



Penetration into the penalty area and match outcome

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Introduction:

The background for this small study is a combination of the general curiosity of how different variables influence the outcome of games. More, the aim is to see if there still is possible to find support for a more direct playing style. The trend today seems to be to the favor of possession oriented football. In this case, it would be interesting to see if some of the old “winning formulas” still are alive today. Prior to the millennium, there have been several studies in favor of a direct playing style (Bate 1987; Harris & Reilly 1987; Huges 1990; Olsen, Semb & Larsen 1994).

Opposite, nearly 20 years of statistics indicates that superiority in ball possession rarely gives a probability above 50 % for winning the game, and many times a higher probability for losing the game than winning it (Grant & Williams 1997; Carlsen 2000; Euro 2000; FIFA 2006; FIFA 2010; Euro 2012). Moreover, it seems like both the difference between the teams, and the relationship between superior ball possession and success decrease in the knock out stages in the Euro Cup and World Cup (Euro 2000; FIFA 2006; FIFA 2010; Euro 2012).

This study investigated the relationship between two variables about penetration into the penalty area (independent variables) and the outcome of games (dependent variable). The two independent variables were “penetration into the penalty area” and “ball control inside the penalty area”. The first was recorded every time a team got the ball inside the opponent`s penalty area at the same as they had one or more teammates inside the opponent`s penalty area. The latter was recorded every time the team got control of the ball or a touch on the ball inside the opponent`s penalty area. The time and space inside the penalty area are quite limited, and attackers often finish or try to finish on the first touch (Faag 2000). Therefore, the study did not separate between having control of the ball inside the opponent`s penalty area or just simply having a touch on the ball. The results indicate that both superior numbers of penetrations into the penalty area and ball control inside the penalty area increase the chance for winning the game. More, winning teams scored higher on both the investigated variables than losing teams. In regard, it seems like superiority in penetration into the penalty have a greater impact on success than superiority in possession. Finally, the author made some suggestions about how many penetrations into the opponent`s penalty area teams in different situation should try to achieve during a match.

Methods:

The data was collected using the method of direct match analysis (Brackenridge & Alderson 1983; Larsen, Olsen & Semb 1996; Larsen 1997; Olsen & Larsen 1997). A total of 25 club- and national matches at the very top international level were included in this study. The matches were included based on these criteria: 1) League matches or Champion League matches involving English, Spanish, German, and Italian top teams, and national games from the Euro cup 2012. 2) Matches from the previous category that I got a chance to watch because they were shown on my TV channels 3) Three comparison matches from respectively the Norwegian top league, one match from the Africa Cup of Nation, and a friendly for the Norwegian National team. The matches and the raw data are presented in the appendix.

Both the none-random sample of matches and the direct analysis method have some pitfalls. However, the number of matches is sufficient to see a trend, and there was some sort of chance involved in the selection of matches. Concerning the analysis there were some situations where it was difficult to decide if a team had teammates inside the penalty area or not, or if there was a touch on the ball or not. Yet, the experience indicated that it in general was quite easy to make an accurate analysis.

Result and discussion:

Tab. 1: The number and percentage of matches where the team with superior numbers of penetration into the penalty area and superior times with ball control inside the penalty area respectively got a win, draw or loss. In one game, the teams had equal numbers of penetration into the penalty area, and that game was left out regarding this variable.

The number of times the team with...got a...	Win	Draw	Loss
Superior numbers of penetration into the penalty area (n = 24)	14 = 58 %	6 = 25 %	4 = 17 %
Superior times with ball control inside the penalty area (n = 25)	14 = 56 %	6 = 24 %	5 = 20 %

Based on these data the probability of winning the game with superior numbers of penetration into the penalty area was 58 %. Opposite, the probability of losing the game with superior penetration into the penalty area was only 17 %. Hence, there was an 83 % chance for not losing the match with superior numbers of penetration into the penalty area. The relationship between match outcome and superior times with ball control inside the penalty area was almost the same as for the previous variable. In regard, the probability for winning the match, losing the match, and not losing the match was respectively 56 %, 20 %, and 80 %. For comparison, the probability for winning the match with superior ball possession in the FIFA World Cup 2010 and the Euro Cup 2012 was

respectively 41 and 43 %, and the probability for losing the game with superior ball possession was 31 and 33 % (FIFA 2010; Euro 2012). More, a probability of 58 % for success in football is equal to winning the goal opportunity statistics 7 – 4 (Olsen 2011). In general, it seems like there is only a few variables that give a chance of 60 % or more for victory in football.

Tab. 2: The average number of penetrations into the penalty area and control inside the penalty area per/for game, team, winning team, and losing team.

The average number of...per/for...	Match	Team	Winning teams	Losing teams
Penetrations into the penalty area	63 (n = 25) SD = 11,6	32 (n = 25)	39 (n = 18) SD = 11,1	24 (n = 18) SD = 8,2
Times with control inside the penalty area	28 (n = 25) SD = 7,4	14 (n = 25)	20 (n = 19) SD = 7,8	9 (n = 19) SD = 3,8

This study shows that there were 63 penetrations per match and 32 penetrations per team into the penalty area. The average number with ball control inside the penalty area was 28 per match and 14 per team. More, winning teams had an average of 39 penetrations into the penalty area and 20 times with ball control inside the penalty area, versus 24 and 9 for losing teams. Hence, it seems like winning teams performed much better on these two variables than losing teams. Another interesting point is that winning teams managed to hit a teammate inside the penalty area in 51 % of the times they played the ball inside the penalty area. In contrast, losing teams just managed to hit a teammate in 38 % of the times they played the ball inside the penalty area.

Tab. 3: Other results.

- The highest and lowest number of penetrations into the penalty area for one team in one match was 57 versus 14.
- The highest and lowest number with ball control inside the penalty area for one team in one match was 33 versus 3.
- The probability for winning the match with more than 40 penetrations into the penalty area in the same game was 62 %, versus 15 % for losing the game.
- The probability for winning the match after having more than 20 times with ball control inside the penalty area in one match was 90 %, and no team lost with this achievement.

Table number three indicates that there were big differences in how different teams performed on these two variables. The most successful team had 57 penetrations into the penalty area in one match, versus 14 for the less successful team. More, the most successful team managed to get 33 times with ball control inside the penalty area, versus three for the less successful team. In regard, it is hard to imagine how a team could win a match with the latter achievement.

For those teams who managed to get more than 40 penetrations into the penalty area in one match, the probability for success increased only a little bit. However, 62 % chance for winning a match is a quite high probability in football, and it is the same as winning the goal opportunity statistics 7 – 3 (Olsen 2011). More interesting, teams who had 20 or more times with ball control inside the penalty area won 90 % of their matches, and they did not lose a single match. Even though the amount of data is too small to make accurate conclusion, the ability to hitting your teammates inside the penalty area seems quite important for success in football. Therefore, delivering and movements inside the box seems to play a central part in football. In that case it is possible to state that a slow build up give a team better chance to move more players inside the penalty area, and to make a more accurate pass or cross into the box.

Conclusion:

This study investigated the relationship between two variables about penetration into the penalty area (independent variables) and the outcome of games (dependent variable). The two independent variables were “penetration into the penalty area” and “ball control inside the penalty area”. The data indicate that we can increase success in football by getting the ball and teammates more often inside the penalty area than your opponents. Hence, this study gives some support for choosing a more direct style of play. Yet, the ability to hit your teammates inside the penalty area also seems crucial. This study also indicates that winning teams managed to get more times with ball control inside the penalty area than losing teams. Therefore, it seems like it is a smart strategy to pass the ball into the penalty area as soon as your team has one or more teammates there. Especially if the player with the ball is in a good position and can deliver an accurate pass or cross inside the box. More, the earlier you pass the ball into the penalty area, the fewer defenders will cover the box.

Except from having the best players, it seems hard to find single criteria for success in football. Nevertheless, the author will state some goals based on the data from this research. In matches where your team dominate or is supposed to dominates the game, you should manage to have 60 or more penetration into the penalty are in combination of having one or more teammates there. If the two teams are more balanced, the goal should be at least 45 penetrations. If your team is inferior, the other team the goal should still be to get 30 penetrations into the penalty area. More, your team should manage to hit a teammate inside the penalty area in 50 % or more of these penetrations. To get the ball into the area where we normally score goals is crucial in football. In fact, every attack that does not end up in this area is a wasted attack as long as the objective is to score a goal.

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Appendix:

The analyzed matches; n = 25, 19 matches had a champion and 6 matches ended with a draw. All data are based on regular playing time. The latter means that both the score and the numbers of penetration were collected through the normal 90 minutes plus additional time.

Match	Date	Tournament	Team	Penetration	Control	Result
Real Madrid – Granada	7.1.12	La Liga	Real Madrid Granada	41 19	27 8	5-1
Freiburg – Werder Bremen	5.2.12	Bundesliga	Freiburg Werder Bremen	42 20	16 6	2-2
Bayer Leverkusen – Barcelona	14.2.12	Champions League	Leverkusen Barcelona	18 34	10 20	1-3
AC Milan – Arsenal	15.2.12	Champions League	AC Milan Arsenal	38 36	24 13	4-0
Napoli – Chelsea	21.2.12	Champions League	Napoli Chelsea	26 42	10 18	3-1
Basel – Bayern Munich	22.2.12	Champions League	Basel Bayern Munich	45 23	23 14	1-0
Real Madrid – RCD Espanyol	4.3.12	La Liga	Real Madrid RCD Espanyol	51 19	33 7	5-0
Arsenal – AC Milan	6.3.12	Champions League	Arsenal AC Milan	26 23	14 12	3-0
Real Racing – Barcelona	11.3.12	La Liga	Real Racing Barcelona	14 47	3 28	0-2
Chelsea – Napoli	14.3.12	Champions League	Chelsea Napoli	43 30	20 10	4-1
Benfica – Chelsea	27.3.12	Champions League	Benfica Chelsea	49 25	16 9	0-1
AC Milan – Barcelona	28.3.12	Champions League	AC Milan Barcelona	17 27	12 21	0-0
Man. United – Everton	22.4.12	Premier League	Man. United Everton	52 29	18 19	4-4
Nederland – Germany	13.6.12	Euro Cup	Nederland Germany	26 26	12 6	1-2
Italy – Croatia	14.6.12	Euro Cup	Italy Croatia	32 37	16 12	1-1
Ukraine – France	15.6.12	Euro Cup	Ukraine France	19 32	6 18	0-2
Sweden – England	15.6.12	Euro Cup	Sweden England	34 23	8 12	2-3
England – Ukraine	19.6.12	Euro Cup	England Ukraine	25 36	10 11	1-0

Czech – Portugal	21.6.12	Euro Cup	Czech Portugal	17 51	4 22	0-1
Germany – Greece	22.6.12	Euro Cup	Germany Greece	57 14	26 6	4-2
Spain – France	23.6.12	Euro Cup	Spain France	25 21	12 7	2-0
England – Italy	24.6.12	Euro Cup	England Italy	25 47	8 14	0-0
Mali – Cote D'Ivoire	8.2.12	Africa Cup	Mali Cote D'Ivoire	25 35	4 18	0-1
RBK – Stabæk	4.5.12	Norwegian top division	RBK Stabæk	52 22	32 8	3-1
Norway – Croatia	2.6.12	Friendly	Norway Croatia	39 18	13 6	1-1