

How important is ball possession in football?

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1. Introduction

The 41st Monthly Report analyses the link between ball possession and results in 35 championships from UEFA member associations for the 2016/17 and 2017/18 seasons (2017 and 2018 for the summer leagues). The data used was generated by the specialist **InStat** company, with which the CIES Football Observatory collaborates. The sample is made up of no less than 19,949 domestic league matches.

The analysis focuses on both the results at match level and the rankings at the end of the season. Though the link between success and the three indicators for possession taken into account is undeniable, the report shows that it is only from a certain level that ball control allows teams to improve significantly their results. This is probably the source of the erroneous but widespread idea that possession is not a key factor for success.

Figure 1: study sample

[AUT]	Bundesliga	[ISR]	Ligat ha'Al
[BEL]	Division 1A	[ITA]	Serie A
[BLR]	Premier League	[ITA/2]	Serie B
[BUL]	First League	[NED]	Eredivisie
[CRO]	1. HNL	[NOR]	Eliteserien
[CZE]	First League	[POL]	Lotto Ekstraklasa
[DEN]	Superliga	[POR]	Primeira Liga
[ENG]	Premier League	[ROM]	Liga I
[ENG/2]	Championship	[RUS]	Premier League
[ESP]	Primera Division	[SCO]	Premier League
[ESP/2]	Segunda Division	[SRB]	Super Liga
[FIN]	Veikkausliiga	[SUI]	Super League
[FRA]	Ligue 1	[SVK]	Super Liga
[FRA/2]	Ligue 2	[SVN]	1. SNL
[GER]	Bundesliga	[SWE]	Allsvenskan
[GER/2]	2. Bundesliga	[TUR]	Super Lig
[GRE]	Super League	[UKR]	Premier League
[HUN]	NB I		

2. Analysis by match

The first type of analysis consists of crossing the percentage of ball possession with the average difference of goals per match. Possession was calculated on the basis of the actual amount of playing time. Figure 2 illustrates the positive link between possession and results. Nevertheless, a real disparity only starts to appear from a possession percentage of 57%. It is from this threshold that the dominant teams significantly increase their chances of victory.

The second indicator analysed is the percentage of successfully completed passes by a team in comparison to the total of successful passes during a match. In this case also, a positive link with scores exists. However, up until a threshold of about 55%, the ability to complete more passes than one's opponent does not have an impact on results. This confirms that possession must be sufficiently high to constitute a key factor for success.

Figure 2: % of possession and goal difference, 35 leagues

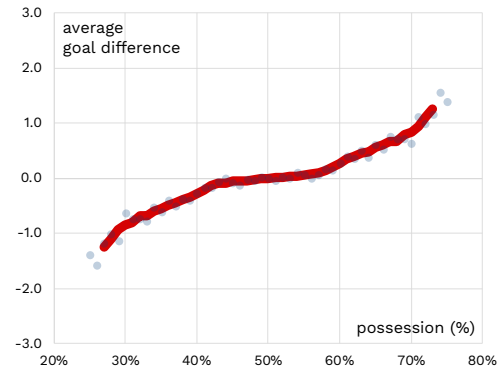
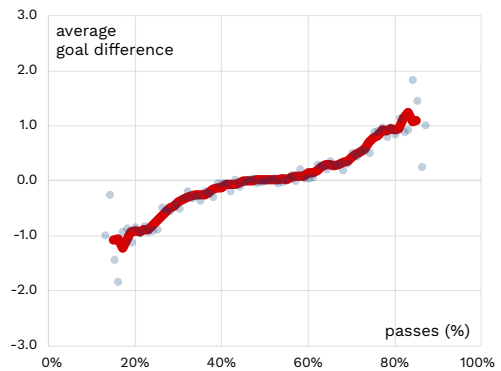


Figure 3: % of passes and goal difference, 35 leagues



A third analysis takes into account the percentage of passes completed by a team in the opponent's third in comparison to the total of successful passes by the two teams in these areas of the pitch. Here also, a link with the results exists. In this case, it is from a threshold of 60% that the indicator in question becomes a key criterion in obtaining victory.

This relatively high threshold is due to the fact that teams that are winning tend to accept the domination of their opponents by adopting a defensive tactic aiming at maintaining the score. While this tactic can turn out to be advantageous at match level, the following chapter shows that this is not the case over the course of a season.

The link between possession and goal difference at match level is very different according to league. At one extreme, the percentage of possession plays a decisive role in the Dutch Eredivisie, an unbalanced championship with an open style of play. On the other hand, no link between possession and success was observed in the five second divisions analysed. These competitions are balanced leagues where teams score relatively few goals.

Figure 4: % of passes in the opponent's third and goal difference, 35 leagues

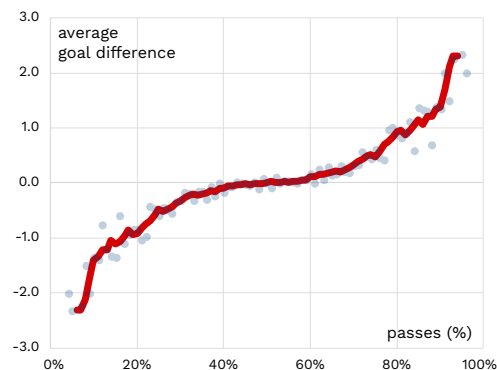


Figure 5: goal difference according to the % of possession, by league

	>=50.0%	>=52.5%	>=55.0%	>=57.5%	>=60.0%
NED	+0.50	+0.64	+0.75	+0.88	+1.11
SVK	+0.48	+0.59	+0.68	+0.85	+1.09
CRO	+0.58	+0.74	+0.84	+0.97	+1.03
GRE	+0.42	+0.50	+0.63	+0.78	+1.02
SCO	+0.38	+0.45	+0.63	+0.75	+0.99
UKR	+0.35	+0.45	+0.63	+0.73	+0.95
SRB	+0.50	+0.61	+0.69	+0.84	+0.90
ENG	+0.48	+0.60	+0.75	+0.81	+0.84
POR	+0.32	+0.39	+0.44	+0.62	+0.82
ITA	+0.47	+0.53	+0.64	+0.71	+0.81
SVN	+0.45	+0.54	+0.59	+0.78	+0.78
AUT	+0.26	+0.36	+0.39	+0.65	+0.73
BUL	+0.43	+0.45	+0.51	+0.62	+0.72
FRA	+0.39	+0.45	+0.54	+0.65	+0.68
GER	+0.25	+0.26	+0.30	+0.51	+0.65
ESP	+0.28	+0.37	+0.40	+0.57	+0.65
ISR	+0.26	+0.31	+0.41	+0.50	+0.64
TUR	+0.12	+0.15	+0.24	+0.44	+0.63
RUS	+0.19	+0.24	+0.29	+0.31	+0.50
DEN	+0.30	+0.35	+0.38	+0.38	+0.41
CZE	+0.07	+0.07	+0.08	+0.26	+0.40
SWE	+0.22	+0.25	+0.31	+0.39	+0.38
BLR	+0.16	+0.23	+0.41	+0.54	+0.36
BEL	+0.14	+0.22	+0.23	+0.35	+0.31
FIN	+0.19	+0.24	+0.34	+0.34	+0.30
ROM	+0.07	+0.13	+0.14	+0.19	+0.26
SUI	+0.10	+0.07	+0.06	+0.21	+0.25
ENG/2	-0.08	-0.08	-0.10	-0.04	+0.10
POL	-0.06	-0.03	-0.03	-0.11	+0.06
HUN	+0.07	+0.13	+0.05	+0.04	+0.04
NOR	+0.10	+0.21	+0.15	-0.05	-0.02
ITA/2	-0.13	-0.15	-0.23	-0.15	-0.10
FRA/2	+0.00	-0.04	-0.14	-0.12	-0.14
ESP/2	-0.21	-0.25	-0.24	-0.25	-0.33
GER/2	-0.27	-0.31	-0.33	-0.38	-0.33

3. Analysis by season

The impact of possession can also be measured at the level of results over the course of a season, either with respect to average points per match or the aggregate goal difference. In the two cases, the strongest correlations were recorded for the percentage of passes completed by a team in the opponent's third with respect to the total number of successful passes in these areas of the pitch. Over the whole of a season, it is the most pertinent indicator among those analysed in this report.

The correlations between possession percentage and points per match at a season level again highlight the importance of the disparities according to league. The second divisions of the countries hosting the five major European championships stand out from the pack due to the weak impact of possession on results. Nevertheless, contrary to what observed at match level, with the exception of the Spanish Segunda División and the German Zweite Bundesliga, the correlations are significant with a probability of error of less than 5%.

Figure 6: correlations between possession indicators and results over the course of a season (r2), 35 leagues

Indicator	points per match	goal difference
% of possession	48.8%	52.0%
% of passes	46.7%	49.8%
% of passes in opponent third	53.2%	57.8%

Figure 7: correlations between % of possession and points per match at the end of the season, by league

	r2	p	sign
SVN	86%	0.000	***
CRO	80%	0.000	***
ENG	72%	0.000	***
SRB	71%	0.000	***
BLR	70%	0.000	***
BUL	69%	0.000	***
UKR	68%	0.000	***
NED	68%	0.000	***
ITA	66%	0.000	***
SCO	65%	0.000	***
RUS	63%	0.000	***
GER	61%	0.000	***
POR	61%	0.000	***
TUR	60%	0.000	***
FRA	59%	0.000	***
GRE	59%	0.000	***
SWE	57%	0.000	***
ISR	55%	0.000	***
AUT	51%	0.000	***
SVK	49%	0.000	***
BEL	48%	0.000	***
ROM	42%	0.000	***
HUN	42%	0.001	**
CZE	40%	0.000	***
FIN	34%	0.003	**
SUI	30%	0.013	*
ESP	29%	0.000	***
DEN	25%	0.006	**
ENG/2	25%	0.000	***
POL	18%	0.017	*
NOR	16%	0.021	*
ITA/2	15%	0.009	**
FRA/2	11%	0.041	*
GER/2	10%	0.056	ns
ESP/2	1%	0.506	ns

[***]: p<0.001, [**]: p<0.01, [*]: p<0.05, [ns]: not significant

The average percentage of possession of teams having won their championship during the two seasons analysed was 57%. This percentage rises to 59% for the percentage of successful passes and to 60% for the percentage of successful passes in the opponent's third of the pitch. The French Ligue 2 is the only competition among the 35 studied where the champions have on average had a possession percentage of less than 50%.

Manchester City, Celtic and Shakhtar stand out from the champions with the highest possession percentages. Conversely, seven of the 70 champions won their league with a ball possession of less than 50%: Spartak Trnava, RC Strasbourg, Stade de Reims, AIK Solna, FC Midtjylland, Spal 2013 and CFR Cluj. However, these are the exceptions that confirm the rule.

Figure 8: average % of champions over three possession indicators, by league

	possession	passes	passes in opponent third
AUT	60%	62%	61%
BEL	54%	57%	55%
BLR	55%	59%	58%
BUL	60%	68%	64%
CRO	59%	66%	63%
CZE	53%	58%	53%
DEN	53%	57%	54%
ENG	61%	68%	65%
ENG/2	53%	52%	55%
ESP	59%	62%	61%
ESP/2	52%	51%	52%
FIN	60%	67%	62%
FRA	59%	61%	60%
FRA/2	48%	50%	47%
GER	66%	73%	70%
GER/2	52%	51%	54%
GRE	59%	65%	61%
HUN	52%	55%	52%
ISR	60%	62%	63%
ITA	57%	56%	58%
ITA/2	53%	52%	55%
NED	54%	62%	54%
NOR	55%	53%	56%
POL	55%	58%	58%
POR	60%	65%	63%
ROM	54%	60%	55%
RUS	54%	58%	57%
SCO	67%	68%	72%
SRB	58%	66%	60%
SUI	54%	57%	54%
SVK	54%	57%	56%
SVN	56%	60%	59%
SWE	53%	57%	55%
TUR	58%	59%	60%
UKR	66%	76%	70%

Figure 9: highest % of possession for champions

1 Manchester City [ENG, 2017/18]	68.6%
2 Bayern Munich [GER, 2016/17]	67.4%
3 Celtic FC [SCO, 2016/17]	67.2%
4 Celtic FC [SCO, 2017/18]	66.7%
5 Shakhtar Donetsk [UKR, 2016/17]	66.7%
6 Shakhtar Donetsk [UKR, 2017/18]	66.1%
7 Bayern Munich [GER, 2017/18]	64.5%
8 Paris Saint-Germain [FRA, 2017/18]	64.1%
9 Barcelona [ESP, 2017/18]	61.7%
10 GNK Dinamo [CRO, 2017/18]	61.5%
11 Red Bull Salzburg [AUT, 2017/18]	61.5%
12 HJK [FIN, 2017]	61.3%
13 Hapoel Be'er Sheva [ISR, 2016/17]	61.1%
14 AEK Athens [GRE, 2017/18]	60.8%
15 Benfica [POR, 2016/17]	60.8%

Figure 10: lowest % of possession for champions

1 Spartak Trnava [SVK, 2017/18]	48.0%
2 RC Strasbourg [FRA/2, 2016/17]	48.1%
3 Stade Reims [FRA/2, 2017/18]	48.4%
4 AIK Solna [SWE, 2018]	49.1%
5 FC Midtjylland [DEN, 2017/18]	49.3%
6 Spal 2013 [ITA/2, 2016/17]	49.3%
7 CFR 1907 Cluj [ROM, 2017/18]	49.3%
8 Levante UD [ESP/2, 2016/17]	50.0%
9 Fortuna Dusseldorf [GER/2, 2017/18]	50.3%
10 PSV [NED, 2017/18]	51.0%
11 Honved [HUN, 2016/17]	51.1%
12 Slavia Praha [CZE, 2016/17]	51.4%
13 Lokomotiv Moskva [RUS, 2017/18]	51.4%
14 Wolverhampton [ENG/2, 2017/18]	52.2%
15 Anderlecht [BEL, 2016/17]	52.5%

4. Conclusion

The data produced by **InStat** opens very numerous opportunities to analyse football and understanding the key factors to success. This Monthly Report shows that any ambitious team must be able to possess the ball at least as much as their opponents. The 70 champions of the 35 leagues and two seasons analysed have had an average possession of 57% during their winning season.

At match level, all the indicators taken into account show that a team can sometimes accept an opponent's domination, especially when they are winning. However, this is not a successful strategy in the longer term. Indeed, it implies too many risks of conceding the first goal without being then able to put sufficient pressure on opponents.