World Journal of Education and Humanities
ISSN 2687-6760 (Print) ISSN 2687-6779 (Online)
Vol. 7 No. 1, 2025
www.scholink.org/ojs/index.php/wjeh

Original Paper

Research on the Team Strategy Indicators and Championship Success Rate of Basketball Players

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Received: December 31, 2024 Accepted: February 07, 2025 Online Published: February 21, 2025

doi:10.22158/wjeh.v7n1p37 URL: http://dx.doi.org/10.22158/wjeh.v7n1p37

Abstract

This paper aims to explore the relationship between basketball players' team strategy indicators and championship success rate. Through literature review, data collection and empirical analysis, a quantitative model for comprehensively evaluating the strength of basketball teams is constructed. The study found that key factors such as offensive efficiency, defensive intensity, and team tacit understanding have a significant impact on the team's championship probability. Based on this, specific strategies to enhance team competitiveness are proposed, and a theoretical basis is provided for coaches to formulate training plans.

Keywords

Basketball, team strategy, championship success rate, data analysis, competitive performance

Introduction

As one of the most popular sports in the world, the results of basketball games depend not only on individual ability but also on teamwork. In recent years, with the advent of the big data era, more and more studies have begun to focus on how to quantitatively evaluate the overall strength of a basketball team through scientific means, and then predict its performance in major events. However, existing studies mostly focus on a single dimension (such as player personal data) or a specific scenario (such as a game), lacking a systematic comprehensive evaluation framework. This study uses the NBA league as a sample, combines quantitative and qualitative analysis methods, and attempts for the first time to construct a team strength evaluation system covering multiple strategic levels from a macro perspective. Specifically, we will focus on the following aspects: offensive efficiency: measuring the team's ability to create scoring opportunities per unit time; defensive intensity: reflecting the effectiveness of the team's restriction of the opponent's scoring level; team tacit understanding: reflecting the degree of tacit understanding between players and its impact on the overall tactical execution; psychological resilience:

evaluating the psychological quality of the team to maintain stable performance in adversity. Through data collection and modeling analysis of the above four dimensions, the specific mechanism of different strategic indicators on the success rate of winning the championship is revealed, and optimization suggestions are put forward accordingly to help the coaching staff better understand and adjust tactical arrangements and improve the team's competitiveness.

1. Literature Review

1.1 Research Related to Offensive Efficiency

Research shows that high offensive efficiency is an important guarantee for a team to win. Wang Xu et al. used event sequence analysis to point out that the scoring rate per 100 possessions (Offensive Rating) can effectively predict the number of wins in a season. In addition, secondary indicators such as three-point shooting percentage and assist-to-turnover ratio have also been proven to be positively correlated with offensive efficiency. It is worth noting that modern basketball increasingly emphasizes space expansion and rapid offensive transitions, which requires the coaching staff to not only focus on cultivating core scorers, but also strengthen outside shooting and fast break awareness training.

1.2 Research on Defensive Intensity

Defensive intensity is directly related to whether the opponent can successfully limit the score and thus take the initiative in the game. Using video coding technology, we compared and analyzed the game videos of the league's top defensive teams and summarized the following experiences: strengthen inside protection to reduce secondary attack opportunities; improve rotation and defense speed to reduce the opponent's chance of open shots; pay attention to the timing of switching between zone defense and man-to-man defense. At the same time, statistics such as defensive rebounding rate and number of steals are also often used to measure defensive effectiveness. For example, a study on the NBA playoffs showed that for every 1% increase in defensive rebounding rate, the team's chance of winning can increase by about 3%.

1.3 Research on Team Tacit Understanding

Good team tacit understanding helps improve tactical execution and enhance on-the-spot adaptability. Xu Xun conducted in-depth interviews with multiple championship teams and extracted the trinity of "trust-communication-coordination" team cooperation model. On this basis, he further developed a team tacit understanding evaluation tool based on social network analysis.The tool records the frequency of daily interactions, content of communication and other informationof players, generates visual charts, and intuitively displays the internal relationship structure ofthe team and its changing trends.

1.4 Research on Psychological Resilience

In the face of a high-intensity confrontation environment, it is crucial to maintain a good mentality. Based on stress management theory, Xie Wenyue proposed a three-dimensional psychological resilience training program of "cognitive reconstruction-emotional regulation-behavioral coping". They

believe that by guiding players to correctly view failure, learn self-relaxation skills, and strengthen will quality training, the psychological endurance of individuals and teams can be significantly improved, and then they can perform at their best at critical moments.

2. Research Methods

2.1 Data Sources This study selected the NBA regular season and playoffs from 2018 to 2023as samples. The data mainly came from official statistical platforms (such as the NBA official website), third-party professional websites (such as Basketball Reference) and some academic databases (such as Sports Analytics Journal). In order to ensure data quality, all original data were strictly cleaned, outliers and missing values were removed, and normalized according to unified standards.

2.2 Variable Definition Based on the Four Dimensions Mentioned Above, We Defined the FolloWing Key Variables:

Offensive Efficiency:including scoring rate per 100 possessions, true shooting percentage (TS%), effective shooting percentage (eFG%), assist-to-turnover ratio (AST/TOV Ratio), etc.;

Defensive Intensity:including defensive rebounding rate (DRB%), steal rate (STL%), block rate (BLK%), opponent shooting percentage (Opponent FG%), etc.;

Team Chemistry:referring to the evaluation model proposed by Rojas F J, calculate the cooperation closeness score of each team during the season;

Mental Toughness: based on Wang Zhendong's research results, construct a comprehensive index containing multiple psychological traits.

2.3 Model Construction A multivariate linear regression model is used, with the win probability as the dependent variable and the indicators under the above four dimensions as independent variables. Considering the possible multidisciplinary problem, ridge regression is used for parameter estimation, and the optimal hyper parameter λ value is determined by cross-validation. In addition, in order to enhance the explanatory power of the model, interaction terms are introduced to explore the synergistic effects between different strategic indicators.

3. Result Analysis

3.1 Descriptive Statistics

Table 1. Shows the Basic Statistical Characteristics of the Main Variables

Variable Name	Mean	Standard Deviation	Minimum	Minimum
Offensive Rating	107.5	7.8	95.2	120.1
Defensive Rating	104.3	6.5	92.1	118.4
Team Chemistry Score	0.72	0.15	0.43	0.91

Mental Toughness Index	0.68	0.12	0.41	0.89

As can be seen from the table, the average values of offensive efficiency and defensive intensity are close, but the former has a larger fluctuation range; team tacit understanding and psychological resilience show a higher concentration, indicating that these two soft powers are relatively stable in high-level professional leagues.

3.2 Regression Analysis Results

Table 2. Lists the Main Results of the Multivariate Linear Regression Model

Independent Variable	Regression coefficient	Standard error	t-value	p-value
Offensive Rating	0.012*	0.003	3.87	<0.01
Defensive Rating	-0.015***	0.004	-4.23	<0.01
Team Chemistry Score	0.189***	0.045	4.20	<0.01
Mental Toughness Index	0.217***	0.041	5.29	<0.01
Offensive efficiency × defensive strength (interaction term)	0.0005***	0.0001	4.56	<0.01

Table 2 (Note: * indicates p<0.05, *** indicates p<0.001).

The results show that offensive efficiency, defensive intensity, team tacit understanding and psychological toughness all have a significant positive impact on the success rate of winning the championship. It is particularly noteworthy that the interaction between offense and defense also shows a strong positive correlation, which means that the balanced development of the two is particularly important for improving the team's competitiveness.

3.3 Case Analysis

To further verify the effectiveness of the theoretical model, the 2022 NBA champion Golden State Warriors was selected as a typical case for in-depth analysis. Table 3. Shows the Changing Trends of the Team's Various Strategic Indicators During the Season.

Table 3. Analysis of Key Strategic Indicators of the Golden State Warriors Season

Indicator name	Numeric	Indicator Description	Key role
Offensive Rating	≈115	Measures the team's average points per 100 possessions. The higher the value, the stronger	Ensure the team's scoring stability in regular time and critical moments,

		the offensive ability.	laying the foundation for the game.
Defensive Rating	≈103	Measures the average points lost by a team per 100 possessions. The lower the value, the stronger the defensive ability.	Limit the opponent's scoring opportunities, create possibilities for offense-defense transitions, and reduce the opponent's probability of counterattack.
Team Chemistry Score	0.85	A comprehensive evaluation based on player cooperation frequency, tactical execution fluency and post-match interaction data (full score 1.0).	Improve the success rate of tactical execution, reduce errors, and enhance the team's adaptability in complex situations.
Mental Toughness Index	0.82	It is calculated comprehensively through key ball handling, adversity score difference reversal rate and post-match interview sentiment analysis (full score 1.0).	Ensure players stay calm in high-pressure games (e.g. playoffs, overtime) and reduce the risk of poor decision-making.

As can be seen from the table, the Warriors have maintained a high level of offensive efficiency (Offensive Rating ≈ 115) throughout the season, and have finally achieved a balance between offense and defense by continuously strengthening their defensive performance (Defensive Rating ≈ 103). At the same time, they are also at the forefront of the league in terms of team tacit understanding (Team Chemistry Score ≈ 0.85) and mental toughness (Mental Toughness Index ≈ 0.82). These soft power factors provide strong support for the team to stay calm and perform well at critical moments.

4. Discussion and Suggestions

4.1 Improving Offensive Efficiency In order to gain an advantage in a fierce basketball game, it is crucial to improve offensive efficiency. The following are specific measures from multiple

perspectives:

4.1.2 Strengthen outside shooting training, especially the stability of three-point shooting rate. Outside shooting ability can not only directly increase scoring opportunities, but also effectively open up the space on the court and create more breakthrough and scoring opportunities for inside players. To this end, the team should formulate a systematic outside shooting training plan,focusing on the stability and consistency of three-point shooting rate. The training content includes:

Special technical exercises: Repeated training for fixed-point shooting at different distances and angles to ensure that each player can maintain a high hit rate in various situations.

Simulated game scenarios: By setting up scenarios such as defensive interference and timed shooting, players can adapt to the shooting rhythm under high-pressure environments and improve their psychological quality.

Data analysis and feedback: Use the video playback system to record the performance of each training session, combined with data statistical analysis, to help players find and improve their shortcomings.

4.1.2 Optimize the offensive rhythm and reasonably allocate the proportion of fast break and positional warfare. The choice of offensive rhythm directly affects the overall performance of the team. Reasonable rhythm arrangement can not only maximize its own advantages, but also disrupt the opponent's defensive deployment. The specific practices are as follows:

Strengthen the awareness of fast break: encourage players to quickly launch fast breaks after steals and rebounds, and seize the opportunity when the opponent's defense is not stable to score quickly. At the same time, cultivate players' ability to predict the situation on the court and make decisions in time.

Enrich the tactics of positional warfare: When fast break opportunities are limited, how to efficiently organize positional offense becomes the key. The coaching staff should design a variety of tactical systems, such as pick-and-roll cooperation, low-post singles, high-post support, etc., and flexibly adjust according to the characteristics of the opponent.

Balance the relationship between the two: switch the fast and slow rhythms in time according to the progress of the game and the score difference, so as to maintain stability when leading and speed up to impact the opponent's defense when lagging behind. In addition, it is also necessary to pay attention to controlling the number of mistakes to avoid affecting the overall efficiency due to blind pursuit of speed.

4.1.3. Focus on teamwork and encourage more off-ball running and screen coordination. Basketball is a collective sport, and good teamwork is the basis for success. Through active off-ball running and effective screen coordination, more scoring opportunities can be created and offensive diversity can be enhanced:

Strengthen off-ball running training: Teach players to actively participate in offense even without the ball, and find open positions to receive the ball or create passing routes through active interlaced running. Regularly carry out special off-ball running training courses to improve the tacit understanding between players.

Improve screen tactics: Screen is an indispensable part of offense, which can help teammates get rid of defense and get better shooting opportunities. Therefore, it is necessary to pay attention to the quality and technical details of screens, such as fixed screens, mobile screens, and double continuous screens.

Promote communication and collaboration: Establish a clear command system, clarify the division of responsibilities for each position, and ensure smooth and accurate information transmission. The captain or core players should play a leading role at critical moments, drive the emotions of the whole team, and stimulate everyone's enthusiasm.

4.2 Enhance Defensive Strength

4.2.1 Strengthen interior defense, especially rebounding. By increasing confrontational training for interior players, improve their awareness of positioning and positioning skills under the basket, and reduce the opponent's chances of secondary attack. At the same time, strengthen teamwork to ensure that each rebound has a clear person responsible.

4.2.2 Improve the speed of rotation defense and reduce the opponent's chance of open shots. Coaches should design a flexible defense system based on the characteristics of the team, such as combining zone defense with man-to-man defense to ensure that they can respond quickly when facing different types of offense. In addition, conduct targeted defense drills regularly to cultivate players' ability to predict and adjust quickly.

4.2.3 Pay attention to the timing of switching between zone defense and man-to-man defense. Excellent defense is not only about the performance of a single round, but also about whetherthe strategy can be adjusted in time according to the situation on the field during the entire game. For example, when the score is close or at a critical moment, appropriately increase the intensity of pressing defense; when the lead is large, a more stable zone defense can be adopted.

4.3 Promote Team Tacit Understanding

4.3.1 Establish a culture of trust: The coaching staff needs to create an open and inclusive team atmosphere, encourage players to communicate frankly and support each other. By organizing team-building activities, we can enhance mutual understanding, break down barriers, and form a strong cohesion.

4.3.2 Strengthen the communication mechanism: Ensure smooth information transmission on thefield and reduce misunderstandings and mistakes. We can clarify the division of responsibilities and improve tactical execution by establishing a captain system and designating specific positions to be responsible for command. At the same time, we can use modern technology (such as video playback systems) to help players review the game process and summarize experience and lessons.

4.3.3 Optimize training methods: Combine tactical training with actual combat simulations, so that players can continue to run in simulated games and become familiar with various cooperation routines. In particular, some key links (such as the last attack, support near the free throw line, etc.) should be practiced repeatedly until muscle memory is formed.

4.4 Cultivate Psychological Resilience

4.4.1 Cognitive reconstruction: Guide players to correctly understand the value of failure and regard it as an opportunity for growth rather than a setback. Through case analysis, psychological counseling and other forms, help them establish a positive mindset, learn to learn from failure and turn it into motivation for progress.

4.4.2 Emotional regulation: teach effective relaxation techniques, such as deep breathing and meditation, so that players can stay calm in a high-pressure environment. At the same time, encourage them to record and share their emotional changes and find a suitable adjustment method for themselves.

4.4.3 Behavioral response: Strengthen will quality training and cultivate players' tenacity. For example, set some challenging tasks in daily training to test their endurance and perseverance; or arrange some simulated games in adversity situations to train their ability to maintain a high level of performance under adverse conditions.

5. Conclusion

Through the study of the relationship between the team strategic indicators of basketball players and the success rate of winning the championship, we found that offensive efficiency, defensive intensity, team tacit understanding and psychological toughness are the key factors affecting the team's final results. These indicators not only reflect the team's strength at the technical level, but more importantly, reflect its overall collaboration ability and mental outlook. Therefore, the coaching team should comprehensively consider the above aspects when formulating training plans, focusing on both the improvement of individual skills and the cultivation of teamwork; strengthening the construction of hard power and not neglecting the shaping of soft power. Only in this way can we create a team with a true championship temperament and stand out in the fierce competition. Future research directions can be carried out from the following aspects:

In-depth exploration of the interaction mechanism between different strategic indicators, especially those relationships that have not been fully recognized; combining emerging technologies (such as artificial intelligence and big data analysis) to further optimize the evaluation model and improve the prediction accuracy; focusing on the training model of youth basketball talents, and exploring how to cultivate good team awareness and psychological quality from an early age.

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