



# Objective Player Performance Ratings in Soccer: A New Comprehensive Evaluation Model

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## **I. Introduction**

Player match ratings are a staple in soccer performance evaluation but are often simplified, lacking the depth and context necessary for meaningful analysis. Traditional ratings frequently emphasize goal-scoring statistics, leaving out significant contributions from defensive or supporting roles. This paper explores a comprehensive and contextualized player rating system designed to capture the true impact of players across positions in soccer, focusing on their role and the quality of performance a given player puts for relative to other performances of players in that role.

## **II. Problem Statement**

The soccer analytics landscape is filled with rudimentary rating systems that fail to provide decision-makers with actionable insights. Traditional rating platforms such as WhoScored and SofaScore typically base their ratings on easily measurable outputs—goals, assists, and pass completions (Anderson & Sally, 2013). However, they rarely adjust for the nuances of different player roles or the context in which an action takes place. For example, defensive midfielders may disrupt play and initiate transitions without directly contributing to goals or assists. Ratings often ignore factors like game state, time-sensitive contributions, and opponent strength. This creates a gap for coaches, analysts, and scouts attempting to assess player performance objectively.

## **III. Purpose and Rationale**

The purpose of this project was to design a context-driven player rating system that goes beyond traditional metrics. By incorporating situational context (e.g., the scoreline at the time of an event), player role expectations, and opponent quality, this system aims to provide a more accurate and equitable assessment of performance.

A contextual rating system addresses three core needs in sport management:

- Objective Player Evaluation: Reduces bias and provides evidence-based decision support for player selection and recruitment (Müller et al., 2017).

- Player Development and Performance Review: Helps coaches identify strengths and weaknesses, even in players whose contributions are typically underrepresented by conventional stats.
- Fan and Media Engagement: Offers more informative analysis and storytelling about player impact beyond the usual scorers.

## **IV. Methodology**

- Data Collection
  - The dataset was sourced from FBref.com's Premier League 2023–24 player standard stats, acquired through web scraping via Python and Selenium due to the site's lack of CSV export functionality.
- Metric Selection
  - Metrics were categorized into three groups:
    - Offensive: Goals, assists, expected goals (xG), expected assists (xA), key passes, and progressive carries, forward passes..
    - Defensive: Tackles, interceptions, pressures, clearances, and blocks.
    - Transitional/Positional: Recoveries, progressive passes received, and aerial duels won.
- Contextual Adjustments:
  - Role-Specific Scoring: Different positions emphasized different metrics. Center-backs were evaluated more on clearances and aerial duels, while wingers focused on key passes and successful dribbles.
  - Minutes played: All statistics were divided by number of minutes played, emphasizing efficiency in statistical production rather than stats coming as a result of a high minutes played count.

## **V. Match Rating Scoring System**

This section outlines the methodology used to evaluate and score individual player performances within the context of their positional groupings. The model leverages percentile-based statistics and standardizes player ratings on a 0.0 to 10.0 scale to provide intuitive, comparative match ratings.

#### a. Positional Categorization

Players were first divided into three primary positional categories:

- Attackers
- Midfielders
- Defenders

This categorization ensures that each player's statistical output is contextualized against the expectations of their position. For instance, a defender's goal-scoring contributions are more heavily weighted by virtue of percentile calculations, which are conducted solely within positional peer groups.

#### b. Data Normalization by Minutes Played

All player statistics—both standard and advanced metrics—were normalized on a per-minute basis to control for variations in playing time. This prevents bias towards players who accumulate counting stats by virtue of greater minutes played.

For each player p in statistical category s, the per-minute rate  $R_{s,p}$  is calculated as:

$$R_{s,p} = S_{s,p} / M_p$$

Where:

- $S_{s,p}$  = Player p's total in statistical category s
- $M_p$  = Total minutes played by player p

### c. Percentile Generation within Positional Groups

After normalization, each player's per-minute statistics were ranked within their positional group to generate percentile scores. This step contextualizes raw numbers, accounting for what is typical or exceptional for players in similar roles.

For each player p in category s, the percentile rank  $P_{s,p}$  is determined by:

$$P_{s,p} = \text{Percentile rank of } R_{s,p} \text{ among players in the same position}$$

### d. Composite Average Percentile Calculation

Each player's overall performance across all statistical categories was calculated by taking the arithmetic mean of their individual percentile ranks.

The composite average percentile  $\bar{P}$  is:

$$\bar{P} = (1/n) * \sum_{s=1}^n P_{s,p}$$

Where:

- n = Number of statistical categories considered
- $P_{s,p}$  = Percentile rank for player p in category s

### e. Scaling Percentile Averages to a 0.0 – 10.0 Rating

The final step converts the composite percentile  $\bar{P}$  into an intuitive match rating on a 0.0 to 10.0 scale, allowing for clearer interpretation and comparison.

The conversion applies the following logic:

- Players below the 10th percentile are assigned a rating of 0.0

- Players above the 90th percentile are assigned a rating of 10.0
- Percentiles between 10 and 90 are mapped linearly across the 0.0 to 10.0 scale, in increments of 0.1 (e.g., 0.0, 0.1, 0.2, ..., 9.9, 10.0)

This approach ensures a fair and consistent representation of performance, providing teams, analysts, and fans with an easily interpretable score that captures the player's statistical output within their role and relative to their peers.

## **VI. Results & Implications**

The contextual rating system revealed discrepancies between traditional ratings and context-aware evaluations. For example, players like Rodri (Manchester City) and Declan Rice (Arsenal), often overlooked in standard scoring systems, ranked significantly higher due to their positional discipline, transition control, and game-state impact.

Applications in Sport Management:

- Recruitment: Clubs can make data-driven recruitment decisions by identifying undervalued players.
- Performance Reviews: Coaches can provide targeted feedback on role-specific contributions.
- Contract Negotiations: Players and agents can leverage objective data during contract discussions, supporting claims of value.

## **VI. Conclusion**

This project demonstrates that contextualized player ratings fill a critical gap in soccer performance analysis. By accounting for game-state, opponent quality, and player roles, this system provides a more comprehensive and fair assessment of player impact. Moving forward, such models could be enhanced with tracking data and integrated into club performance management systems.

## References

- Anderson, C., & Sally, D. (2013). *The Numbers Game: Why Everything You Know About Soccer Is Wrong*. Penguin Books.
- Müller, C., Simons, A., & Weinmann, M. (2017). Beyond crowd judgments: Data-driven estimation of market value in association football. *European Journal of Operational Research*, 263(2), 611-624.
- Decroos, T., Bransen, L., Van Haaren, J., & Davis, J. (2019). Actions speak louder than goals: Valuing player actions in soccer. *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining*, 1851-1861.
- FBref.com. (2024). Premier League Standard Stats. Retrieved from <https://fbref.com>
- Tenga, A., Holme, I., Ronglan, L. T., & Bahr, R. (2010). Effect of playing tactics on achieving score-box possessions in football. *Journal of Sports Sciences*, 28(3), 245–255.