

Football Strategies Mathematically

Many different strategies and philosophies have been used in organized attacks in football, and experts and coaches have their differing preferences. How can we know what the best strategies are? We look at it from a statistical perspective!

Using data and analytics is on the rise in football. Teams like Midtjylland and Brentford have vastly improved their performances both on the pitch and financially through deploying club-wide strategies based on statistical analyses of the sport. Traditionally, a lot of decisions in the footballing industry have been made based on the opinions and experience of powerful people within clubs. The approach I prefer is the mathematical one, to make data backed decisions and choose strategies based on statistics rather than feelings and opinions.

With this mindset I have spent the last half a year conducting a study on what attacking strategies actually maximize the probability of scoring goals. Likewise, I have analyzed what defending strategies best prevent the opponents from scoring. Because football is a complex sport with lots of different game scenarios, I decided to narrow the study to just organized attacks: the times where the team in possession comfortably has the ball in the opponents' half and the defense is well organized. By measuring what patterns of play most often result in good goal scoring opportunities, I can draw conclusions about what the most efficient strategies are.

The study shows that attacking players moving faster and making more runs tends to open up gaps in the defense and results in more and better goal scoring

opportunities. This is a nice result that's in line with modern football tactics. Perhaps more surprising is that playing crosses is statistically an incredibly efficient way to create good chances. When watching football nowadays, I often see wingers and wing backs reluctant to make crosses unless the moment is perfect. Instead, they'll make an extra pass back to a central midfielder or central defender and wait for another opportunity to go forward. In statistical terms, this is not the way to maximize your probability of scoring. If you have the chance to put in a cross and you've got teammates in the box, make the cross!

Defensively the results of this study are very satisfactory for the common football fan. The most important factor to stop opponents from creating chances is to cover more space and stay closer to the attacking players when defending. In fact, my study shows that when the defense sticks close together and defends only around their own penalty area, the attacking is likely to create more and better chances. Thus, the exciting and fan-friendly approach of contesting possession over bigger areas is both more fun and more efficient.

The beauty of this project is that the method by which it was conducted can be applied to more areas. I don't want to toot my own horn too much, but doing this type of historical and statistical analysis on what strategies tend to generate better results is a great way to understand football. Why not apply this method to analyze what strategies are most successful in the build up phase, or how to take corners, or how to organize counter press? Let's bring more mathematics into football!

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