

Discipline-Related Performance Indicators and Playoff Success in the NBA: Fouls, Turnovers and Violations

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Abstract

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Aim: The present study aimed to examine discipline-related performance indicators such as fouls, turnovers and infraction types in relation to competitive advancement among teams participating in the 2024–2025 NBA Playoffs.

Method: Official statistical data were obtained from Basketball Reference, an open-access and widely used database and included all teams competing in the playoffs. For comparability, all variables were standardized to per-game averages. The examined indicators were classified into three conceptual dimensions: foul types (defensive and offensive), turnover-related violations and non-turnover violations (kicked ball, defensive 3-second and defensive goaltending). In addition, teams were categorized according to playoff stage as first-round teams, second-round teams, conference finalists and NBA finalists in order to reflect different levels of playoff advancement.

Results: The results indicated that none of the examined discipline-related performance indicators differed significantly across playoff advancement categories ($p>0.05$). Defensive fouls, offensive fouls, turnovers and shot clock violations remained relatively consistent among teams eliminated at different playoff stages. Similarly, travel violations and backcourt violations did not show meaningful variation across groups.

Conclusion: The findings suggest that discipline-related indicators such as fouls, turnovers and rule violations are relatively homogeneous among elite NBA playoff teams. These results indicate that when team quality is closely matched, such discipline-related variables may have limited discriminative power in explaining playoff advancement.

NBA'de Disiplinle İlişkili Performans Göstergeleri ve Playoff Başarısı: Fauller, Top Kayıpları ve Kural İhlalleri

Özet

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Amaç: Bu çalışmanın amacı, 2024–2025 NBA Playoffları'nda mücadele eden takımların playofflardaki başarıları ve oyun içi disiplinle ilişkili performans göstergeleri (fauller, top kayıpları ve ihlal türleri) arasındaki ilişkiyi incelemektir.

Gereç ve Yöntem: Çalışmada yer alan istatistiksel veriler, açık erişimli ve yaygın olarak kullanılan bir veri tabanı olan Basketball Reference'tan elde edilmiş ve playofflara katılan tüm takımları kapsayacak şekilde maç başına ortalama değerler üzerinden standartlaştırılmıştır. İncelenen değişkenler üç farklı şekilde sınıflandırılmıştır: faul türleri (savunma ve hücum faulleri), top kaybına yol açan hatalar ve top kaybı oluşturmeyen ihlaller (kasıtlı ayakla müdahale, savunma 3-saniye ihlali ve kendi çemberine müdahale). Takımlar, playoff aşamalarına göre ilk tur, ikinci tur, konferans finalleri ve NBA Finalleri katılımcıları olarak sınıflandırılmış ve playoff ilerleme düzeyleri bu doğrultuda belirlenmiştir.

Bulgular: Elde edilen sonuçlar, incelenen disiplinle ilişkili performans göstergelerinin hiçbirinde playoff ilerleme düzeylerine göre istatistiksel olarak anlamlı bir farklılık bulunmadığını göstermiştir ($p>0.05$). Savunma faulleri, hücum faulleri, top kayıpları ve şut saati ihlali gibi değişkenler farklı playoff aşamalarındaki takımlar arasında benzer dağılımlar göstermiştir. Benzer şekilde topla yürüme ve yarı saha ihlalleri açısından da gruplar arasında anlamlı bir farklılık gözlenmemiştir.

Sonuç: Bulgular, elit düzeydeki NBA playoff takımları arasında fauller, top kayıpları ve çeşitli ihlal türleri gibi disiplinle ilişkili göstergelerin büyük ölçüde benzer düzeylerde gerçekleştiğini göstermektedir.

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Introduction

In recent years, performance analysis in basketball has become a central methodological approach for understanding the determinants of success in elite competition. As a result, coaches, analysts and sport scientists increasingly rely on game-related statistics to evaluate both the technical and tactical dimensions of play, thereby supporting data-driven strategic decision-making (Hughes and Franks, 2015; O'Donoghue, 2009). While traditional performance metrics such as shooting accuracy, rebounds and assists have long been considered fundamental indicators of success (Trninić et al., 2000; Sampaio and Janeira, 2003), recent research suggests that discipline-related variables, particularly fouls and turnovers, are equally important aspects of team performance. In this context, fouls and turnovers should not be viewed simply as isolated mistakes but as indicators of collective efficiency and decision-making consistency. Therefore, discipline-related variables such as fouls and turnovers have become important indicators linking technical execution with collective decision-making processes.

Fouls constitute a structural element of basketball and have direct consequences for both defensive and offensive balance. In particular, defensive and offensive fouls can disrupt the rhythm of the game, create foul trouble situations and therefore limit tactical flexibility (Leicht et al., 2017). In addition, repeated fouling often reflects deficiencies in defensive organization and may require rapid tactical adjustments under competitive pressure. Similarly, turnovers result in an immediate loss of possession and frequently generate high-efficiency scoring opportunities for opponents (Sampaio et al., 2010). Hence, both variables can be conceptualized as indicators of team discipline, reflecting collective decision-making and behavioral control in competitive contexts.

In performance analysis literature, discipline-related indicators are commonly interpreted as observable manifestations of collective behavioral control and decision-making stability within a team structure. From this perspective, fouls and turnovers represent more than isolated technical errors; they reflect the ability of players to maintain tactical discipline under competitive pressure and to regulate risk-taking during offensive and defensive actions. Previous studies have suggested that error-related metrics such as fouls, turnovers and rule violations may serve as indirect indicators of team discipline, as they reveal how effectively teams control decision-making processes and minimize avoidable mistakes during high-intensity game situations (Hughes and Franks, 2015; McGarry et al., 2002).

Previous research has consistently demonstrated the influence of fouls and turnovers on game outcomes (Zhang et al., 2017; Conte et al., 2015). In this respect, Zhang et al. (2017) reported that turnovers substantially reduce offensive efficiency in NBA contexts, while excessive fouling is associated with lower winning probabilities in closely contested games. Similarly, evidence from European leagues indicates that teams maintaining lower turnover frequencies and more disciplined defensive behavior are more likely to sustain competitive stability throughout a season (Gómez et al., 2009). However, despite these findings, most existing studies have tended to examine fouls and turnovers as isolated variables, thereby leaving their combined role as integrated indicators of team discipline largely unexplored, particularly within the context of NBA playoff competition.

The NBA constitutes a unique analytical framework due to its regulatory structure, which differs from that of FIBA competitions. In particular, differences in defensive three-second violations, cumulative foul rules and pace of play affect both the frequency and impact of fouls and turnovers (Mikołajec et al., 2013). In addition, the postseason introduces specific situational pressures, including increased physicality, shorter player rotations and greater tactical precision, all of which intensify the strategic consequences of each foul or turnover. For these reasons, the playoffs provide an appropriate context for examining how discipline-related factors distinguish teams that advance to later rounds from those eliminated at earlier stages.

In this context, an important gap remains in the existing literature regarding the role of discipline-related performance indicators in elimination-based basketball competitions. Although previous studies have extensively examined the effects of fouls and turnovers on game outcomes, most of this research has focused on regular-season performance or has analyzed these variables separately. Consequently, relatively little empirical evidence exists regarding how discipline-related indicators collectively differentiate teams at different stages of postseason competition. This limitation is particularly evident in the context of the NBA playoffs, where small variations in error control may determine whether teams advance or are eliminated. Therefore, the present study seeks to address this gap by examining discipline-related performance indicators, including fouls, turnovers and rule violations, across different stages of the 2024–2025 NBA Playoffs.

By viewing fouls and turnovers as dynamic elements that influence game pace and tactical responses, this study adopts a contextual approach to team discipline. In doing so, this perspective is consistent with contemporary research that highlights the interactive and situational nature of team performance (Gómez et al., 2017; McGarry et al., 2002).

Accordingly, the aim of this research is to examine the relationship between fouls, turnovers and team success during the 2024–2025 NBA Playoffs. More specifically, the study seeks to determine whether statistically significant differences in discipline-related variables exist among teams at different stages of playoff advancement, thereby providing empirically grounded evidence regarding the contribution of team discipline to competitive success in elite basketball.

Materials and Methods

Research Design

This study adopted a cross-sectional and observational design and included all teams participating in the 2024–2025 NBA Playoffs. The analytical sample consisted of 16 teams, representing all playoff participants in that season. Accordingly, each team constituted one observation unit in the dataset ($N = 16$). Within this framework, team discipline indicators, operationalized through fouls and turnovers, were examined in relation to competitive progression.

All data were obtained from Basketball Reference, an open-access and publicly accessible database widely used in basketball research. In addition, data consistency was cross-verified using official NBA box scores in order to ensure accuracy and reliability.

For analytical clarity, foul and turnover-related variables were organized into three conceptual categories, as presented in Table 1.

Table 1. Classification of variables included in the study

Category	Variables Included
Foul Types	Defensive fouls, Offensive fouls
Turnover-Related Violations	Total turnovers, Traveling, Backcourt violation, 5-second violation (inbounds/closely guarded), 8-second violation, Shot clock violation
Non-Turnover Violations	Kicked ball, Defensive 3-second violation, Defensive goaltending

Teams were further classified according to playoff stage as first-round teams, second-round teams, conference finalists and NBA finalists.

This classification facilitated comparative analyses between teams eliminated early and those that advanced to later playoff stages.

Statistical Analysis

All statistical analyses were conducted using IBM SPSS Statistics 25.0, with the significance threshold set at $p < 0.05$. All variables were expressed as per-game averages to enable comparability among teams playing different numbers of playoff games.

Descriptive statistics and normality measures are jointly presented in Table 2. Normality was evaluated using skewness and kurtosis values, applying frequently used thresholds of ± 1 (George and Mallery, 2010). Variables meeting this criterion were deemed to approximate normal distribution and were thus analyzed using one-way ANOVA. This applied to defensive fouls, offensive fouls, turnovers, travel violations, backcourt violations, shot clock violations and defensive goaltending.

Conversely, variables exceeding the acceptable range (i.e., 5-second violations, 8-second violations, kicked ball and defensive 3-second violations) were analyzed with the Kruskal–Wallis test.

Table 2. Descriptive statistics and normality measures for discipline-related variables

Variable	N	Mean	Confidence Interval		Variance	SD	Min	Max	Skewness	Kurtosis
			Lower Limit	Upper Limit						
Defensive Fouls	16	20.35	19.54	21.16	2.73	1.65	17.3	23.3	-0.17	-0.2
Offensive Fouls	16	1.64	1.3	1.99	0.49	0.7	0.3	3.3	0.44	1.25
Turnovers	16	14.26	13.27	15.26	4.14	2.03	11.6	19.3	0.9	0.98
Travel	16	0.54	0.37	0.72	0.13	0.36	0	1.3	0.78	-0.02
Backcourt Violation	16	0.14	0.07	0.21	0.02	0.14	0	0.4	0.71	-0.71
5 Sec. Violation	16	0.03	0	0.06	0	0.06	0	0.2	1.89	3.03
8 Sec. Violation	16	0.04	0.01	0.07	0	0.06	0	0.2	1.5	1.58
Shot Clock Violation	16	0.85	0.69	1.01	0.11	0.32	0.4	1.4	0.33	-0.91
Kicked Ball	16	0.24	0.13	0.34	0.05	0.21	0	0.8	1.25	2.0
Defensive 3 Sec.	16	0.1	0.01	0.19	0.03	0.18	0	0.7	2.98	10.13
Defensive Goaltending	16	0.14	0.09	0.19	0.01	0.1	0	0.3	-0.46	-1.34

Results

Differences in foul and turnover-related indicators across playoff success categories were examined using one-way ANOVA for variables meeting normality assumptions (Table 3).

Table 3. One-Way ANOVA Results for Parametric Variables

Variable	Source	Sum of Squares	df	Mean Square	F	p
Defensive Fouls (per game)	Between Groups	11.17	3	3.72	1.50	0.265
	Within Groups	29.79	12	2.48		
Offensive Fouls (per game)	Between Groups	0.31	3	0.10	0.18	0.911
	Within Groups	7.09	12	0.59		
Turnovers (per game)	Between Groups	3.71	3	1.24	0.25	0.857
	Within Groups	58.37	12	4.86		
Travel Violations (per game)	Between Groups	0.14	3	0.05	0.31	0.816
	Within Groups	1.78	12	0.15		
Backcourt Violations (per game)	Between Groups	0.02	3	0.01	0.28	0.841
	Within Groups	0.28	12	0.02		
Shot Clock Violations (per game)	Between Groups	0.19	3	0.06	0.54	0.665
	Within Groups	1.39	12	0.12		
Defensive Goaltending (per game)	Between Groups	0.07	3	0.02	3.41	0.053
	Within Groups	0.09	12	0.01		

*p<0.05

The results indicated that none of the parametric variables demonstrated statistically significant differences between playoff success categories. In particular, defensive fouls, offensive fouls, turnovers and shot clock violations showed relatively stable distributions across teams eliminated in the first round, second round, conference finals and NBA Finals ($p>0.05$). Similarly, travel violations and backcourt violations did not present meaningful variation between the examined playoff stages ($p>0.05$).

Among the analyzed indicators, defensive goaltending produced the lowest p-value; however, the difference between groups did not reach the conventional threshold for statistical significance ($F = 3.41$, $p = 0.053$). Although this result suggests a potential tendency for variation in defensive goaltending frequency across playoff stages, the observed differences cannot be interpreted as statistically significant within the present sample.

In addition to the parametric analyses conducted for variables approximating normal distribution, non-parametric tests were employed for those variables that violated the assumptions of normality. For variables that violated normality assumptions, non-parametric analyses were conducted using the Kruskal–Wallis test (Table 4).

Table 4. Kruskal–Wallis Test Results for Non-Parametric Variables

Variable	Mean Ranks (per group)	Chi-Square	df	p
5 Sec Violation (per game)	First Round: 7.69	6.762	3	0.080
	Second Round: 6.75			
	Conf. Finals: 14.0			
	NBA Finals: 13.0			
8 Sec Violation (per game)	First Round: 7.25	1.667	3	0.644
	Second Round: 11.5			
	Conf. Finals: 9.75			
	NBA Finals: 8.5			
Kicked Ball (per game)	First Round: 6.94	4.643	3	0.200
	Second Round: 7.75			
	Conf. Finals: 14.25			
	NBA Finals: 10.5			
Defensive 3 Sec (per game)	First Round: 8.44	3.034	3	0.386
	Second Round: 9.38			
	Conf. Finals: 4.5			
	NBA Finals: 8.5			

The Kruskal–Wallis results confirmed that none of the non-normally distributed variables differed significantly across team categories ($p>0.05$). Although higher mean ranks were observed for 5-second and kicked-ball violations in the Conference Finals group, these differences were not statistically significant ($p>0.05$).

Discussion and Conclusion

This study aimed to determine whether discipline-related performance indicators, including fouls, turnovers and violation types, differentiated NBA playoff teams according to their level of advancement. The results showed that none of the examined variables significantly distinguished teams across playoff stages. However, defensive goaltending produced the lowest p-value among the analyzed indicators ($p = 0.053$). Although defensive goaltending did not reach statistical significance, the relatively lower frequency observed among teams advancing further may suggest a potential tendency related to defensive precision near the rim. By contrast, more frequently occurring indicators such as defensive fouls, offensive fouls, turnovers and shot-clock violations did not differ significantly between groups, suggesting that these factors are more evenly distributed among elite teams with similar levels of tactical and technical proficiency.

These results complement earlier research that emphasizes defensive efficiency as a key determinant of success in basketball. For example, Trninić et al. (2000) showed that defensive rebounds and field-goal defense were effective in distinguishing winning and losing teams in elite European competitions, while Oliver (2004) identified turnovers and free throws as two of the Four Factors underlying basketball success. However, subsequent studies have indicated that turnovers alone may not be sufficient to predict outcomes in highly balanced competitions (Csataljay et al., 2012). In a similar vein, García et al. (2013) reported that, within the Spanish ACB League, performance variables such as assists and rebounds demonstrated greater discriminative power than fouls or turnovers. Taken together, this body of evidence suggests that when team quality is closely matched, as observed during NBA playoff competition, only certain defensive infractions, including goaltending, may display potential variation across playoff stages, although the present findings did not demonstrate statistically significant differences.

Conversely, the absence of significant differences in defensive fouls contrasts with the findings of Leicht et al. (2017), who suggested that effective foul control may be associated with superior competitive performance. One possible explanation is that standardized officiating and well-developed defensive strategies during the NBA playoffs tend to normalize foul rates across teams, thereby reducing variability between groups. In addition, turnovers, which are frequently identified as detrimental to offensive efficiency, did not emerge as a discriminating variable in this context (Sampaio et al., 2010; Gómez et al., 2016; Teramoto and Cross, 2010). This pattern may reflect the consistently high level of tactical sophistication among playoff teams, where possession-related errors occur within a relatively narrow range and thus have limited predictive value.

Non-parametric variables such as 5-second, 8-second and defensive 3-second violations also failed to produce statistically significant effects. This finding is consistent with the results reported by Puente et al. (2015), who noted that such situational violations tend to occur sporadically and are highly dependent on game context. In addition, Gómez et al. (2016) emphasized that outcomes in elite basketball are influenced

more strongly by stable performance indicators, such as shooting accuracy and rebounding, than by infrequent technical infractions. Accordingly, the present findings support the view that minor rule violations have limited discriminative value in determining playoff outcomes and further reinforce the importance of high-impact defensive actions in elite competition.

In summary, these findings indicate that playoff success among elite teams is influenced less by overall categories of errors, such as total fouls or turnovers and more by the avoidance of high-impact violations that directly lead to points conceded. From a broader tactical perspective, the interaction between defensive discipline and offensive pressure becomes especially important in closely contested matches (Zhang et al., 2017). In this regard, the relatively lower frequency of defensive goaltending observed among teams advancing further may highlight the importance of rim protection precision.

However, these results should be interpreted with caution. The analysis was limited to a single playoff season and included only the 16 teams participating in the 2024–2025 NBA Playoffs, which restricts the generalizability of the findings. In addition, the relatively small sample size may limit the statistical power of the analyses. In particular, the comparison of playoff stages resulted in small group sizes, which may reduce the sensitivity of statistical tests such as ANOVA to detect potential differences between groups. Accordingly, future research should seek to replicate these results across multiple playoff seasons and incorporate advanced player-tracking data to determine whether defensive goaltending consistently functions as an indicator of playoff success.

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