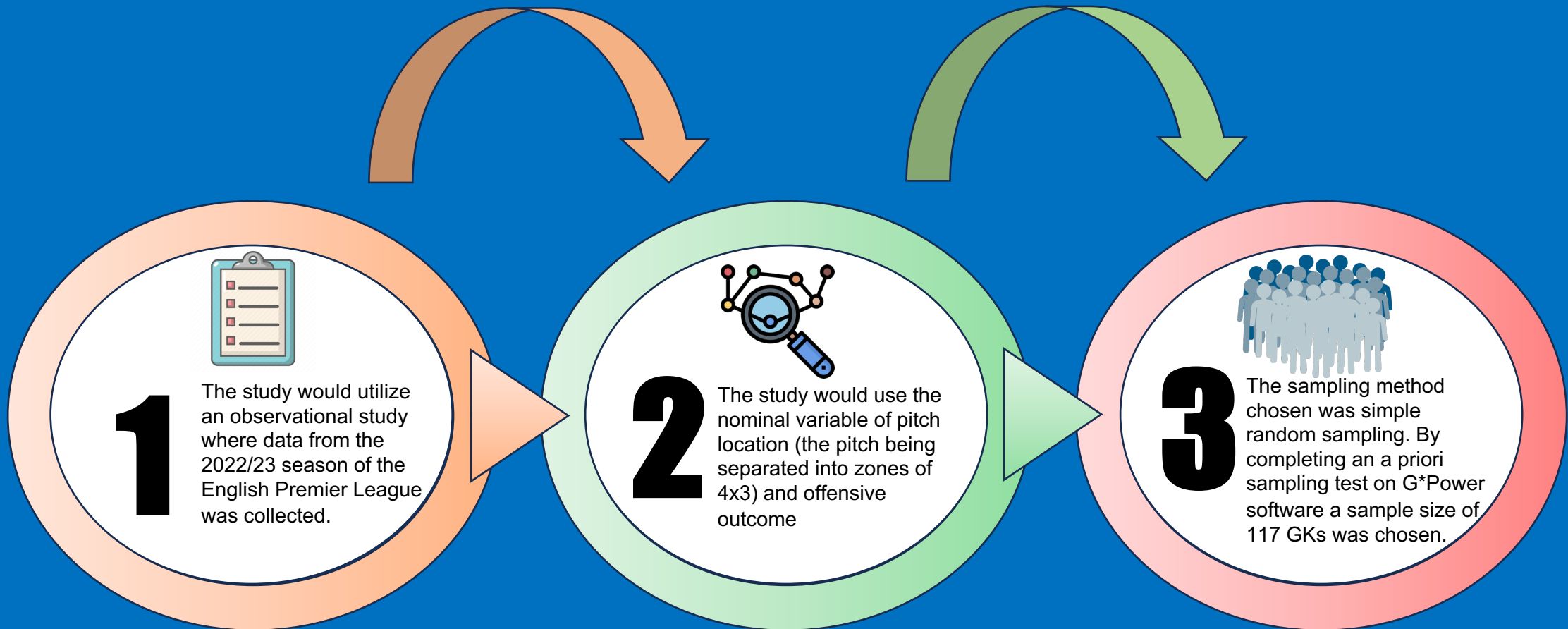
Finding and implementing strategies that enable entry into the final-third is found to be universally difficult for coaches. Although research has shown that different modes of possession start ups will show different relationships with final-third entry. Although, there is a clear limitation in research that explores specifically goal kick distribution in terms of pitch location and its relationship with final third entry. (Wright et al., 2011; Guimaraes et al., 2021; Hughes and Lovell, 2021)

When reviewing the overall distribution of goalkeepers in the Women's La Liga it was found that direct distribution would show a higher probability of offensive success compared to indirect. Furthermore, the closer the distribution was to the opposition goal, the higher the probability of offensive success but also the probability of losing the ball would be higher for direct goal kicks in comparison to indirect, Casal et al., (2024).

Goal kick distribution has seen changes in its implementation. In particular, after a FIFA rule change to order to limit the frequency of aerial duels in football that has shown direct links to head-related injuries, there has been a spike in the volume of short goal kicks in comparison to long goal kicks in the Japanese top-flight league. Although, viewing this from a performance analysis lens, short goal kicks were found to be more negatively associated with offensive success compared to long goal kicks. (Shibukawa and Hoshikawa, 2022, Beaudouin et al., 2021; Mendes et al., 2023)

The aim of the study was to investigate the relationship between the goal kick distribution location and offensive zone entry in the English Premier League.

# Methodology



Sarmiento et al., (2018)

Faul et al., (2007)



# Methodology

## Hypotheses

### 1. Alternate Hypothesis

- There is a relationship between GK distribution location and offensive outcome success.

### Null Hypothesis

- There is no relationship between GK distribution location and offensive outcome success.

### 2. Alternate Hypothesis

- There is a relationship between GK distribution location outside the defensive zones (zones: 4, 5, 6, 7, 8, 9) and offensive outcome success.

### Null Hypothesis

- There is no relationship between GK distribution location outside the defensive zones (zones: 4, 5, 6, 7, 8, 9,) and offensive outcome success.

### 3. Alternate Hypothesis

- There is a relationship between offensive outcome success and GK distribution location from central zones (zones: 2,5,8).

### Null Hypothesis

- There is no relationship between offensive outcome success and GK distribution location from central zones (zones: 2,5,8).

## Axiology of the study

The results were recorded using the kappa test for intra-rater reliability, Cohen (1968).

Prior to the completion of this study a level 1 ethical approval application was filed and approved by a supervisor at St Mary's University and then formally logged and reported to the University ethics committee via Faculty ethics representative.

The potential for preference bias given the researchers involvement in data collection was acknowledged.

## Data Analysis

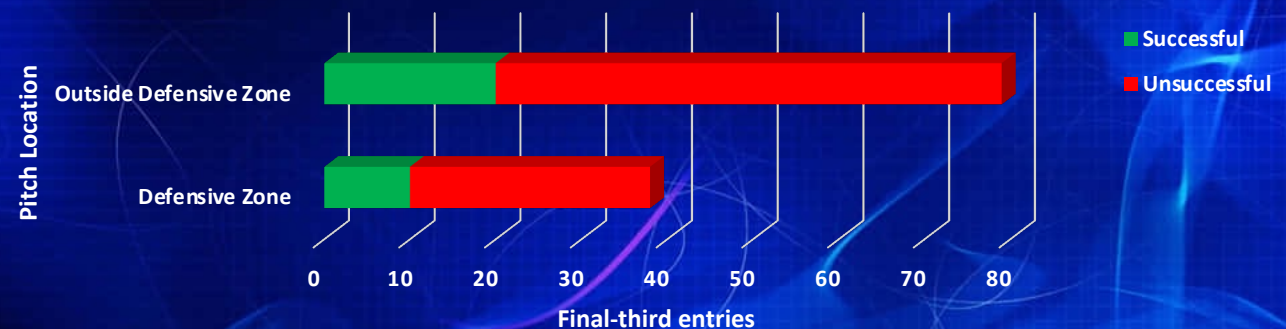
The data analysis was done using quantitative methods. Using R software, a fisher's exact test was completed to test the first hypotheses. Then Chi-square tests of independence were completed to test both the second and third hypotheses





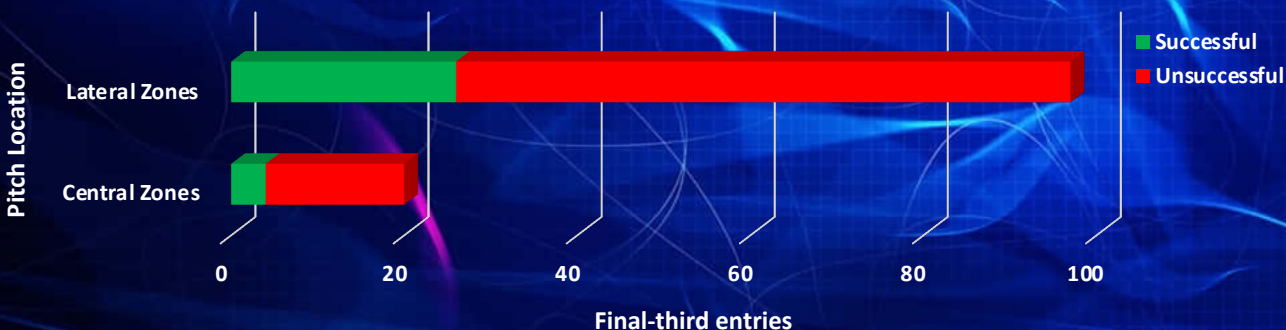
- 87 of 117 GKs unsuccessful.
- Very mix spread of percentage success within defensive and pre-defensive zone.
- Zone 7 and 9 were most frequently used while zone 5 was used the least.

(Mendes et al., 2023, Casal et al., 2024; Kubayi, 2021, Konefal et al., 2019)



- Success inside and outside defensive zone overall very similar.
- Distribution outside defensive zone used much more frequently.

(Mendes et al., 2023; Brindescu et al., 2021)



- Lateral zones would be used much more frequently than central zones
- Lateral zones would show a greater percentage of successful outcome

(Guimaraes et al., 2021; Mara et al., 2012; Kim et al., 2019)



# Results

 There is a relationship between individual pitch zone of GK distribution and entry into the final-third.



 There is a relationship between GK distribution inside the defensive zone and entry into the final-third.

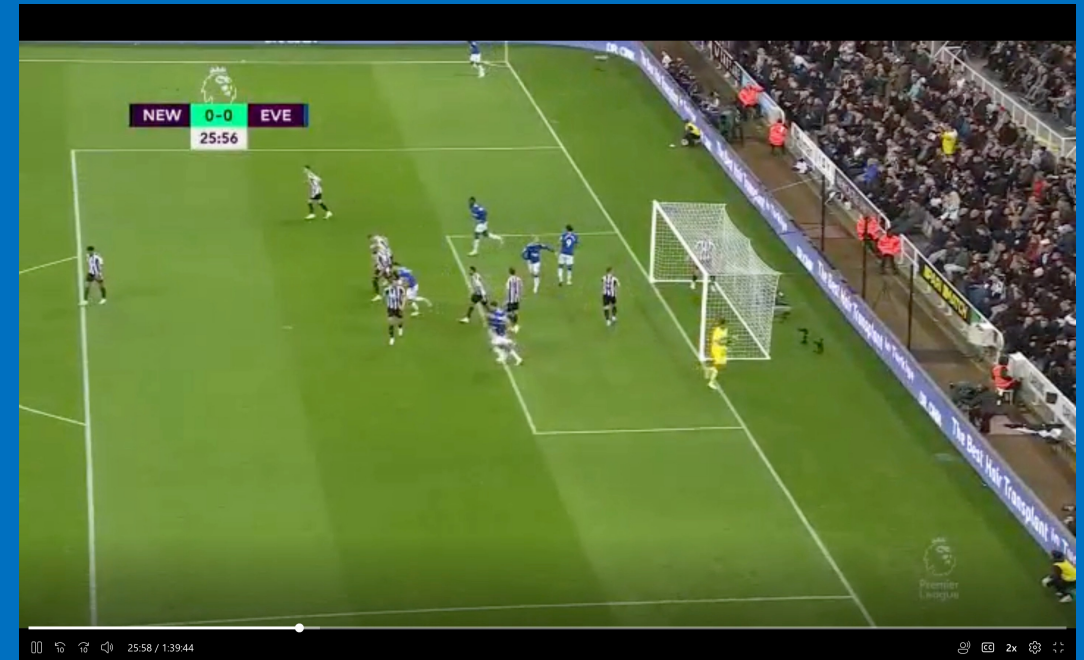


 There is a relationship between GK distribution inside the central zones and entry into the final-third.










## Newcastle GK strategy



(Notari et al., 2023; Brindescu et al., 2021)

# Conclusion

-  Variety of distribution types used in the EPL.
-  No relationship was found between goal kick distribution and final-third entry findings.
-  The process between goal kick and final-third entry is more nuanced.
-  There is a need for future research to look at goal kick distribution more holistically. Coaches should analyse GKs by observing multiple variables.
-  Opposition defensive strategy was highlighted as a key variable to explore.



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