

Performance analysis: Best clubs and players of the big-5 league season

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1. Introduction

Since 2010, the CIES Football Observatory has been developing an innovative approach to analyse performance in football both at team and player level. This analysis focuses on the volume and efficiency of actions in key areas of the game.

The starting principle of our approach consists of considering that in football the whole is greater than the sum of the parts. Historically, all of the great teams have been able to integrate individual talent in to the collective effort of the team. Individual talent should serve the collective, not the inverse.

From a practical standpoint, our approach begins by focusing on team statistics before moving to the analysis of players on an individual level. Indeed, we consider that the performance of footballers should always be appraised by taking into account the general context in which they perform.

Individual performance depends heavily on the astute assembly of complementary skills within the framework of the style of play practiced by teams, as well as on the matching of footballers' characteristics and skills requested to play in a given position with respect to the style of play performed.

Moreover, individual performance is influenced by the overall set up of teams. For example, it is much easier for a player to be competitive in a stable environment with a clear strategic line than in an unstable one characterised by frequent manager changes.

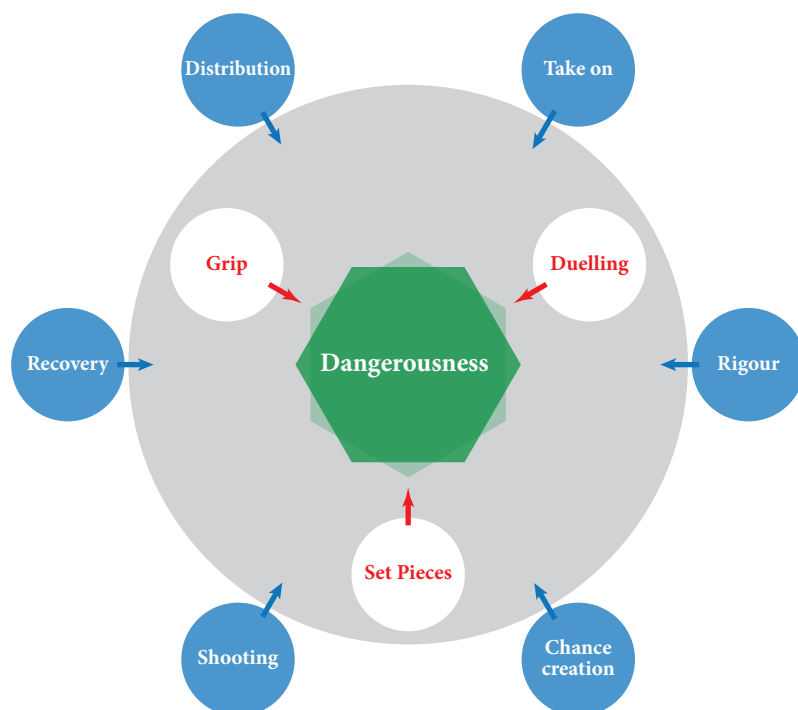
The strong interdependence between all these contextual elements makes the analysis of performance in football a real challenge. A thorough knowledge of the environment of professional football, a fine understanding of the logics of the game and a solid mastery of statistical techniques are all key prerequisites to be effective in this field.

Chapter two benchmarks big-5 league clubs according to four key performance indicators developed by the CIES Football Observatory research team: dangerousness, grip on the game, duelling and set play. This allows us assessing the strengths and weaknesses of teams compared to competitors.

Chapter three ranks players using six complementary key performance indicators: rigour, recovery, distribution, take on, chance creation and shooting. Each indicator refers to specific skills that any ambitious club should have at its disposal when aiming to obtain top-level results.

The conclusion highlights some of the added values that the effective analysis of performance as developed in this report could provide to forward thinking clubs.

Figure 1: CIES Football Observatory approach for pitch performance analysis



2. Team performance

This chapter compares big-5 league clubs on the basis of four key performance indicators measuring the ability of teams to dominate their opponents in terms of shots (dangerousness), passes (grip on the game), contests (duelling) and set pieces (set play).

This analysis provides useful information for different ends: selecting starting line-ups, adapting tactics, repositioning players, setting up priorities with regard to the technical profile of possible signings, etc.

Dangerousness refers to the volume and quality of shots attempted and conceded, grip on the game focuses on the number and position of passes made or conceded, duelling refers to the volume and outcome of dribbles and tackles, while set play measures the efficiency at free kick and corner levels.

In all cases, a greater figure than one indicates that teams have on average performed better than their rivals in the specific area considered. The analysis below focuses on the ten big-5 league teams at the top of the table for dangerousness¹.











Dangerousness is a more robust indicator than goals scored and conceded as the number of events taken into account is greater, which reduces the role of chance. Dangerousness is thus

a more reliable metric also from a predictive standpoint.

Our analysis shows that Barcelona is not only the most effective club from an attacking perspective, but it is also extremely well organised defensively. Conversely, in the top ten table, only Olympique Lyonnais conceded more and/or better chances to opponents than Real Madrid. This suggests that improving defensive solidity should be a priority for the ten-time Champions League winner.

¹ Annex 1 presents the data for all big-5 league clubs.










Figure 2: Dangerousness ranking, big-5 league

Team	Own	Opponents	Ratio	
1. FC Barcelona	114.7	25.9	4.42	
2. Juventus FC	63.2	19.4	3.25	
3. Paris St-Germain FC	98.7	32.2	3.07	
4. Club Atlético de Madrid	79.0	26.2	3.01	
5. FC Bayern München	91.9	30.9	2.97	
6. Real Madrid CF	108.0	38.0	2.84	
7. Chelsea FC	75.0	30.5	2.46	
8. SSC Napoli	81.6	36.4	2.24	
9. Arsenal FC	74.5	37.3	2.00	
10. Olympique Lyonnais	87.3	45.5	1.92	

The analysis in the level of grip on the game highlights the considerable ability of Barcelona and Bayern Munich in this field. Real Madrid has less favourable figures than its Catalan rival both for own and opponent passing.

However, the negative gap in the first case is lower than in the second: 33% compared to 43%. This confirms that putting more emphasis on ball recovery (i.e. pressing) should be a priority for Real Madrid.










Figure 3: Grip on the game ranking, the ten most dangerous big-5 league teams

Team	Own	Opponents	Ratio	
1. FC Barcelona	10,896	3,718	2.93	
2. FC Bayern München	7,864	3,100	2.54	
3. SSC Napoli	7,817	4,987	1.57	
4. Arsenal FC	7,744	5,202	1.49	
5. Chelsea FC	7,748	5,389	1.44	
6. Real Madrid CF	7,293	5,310	1.37	
7. Juventus FC	7,033	5,153	1.36	
8. Olympique Lyonnais	6,271	4,773	1.31	
9. Paris St-Germain FC	5,959	4,567	1.30	
10. Club Atlético de Madrid	6,383	5,616	1.14	

Barcelona tops the table also in duelling. This is mainly due to the difficulty that opponent players face in dribbling or avoiding successful tackles. Again, the positive gap with respect to Real Madrid is due to greater efficiency in defensive actions. Interestingly, this is also the case

for Bayern Munich. However, the German team partially compensate this weakness with greater efficiency in attacking duels, as well as an outstanding recovery work (see previous indicator). This is not the case for Real Madrid.











Figure 4: Duelling ranking, the ten most dangerous big-5 league teams

Team	Own	Opponents	Ratio	
1. FC Barcelona	0.65	0.22	2.92	
2. Arsenal FC	0.73	0.50	1.47	
3. Chelsea FC	0.58	0.42	1.38	
4. FC Bayern München	0.70	0.51	1.38	
5. Real Madrid CF	0.63	0.46	1.37	
6. Juventus FC	0.51	0.37	1.36	
7. Olympique Lyonnais	0.41	0.32	1.26	
8. Paris St-Germain FC	0.47	0.41	1.15	
9. Club Atlético de Madrid	0.32	0.32	1.02	
10. SSC Napoli	0.35	0.45	0.78	

Among clubs analysed, Barcelona has the best statistics also from a set play perspective. This is mainly due to the formidable ability to prevent opponents scoring from free kicks and corners. Conversely, Atlético Madrid is by far the most effective team from an attacking perspective. As

for previous indicators, the lower ratio measured for Real Madrid compared to Barcelona is due to lower performance levels in defence.

Figure 5: Set play ranking, the ten most dangerous big-5 league teams

Team	Own	Opponents	Ratio	
1. FC Barcelona	4.81	1.05	4.60	
2. Club Atlético de Madrid	12.79	3.06	4.18	
3. Chelsea FC	5.50	2.94	1.87	
4. Olympique Lyonnais	5.83	3.42	1.70	
5. Real Madrid CF	6.44	4.78	1.35	
6. Arsenal FC	4.61	4.10	1.13	
7. Paris St-Germain FC	4.92	5.58	0.88	
8. Juventus FC	4.18	4.85	0.86	
9. FC Bayern München	2.80	3.97	0.70	
10. SSC Napoli	3.48	5.56	0.63	

3. Player performance

Once strength and weaknesses are determined at collective level, the assessment of the performance of players provides further insights to gain a deeper understanding of the dynamics observed using teams as the unit of analysis. Our approach focuses on six complementary areas of the game.

From an individual skill standpoint, shooting refers to the ability of players to take advantage of goal opportunities through accurate shooting. Chance creation is the ability to put teammates in a favourable position to strike. Take on refers to the ability to create dangerous situations by successfully challenging opponents, while distribution is the ability to keep a hold on the game through efficient passing. Finally, recovery and rigour refer to the ability to minimise goal opportunities for opponents through proficient interception work, and respectively strength in duels.

To maximise their relevance, these key performance indicators combine systematically the volume of actions undertaken and their outcome (i.e. number of dribbles and % which were successful, the number of tackles and % successful ones, etc.).

Players are ranked according to five positions: centre backs, full backs, defensive midfielders, attacking midfielders and forwards. KPIs are selected or weighted according to their importance for each position as illustrated in Figure 6 below. For increased robustness, only footballers who played at least 60% of domestic league minutes are included in the rankings.

For footballers who play in different positions, we considered the one most often played in. If the position for a given game is too distinct from the usual one, we exclude the match from the analysis. This allows us to avoid, for the most part, possible bias.

The approach developed permits us to identify not only the top performing players in absolute terms, but also the footballers who have performed the best with respect to teammates. This allows us to unveil the hidden potential of players who are not yet part of the most competitive clubs, as well as the level of dependence of clubs on their best performing players.

Figure 6 : KPIs per position according to the CIES Football Observatory

	Rigour	Recovery	Distribution	Take on	Chance creation	Shooting
Centre Backs	****	****	****			
Full Backs	**	**	**	**	**	**
Defensive midfielders	***	***	***	*	*	*
Attacking midfielders	*	*	*	***	***	***
Forwards				****	****	****

According to our analysis, Thiago Silva was the best performing centre back of the 2014/15 season at both French and big-5 league level². The Paris St-Germain player outranks world champion Jérôme Boateng. This is mainly due to his outstanding performance level in the area of rigour.

Raphaël Varane heads the relative ranking in Spain. This not only reveals his great potential, but also confirms previous analysis on the crucial need for Real Madrid to improve defensive cohesion through a better division of labour between all players fielded. Free agent Emir Spahić tops the relative table in Germany.

² Annex 2 presents the big-5 league top-12 absolute rankings for each position.

Figure 7: Best centre backs per league, absolute and relative

League	Absolute	Relative
Premier League	Dejan Lovren	Jores Okore
Ligue 1	Thiago Silva	Loïc Perrin
Bundesliga	Jérôme Boateng	Emir Spahić
Serie A	Giorgio Chiellini	Rafael Marquéz
Liga	Javier Mascherano	Raphaël Varane

Barcelona's Dani Alves and Jordi Alba top the big-5 league table for full-backs, ahead of the young Frenchman Layvin Kurzawa. The Monaco player is undoubtedly ready to play for the very best European clubs. The same is valid for the Swiss full international Ricardo Rodríguez.

Players topping the relative rankings would also deserve a chance to prove themselves in more competitive teams. This holds particularly true for the youngest player among them: 22-year-old Djibril Sidibé of Lille.

Figure 8: Best full backs per league, absolute and relative

League	Absolute	Relative
Premier League	Gaël Clichy	Patrick van Aanholt
Ligue 1	Layvin Kurzawa	Djibril Sidibé
Bundesliga	Ricardo Rodríguez	Bastian Oczipka
Serie A	Patrice Evra	Antonio Balzano
Liga	Dani Alves	Sergio Escudero

Former world champion Francesc Fàbregas out-ranks all other defensive midfielders at big-5 league level. This confirms that the Spaniard has settled in perfectly at Chelsea. In second position is Marco Verratti. The young Italian prodigy will certainly go on to have an outstanding career.

The relative rankings allow us to highlight the strong potential of two non-full international players under contract with clubs in the bottom half of the table in their respective leagues: N’Golo Kanté (Caen) and Mario Vrančić (Paderborn).

Figure 9: Best defensive midfielders per league, absolute and relative

League	Absolute	Relative
Premier League	Francesc Fàbregas	Leroy Fer
Ligue 1	Marco Verratti	N’Golo Kanté
Bundesliga	Xabi Alonso	Mario Vrančić
Serie A	Claudio Marchisio	Miralem Pjanić
Liga	Sergio Busquets	Dani Parejo

Three players born in 1991 head the big-5 league table for attacking midfielders: James Rodríguez, Eden Hazard and Kevin de Bruyne. All these players can have legitimate ambitions to win the Golden Ball award in the years to come.

Bernardo Silva is the youngest player at the top of the relative rankings. The Portuguese rising star was born in 1994, three years after another young talent heading the relative tables of his league: Lucas Vázquez. Our analysis also highlights the strength of more mature attacking midfielders such as Gylfi Sigurdsson, Lars Stindl and Franco Brienza.

Figure 10: Best attacking midfielders per league, absolute and relative

League	Absolute	Relative
Premier League	Eden Hazard	Gylfi Sigurdsson
Ligue 1	Dimitri Payet	Bernardo Silva
Bundesliga	Kevin de Bruyne	Lars Stindl
Serie A	Marek Hamšík	Franco Brienza
Liga	James Rodríguez	Lucas Vázquez

Finally, Lionel Messi tops the big-5 league table for forwards ahead of Cristiano Ronaldo. In third position is another player of the Spanish Liga: Luis Suárez. Our metrics also allow us to highlight the outstanding talent of Alexandre Lacazette (born in 1991) and Felipe Anderson (born in 1993). They both have the potential to be future superstars.

Figure 11: Best forwards per league, absolute and relative

League	Absolute	Relative
Premier League	Sergio Agüero	Diego Costa
Ligue 1	Alexandre Lacazette	Christophe Mandanne
Bundesliga	Arjen Robben	Anthony Ujah
Serie A	Felipe Anderson	Antonio Di Natale
Liga	Lionel Messi	Jonathas de Jesus

Depending on the style of game played or intended by a team, it is also important to target footballers with different characteristics for the same generic position. That is why we identify as many profiles as KPIs selected for each outfield position considered.

James Rodríguez, Eden Hazard and Francesc Fàbregas are the only players heading the table in two distinct domains. This is a further indicator of their outstanding talent. The performance level of Real Madrid and Chelsea strongly depends on their shape.

This approach is particularly useful to gain a deeper understanding of players' specificities from the perspective of signing footballers providing complementary skills with respect to players available or, on the contrary, holding similar characteristics to squad members on the verge of being transferred to other clubs.

Figure 12: pitch positions and profile according to the CIES Football Observatory

Area	Position	KPI	Profile	Best (absolute)
Defence	Centre backs	Rigour	Timing	Thiago Silva
		Recovery	Placement	Nicolas N’Koulou
		Distribution	Technique	Javier Mascherano
	Full backs	Rigour	Timing	Lukasz Piszczek
		Recovery	Placement	Olivier Veigneau
		Distribution	Technique	Dani Alves
		Take on	Pace	Juan Bernat
		Chance creation	Vision	Leighton Baines
		Shooting	Power	Maxwell Scherrer
		Midfield	Defensive midfielders	Rigour
Recovery	Placement			Maxime Gonalons
Distribution	Technique			Francesc Fàbregas
Take on	Pace			Fredy Guarín
Chance creation	Vision			Francesc Fàbregas
Shooting	Power			Paul Pogba
Attacking midfielders	Rigour		Timing	Henrik Mkhitaryan
	Recovery		Placement	Vieirinha de Freitas
	Distribution		Technique	Eden Hazard
	Take on		Pace	Eden Hazard
	Chance creation		Vision	James Rodríguez
	Shooting		Power	James Rodríguez
	Attack		Forwards	Take on
Chance creation		Vision		Luis Suárez
Shooting		Power		Lionel Messi

5. Conclusion

The experience of the CIES Football Observatory shows that a holistic approach to squad management provides clubs with a competitive edge³. The definition of clear strategic lines and their sustainable implementation are key steps to help clubs to both prevent and manage difficult periods from a sporting perspective.

Conversely, an absence of, or ineffective strategic planning at squad management level often lead to upsetting performances and decisions dictated by panic which will further damage results over the long term. The extreme media pressure with which football clubs are confronted often aggravate the negative consequences of poor planning.

The effective analysis of performance at both collective and individual level as briefly proposed in this report is part of the key actions that all ambitious clubs should undertake to fight against the culture of short-termism which is rife in the professional game.

In addition, the development of a consistent approach in the area of performance analysis allows clubs to identify on an objective basis their weaknesses, implement solutions to overcome them and develop strategies to tackle possible threats.

While resistance to data-driven methods within clubs is decreasing, pitfalls in the production or

interpretation of findings, combined with organisational concerns, still prevent the vast majority of teams from taking full advantage of evidence-based research.

From this perspective, the integration of top level performance analysis in the decision-making process with regard to squad management and scouting still has great potential to allow forward thinking clubs to improve their results in a significant and sustainable manner.

³ Read also the CIES Football Observatory paper on [paths to sustainable success](#). An updated version will be available shortly.

Annexe 1a: Big-5 league ranking - Dangerousness

	Own	Opponent	Ratio		Own	Opponent	Ratio
1. Barcelona (ESP)	114.7	26.0	4.42	. Lille (FRA)	43.7	48.4	0.90
2. Juventus (ITA)	63.2	19.4	3.25	51. Tottenham (ENG)	54.3	61.0	0.89
3. PSG (FRA)	98.7	32.2	3.07	. Lorient (FRA)	61.9	69.8	0.89
4. Atlético Madrid (ESP)	79.0	26.2	3.01	53. West Ham (ENG)	46.4	52.6	0.88
5. Bayern München (GER)	91.9	31.0	2.97	. Caen (FRA)	49.1	55.7	0.88
6. Real Madrid (ESP)	108.0	38.0	2.84	55. Getafe (ESP)	46.9	54.5	0.86
7. Chelsea (ENG)	75.0	30.5	2.46	56. Genoa (ITA)	54.4	63.6	0.85
8. Napoli (ITA)	81.6	36.4	2.24	. Nice (FRA)	43.0	50.9	0.85
9. Arsenal (ENG)	74.5	37.3	2.00	58. Athletic Bilbao (ESP)	43.3	51.5	0.84
10. Lyon (FRA)	87.3	45.5	1.92	59. Freiburg (GER)	59.5	72.0	0.83
11. Manchester City (ENG)	71.0	37.3	1.90	60. Augsburg (GER)	47.7	58.6	0.81
12. Lazio (ITA)	79.4	41.9	1.89	. Sassuolo (ITA)	46.7	57.9	0.81
13. Monaco (FRA)	55.5	31.4	1.77	62. Rayo Vallecano (ESP)	55.2	68.7	0.80
14. Everton (ENG)	56.5	32.4	1.74	. Nantes (FRA)	39.3	48.9	0.80
15. Sevilla (ESP)	71.9	42.1	1.71	. Hellas Verona (ITA)	48.1	60.1	0.80
16. Southampton (ENG)	49.6	30.0	1.66	. Frankfurt (GER)	67.7	84.5	0.80
17. Roma (ITA)	55.2	34.0	1.62	. Köln (GER)	41.3	51.6	0.80
. Dortmund (GER)	60.6	37.5	1.62	67. Stoke City (ENG)	32.8	41.7	0.79
19. M'gladbach (GER)	67.9	43.5	1.56	68. Swansea (ENG)	45.3	58.3	0.78
20. Wolfsburg (GER)	75.6	49.3	1.53	69. Hull City (ENG)	37.9	49.4	0.77
. Villarreal (ESP)	61.6	40.3	1.53	70. Mainz (GER)	44.7	58.8	0.76
22. Liverpool (ENG)	61.2	41.9	1.46	71. Palermo (ITA)	42.6	57.2	0.74
23. Valencia (ESP)	53.3	36.9	1.44	72. Leicester (ENG)	39.9	54.8	0.73
24. Marseille (FRA)	68.0	47.7	1.43	73. Newcastle (ENG)	40.0	57.5	0.70
25. Werder Bremen (GER)	67.5	49.0	1.38	74. Real Sociedad (ESP)	37.2	54.0	0.69
26. Manchester Utd (ENG)	62.1	47.7	1.30	75. Hertha Berlin (GER)	38.0	55.5	0.68
27. Leverkusen (GER)	63.9	52.4	1.22	. WBA (ENG)	38.3	56.6	0.68
28. Internazionale (ITA)	48.7	40.3	1.21	77. Granada (ESP)	38.1	57.5	0.66
29. St-Etienne (FRA)	48.0	42.0	1.14	78. Toulouse (FRA)	34.8	53.6	0.65
30. Torino (ITA)	44.8	39.7	1.13	79. Aston Villa (ENG)	34.3	53.4	0.64
. Chievo (ITA)	38.0	33.7	1.13	. Sunderland (ENG)	35.7	55.7	0.64
32. Empoli (ITA)	49.7	44.8	1.11	81. Stuttgart (GER)	41.3	65.5	0.63
33. Fiorentina (ITA)	53.1	48.3	1.10	. Paderborn (GER)	39.7	63.2	0.63
34. Celta Vigo (ESP)	50.3	49.1	1.02	83. Lens (FRA)	36.5	59.5	0.61
. Milan (ITA)	44.6	43.9	1.02	. Burnley (ENG)	33.7	55.4	0.61
36. Metz (FRA)	50.2	49.7	1.01	85. Reims (FRA)	42.2	71.2	0.59
37. Rennes (FRA)	43.7	43.5	1.00	. La Corunã (ESP)	41.6	70.4	0.59
. Hoffenheim (GER)	53.6	53.5	1.00	. Cesena (ITA)	34.8	59.0	0.59
. Schalke (GER)	55.4	55.5	1.00	88. QPR (ENG)	40.8	70.7	0.58
40. Espanyol (ESP)	51.5	52.9	0.97	. Eibar (ESP)	39.0	67.8	0.58
41. Bordeaux (FRA)	47.0	48.9	0.96	90. Córdoba (ESP)	35.5	61.9	0.57
42. Hannover (GER)	50.1	52.6	0.95	91. Elche (ESP)	36.5	65.2	0.56
. Málaga (ESP)	53.2	56.2	0.95	92. Udinese (ITA)	30.3	55.0	0.55
. Montpellier (FRA)	49.4	52.3	0.95	93. Atalanta (ITA)	35.0	66.2	0.53
45. Guingamp (FRA)	51.9	55.1	0.94	94. Hamburg (GER)	33.2	65.4	0.51
46. Bastia (FRA)	43.4	46.6	0.93	95. Evian TG (FRA)	29.1	62.6	0.46
47. Cagliari (ITA)	59.2	64.3	0.92	96. Almería (ESP)	34.4	82.1	0.42
48. Crystal Palace (ENG)	38.4	42.4	0.90	97. Levante (ESP)	26.7	68.4	0.39
. Sampdoria (ITA)	43.2	47.8	0.90	98. Parma (ITA)	24.4	65.4	0.37

Annexe 1b: Big-5 league ranking - Grip on the game

	Own	Opponent	Ratio
1. Barcelona (ESP)	10,896	3,718	2.93
2. Bayern München (GER)	7,864	3,100	2.54
3. Manchester City (ENG)	9,564	5,194	1.84
4. Fiorentina (ITA)	7,791	4,404	1.77
5. Manchester Utd (ENG)	7,512	4,295	1.75
6. Dortmund (GER)	6,336	3,655	1.73
7. Leverkusen (GER)	6,105	3,630	1.68
8. Napoli (ITA)	7,817	4,987	1.57
9. Internazionale (ITA)	7,517	4,859	1.55
10. Arsenal (ENG)	7,744	5,202	1.49
11. Chelsea (ENG)	7,748	5,389	1.44
. Roma (ITA)	6,457	4,494	1.44
13. Real Madrid (ESP)	7,293	5,310	1.37
14. Juventus (ITA)	7,033	5,153	1.36
15. Lyon (FRA)	6,271	4,773	1.31
16. PSG (FRA)	5,959	4,567	1.30
. Lazio (ITA)	6,133	4,724	1.30
18. Athletic Bilbao (ESP)	6,650	5,136	1.29
. Lille (FRA)	5,887	4,569	1.29
. Tottenham (ENG)	6,966	5,419	1.29
21. Celta Vigo (ESP)	6,629	5,232	1.27
22. Monaco (FRA)	6,037	4,795	1.26
23. Bordeaux (FRA)	5,788	4,741	1.22
. Genoa (ITA)	6,107	5,022	1.22
25. Empoli (ITA)	6,111	5,081	1.20
26. Hoffenheim (GER)	5,051	4,323	1.17
27. Lorient (FRA)	6,016	5,166	1.16
28. Wolfsburg (GER)	4,910	4,308	1.14
. Atlético Madrid (ESP)	6,383	5,616	1.14
30. Montpellier (FRA)	6,662	5,966	1.12
31. Toulouse (FRA)	5,908	5,452	1.08
32. Southampton (ENG)	6,395	6,050	1.06
33. Marseille (FRA)	5,169	4,904	1.05
. Everton (ENG)	6,562	6,245	1.05
. Real Sociedad (ESP)	6,282	5,992	1.05
36. Palermo (ITA)	5,903	5,710	1.03
. St-Etienne (FRA)	5,296	5,137	1.03
38. Cagliari (ITA)	5,727	5,602	1.02
. Evian TG (FRA)	5,399	5,298	1.02
40. Stuttgart (GER)	4,537	4,533	1.00
41. Rayo Vallecano (ESP)	4,862	4,920	0.99
42. Nantes (FRA)	5,170	5,304	0.97
. Schalke (GER)	4,739	4,891	0.97
44. La Coruña (ESP)	5,517	5,762	0.96
45. Valencia (ESP)	5,322	5,592	0.95
. Metz (FRA)	5,327	5,612	0.95
47. Burnley (ENG)	6,003	6,401	0.94
48. Lens (FRA)	5,710	6,135	0.93
. QPR (ENG)	5,910	6,355	0.93

	Own	Opponent	Ratio
. Stoke City (ENG)	5,734	6,167	0.93
. Liverpool (ENG)	5,462	5,876	0.93
52. Frankfurt (GER)	4,414	4,802	0.92
. Reims (FRA)	4,775	5,197	0.92
. Espanyol (ESP)	5,594	6,099	0.92
55. Newcastle (ENG)	5,472	5,992	0.91
. Sevilla (ESP)	5,323	5,843	0.91
. Málaga (ESP)	5,289	5,833	0.91
58. Villarreal (ESP)	5,879	6,526	0.90
. Aston Villa (ENG)	5,898	6,550	0.90
. Almería (ESP)	5,251	5,849	0.90
61. Freiburg (GER)	4,226	4,756	0.89
. Leicester (ENG)	6,051	6,820	0.89
. Sassuolo (ITA)	5,307	5,993	0.89
64. Nice (FRA)	4,938	5,649	0.87
. Hamburg (GER)	4,239	4,856	0.87
. Mainz (GER)	4,126	4,746	0.87
. West Ham (ENG)	5,591	6,453	0.87
68. Hannover (GER)	4,438	5,173	0.86
69. Sampdoria (ITA)	5,430	6,381	0.85
. Cesena (ITA)	5,559	6,573	0.85
71. Caen (FRA)	5,198	6,169	0.84
72. Augsburg (GER)	4,023	4,824	0.83
73. Chievo (ITA)	5,299	6,427	0.82
. Levante (ESP)	5,067	6,158	0.82
. Atalanta (ITA)	5,886	7,161	0.82
. Granada (ESP)	4,776	5,815	0.82
. M'gladbach (GER)	4,629	5,668	0.82
. Milan (ITA)	5,207	6,380	0.82
79. Werder Bremen (GER)	4,585	5,639	0.81
. WBA (ENG)	5,622	6,956	0.81
81. Parma (ITA)	5,245	6,580	0.80
82. Getafe (ESP)	5,046	6,419	0.79
. Hull City (ENG)	5,353	6,811	0.79
. Elche (ESP)	4,821	6,136	0.79
85. Crystal Palace (ENG)	5,571	7,145	0.78
86. Guingamp (FRA)	4,681	6,280	0.75
87. Hertha Berlin (GER)	4,108	5,783	0.71
88. Köln (GER)	3,969	5,671	0.70
89. Paderborn (GER)	3,924	5,671	0.69
. Udinese (ITA)	5,028	7,274	0.69
. Córdoba (ESP)	5,035	7,307	0.69
. Bastia (FRA)	4,506	6,573	0.69
93. Rennes (FRA)	4,564	6,665	0.68
94. Eibar (ESP)	4,711	7,173	0.66
95. Swansea (ENG)	4,605	7,059	0.65
96. Sunderland (ENG)	4,909	7,918	0.62
97. Hellas Verona (ITA)	4,962	8,429	0.59
98. Torino (ITA)	3,853	7,095	0.54

Annexe 1c: Big-5 league ranking - Duelling

	Own	Opponent	Ratio		Own	Opponent	Ratio
1. Barcelona (ESP)	0.65	0.22	2.92	. Caen (FRA)	0.37	0.36	1.03
2. Torino (ITA)	0.64	0.38	1.69	51. Atlético Madrid (ESP)	0.32	0.32	1.02
3. Internazionale (ITA)	0.69	0.41	1.68	. Hoffenheim (GER)	0.45	0.44	1.02
4. Liverpool (ENG)	0.53	0.33	1.61	. Everton (ENG)	0.47	0.46	1.02
5. Tottenham (ENG)	0.48	0.30	1.60	54. Paderborn (GER)	0.56	0.56	1.00
6. M'gladbach (GER)	0.81	0.55	1.48	. Córdoba (ESP)	0.39	0.39	1.00
7. Villarreal (ESP)	0.42	0.28	1.47	56. Leicester (ENG)	0.40	0.41	0.99
. Arsenal (ENG)	0.73	0.50	1.47	57. Levante (ESP)	0.39	0.40	0.98
. Lazio (ITA)	0.61	0.41	1.47	. Hamburg (GER)	0.53	0.54	0.98
10. Lorient (FRA)	0.51	0.35	1.45	59. Bordeaux (FRA)	0.35	0.36	0.97
11. Roma (ITA)	0.57	0.41	1.40	60. Schalke (GER)	0.65	0.67	0.96
12. Chelsea (ENG)	0.58	0.42	1.38	61. Stoke City (ENG)	0.46	0.48	0.95
. Bayern München (GER)	0.70	0.51	1.38	62. Fiorentina (ITA)	0.52	0.55	0.94
14. Real Madrid (ESP)	0.63	0.46	1.37	. Udinese (ITA)	0.40	0.42	0.94
. Toulouse (FRA)	0.45	0.33	1.37	64. Mainz (GER)	0.53	0.59	0.91
16. Juventus (ITA)	0.51	0.37	1.36	65. Lens (FRA)	0.32	0.36	0.90
17. Genoa (ITA)	0.47	0.35	1.34	66. La Coruña (ESP)	0.32	0.36	0.89
18. Valencia (ESP)	0.32	0.24	1.32	67. Montpellier (FRA)	0.34	0.39	0.88
. Manchester Utd (ENG)	0.47	0.36	1.32	68. Getafe (ESP)	0.37	0.43	0.87
. Manchester City (ENG)	0.82	0.63	1.32	69. Crystal Palace (ENG)	0.31	0.36	0.86
21. Rennes (FRA)	0.39	0.30	1.29	. QPR (ENG)	0.39	0.46	0.86
22. Lyon (FRA)	0.41	0.32	1.26	71. Atalanta (ITA)	0.44	0.52	0.85
23. Wolfsburg (GER)	0.78	0.63	1.22	72. Hannover (GER)	0.49	0.59	0.83
. Granada (ESP)	0.33	0.27	1.22	73. St-Etienne (FRA)	0.31	0.38	0.82
25. Milan (ITA)	0.39	0.32	1.21	74. Empoli (ITA)	0.46	0.57	0.81
. Augsburg (GER)	0.63	0.52	1.21	75. WBA (ENG)	0.41	0.52	0.79
27. Nantes (FRA)	0.42	0.36	1.16	. Stuttgart (GER)	0.50	0.63	0.79
28. PSG (FRA)	0.47	0.41	1.15	77. Napoli (ITA)	0.35	0.45	0.78
29. Marseille (FRA)	0.47	0.41	1.14	. Frankfurt (GER)	0.43	0.56	0.78
30. Palermo (ITA)	0.54	0.48	1.13	. Hull City (ENG)	0.37	0.48	0.78
. Aston Villa (ENG)	0.46	0.41	1.13	80. Hertha Berlin (GER)	0.44	0.58	0.77
32. Leverkusen (GER)	0.55	0.49	1.12	81. Sunderland (ENG)	0.44	0.58	0.75
33. Monaco (FRA)	0.43	0.39	1.11	82. Evian TG (FRA)	0.34	0.46	0.74
. Celta Vigo (ESP)	0.39	0.35	1.11	83. Parma (ITA)	0.39	0.53	0.72
35. Cagliari (ITA)	0.56	0.51	1.10	84. Swansea (ENG)	0.41	0.59	0.70
. Metz (FRA)	0.28	0.26	1.10	. Athletic Bilbao (ESP)	0.25	0.36	0.70
37. Newcastle (ENG)	0.38	0.35	1.09	86. Guingamp (FRA)	0.27	0.40	0.68
. Sevilla (ESP)	0.41	0.37	1.09	. Málaga (ESP)	0.32	0.47	0.68
39. Lille (FRA)	0.44	0.40	1.08	88. Cesena (ITA)	0.30	0.44	0.67
. Dortmund (GER)	0.56	0.52	1.08	89. Espanyol (ESP)	0.24	0.38	0.62
. Nice (FRA)	0.35	0.32	1.08	90. Werder Bremen (GER)	0.40	0.68	0.58
42. Sampdoria (ITA)	0.45	0.42	1.06	91. Bastia (FRA)	0.21	0.37	0.56
. Real Sociedad (ESP)	0.29	0.27	1.06	92. West Ham (ENG)	0.29	0.53	0.54
. Freiburg (GER)	0.59	0.56	1.06	93. Reims (FRA)	0.21	0.42	0.51
45. Chievo (ITA)	0.43	0.41	1.05	94. Eibar (ESP)	0.24	0.48	0.50
. Köln (GER)	0.57	0.55	1.05	95. Elche (ESP)	0.18	0.41	0.44
47. Rayo Vallecano (ESP)	0.34	0.33	1.04	. Hellas Verona (ITA)	0.24	0.54	0.44
. Southampton (ENG)	0.34	0.33	1.04	97. Burnley (ENG)	0.31	0.72	0.43
49. Almería (ESP)	0.33	0.32	1.03	98. Sassuolo (ITA)	0.24	0.63	0.39

Annexe 1d: Big-5 league ranking - Set play

	Own	Opponent	Ratio		Own	Opponent	Ratio
1. M'gladbach (GER)	4.9	0.4	12.12	50. PSG (FRA)	4.9	5.6	0.88
2. Hellas Verona (ITA)	5.7	0.9	6.73	51. Juventus (ITA)	4.2	4.9	0.86
3. Barcelona (ESP)	4.8	1.1	4.60	52. Caen (FRA)	4.1	4.8	0.85
4. Atlético Madrid (ESP)	12.8	3.1	4.18	53. Dortmund (GER)	4.4	5.2	0.84
5. Hull City (ENG)	4.0	1.0	4.00	. Hannover (GER)	3.7	4.4	0.84
6. Torino (ITA)	6.1	1.6	3.74	55. Leicester (ENG)	2.7	3.2	0.82
. Athletic Bilbao (ESP)	6.0	1.6	3.74	. Manchester City (ENG)	2.6	3.2	0.82
8. Internazionale (ITA)	4.3	1.2	3.63	. Southampton (ENG)	1.7	2.1	0.82
9. Monaco (FRA)	2.9	0.9	3.32	. Genoa (ITA)	2.7	3.2	0.82
10. Wolfsburg (GER)	6.7	2.2	3.11	59. Aston Villa (ENG)	2.7	3.3	0.80
11. Werder Bremen (GER)	9.0	3.3	2.77	. Milan (ITA)	4.1	5.2	0.80
12. Valencia (ESP)	6.4	2.8	2.31	61. Hertha Berlin (GER)	4.4	5.5	0.79
13. Freiburg (GER)	5.3	2.3	2.29	62. Lorient (FRA)	2.1	3.0	0.71
14. Rennes (FRA)	5.7	2.6	2.20	63. Bayern München (GER)	2.8	4.0	0.70
15. Schalke (GER)	6.7	3.1	2.18	. West Ham (ENG)	2.6	3.8	0.70
16. Rayo Vallecano (ESP)	3.0	1.4	2.11	. Frankfurt (GER)	3.9	5.5	0.70
17. WBA (ENG)	10.4	5.0	2.10	66. Elche (ESP)	4.1	6.0	0.69
18. Montpellier (FRA)	2.6	1.3	2.04	67. Chievo (ITA)	2.5	3.7	0.68
19. Udinese (ITA)	3.4	1.7	2.03	68. Getafe (ESP)	3.3	4.9	0.67
20. Marseille (FRA)	4.8	2.4	2.02	69. Köln (GER)	2.1	3.1	0.66
21. Atalanta (ITA)	4.8	2.5	1.93	70. Sampdoria (ITA)	2.5	3.9	0.65
22. Chelsea (ENG)	5.5	2.9	1.87	71. Napoli (ITA)	3.5	5.6	0.63
23. St-Etienne (FRA)	2.2	1.2	1.82	72. Leverkusen (GER)	2.6	4.3	0.61
24. Everton (ENG)	3.8	2.1	1.79	73. Augsburg (GER)	3.5	6.0	0.59
25. Lyon (FRA)	5.8	3.4	1.70	74. Liverpool (ENG)	2.1	3.6	0.58
26. Sunderland (ENG)	2.8	1.7	1.60	75. Granada (ESP)	2.8	5.1	0.56
27. Parma (ITA)	3.6	2.3	1.56	76. Levante (ESP)	2.7	4.9	0.55
28. Sevilla (ESP)	4.8	3.3	1.43	77. Metz (FRA)	0.8	1.5	0.54
29. Tottenham (ENG)	3.3	2.4	1.40	78. Bastia (FRA)	3.2	6.1	0.53
30. Real Madrid (ESP)	6.4	4.8	1.35	. Celta Vigo (ESP)	2.4	4.6	0.53
31. Fiorentina (ITA)	4.6	3.5	1.33	80. Toulouse (FRA)	2.4	4.7	0.51
32. Eibar (ESP)	6.3	4.8	1.30	. Manchester Utd (ENG)	2.3	4.4	0.51
33. Nantes (FRA)	2.8	2.2	1.28	82. Newcastle (ENG)	2.9	5.8	0.49
34. QPR (ENG)	5.2	4.2	1.26	. Bordeaux (FRA)	2.2	4.6	0.49
35. Crystal Palace (ENG)	5.0	4.0	1.25	. Espanyol (ESP)	2.5	5.2	0.49
36. Guingamp (FRA)	4.0	3.2	1.24	85. Palermo (ITA)	3.0	6.3	0.47
37. Empoli (ITA)	5.1	4.3	1.19	86. Burnley (ENG)	2.4	5.4	0.45
38. Reims (FRA)	5.9	5.0	1.17	87. Stuttgart (GER)	3.4	8.1	0.42
. Lens (FRA)	0.8	0.7	1.17	88. Sassuolo (ITA)	1.8	4.4	0.41
40. Arsenal (ENG)	4.6	4.1	1.13	. Swansea (ENG)	1.0	2.3	0.41
41. Almería (ESP)	4.9	4.4	1.11	90. Paderborn (GER)	2.0	5.0	0.40
42. Hoffenheim (GER)	3.9	3.5	1.10	91. Cesena (ITA)	1.4	4.4	0.31
43. Roma (ITA)	3.8	3.5	1.08	92. Cagliari (ITA)	2.0	8.0	0.25
44. Mainz (GER)	5.0	4.7	1.07	93. Córdoba (ESP)	1.7	7.4	0.23
45. Nice (FRA)	4.4	4.1	1.06	94. La Corunã (ESP)	0.8	3.6	0.21
46. Lazio (ITA)	4.0	4.0	1.01	95. Stoke City (ENG)	0.7	3.6	0.20
47. Real Sociedad (ESP)	4.3	4.3	1.00	96. Málaga (ESP)	1.4	7.8	0.18
48. Evian TG (FRA)	3.6	3.8	0.95	97. Lille (FRA)	0.7	5.2	0.14
49. Villarreal (ESP)	2.6	2.8	0.94	. Hamburg (GER)	0.5	3.7	0.14

Annexe 2: Big-5 league rankings, best players per position

Centre backs

1. Thiago Silva (Paris SG/FRA)	100.0
2. Jérôme Boateng (Bayern/GER)	97.1
3. Javier Mascherano (Barcelona/ESP)	94.8
4. Giorgio Chiellini (Juventus/ITA)	93.5
5. Davide Astori (AS Roma/ITA)	86.3
6. Gerard Piqué (Barcelona/ESP)	85.6
7. Jérémy Mathieu (Barcelona/ESP)	83.3
8. Nicolas N'Koulou (Marseille/FRA)	81.7
9. Mats Hummels (Dortmund/GER)	80.8
10. Emir Spahić (Leverkusen/GER)	80.2
11. Loïc Perrin (St-Etienne/FRA)	80.2
12. Dejan Lovren (Liverpool/ENG)	79.6

Full backs

1. Dani Alves (Barcelona/ESP)	100.0
2. Jordi Alba (Barcelona/ESP)	92.8
3. Layvin Kurzawa (Monaco/FRA)	87.1
4. Gaël Clichy (Man. City/ENG)	77.3
5. Antonio Valencia (Man. United/ENG)	76.4
6. Patrice Evra (Juventus/ITA)	76.3
7. Ricardo Rodríguez (Wolfsburg/GER)	75.6
8. Marcelo Vieira (Real Madrid/ESP)	75.6
9. Djibril Sidibé (Lille/FRA)	71.8
10. Dušan Basta (Lazio/ITA)	69.9
11. Leighton Baines (Everton/ENG)	69.5
12. Maxwell Scherrer (Paris SG/FRA)	69.5

Defensive midfielders

1. Francesc Fàbregas (Chelsea/ENG)	100.0
2. Marco Verratti (Paris SG/FRA)	96.3
3. Xabi Alonso (Bayern/GER)	91.2
4. Sergio Busquets (Barcelona/ESP)	82.4
5. Claudio Marchisio (Juventus/ITA)	82.1
6. Ivan Rakitić (Barcelona/ESP)	81.8
7. Luiz Fernandinho (Man. City/ENG)	81.4
8. Miralem Pjanić (AS Roma/ITA)	80.7
9. Arturo Vidal (Juventus/ITA)	79.1
10. Lucas Biglia (Lazio/ITA)	78.8
11. Paul Pogba (Juventus/ITA)	77.7
12. Nemanja Matić (Chelsea/ENG)	75.9

Attacking midfielders

1. James Rodríguez (Real Madrid/ESP)	100.0
2. Eden Hazard (Chelsea/ENG)	93.8
3. Kevin de Bruyne (Wolfsburg/GER)	81.2
4. David Silva (Man. City/ENG)	75.4
5. Dimitri Payet (Marseille/FRA)	71.7
6. Marek Hamšík (Napoli/ITA)	68.1
7. Jesús Navas (Man. City/ENG)	67.7
8. Patrick Herrmann (M'gladbach/GER)	66.7
9. Isco Alarcón (Real Madrid/ESP)	65.7
10. Santi Cazorla (Arsenal/ENG)	64.3
11. Bernardo Silva (Monaco/FRA)	55.7
12. Yannick Ferreira Carrasco (Monaco/FRA)	54.5

Forwards

1. Lionel Messi (Barcelona/ESP)	100.0
2. Cristiano Ronaldo (Real Madrid/ESP)	93.5
3. Luis Suárez (Barcelona/ESP)	92.8
4. Arjen Robben (Bayern/GER)	88.5
5. Sergio Agüero (Man. City/ENG)	67.0
6. Alexandre Lacazette (Lyon/FRA)	65.1
7. Diego Costa (Chelsea/ENG)	65.0
8. Neymar Júnior (Barcelona/ESP)	64.1
9. Karim Benzema (Real Madrid/ESP)	62.5
10. Felipe Anderson (Lazio/ITA)	61.5
11. Carlos Tévez (Juventus/ITA)	59.3
12. Alexis Sánchez (Arsenal/ENG)	58.0