



# From the Pitch to plt: Exploring the Football Narratives through Data

Date

#PyConTH #PyConTH2023



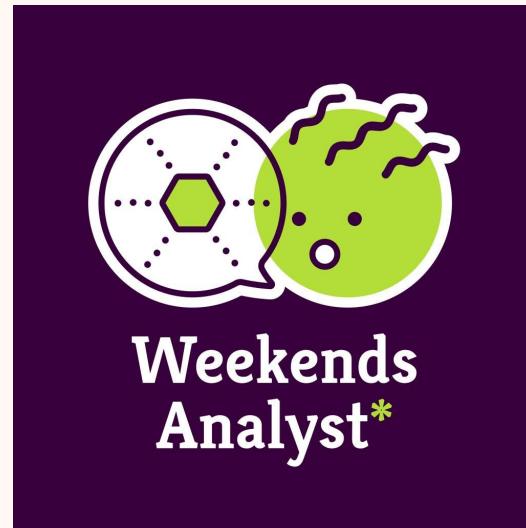


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# Weekends Analyst

<https://www.facebook.com/weekendsanalyst>







The slide features a dark background with a faint image of a person working on a laptop. At the top left is the DataWow logo, and at the top right is a "WE'RE HIRING" button. A large, rounded rectangular callout in the center contains the text "Data & Technology". Below this, a list of ten job positions is presented in a bulleted format. At the bottom, there is an email address: [hr@datawow.io](mailto:hr@datawow.io).

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- Project Manager (Data Science Team)
- Frontend Developer
- Backend Developer Ruby on Rails
- Quality Assurance Engineer (Blockchain)
- iOS Developer
- Data Engineer
- Data Analyst
- IT Compliance Officer
- UI/UX Designer

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# TELL ME ABOUT FOOTBALL

CIRCA 2008

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\* Moneyball was first published in 2003!

January 8, 2009



Howard Hamilton



0 Comments



## Moneyball and soccer

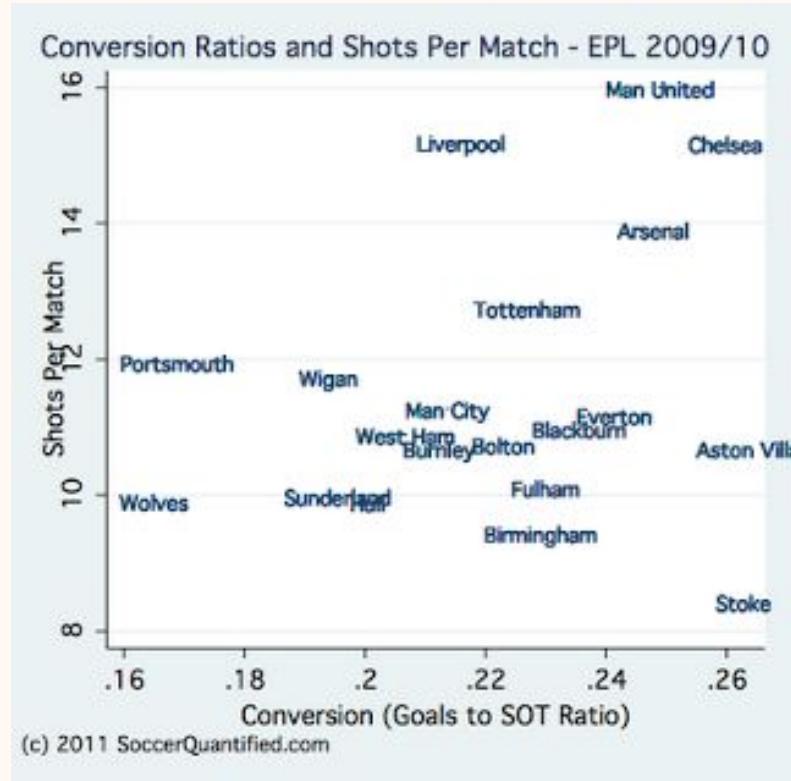
Categories: Analytics Perspectives, High-Level Discussions

This was a post I wrote on my primary blog, and I'm reproducing it here.

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A couple of years ago I read Michael Lewis' [Moneyball](#), which is an excellent book on the 2002 Oakland Athletics and the behind-the-scenes maneuvering that assembled that team. I was living in the Bay Area when the A's went on their 20-game winning streak and I remember the excitement in the East Bay during that time, so the book appealed to me on that level. But it's more than just a baseball book. It's really a story of the use of statistical methods to assemble a team in a sport so heavily depending on scouting evaluations, despite the reputation of being a statistics-heavy sport. Now that the A's are running the San José Earthquakes, and the architect of that approach (GM Billy Beane) is seeking to apply it to soccer, the following question has to be asked: *Can a 'Moneyball' approach be successful in soccer?*

<https://www.soccermetrics.net/high-level-discussions/moneyball-and-soccer-2>



Chris Anderson wrote a book  
*Soccer by Numbers* in 2012

[soccerbynumbers.com](http://soccerbynumbers.com) via Wayback Machine



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## Expected Goals - ໄໂຄອນຂອງງານການຂອງ Football Analytics

ຄ່າເຈລືຍ **Expected Goals** ຕາມພື້ນຖານສະນາມຂອງພຣີເມີຣິສັກໃນຄຸດກາ 2023/2024

0.00	0.00	0.03	0.08	0.32	0.34	0.07	0.02	0.00	0.00
0.00	0.04	0.04	0.09	0.19	0.19	0.09	0.03	0.00	0.00
0.00	0.02	0.05	0.07	0.23	0.13	0.08	0.05	0.03	0.00
0.03	0.04	0.02	0.05	0.08	0.08	0.05	0.03	0.00	0.00
0.00	0.01	0.02	0.03	0.05	0.04	0.03	0.05	0.01	0.00
0.00	0.00	0.02	0.02	0.03	0.03	0.02	0.03	0.00	0.00
0.00	0.05	0.00	0.03	0.02	0.03	0.02	0.00	0.00	0.00
0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.02	0.01	0.00
0.00	0.00	0.01	0.00	0.00	0.01	0.02	0.00	0.00	0.00
0.00	0.00	0.00	0.03	0.01	0.01	0.00	0.01	0.00	0.00

ບ້ອນຈາກ Opta

ວິຊວລໄລເຊັ້ນໂດຍ **Weekends Analyst**

# Will Spearman

กับเส้นทางฟุตบอล  
สุดเบิร์ด



Havard, ฟิลิกส์อนภาค, และ หัวหน้าทีมวิจัยที่ Liverpool - เมื่อความเนิร์ดพาคุณไปสุดทางกับ Will Spearman

# TacticAI: an AI assistant for football tactics

Zhe Wang<sup>\*1</sup>, Petar Veličković<sup>\*1</sup>, Daniel Hennes<sup>\*1</sup>, Nenad Tomašev<sup>1</sup>, Laurel Prince<sup>1</sup>, Michael Kaisers<sup>1</sup>, Yoram Bachrach<sup>1</sup>, Romuald Elie<sup>1</sup>, Li Kevin Wenliang<sup>1</sup>, Federico Piccinini<sup>1</sup>, William Spearman<sup>2</sup>, Ian Graham<sup>4</sup>, Jerome Connor<sup>1</sup>, Yi Yang<sup>1</sup>, Adrià Recasens<sup>1</sup>, Mina Khan<sup>1</sup>, Nathalie Beauguerlange<sup>1</sup>, Pablo Sprechmann<sup>1</sup>, Pol Moreno<sup>1</sup>, Nicolas Heess<sup>1</sup>, Michael Bowling<sup>3</sup>, Demis Hassabis<sup>1</sup> and Karl Tuyls<sup>1</sup>

<sup>\*</sup>Contributed equally to this work, <sup>1</sup>Google DeepMind, <sup>2</sup>Liverpool FC, <sup>3</sup>University of Alberta, <sup>4</sup>Work completed while at Liverpool FC

Identifying key patterns of tactics implemented by rival teams, and developing effective responses, lies at the heart of modern football. However, doing so algorithmically remains an open research challenge. To address this unmet need, we propose TacticAI, an AI football tactics assistant developed and evaluated in close collaboration with domain experts from Liverpool FC. We focus on analysing corner kicks, as they offer coaches the most direct opportunities for interventions and improvements. TacticAI incorporates both a predictive and a generative component, allowing the coaches to effectively sample and explore alternative player setups for each corner kick routine and to select those with the highest predicted likelihood of success. We validate TacticAI on a number of relevant benchmark tasks: predicting receivers and shot attempts and recommending player position adjustments. The utility of TacticAI is validated by a qualitative study conducted with football domain experts at Liverpool FC. We show that TacticAI's model suggestions are not only indistinguishable from real tactics, but also favoured over existing tactics 90% of the time, and that TacticAI offers an effective corner kick retrieval system. TacticAI achieves these results despite the limited availability of gold-standard data, achieving data efficiency through geometric deep learning.

[Arxiv - TacticAI: an AI assistant for football tactics](#)



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"I always make my own decisions. I like to use data and analytics to help me negotiate contracts, and I don't think you need an agent for that. I think if you have the right information and the right people around you, you can do it yourself."



**Kevin de Bruyne**  
Manchester City & Belgium



<https://analyticsfc.co.uk/case-studies/kevin-de-bruyne-and-footballs-data-revolution>



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**Who had the highest npxG + xAG (Non-penalty Expected Goals + Expected Assisted Goals) in a season in the Big 5 European Leagues since 2017-18?**



Newcastle United Stats & History		Stats by Competition ▾		Player Career Details		Match Logs ▾		Goal Logs ▾		Wages		Affiliated Squads ▾		Back to top ▲																					
Standard Stats 2023-2024 Newcastle United: Premier League														Scroll Right For More Stats · Switch to Widescreen View ►																					
Player	Nation	Pos	Age	MP	Starts	Min	90s	Gls	Ast	G+A	G-PK	PK	PKatt	CrdY	CrdR	xG	npxG	xAG	npxG+xAG	PrgC	PrgP	PrgR	Gls	Ast	G+A	G-PK	PrgC	PrgP	PrgR	Per 90 Minutes	xG	xAG	xG+xAG	npxG	npxG+xAG
Fabian Schär	SWI	DF	31-355	15	15	1,350	15.0	0	0	0	0	0	0	2	0	0.9	0.9	0.1	0.9	10	55	6	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.06	0.06	0.0			
Kieran Trippier	ENG	DF	33-082	15	15	1,307	14.5	0	7	7	0	0	0	4	0	0.3	0.3	5.4	5.7	25	104	76	0.00	0.48	0.48	0.00	0.48	0.02	0.37	0.39	0.02	0.3			
Nick Pope	ENG	GW	31-235	14	14	1,255	13.9	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Bruno Guimarães	BRA	MF	26-024	14	14	1,222	13.6	1	2	1	0	0	5	0	1.3	1.3	1.4	2.7	23	93	26	0.07	0.07	0.15	0.07	0.15	0.10	0.10	0.20	0.10	0.2				
Anthony Gordon	ENG	FW	22-289	14	13	1,149	12.8	6	3	9	6	0	0	6	0	4.5	4.5	2.0	6.6	48	36	95	0.47	0.23	0.70	0.47	0.70	0.35	0.16	0.51	0.35	0.5			
Miguel Almirón	PAR	FW	29-303	15	13	1,014	11.3	2	1	3	2	0	0	1	0	2.3	2.3	0.9	3.2	46	39	94	0.18	0.09	0.27	0.18	0.27	0.20	0.08	0.28	0.20	0.2			
Dan Burn	ENG	DF	31-215	11	11	945	10.5	1	0	1	1	0	0	2	0	1.0	1.0	0.5	1.5	7	32	15	0.10	0.00	0.10	0.10	0.10	0.09	0.05	0.14	0.09	0.1			
Jouelinton	BRA	MF,FW	27-118	12	11	907	10.1	1	1	2	1	0	0	3	0	1.7	1.7	1.9	3.7	15	41	46	0.10	0.10	0.20	0.10	0.20	0.17	0.19	0.37	0.17	0.3			
Jamaal Lascelles	ENG	DF	30-029	10	9	821	9.1	1	0	1	1	0	0	3	0	0.7	0.7	0.1	0.8	6	25	2	0.11	0.00	0.11	0.11	0.11	0.08	0.01	0.09	0.08	0.0			
Alexander Isak	SWE	FW	24-080	11	9	752	8.4	7	0	7	6	1	0	0	6	0.6	0.6	0.6	6.6	21	18	40	0.84	0.00	0.84	0.72	0.72	0.82	0.07	0.89	0.72	0.7			
Sean Longstaff	ENG	MF	26-041	12	8	812	9.0	2	1	3	2	0	0	4	0	1.5	1.5	0.9	2.4	6	48	32	0.22	0.11	0.33	0.22	0.33	0.16	0.10	0.27	0.16	0.2			
Callum Wilson	ENG	FW	31-286	10	5	484	5.4	7	0	7	5	2	2	1	0	5.9	4.4	0.0	4.4	6	4	36	1.30	0.00	1.30	0.93	0.93	1.11	0.00	1.11	0.81	0.8			
Sven Botman	NED	DF	23-332	5	5	446	5.0	1	1	2	1	0	0	1	0	0.3	0.3	0.7	1.0	0	9	2	0.20	0.20	0.40	0.20	0.40	0.06	0.14	0.20	0.06	0.2			
Sandro Tonali	ITA	MF	23-216	8	5	438	4.9	1	0	1	1	0	0	2	0	0.7	0.7	0.6	1.3	11	19	21	0.21	0.00	0.21	0.21	0.21	0.13	0.13	0.26	0.13	0.2			
Elliott Anderson	SCO	MF,FW	21-034	9	4	411	4.6	0	1	1	0	0	0	0	0	0.7	0.7	0.9	1.6	14	26	33	0.00	0.22	0.22	0.00	0.22	0.16	0.19	0.35	0.16	0.3			
Lewis Miley	ENG	MF	17-223	4	4	333	3.7	0	1	1	0	0	0	0	0	0.4	0.4	1.0	1.5	2	14	16	0.27	0.27	0.27	0.00	0.27	0.11	0.28	0.39	0.11	0.3			
Valentino Livramento	ENG	DF	21-028	9	3	409	4.5	0	0	0	0	0	0	1	0	0.0	0.0	0.1	0.1	12	13	19	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.0			
Harvey Barnes	ENG	FW	26-001	6	2	187	2.1	1	1	2	1	0	0	1	0	0.7	0.7	0.9	1.6	15	5	16	0.48	0.48	0.96	0.48	0.96	0.35	0.42	0.76	0.35	0.7			
Zen Willock	ENG	MF,FW	24-112	3	1	137	1.5	0	0	0	0	0	0	0	0	0.1	0.1	0.3	0.4	6	3	9	0.00	0.00	0.00	0.00	0.00	0.09	0.21	0.29	0.09	0.2			
Jacob Murphy	ENG	FW	28-289	5	1	121	1.3	1	3	4	1	0	0	0	0	0.1	0.1	1.4	1.5	6	10	13	0.74	2.23	2.98	0.74	2.98	0.07	1.05	1.12	0.07	1.1			
Martin Dubravka	SVK	GW	34-329	2	1	95	1.1	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Matt Targett	ENG	DF	28-083	3	1	78	0.9	0	0	0	0	0	0	1	0	0.0	0.0	0.0	0.0	1	2	0	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.0			
Lewis Hall	ENG	DF	19-093	2	1	55	0.6	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	1	2	0	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.04	0.04	0.0			
Matt Ritchie	SCO	FW,MF	34-091	5	0	84	0.9	0	0	0	0	0	0	1	0	0.1	0.1	0.0	0.1	1	3	3	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.08	0.0			
Ben Parkinson	ENG	FW	18-275	1	0	25	0.3	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Paul Dummett	WAL	DF	32-075	1	0	5	0.1	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	1	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Alex Murphy	IRL	FW,DF	19-168	1	0	4	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Emil Krafts	SWE	DF	29-130	2	0	2	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	1	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Anaídac Dialis	ENG	MF	20-298	1	0	1	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Michael Ndiweni	ENG	FW	20-008	1	0	1	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Mark Gillespie	ENG	GW	31-258	0	0	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Laris Karius	GER	GK	30-171	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			
Javier Manquillo	ESP	DF	29-219	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0			



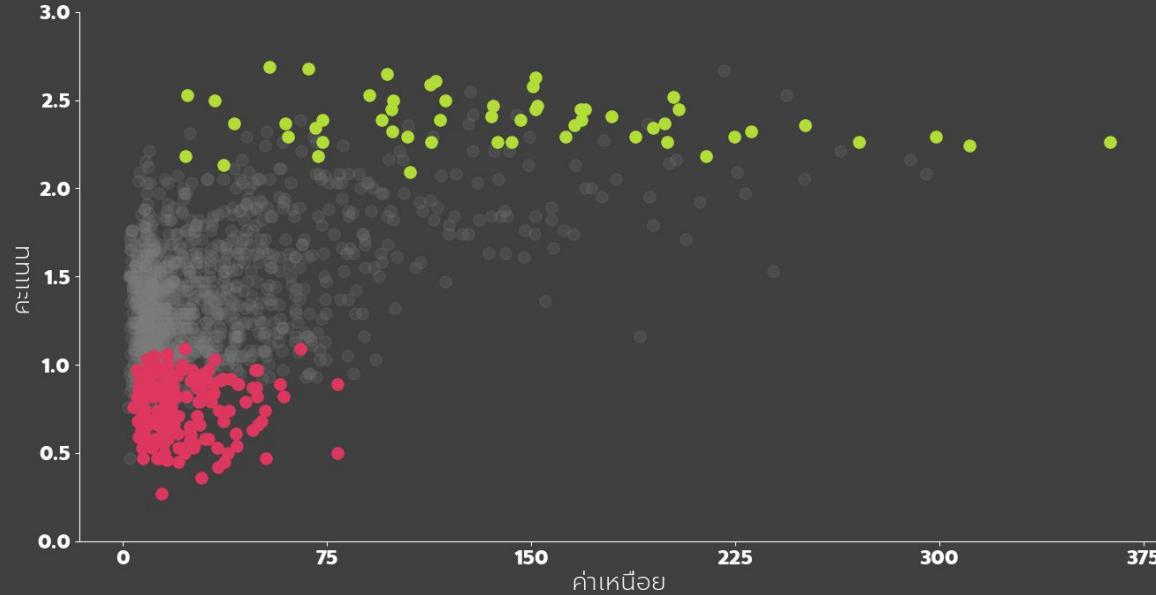
# What can we say about football?





## ค่าเห็นออยคือตัวตัดสินว่าทีมไหนจะเป็น **แชมป์** และทีมไหนจะ **ตกชั้น**

ค่าเห็นออยต่อปีและคะแนนเฉลี่ยของทีมใน 5 สีคิใหญ่ของยุโรป และ Major League Soccer ตั้งแต่ 2013 - 2023

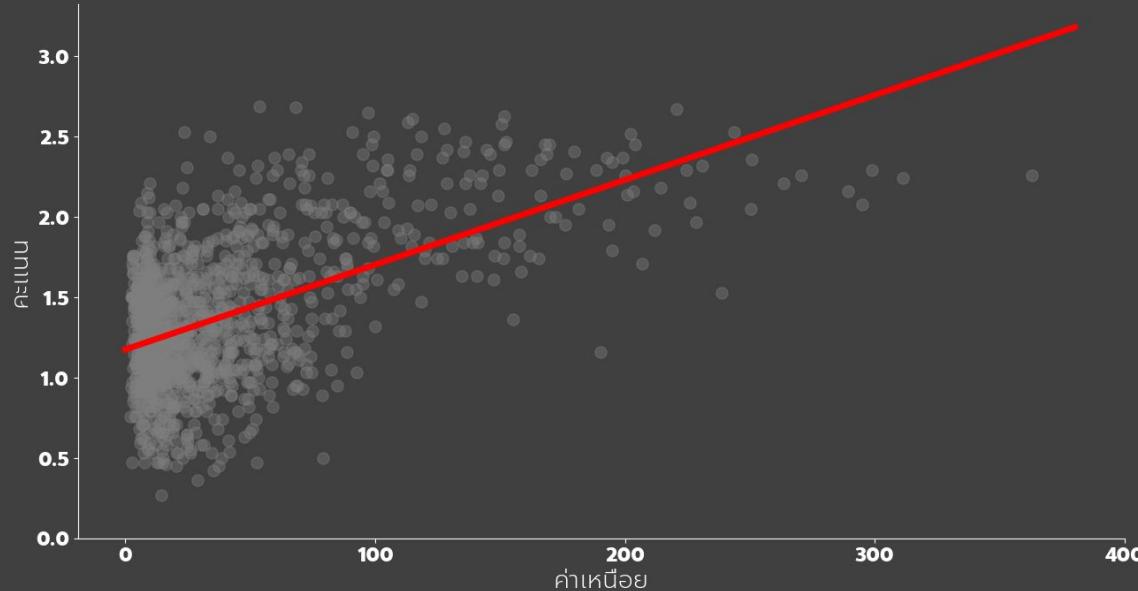


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วิชวลไอลเซ็นโดย **Weekends Analyst**

ค่าเหนืออยที่เพิ่มขึ้นทุกๆ **100 ล้านปอนด** จะช่วยให้ทีมเก็บได้มากขึ้น **20 แต้ม** ต่อฤดูกาล

ค่าเหนืออยต่อปีและคะแนนเฉลี่ยของทีมใน 5 สีคิ้วใหญ่ของยุโรป และ Major League Soccer ตั้งแต่ 2013 – 2023

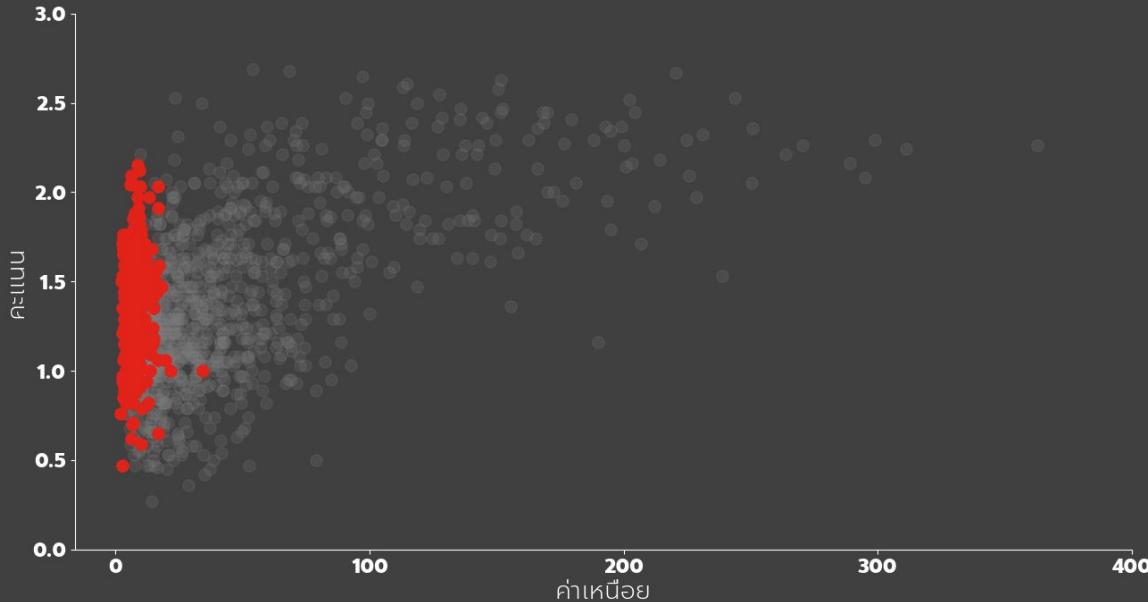


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## Major League Soccer มีการกำหนด Salary Cap เพื่อป้องกันการผูกขาด

มีถึง 9 ทีมที่ชนะถ้วย MLS Cup ในรอบ 10 ปีผ่านมา

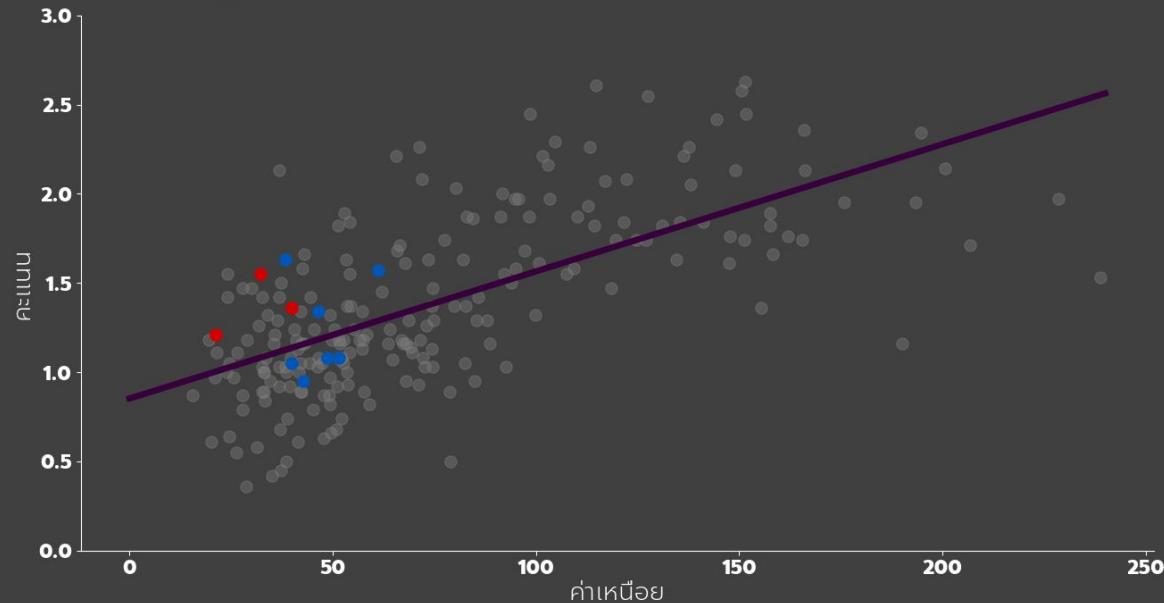


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วิชวลໄລເຊັ້ນໂດຍ **Weekends Analyst**

## Moneyball - ศิลปะของการแบ่งขั้นในเกมส์กีฬาฟอร์ม

Brighton และ Brentford ใช้ความคิดสร้างสรรค์เพื่อแบ่งกับชาใหญ่ในพรีเมียร์ลีก



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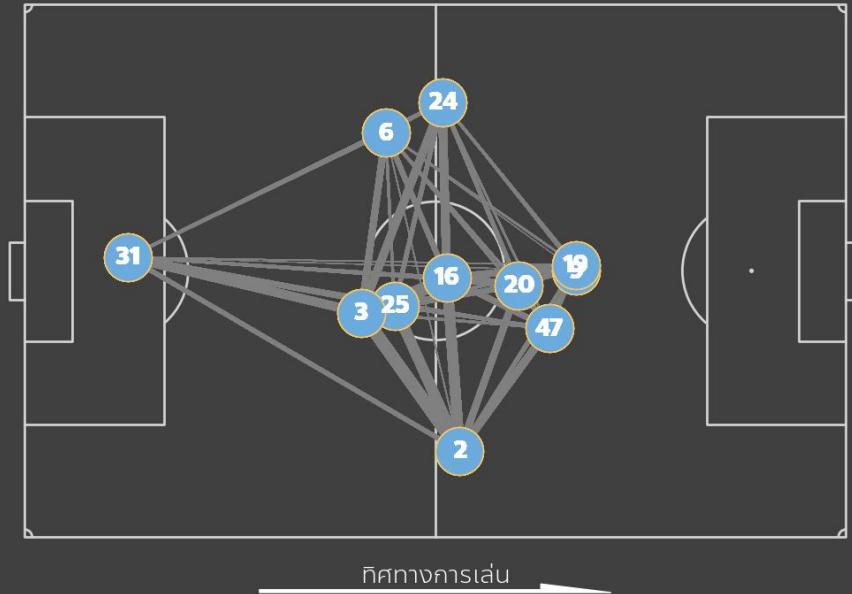
วิชวโลโซเช่นโดย Weekends Analyst



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## Passing Network ของ Manchester City

Premier League | ฤดูกาล 2023/2024

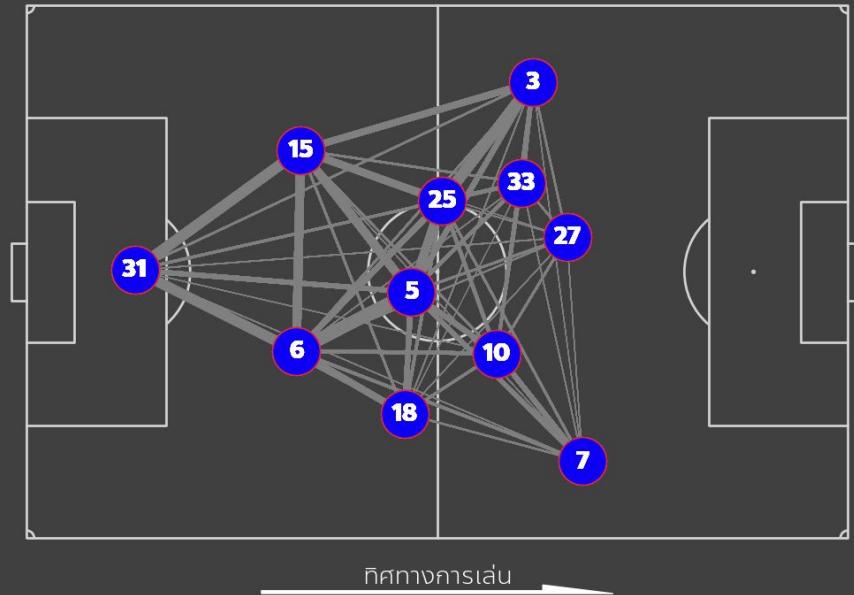


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## Passing Network ของ Ipswich Town

EFL Championship | ฤดูกาล 2023/2024



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**STATS**

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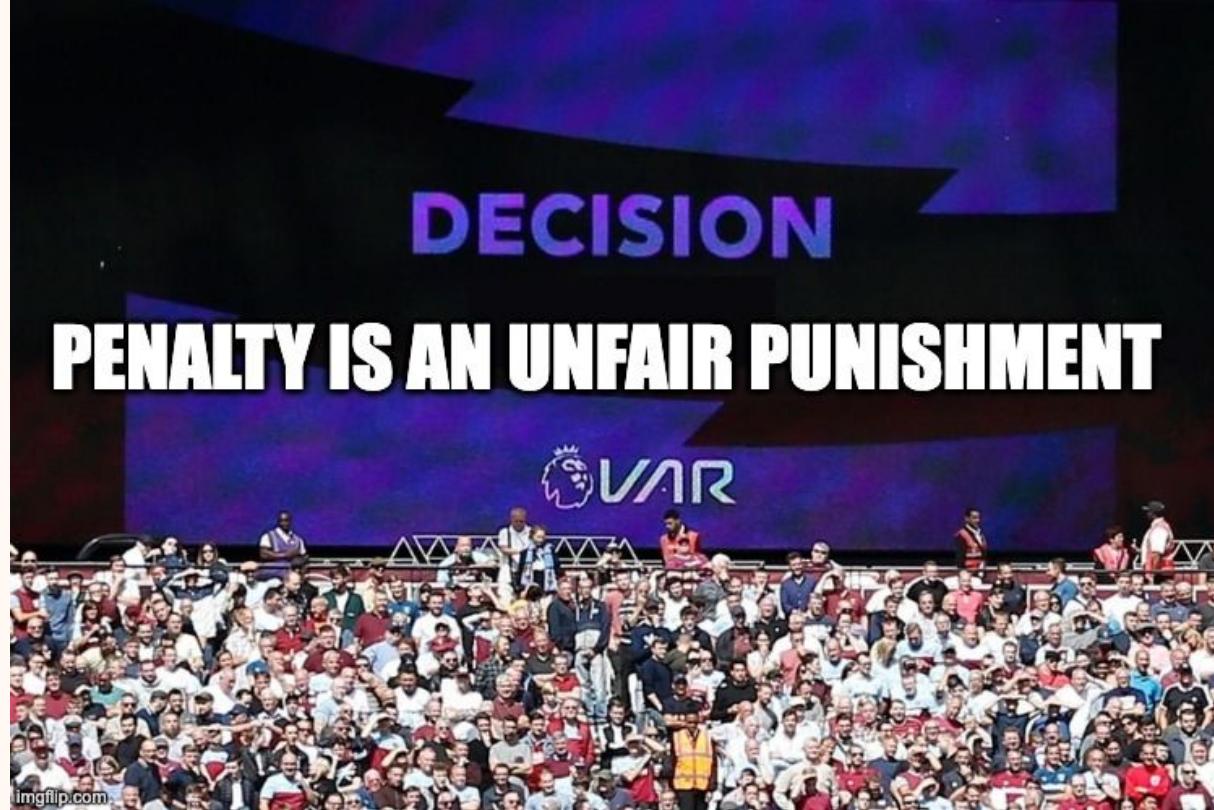


**EYE TEST**

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# Narratives



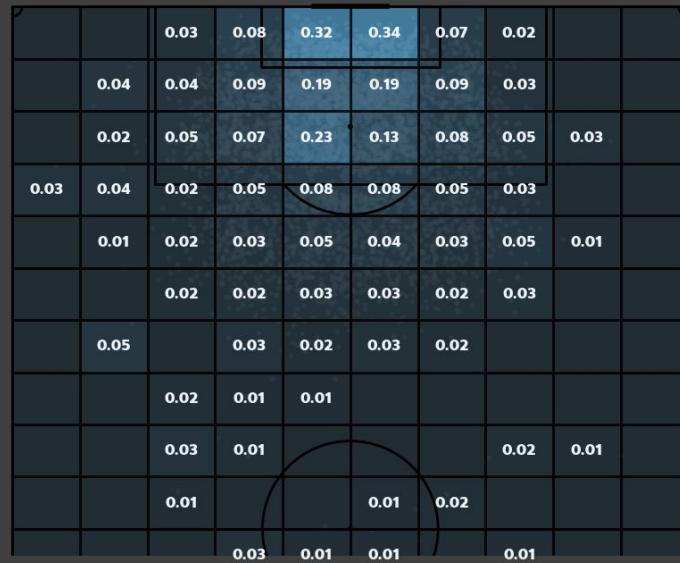
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## Expected Goals บอกรายงานของจังหวะการยิงประตูแต่ละครั้ง

ค่าเฉลี่ย Expected Goals ตามพื้นที่ในสนามของพรีเมียร์ลีกในฤดูกาล 2023/2024

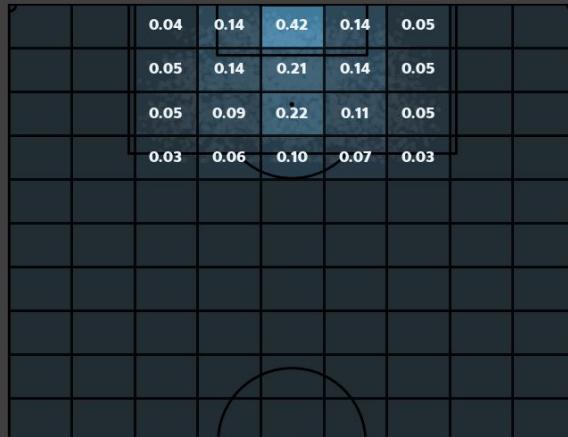


ข้อมูลจาก Opta

วิเคราะห์โดย **Weekends Analyst**

## ลูกจุดโภชเปลี่ยนโอกาสทำประตูคุณภาพดีให้เป็นโอกาสทำประตูคุณภาพสูง

ค่าเฉลี่ย Expected Goals ในกรอบเขต



ค่า Expected Goals ของจุดโภช



ข้อมูลจาก Opta

วิชวโลโซเชิ่นโดย Weekends Analyst





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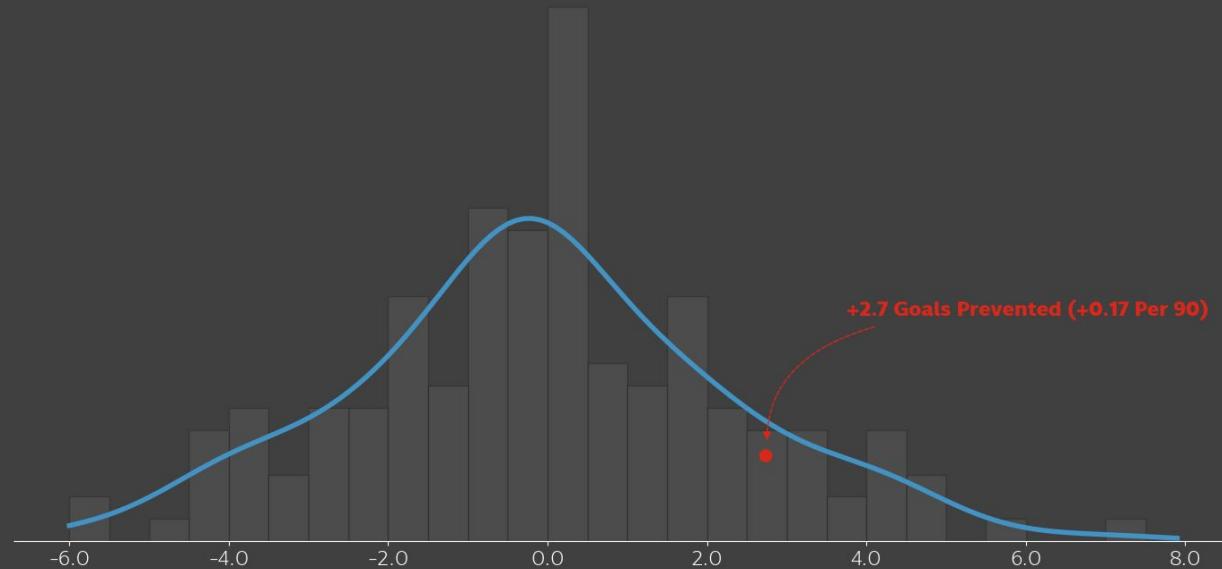


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## André Onana ເປັນເຫັນໃນຜູ້ຮັກໝາປະຕຸແລວທີ່ນ້ຳຂອງຍຸໂຮປ

ສົດຕິ **Goal Prevented** ບອນຜູ້ຮັກໝາປະຕຸໃນ 5 ສັດໃໝ່ຍຸໂຮປ ຄຸດາລ 2023/2024



ບ້ອມຈາກ FBRef

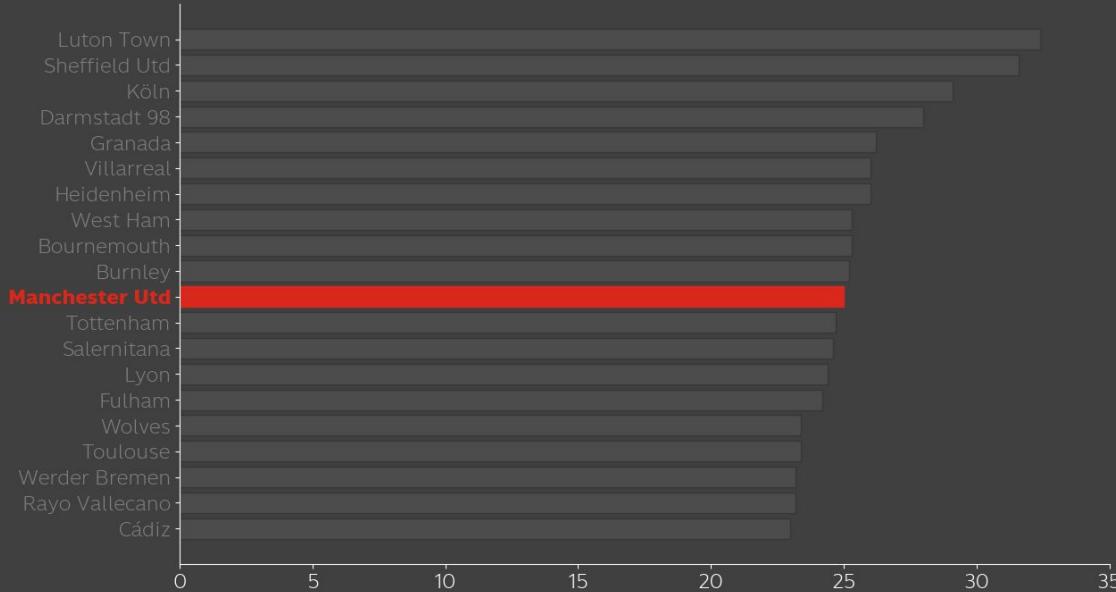
ວິຫວາລໄລເຊັ່ນໂດຍ **Weekends Analyst**



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## Man Utd ปล่อยให้คู่แข่งสร้างโอกาสที่อันตรายเทียบเท่ากับ 25 ประตู

บันเบิญสก็ตติ xG Against ที่ **มากที่สุดอันดับ 11** ในห้าลีกใหญ่ของยุโรป

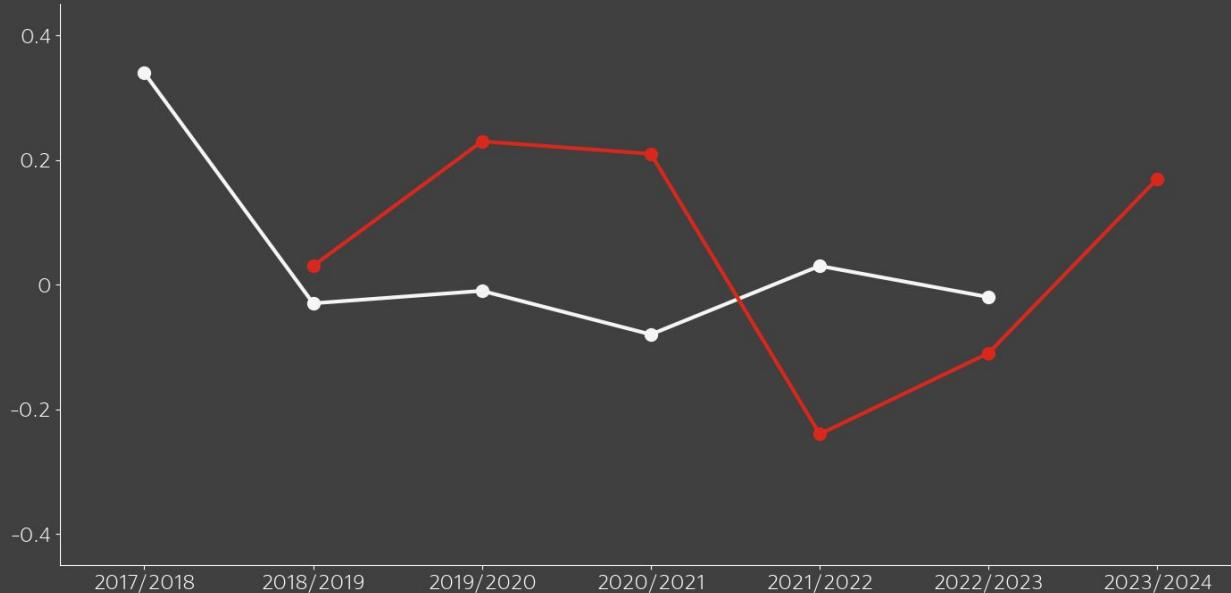


ข้อมูลจาก FBRef

วิชวลໄລເຊັ້ນໂດຍ **Weekends Analyst**

## André Onana เป็นตัวแทนของ David de Gea ที่กำลังໂຮຍຮາ

สถิติ Goal Prevented ต่อ 90 นาทีใน 6 ฤดูกาลล่าสุด



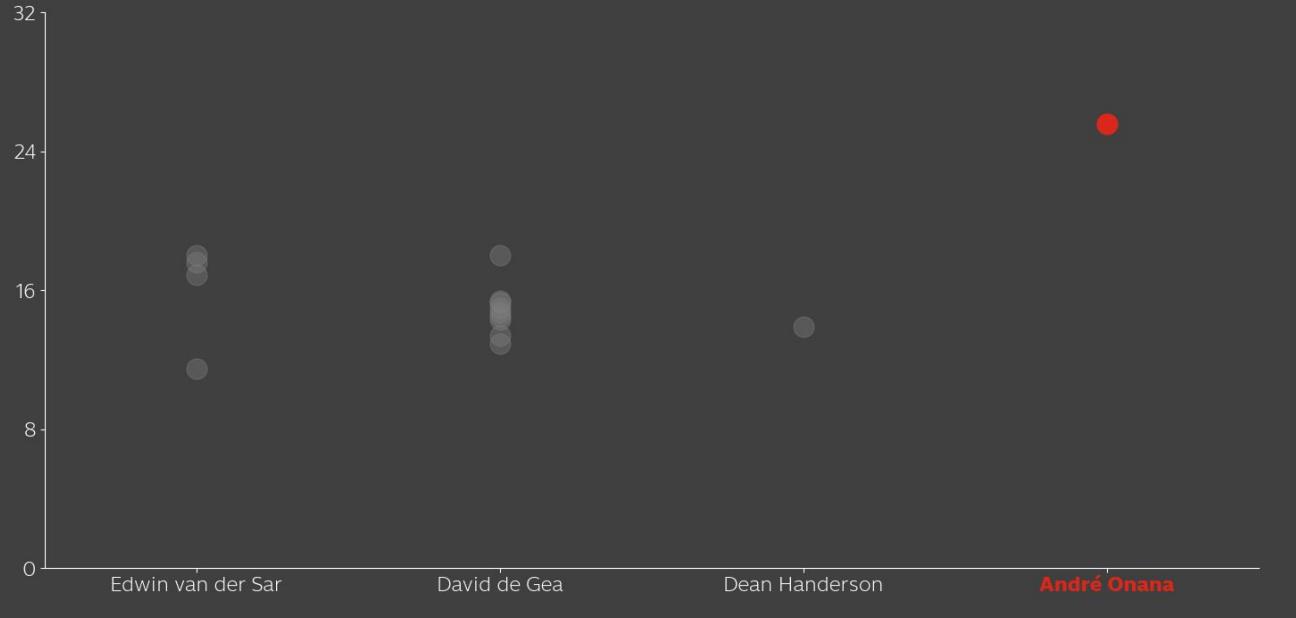
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วิชวลໄລເຊັ້ນໂດຍ **Weekends Analyst**



## André Onana มีส่วนร่วมกับการตั้งเกมส์ของ Man Utd มาตั้งแต่ฤดูกาล 2007/2008

สถิติการส่งบอลต่อ 90 นาทีของผู้รักษาประตูของ Man Utd ตั้งแต่ฤดูกาล 2007/2008



ข้อมูลจาก Opta

วิชวลໄລເຊັ້ນໂດຍ **Weekends Analyst**



## Pythagoras in Boots - Andre Onana Tactical Analysis

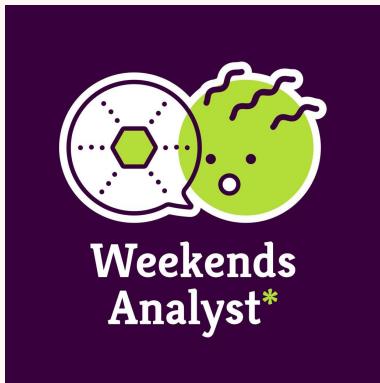
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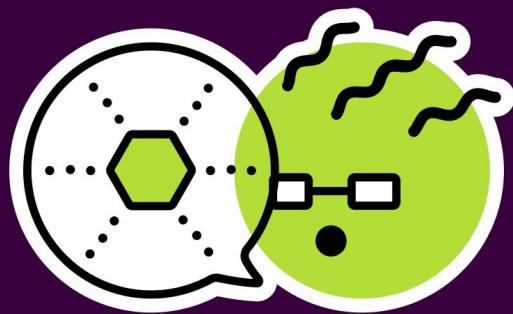


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# Join Us!





# Weekends Analyst\*





# Questions?