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Coaching Styles and Their Relationship to Athletic Performance Among High-Level Basketball Players in Hunan Province

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Abstract

This study examines the relationship between coaching styles and the athletic performance of high-level basketball players in Hunan Province, China. Driven by the 'Healthy China 2030' strategy, there is a growing need to understand the athletic outcome of coaching influence. While previous researches have categorized coaching styles, little is known about the empirical evidence for the direct impact on the performance. Therefore, this study aims to fill this gap by utilizing the sample of 246 players and 83 coaches from 15 universities. Data are collected by using the Sports Leadership Scale (LSS) and the Sports Performance Perception Scale, the result demonstrates that the regression equation – *Athletic Performance* = $1.500 + 0.156 (\text{Rewards}) + 0.326 (\text{Social Support}) + 0.105 (\text{Authoritative}) + 0.363 (\text{Democratic}) + 0.288 (\text{Training})$. The findings reveal that the coaches predominantly use a reward and a praise style, a significant positive correlation exists between the coaching style and the player performance. Specifically, democratic behavior shows the strongest correlation with high athletic performance ($r = 0.407$, $P < 0.01$). A subsequent regression analysis confirms this and demonstrates that democratic coaching has the most significant predictive effect on performance ($\beta = 0.363$, $P < 0.05$), with the five coaching dimensions collectively explaining 25.9% of the variance. In addition, the study concludes that a democratic coaching style is the most influential in enhancing athletic performance, providing a clear recommendation for coaches to adopt an athlete-centered approach in training and further development.

Keyword: Coaching style, Democratic behavior, Sports Leadership Scale (LSS), Sports Performance Perception Scale, Athlete-centered approach

Introduction

The rapid development of basketball program in China, fueled by national strategies and the professionalization of leagues, necessitates a deeper understanding of the factors that influence athletic performance. The coach's role in this process is critical and complex, encompassing not only the implementation of scientific training programs but also the management and psychological development of elite athletes (Trninić et al., 2009). The coach's style is widely recognized as a key determinant of an athlete's psychological state, technical execution, and team cohesion (Lin, 2022). Furthermore, a coach's competence is directly linked to an athlete's perceived progress in their sport (Moen & Federici, 2013). This relationship is not one-sided; athlete-related factors such as age and gender can influence a coach's behavior (Bebetsos et al., 2017; Partington et al., 2014). For coaches to be effective, they must also manage their own professional lives, including their social networks and support systems (Norris et al., 2020), which in turn impacts their ability to maintain a positive and productive environment. While previous research has primarily focused on classifying coaching styles (Lei, 2017), this study seeks to establish a clear, data-driven link between these styles and actual athletic performance.

This study is particularly relevant to Hunan Province, a region with a strong basketball community but a history of inconsistent performance at national level. By examining the relationship between coaching styles and athletic performance among high-level university basketball players in this region, this research provides empirical evidence to help coaches optimize their training methodologies. This will not only improve individual and team performance but also enhance communication and trust between coaches and athletes, which is essential for a harmonious and effective team dynamic (Shi, 2021). The core research questions guiding this investigation: Is there a significant correlation between coaching style and athletic performance? And which specific coaching styles have the most and least significant impact on player performance?

Coaching is a complex, multifaceted art that has been studied from various perspectives. Early research on coaching and leadership styles, particularly in the 1970s, focused on personality traits and situational theories (Feng-Yan H, 2009). The development of tools such as the Coaches' Behavior Assessment System (CBAS) by Smith and his colleagues marked a significant advancement, allowing for the systematic observation and analysis of coach behavior and its impact on athletes (Lei, 2017). This led to the classification of coaching styles into categories such as commanding, compliant, or cooperative (Wang, 2012).

In the context of basketball, coaching ability and style have been shown to be crucial. An excellent coach must not only possess a deep understanding of basketball theory and sports physiology but also be adept at motivating and managing athletes (Du, 2006). Research has demonstrated that a coach's leadership style significantly influences an athlete's on-site psychological state, which in turn

affects game outcomes (Wei Jianhui, 2011). Furthermore, studies have noted that frequent changes in coaching staff can be detrimental to team development, highlighting the importance of a stable coaching environment for gradual performance improvement (Liu, 2008).

The athletic performance of basketball players is influenced by a range of factors, including physical fitness, technical proficiency, and psychological resilience (Koester, 2022). Previous research has shown a correlation between technical indicators, such as shooting percentage and rebounds, and team rankings (Jun Z, 2019). This study expands upon these findings by adopting a more holistic approach, considering not only the technical and physical aspects but also the psychological and strategic dimensions of performance. The research hypotheses for this study, as follows:

Hypothesis H1: There is a significant correlation between a coach's style and the performance of basketball players.

Hypothesis H2: Different coaching styles have different effects on the athletic performance of basketball players.

By examining these various dimensions, this research aims to provide a more comprehensive understanding of the relationship between a coach's style and an athlete's overall effectiveness.

Methodology

This study adopted a cross-sectional research design, utilizing both qualitative and quantitative methods. A total of 246 high-level basketball players and 83 coaches from 15 universities in Hunan Province were recruited. The sample was selected using a non-probability convenience sampling method. All participants were informed of the study's purpose and provided consent prior to their participation.

Research Instruments

1. Coaching Style Scale: This scale was adapted from the multi-dimensional leadership model framework proposed by Chelladurai (1984) and the Leadership Scale for Sports (LSS) developed by Chelladurai and Saleh (1980). It consists of 35 items distributed across five dimensions as training and teaching behavior; democratic behavior; authoritative behavior; social support behavior; and reward and appreciation behavior. The scale uses a 4-point Likert response format (1 = strongly disagree to 4 = strongly agree). Reliability analysis demonstrated high internal consistency, with the overall Cronbach's alpha coefficient being 0.84. The Cronbach's alpha for individual dimensions ranged from 0.75 to 0.89. The KMO value was 0.83, and Bartlett's test of sphericity was significant ($p < 0.01$), confirming the data's suitability for factor analysis and the scale's construct validity.

2. Sports Performance Perception Scale: This scale was designed to measure athletes' self-perceived athletic performance. It includes 32 items divided into five dimensions as athlete development; proficiency and development; preparation and strategy; recovery and injury prevention; and psychological skills. The scale utilizes a 7-point Likert response format (1 = almost never to 7 = almost always). The overall reliability was exceptionally high, with a Cronbach's alpha coefficient of 0.96. All corrected item-total correlations were greater than 0.4, indicating strong internal consistency. The KMO value of 0.91 and a significant Bartlett's test of sphericity ($p < 0.01$) further confirmed the scale's high validity and suitability for the intended analysis.

Data Collection and Analysis

Data were collected through an online survey by Wenjuanxing platform, ensuring anonymity and confidentiality. The data were subjected to a series of statistical analyses using appropriate software. Normality tests (P-P plots) were conducted to confirm the suitability of the data for parametric analysis. The Harman single-factor test was used to assess common method bias, with the variance explained by the first factor for both scales falling below the 40% threshold (18.00% for coaching style; 14.53% for athletic performance), confirming the absence of significant bias. Descriptive statistics were used to analyze the current state of athletic performance and coaching styles. Independent samples *t*-tests and one-way ANOVA were conducted to explore differences based on demographic variables (gender, grade, title, etc.). Pearson correlation analysis was employed to examine the relationship between the variables, and a linear regression model was constructed to determine the predictive effect of coaching styles on athletic performance.

Results

Athletic Performance of Players

The overall athletic performance of high-level basketball players in Hunan Province was found to be good (mean score of 5.03 on a 7-point scale), with psychological skills (mean score of 5.19) and proficiency/development (mean 5.05) being the strongest dimensions. While no significant gender difference was found, a significant difference was observed across grade levels ($P < 0.05$). Post-hoc analysis showed that freshmen and juniors scored significantly higher on overall performance than sophomores.

Coaching Styles of Coaches

Coaches predominantly employed a reward and praise style (mean 3.31), followed by social support (mean 3.08) and democratic behavior (mean 3.02). The authoritative style had the lowest mean score (3.02). Statistical analysis revealed no significant differences in coaching style based on the coach's gender, educational level, or sports level ($P > 0.05$). However, a significant difference was found in the

use of reward and praise behavior among coaches with different professional titles ($P < 0.01$).

Table 1: Descriptive Summary of Player Performance and Coaching Styles

Category	Dimension	Mean Score	Notable Findings
Player Performance	Overall	5.03	Generally good performance.
	Psychological skills	5.19	Strongest performance dimension.
	Proficiency/development	5.05	Second strongest performance dimension.
	Demographics		Significant difference in performance across grade levels ($P < 0.05$), with freshmen and juniors outperforming sophomores. No significant gender differences.
Coaching Styles	Reward and praise	3.31	Highest mean and most predominantly used coaching style.
	Social support	3.07	Second most used style.
	Democratic behavior	3.02	Third most used style.
	Authoritative behavior	3.02	Lowest mean and Least used style.
	Demographics		A significant difference in the use of reward and praise behavior was found among coaches with different professional titles ($P < 0.01$). No significant differences were found based on gender, education, or sports level.

From table 1, descriptive summary of player performance and coaching styles shows the player performance get high-level basketball players in Hunan Province are performing well, with an average score of 5.03 out of a possible 7. Their strongest areas are psychological skills and proficiency/development. Interestingly, a player's performance seems to be related to their year in school, with freshmen and juniors performing better than sophomores. Gender, however, does not appear to be a significant factor. Moreover, coaching styles was coaches in the study use a variety of styles, but they most frequently employ reward and praise behaviors. This is a contrast to the least used style, which is authoritative behavior. Similar to the players, demographic factors like gender, education level, and sports

level don't significantly affect a coach's style, with the exception of professional title, which does show a significant difference in the use of reward and praise.

Correlation and Regression Analysis

A Pearson correlation analysis confirmed Hypothesis H1, demonstrating a significant positive correlation between overall athletic performance and coaching style ($r = 0.50$, $P < 0.01$). Further analysis showed that athletic performance was positively correlated with all five dimensions of coaching style. The strongest correlation was observed between athletic performance and democratic behavior ($r = 0.41$, $P < 0.01$).

Table 2: Correlation and Regression Analysis Summary

Relationship	Correlation Coefficient (r)	Regression Coefficient (β)	Statistical Significance
Overall Performance & Coaching Style	0.50	N/A	Strong positive correlation ($P < 0.01$).
Democratic Behavior & Performance	0.41	0.36	Significant positive relationship ($P < 0.01$ correlation, $P < 0.05$ regression).
Social Support & Performance	0.39	0.33	Significant positive relationship ($P < 0.01$ correlation).
Training/Teaching & Performance	0.35	0.29	Significant positive relationship ($P < 0.01$ correlation).
Reward/Praise & Performance	0.33	0.16	Significant positive relationship ($P < 0.01$ correlation).
Authoritative Behavior & Performance	0.293	0.10	Significant positive relationship ($P < 0.01$ correlation), but with the lowest predictive power.
Model Summary	N/A	N/A	The five coaching styles collectively explain 25.9% of the variance in athletic performance ($F=5.374$, $p=0.000$).

From table 2, "The Correlation and Regression Analysis Summary," goes deeper into the relationship between coaching style and player performance. It confirms the study's main hypotheses. Overall Relationship: There is a strong

positive correlation between a coach's overall style and a player's overall performance ($r = 0.50$), meaning as coaching style scores increase, so do player performance scores. Specific Styles: The most important finding is that democratic behavior has the strongest link to high performance. The correlation coefficient ($r = 0.41$) and the regression coefficient ($\beta = 0.36$) both show that this style of coaching has the most significant influence. This suggests that when coaches involve players in decision-making, it has the biggest impact on their performance. Other coaching styles like social support, training/teaching, and reward/praise also have a positive relationship with performance, but their influence is not as strong as democratic behavior. The authoritative behavior has the weakest positive correlation and predictive power, indicating it is the least effective style for improving performance.

To test Hypothesis H2, a multiple linear regression analysis was performed. The model was significant ($F = 5.37$, $p = 0.00$). The regression coefficients showed that democratic behavior had the most significant predictive effect ($\beta = 0.36$, $P < 0.05$), followed by social support and training/teaching behaviors. The resulting regression equation is:

$$\text{AthleticPerformance} = 1.500 + 0.156(\text{Rewards}) + 0.326(\text{SocialSupport}) + 0.105(\text{Authoritative}) + 0.363(\text{Democratic}) + 0.288(\text{Training}).$$

Model Summary: The collective impact of all five coaching styles is significant, as they can explain 25.9% of the variation in a player's athletic performance. This confirms that a coach's style is a crucial factor, but it's not the only thing that affects how well a player does.

Discussion and Conclusion

The regression equation derived from this study is:

$$\text{AthleticPerformance} = 1.500 + 0.156(\text{Rewards}) + 0.326(\text{SocialSupport}) + 0.105(\text{Authoritative}) + 0.363(\text{Democratic}) + 0.288(\text{Training}).$$

This equation provides a quantitative model for the relationship between a coach's style and a player's athletic performance. The coefficients for each coaching style, known as beta values (β), indicate the expected change in athletic performance for every one-unit increase in that particular style, holding all other factors constant. The results of this model strongly align with existing research on coaching and performance.

The finding that democratic behavior has the most significant predictive power ($\beta = 0.36$) is well-supported. Studies have shown that when coaches involve athletes in decision-making and training goals, it enhances their motivation and performance (Mertens et al., 2018; Marcone, n.d.). This collaborative approach

fosters a sense of ownership and competence in the athletes, which directly contributes to better outcomes.

Similarly, social support ($\beta = 0.33$) emerged as a powerful predictor, reinforcing the idea that a coach's emotional and practical support is crucial. Research indicates that a coach's ability to care for and encourage players can significantly impact their focus and psychological readiness (Northcentral University, 2018). This support helps to build trust and a strong coach-athlete relationship, which is a foundational element of effective coaching (Jones, n.d.).

In contrast, authoritative behavior has the smallest coefficient ($\beta = 0.11$), suggesting it has the least impact on performance, despite being a positive factor in the model. This finding resonates with the idea that while an authoritative style—one that provides clear structure and discipline—can be beneficial for youth development (Brinton et al., 2017), it may be less effective for high-level athletes who are expected to demonstrate greater autonomy and internal motivation. The regression equation confirms that a collaborative and supportive approach yields more substantial performance gains at this elite level.

The overall model explains 25.9% of the variance in athletic performance, which is a meaningful contribution. This highlights that while coaching style is a critical factor, other variables not included in this model, such as individual talent, physical conditioning, and team cohesion, also play a significant role. The equation, therefore, offers a clear and actionable guide for coaches to optimize their approach to training and competition by prioritizing democratic and supportive behaviors.

The findings of this study confirm that coaching style plays a significant role in the athletic performance of high-level basketball players. Hypothesis H2, showing that different coaching styles have different effects on athletic performance. It provides a tangible way to see the impact of each style. The results suggest that coaches who want to improve their players' performance should focus on being more democratic, followed by providing social support, and then training and teaching. Authoritative behavior, while a part of the model, is the least important factor. This gives coaches a clear, data-driven roadmap for optimizing their coaching methods. The results align with previous research indicating that a coach's style influences a team's psychological environment and performance (Lei Yuanjie, 2017). This study, however, provides a more comprehensive, multi-dimensional analysis, addressing a gap identified in existing literature (Smith et al., 2020; Jones, 2021). The key takeaway is that a democratic coaching style—one that encourages athlete participation in decision-making—is the most influential factor in predicting superior athletic performance. This is followed by social support and training-oriented behaviors. The authoritative coaching style was found to have the weakest positive correlation, suggesting that a top-down, command-and-control approach may not be optimal for modern high-level athletes. The present study's finding that democratic and socially supportive coaching styles are the most

significant predictors of athletic performance is strongly supported by related research in sports psychology. While our research focused on performance outcomes, other studies have established a crucial link between these coaching behaviors and an athlete's psychological state. For example, Micua et al. (2024) found a direct relationship between supportive coaching styles and increased athlete satisfaction among collegiate athletes in Manila. This suggests that the positive impact on performance observed in our study is likely mediated by psychological factors. When coaches are democratic and supportive, athletes feel more valued and empowered, leading to higher levels of satisfaction. This heightened satisfaction can, in turn, foster greater motivation, commitment, and focus, ultimately translating into superior athletic performance on the court (Mertens et al., 2018; Marcone, n.d.). By connecting our performance-based findings with this psychological research, we can conclude that the most effective coaching styles not only improve skills but also cultivate a positive mental environment essential for success in high-level competition.

Limitations and Recommendations

This study has some limitations. The sample, while useful, is geographically limited to Hunan Province, which may affect the generalizability of the findings. The reliance on self-report scales for performance perception could introduce subjective bias. Future research should consider expanding the sample size and geographical scope, and integrating objective performance data from games and practices. Additionally, longitudinal studies could be conducted to track how coaching styles and performance evolve over an athlete's career, providing a more dynamic understanding of their relationship. Investigating the mediating effects of variables such as team cohesion and athlete motivation would also be a valuable next step.

In conclusion, this study provides strong empirical evidence for the importance of a democratic coaching style in enhancing the performance of high-level basketball players. It is recommended that training programs for basketball coaches be reformed to emphasize democratic, athlete-centered approaches.

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