



ISSN Print: 2664-7559
ISSN Online: 2664-7567
IJSHPE 2024; 6(1): 01-10
www.physicaleducationjournal.in
Received: 02-11-2023
Accepted: 07-12-2023

Qingqing Dong
Ph.D., Department of
Educational Management,
Major P.E., Graduate School,
Emilio Aguinaldo College,
Manila, 1007 Metro Manila,
Philippines

The effect of authentic leadership on team effectiveness: The case of Chinese Women's Soccer League B teams

Qingqing Dong

DOI: <https://doi.org/10.33545/26647559.2024.v6.i1a.92>

Abstract

This study aims to delve into the relationship between athletes' perception of coach's authentic leadership and team efficacy in Chinese Women's Football League (WFL) Division Two teams, and to analyze the potential mediating factors. Employing a quantitative research approach, the study sampled 223 athletes from 28 participating teams in the 2023 National Women's Football League Division Two, systematically collecting data through standardized questionnaire surveys. The findings are as follows:

1. Currently, the overall perception of team authentic leadership and team efficacy among athletes in Chinese Women's Football League Division Two teams is at a moderately high level.
2. Correlation analysis indicates a significant positive correlation between team authentic leadership and various factors of team efficacy.
3. Regression analysis reveals that authentic leadership significantly and positively influences team efficacy, teammate relationships, coach identification, self-efficacy, and team performance.
4. Further mediation analysis unveils that teammate relationships and coach identification play significant parallel and serial mediating roles in the impact of authentic leadership on self-efficacy and team performance.

In this process, the mediating effect of coach identification is found to be significantly stronger than that of teammate relationships, and both the mediating effects of coach identification and teammate relationships are significantly stronger than the serial mediation effect.

Keywords: Authentic leadership, team efficacy, high-level soccer, female soccer players, mediation effect

Introduction

Football, as a globally acclaimed sport, has become a dynamic stage where talent, strategy, and leadership intertwine. The teams participating in the Chinese Women's Football League Division Two comprise both social club women's football teams and university student women's football teams. Therefore, the inclusion of university football teams in this competition signifies that they are among the highest-level teams in local universities. When the team efficacy of football players improves, the overall capability and performance of the team are elevated, thereby influencing the team's competitive results on the field^[1]. Therefore, enhancing the team efficacy of these high-level players from clubs and universities can contribute to improving football competition results, laying a solid foundation for nurturing more professional players.

In the field of sports, Dou Haibo^[2] emphasizes that team efficacy in team ball sports projects is a comprehensive and bidirectional outcome reflecting the team's ultimate performance and output. It mirrors the overall capability and status of the team, showcasing a team's ability to maintain and progress. Lin Zhaoyan^[1] further defines team efficacy as the evaluation given by team athletes regarding the comprehensive performance of the team. It represents the overall performance of a team and serves as a crucial indicator for predicting a team's competitive ability and sustained development. Team efficacy is comprised of four factors: coach identification, teammate relationships, self-efficacy, and team performance. In organizational studies, team efficacy refers to team members' perception of their ability to accomplish tasks. The higher the perceived team efficacy, the more confident the team is in completing tasks^[3]. This can encourage team members to set more challenging goals, face difficulties bravely, and

Corresponding Author:
Qingqing Dong
Ph.D., Department of
Educational Management,
Major P.E., Graduate School,
Emilio Aguinaldo College,
Manila, 1007 Metro Manila,
Philippines

achieve tasks with high quality [4]. Hence, clarifying the manifestation of team efficacy is crucial for sports teams. However, current research has forward some suggestions: shown a lack of comprehensive studies on the performance of team efficacy in high-level football teams, and there is also a dearth of in-depth exploration of team efficacy from the perspective of interpersonal relationships. Therefore, building on previous research, this study employs the Team Efficacy Scale [1] to conduct a survey on team efficacy among athletes in the 2023 Chinese Women's Football League Division Two teams.

Team efficacy is influenced by many factors, with leadership considered a crucial factor affecting team efficacy [5]. Leadership is also seen as a key element in facilitating team communication and achieving performance improvement [6]. However, in sports teams, coaches play the role of leaders within the team. They are not only responsible for teaching players technical skills but also serve as team managers, psychological counselors for players, and even role models. This illustrates that coaches are not just the technical and tactical guides of the team but also the core of team cohesion. Their leadership style and behavior directly impact the team's performance and efficacy. Understanding how team coaches contribute to improving team efficacy is crucial in identifying the factors that compose it [7]. In sports research, studies on the impact of team efficacy can generally be categorized into two main axes: the direct influence of the coach's leadership style on team efficacy and the influence of team interpersonal relationships on team efficacy. Both axes highlight that the most critical factors influencing team efficacy in the sports domain are interpersonal relationships within the team (between coach and teammates). Therefore, how coaches adopt the right leadership style to enhance players' self-efficacy, foster friendly relationships among team members, strengthen players' identification with the team, and increase satisfaction with the training process, thus enhancing team efficacy, has become a significant challenge for football coaches.

With the ongoing trend of interdisciplinary development in the field of sports science research, this study seeks to improve leadership styles and meet the demand for the diverse development of athletes. It attempts to move away from the vertical leadership model that emphasizes authority and commands, introducing the horizontal leadership style - authentic leadership - which emphasizes equal interaction, transparent communication, and relationship building with team members into sports teams for investigation. In recent years, authentic leadership has been extensively studied in the field of management. Authentic leadership emphasizes the authenticity, transparency, and morality of leaders, promoting the positive growth of team members [8]. Research shows that authentic leadership has a significant impact on team task performance [9]. It can enhance athletes' social identification with the team and the leader, making athletes feel they are part of the same team [10]. What's worth mentioning is that when coaches exhibit authentic leadership in a sports context, it can predict crucial positive athlete outcomes while controlling the influence of transformational leadership [11]. Therefore, authentic leadership can not only enhance team performance but also improve team efficacy, effectively raising the overall competitive level of the team. Scholars in various fields extensively study the influencing factors of team efficacy [12, 13] as well as the impact of leadership behaviors on team efficacy [14, 15]. However, in the

field of football, there is relatively little theoretical and empirical research on the relationship between authentic leadership and team efficacy. This study aims to introduce the authentic leadership model into football teams and conduct an in-depth exploration of team efficacy from the perspective of interpersonal relationships. What is the current level of authentic leadership and team efficacy in the Chinese Women's Football League teams? How does authentic leadership influence team efficacy, and what are the specific pathways of its impact? Through this study, we aim to provide theoretical guidance and practical references for football coaches in clubs or universities, helping football teams enhance their overall competitiveness. To achieve this, this study proposes the following hypotheses: |

Hypothesis 1: Authentic leadership positively influences team efficacy among Chinese Women's Football League players.

Hypothesis 2: Authentic leadership positively influences teammate relationships among Chinese Women's Football League players.

Hypothesis 3: Authentic leadership positively influences coach identification among Chinese Women's Football League players.

Hypothesis 4: Authentic leadership positively influences self-efficacy among Chinese Women's Football League players.

Hypothesis 5: Authentic leadership positively influences team performance among Chinese Women's Football League players.

Hypothesis 6: Teammate relationships and coach identification play a multiple mediating role between authentic leadership and self-efficacy.

Hypothesis 7: Teammate relationships and coach identification play a multiple mediating role between authentic leadership and team performance.

Materials and Methods

Design Type: This study will employ a quantitative research method. Its purpose is to comprehensively understand the impact of authentic leadership on the efficacy of women's football teams and the mediating effects involved.

Survey

We will use standardized questionnaires distributed through online platforms to collect data from approximately 200-300 athletes participating in the 2023 National Women's Football Second Division League, representing 28 teams. The questionnaire includes quantitative measurements of authentic leadership and team efficacy.

Survey Participants

Athletes from 13 randomly selected teams out of the 28 were included in the study, comprising a total of 223 high-level female football players. This includes 6 national elite athletes, 148 national level-one athletes, 61 national level-two athletes, and 8 participants with unspecified levels.

Before commencing the study, we obtained informed consent from the athletes through communication with coaches, facilitated by the organizers of the Chinese Women's Football Second Division League via WeChat or phone. After determining the dates and times for data collection, we distributed the questionnaires to the athletes either before or after their matches, at the same venue as their regular competitions. Data collection occurred during the pre and post-qualification stages of the National Women's Football Second Division League, spanning a total of three months (July to October). To avoid sequence effects, we balanced the measurement order in the questionnaire. The time required for questionnaire completion was estimated at 8-15 minutes. Researchers were available online throughout the data collection process to address any questions.

Research Instrument

1. Authentic Leadership Scale

This study employed the Authentic Leadership Questionnaire (ALQ) based on the work of Walumbwa *et al.* (2008), with modifications to assess athletes' perceptions of coach authentic leadership. The scale comprises four dimensions: self-awareness, relational transparency, balanced processing, and internalized moral perspective, totaling 16 items. A Likert five-point scoring method was used, with 1 indicating "strongly disagree" and 5 indicating "strongly agree," with scores ranging from 1 to 5. For instance, items include "My coach accurately understands and evaluates our views on his/her capabilities" and "My coach regularly seeks our feedback to improve communication and relationships with team members." Each athlete's total score reflects the perceived level of authentic leadership from the coach, with higher scores indicating more pronounced authentic leadership. In this study, the Cronbach's α coefficient for this scale was 0.968.

2. Team Effectiveness Scale

This study utilized the Team Effectiveness Scale developed by Lin Zhaoyan ^[1], with modifications. The scale comprises four dimensions: coach acknowledgment, teammate relationships, self-efficacy, and team performance, totaling 19 items. A Likert five-point scoring method was employed, where 1 indicates "strongly disagree," and 5 indicates "strongly agree," with agreement levels incrementing from 1 to 5. Example items include "During matches, I do not get overly nervous about making mistakes; I have enough confidence to face the game" and "During matches, our team members encourage and motivate each other to boost team morale and spirit." The total score of these 19 items is considered an indicator of each athlete's perception of team effectiveness, with higher scores reflecting stronger team effectiveness. In this study, the Cronbach's α coefficient for this scale was 0.961.

Statistical Analysis

The data were entered and processed using SPSS 27.0. Descriptive, correlational, and regression analyses were conducted. Additionally, the Process 4.2 plugin was employed for testing the mediating effects. The analysis utilized the bias-corrected percentile Bootstrap method ^[16]. This involved drawing 5000 Bootstrap samples to estimate a 95% confidence interval for the mediating effects. The significance of the mediating effects was determined by assessing whether the confidence interval included zero.

Results

1. Overview of Female Soccer Players

This study surveyed a total of 223 female soccer players participating in the 2023 Chinese Women's Football Second Division League. The statistical analysis focused on the players' levels, duration since joining the team, and playing positions.

As shown in Table 1, female soccer players without a designated level accounted for 3.59% of the total, those at the national second-level comprised 27.35%, national first-level players constituted 66.37%, and national elite players represented 2.69%. The distribution of player levels indicates that the majority have achieved at least a national first-level standard, highlighting their high football proficiency. Regarding the duration since joining the team, players with less than 6 months of experience constituted 13.45%, those with 6 months to 2 years accounted for 28.25%, players with 2 to 5 years of experience made up 26.01%, and those with over 5 years of experience comprised 32.29%. The distribution of joining duration reflects a relatively even spread, showcasing variations in players' experience within the team. Concerning playing positions, defenders represented 30.04%, midfielders 27.35%, forwards 31.39%, and goalkeepers 11.21%. The distribution of players across positions was relatively balanced.

2. Analysis of the Current Situation of Interviewed Female Soccer Players

2.1 Analysis of Authentic Leadership Status

Table 2 presents the average scores, standard deviations, and rankings from highest to lowest for each dimension of authentic leadership perceived by the coaches in the Chinese Women's Football Second Division League teams. Overall, the athletes perceived their coaches' authentic leadership to be outstanding. In terms of rankings, the highest average score was observed in the Internalized Ethics dimension (4.1166), followed by Balanced Processing (4.107), ranking second. The Relationship Transparency dimension received an average score of 4.0807, ranking third. Although the Self-Awareness dimension had a high average score (4.0011), it ranked fourth.

2.2 Analysis of Team Effectiveness Status

Table 3 displays the average scores, standard deviations, and rankings from highest to lowest for each dimension of team effectiveness in the Chinese Women's Football Second Division League teams. Athletes gave the highest average score to the Teammate Relationship factor (4.3430), ranking first. Regarding Team Performance factors, the average score was 4.0980, ranking second. The Coach Recognition dimension received an average score of 4.0549, ranking third. In terms of Self-Efficacy dimension, the average score was 3.8711, ranking fourth.

3. Correlation between Authentic Leadership and Team Effectiveness

As shown in Table 4, the correlation coefficients (γ) between authentic leadership and various factors of team effectiveness in the Chinese Women's Football Second Division League teams range from 0.536 ($p < 0.01$) to 0.841 ($p < 0.01$), all reaching a significant level, indicating a significant correlation among these factors. In terms of authentic leadership and the factors of team effectiveness, the order of correlation coefficients from high to low is Coach

Identification ($\gamma = 0.841, p < 0.01$), Team Performance ($\gamma = 0.731, p < 0.01$), Self-Efficacy ($\gamma = 0.675, p < 0.01$), and Teammate Relationship ($\gamma = 0.614, p < 0.01$), all reaching a significant level, demonstrating a moderate to high positive correlation. The correlation coefficient between authentic leadership and Team Effectiveness is ($\gamma = 0.815, p < 0.01$), indicating a highly positive correlation between the two.

4. Regression Analysis of Authentic Leadership on Team Effectiveness and Its Dimensions

As shown in Table 5, with an adjusted R^2 of 0.662, it indicates that authentic leadership explains 66.2% of the variance in team effectiveness, and the relationship is significant ($B = 0.776, p < 0.001$). This suggests that authentic leadership in Chinese Women's Football Second Division League teams has a significant positive impact on team effectiveness, supporting Hypothesis 1.

As indicated in Table 6, with an adjusted R^2 of 0.375, authentic leadership explains 37.5% of the variance in teammate relationships, and the relationship is significant ($B = 0.544, p < 0.001$). This implies that authentic leadership in Chinese Women's Football Second Division League teams has a significant positive impact on teammate relationships, supporting Hypothesis 2.

As presented in Table 7, with an adjusted R^2 of 0.707, authentic leadership explains 70.7% of the variance in coach identification, and the relationship is significant ($B = 0.999, p < 0.001$). This indicates that authentic leadership in Chinese Women's Football Second Division League teams has a significant positive impact on coach identification, supporting Hypothesis 3.

Table 8 illustrates that with an adjusted R^2 of 0.454, authentic leadership explains 45.4% of the variance in self-efficacy, and the relationship is significant ($B = 0.757, p < 0.001$). This suggests that authentic leadership in Chinese Women's Football Second Division League teams has a significant positive impact on self-efficacy, supporting Hypothesis 4.

Moreover, as shown in Table 9, with an adjusted R^2 of 0.532, authentic leadership explains 53.2% of the variance in team performance, and the relationship is significant ($B = 0.793, p < 0.001$). This indicates that authentic leadership in Chinese Women's Football Second Division League teams has a significant positive impact on team performance, supporting Hypothesis 5.

5. Multiple Mediation Effects Testing

5.1 Parallel Mediation Effects of Authentic Leadership on Self-Efficacy

The results of the parallel mediation effects of teammate relationships and coach identification on the impact of authentic leadership on self-efficacy are presented in Table 10. The total indirect effects produced by teammate relationships and coach identification have a Bootstrap 95% confidence interval [0.372, 0.721], and since this interval does not include 0, it indicates a significant parallel mediation effect. The overall mediation effect accounts for 76.98% of the total effect. For teammate relationships, the Bootstrap 95% confidence interval is [0.078, 0.235], and as this interval does not include 0, the effect ratio is 20.12%. Regarding coach identification, the Bootstrap 95% confidence interval is [0.224, 0.573], with an effect ratio of 56.86%. The results indicate that both the mediation effects of teammate relationships and coach identification are significant. The relationship between teammate relationships and coach

identification, as indicated by the Bootstrap 95% confidence interval [-0.462, -0.040], is significant, suggesting that the mediating effect of coach identification is significantly stronger than that of teammate relationships.

5.2 Parallel Mediation Effects of Authentic Leadership on Team Performance

The results of the parallel mediation effects of teammate relationships and coach identification on the impact of authentic leadership on team performance are presented in Table 11. The total indirect effects produced by teammate relationships and coach identification have a Bootstrap 95% confidence interval [0.458, 0.736], and since this interval does not include 0, it indicates a significant parallel mediation effect. The overall mediation effect accounts for 76.81% of the total effect. For teammate relationships, the Bootstrap 95% confidence interval is [0.149, 0.336], and as this interval does not include 0, the effect ratio is 30.50%. Regarding coach identification, the Bootstrap 95% confidence interval is [0.205, 0.496], with an effect ratio of 46.31%. The results indicate that both the mediation effects of teammate relationships and coach identification are significant. However, the relationship between teammate relationships and coach identification, as indicated by the Bootstrap 95% confidence interval [-0.311, 0.094], includes 0, suggesting that there is no significant difference.

5.3 Chain Mediation Effects of Authentic Leadership on Self-Efficacy

The results of the chain mediation effects of teammate relationships and coach identification on the impact of authentic leadership on self-efficacy are presented in Table 12. The total indirect effects produced by teammate relationships and coach identification have a Bootstrap 95% confidence interval [0.374, 0.723], and since this interval does not include 0, it indicates a significant chain mediation effect. The overall mediation effect accounts for 76.98% of the total effect. For teammate relationships, the Bootstrap 95% confidence interval is [0.078, 0.233], and as this interval does not include 0, the effect ratio is 20.12%. Regarding coach identification, the Bootstrap 95% confidence interval is [0.196, 0.501], with an effect ratio of 48.59%. The Bootstrap 95% confidence interval for Ind3 is [0.014, 0.123], and since this interval does not include 0, the effect ratio is 8.27%. The results indicate that both the mediation effects of teammate relationships, coach identification, and the combined chain mediation effect are significant. However, the relationship between teammate relationships and coach identification, as indicated by the Bootstrap 95% confidence interval [-0.384, -0.010], does not include 0, showing a significant difference. The Bootstrap 95% confidence interval for Ind1-Ind3 is [-0.014, 0.188], including 0, which is not significant. The Bootstrap 95% confidence interval for Ind2-Ind3 is [0.156, 0.444], not including 0, indicating a significant difference, suggesting that the mediation effect of coach identification is significantly stronger than the chain mediation effect.

5.4 Chain Mediation Effects of Authentic Leadership on Team Performance

The results of the chain mediation effects of teammate relationships and coach identification on the impact of authentic leadership on team performance are presented in Table 13. The total indirect effects produced by teammate

relationships and coach identification have a Bootstrap 95% confidence interval [0.455, 0.734], and since this interval does not include 0, it indicates a significant chain mediation effect. The overall mediation effect accounts for 76.81% of the total effect. For teammate relationships, the Bootstrap 95% confidence interval is [0.151, 0.338], and as this interval does not include 0, the effect ratio is 30.50%. Regarding coach identification, the Bootstrap 95% confidence interval is [0.176, 0.435], with an effect ratio of 39.58%. The Bootstrap 95% confidence interval for Ind3 is [0.012, 0.104], and since this interval does not include 0, the effect ratio is 6.73%. The results indicate that both the mediation effects of teammate relationships, coach identification, and the combined chain mediation effect are significant. However, the relationship between teammate relationships and coach identification, as indicated by the Bootstrap 95% confidence interval [-0.240, 0.123], includes 0, showing no significant difference. The Bootstrap 95% confidence interval for Ind1-Ind3 is [0.073, 0.302], not including 0, indicating a significant difference and suggesting that the mediation effect of teammate relationships is significantly stronger than the chain mediation effect. The Bootstrap 95% confidence interval for Ind2-Ind3 is [0.136, 0.392], not including 0, indicating a significant difference and suggesting that the mediation effect of coach identification is significantly stronger than the chain mediation effect.

In summary, the multiple mediation pathway diagram is presented as illustrated in Figure 1.

Discussion

The Relationship between Authentic Leadership and Team Effectiveness

(1) Authentic leadership has a significantly positive impact on team effectiveness

Leadership factors, with coaching as a core element, influence the team effectiveness of high-level collective sports teams in universities. Coaches should enhance their own qualities, establish authority, and set diverse work goals to improve team effectiveness^[17]. Democratic and supportive coaching behaviors directly impact team effectiveness^[18]. Coaches, through the method of collaborative learning, effectively enhance the generation of team shared leadership behaviors and the perception of team effectiveness^[1]. This study found that authentic leadership in Chinese Women's Football League (Division II) teams has a significantly positive impact on team effectiveness. This result is consistent with previous research findings. In the context of Chinese Women's Football League (Division II) teams, coaches' authentic leadership has been proven to be a crucial factor in shaping a positive team atmosphere and organizational culture. By demonstrating internalized ethics and balanced information processing, coaches convey positive values, thereby enhancing athletes' positive perceptions of the overall team performance. Coaches should focus on improving the ability of internalized ethics and information processing to promote transparent relationships, further strengthen team cohesion and trust, and ultimately enhance overall team effectiveness.

(2) Authentic leadership has a significantly positive impact on teammate relationship factors

Yang Wanling^[19] pointed out that in sports teams, coaches should choose appropriate leadership behaviors to guide athletes and emphasize promoting relationships among team

members, with team goals at the core, thereby enhancing overall team cohesion. This study found that authentic leadership in Chinese Women's Football League (Division II) teams has a significantly positive impact on teammate relationships within the team. This result aligns with previous research findings. Peer relationships play a crucial role in team collaboration and cohesion, making a positive contribution to the team's success. By jointly facing challenges, setting clear team goals, and establishing a common team culture, leaders can cultivate healthy peer relationships. This emphasizes the positive role of authentic leadership in shaping healthy peer relationships, and for football teams, establishing positive, open, and trusting peer relationships is crucial for improving overall team performance.

(3) Authentic leadership has a significantly positive impact on coach identification factors

Modern coaches tend to be more democratic and cooperative, emphasizing giving athletes more care during non-training times and providing opportunities to express opinions, without compromising the rigor of training^[20]. Zhan Yazhu^[21] pointed out the predictive role of coaching styles, especially democratic leadership styles, in athletes' satisfaction with coaches. This study found that authentic leadership in Chinese Women's Football League (Division II) teams significantly positively influences coach identification. This result is consistent with findings from previous research. Team members' high identification with the coach may inspire them to participate more actively in training and competitions, positively impacting players' self-efficacy and overall performance. Therefore, implementing authentic leadership in the coaching model not only empowers athletes with decision-making abilities but also enhances their identification with the coach, promoting collaborative teamwork and overall effectiveness in the team.

(4) Authentic leadership has a significantly positive impact on self-efficacy factors

This study found that authentic leadership in the Chinese Women's Football League (Division II) teams significantly positively influences self-efficacy. This aligns with the results of Lin Zhaoyan's research, indicating that in an environment influenced by leadership behavior, team members have more freedom of will, and with the support of the environment and teammates, their self-efficacy is enhanced. The confidence level of team members is influenced by the coach's leadership style and team culture. Therefore, practicing authentic leadership, where coaches pay attention to and listen to athletes' thoughts, helps boost athletes' confidence levels, thereby positively impacting the overall team effectiveness.

(5) Authentic leadership has a significantly positive impact on team performance factors

Chen Weicheng *et al.*^[22] pointed out that athletes' high perception of coaching leadership is correlated with higher satisfaction and team cohesion. This study found that authentic leadership in Chinese Women's Football League (Division II) teams significantly positively influences team performance. This result is consistent with previous research findings. The coaching style has a significant impact on team cohesion, player loyalty, and satisfaction. Nurturing an authentic leadership model contributes to enhancing team

members' commitment, loyalty, and has positive effects on overall performance, cohesion, and future development. This aligns with existing research, emphasizing the positive impact of authentic leadership on team performance.

Exploration of Multiple Mediation Effects

(1) Discussion on Parallel Mediation Effects

Based on the results in Section 5.1, it is evident that the parallel mediation effects of teammate relationships and coach identification in the impact of authentic leadership on self-efficacy are significant. Moreover, the mediating effect of coach identification is significantly stronger than that of teammate relationships. Specifically, this implies that athletes' perception of authentic leadership significantly influences their self-efficacy through the dual mediation of teammate relationships and coach identification. Teammate relationships and coach identification, as two crucial mediating variables, jointly explain the mechanism through which authentic leadership affects self-efficacy. This finding further emphasizes the critical role of coaches in shaping sports teams, particularly in establishing athletes' identification with their coaches. Fostering positive coach identification may be more effective than emphasizing teammate relationships in enhancing athletes' self-efficacy, thereby positively impacting overall team performance. Coaches should focus on building strong personal relationships, enhancing athletes' identification with them through effective communication and leadership styles, thereby enhancing athletes' self-efficacy.

Based on the results in Section 5.2, it is evident that in the impact of authentic leadership on team performance, teammate relationships and coach identification play a parallel mediating role. Although both teammate relationships and coach identification play significant mediating roles in the impact of authentic leadership on team performance, there is no clear advantage or disadvantage in their respective mediation effect ratios. Therefore, in the process of improving team performance, coaches need to focus on cultivating good personal relationships and strengthening athletes' identification with the coach to comprehensively drive the overall improvement of team performance.

(2) Discussion on Chain Mediation Effects

According to the results in Section 5.3, in the impact of authentic leadership on self-efficacy, teammate relationships

and coach identification play a chain mediating role. However, by comparing the proportions of different mediation effects, the results indicate that the mediating effect of coach identification is significantly stronger than that of teammate relationships. This suggests that in the impact of authentic leadership on self-efficacy, athletes' identification with the coach is more crucial, and the mediating effect of coach identification is significantly stronger than the chain mediation effect. In the process of enhancing athletes' self-efficacy, the coach's leadership style and the relationship with athletes play a vital role. Therefore, coaches should focus on building positive relationships with athletes to maximize the stimulation of athletes' self-efficacy. According to the results in Table 5.4, in the impact of authentic leadership on team performance, it is found that teammate relationships and coach identification play a chain mediating role. However, in the comparison of different mediation effect ratios, the results show that the mediating effect of teammate relationships is significantly stronger than the chain mediation effect, while the mediating effect of coach identification is significantly stronger than that of teammate relationships. This indicates that in the impact of authentic leadership on team performance, athletes' identification with the coach is more critical. Therefore, to improve team performance, coaches should focus on fostering positive relationships with athletes, stimulating team cohesion, and performance.

In summary, this study conducted a thorough analysis of the impact mechanism of authentic leadership on Chinese Women's Football League (CWFL) teams, with a particular emphasis on the crucial roles of coach identification and teammate relationships in this process. For university coaches, leading a team requires not only focusing on the individual development of athletes but also paying attention to positive interpersonal interactions among team members. The study found that when athletes experience more self-esteem, support, emotional support, and mutual assistance within peer relationships, they exhibit positive emotional responses, thereby enhancing their self-efficacy and satisfaction with the team^[23]. Therefore, university coaches can foster a sense of cooperation and learning by creating more collaborative opportunities, promoting positive interactions among athletes, and ultimately enhancing overall team cohesion. Such practices are expected to contribute to the improvement of team efficacy, laying a solid foundation for the team's long-term success and development^[24].

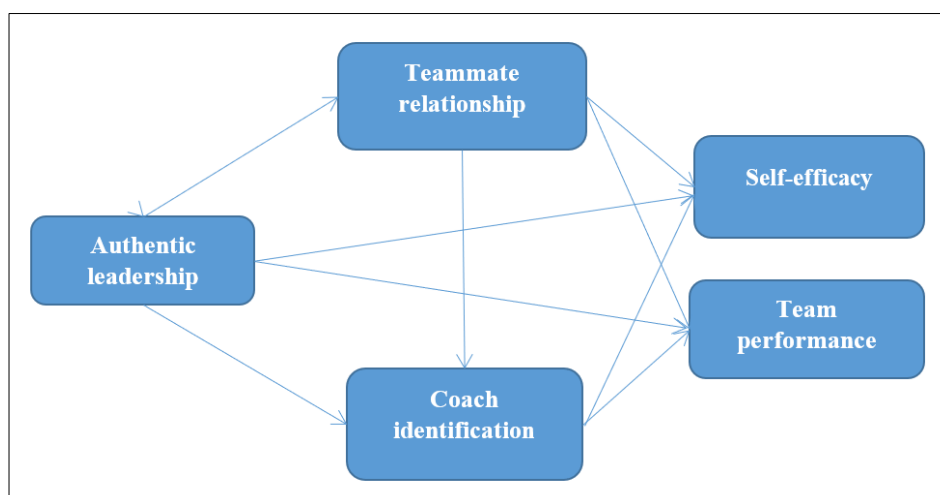


Fig 1: Multiple mediator path diagram

Table 1: Summary of data analysis of the sample of Chinese women's soccer League B players

		Frequency	Percent
Athletic rating	No grade ye	8	3.59%
	National Grade 2	61	27.35%
	National Grade 1	148	66.37%
	National Elite Level	6	2.69%
Duration of joining the team	Less than 6 months	30	13.45%
	6 months - 2 years	63	28.25%
	2 years - 5 years	58	26.01%
	More than 5 years	72	32.29%
Position	Defender	67	30.04%
	Midfielder	61	27.35%
	Forward	70	31.39%
	Goalkeeper	25	11.21%
Total		223	100.00%

Table 2: Statistics of scores for each dimension of authentic leadership

	M	SD	Arrange in order
Self-Awareness	4.0011	0.7890	4
Balanced Processing	4.1076	0.7148	2
Relationship Transparency	4.0807	0.6980	3
Internalized Ethics	4.1166	0.7351	1

Table 3: Statistics of scores for each dimension of team effectiveness

	M	SD	Arrange in order
Coach identification	4.0549	0.8117	3
Self-Efficacy	3.8711	0.7663	4
Teammate Relationship	4.3430	0.6055	1
Team Performance	4.0980	0.7416	2

Table 4: Correlation analysis table between authentic leadership and team effectiveness

Factor Name	Authentic Leadership	Self-Awareness	Balanced Processing	Relationship Transparency	Internalized Ethics
Team Effectiveness	.815**	.759**	.733**	.762**	.778**
Coach identification	.841**	.796**	.752**	.772**	.811**
Self-Efficacy	.675**	.631**	.631**	.625**	.634**
Teammate Relationship	.614**	.543**	.536**	.588**	.614**
Team Performance	.731**	.686**	.655**	.691**	.686**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Results of regression analysis of authentic leadership on team effectiveness

Model	Unstandardized coefficient		Standardized coefficient	t	p	Covariance statistics	
	B	Standardized error	Beta			Tolerance	VIF
(Constant)	0.93	0.154		6.055	0.000		
Authentic Leadership	0.776	0.037	0.815	20.892	0.000	1.000	1.000
$R^2=0.664$, Adjusted $R^2=0.662$, $F=436.491$							

Table 6: Results of regression analysis of authentic leadership on teammate relationship

Model	Unstandardized coefficient		Standardized coefficient	t	p	Covariance statistics	
	B	Standardized error	Beta			Tolerance	VIF
(Constant)	2.126	0.194		10.949	0.000		
Authentic Leadership	0.544	0.047	0.614	11.576	0.000	1.000	1.000
$R^2=0.377$, Adjusted $R^2=0.375$, $F=134.007$							

Table 7: Results of regression analysis of authentic leadership on Coach Identification

Model	Unstandardized coefficient		Standardized coefficient	t	p	Covariance statistics	
	B	Standardized error	Beta			Tolerance	VIF
(Constant)	-0.015	0.178		-0.086	0.932		
Authentic Leadership	0.999	0.043	0.841	23.144	0.000	1.000	1.000
$R^2=0.708$, Adjusted $R^2=0.707$, $F=535.656$							

Table 8: Results of regression analysis of authentic leadership on Self-Efficacy

Model	Unstandardized coefficient		Standardized coefficient	t	p	Covariance statistics	
	B	Standardized error	Beta			Tolerance	VIF
(Constant)	0.787	0.230		3.426	0.001		
Authentic Leadership	0.757	0.056	0.675	13.611	0.000	1.000	1.000
R ² =0.456, Adjusted R ² =0.454, F=185.251							

Table 9: Results of regression analysis of authentic leadership on Team Performance

Model	Unstandardized coefficient		Standardized coefficient	t	p	Covariance statistics	
	B	Standardized error	Beta			Tolerance	VIF
(Constant)	0.867	0.206		4.216	0.000		
Authentic Leadership	0.793	0.050	0.731	15.927	0.000	1.000	1.000
R ² =0.534, Adjusted R ² =0.532, F=253.662							

Table 10: Results of Bootstrap Test for Parallel Mediated Effects (Y=Self-Efficacy)

	Effect	LLCI	ULCI	Effect ratio
Total	0.757	0.647	0.866	100%
Indirect effect (Total)	0.583	0.372	0.721	76.98%
ALQ→TR→SE	0.152	0.078	0.235	20.12%
ALQ→CI→SE	0.430	0.224	0.573	56.86%
TR—CI	-0.278	-0.462	-0.040	/

Authentic leadership (ALQ); Teammate relationships (TR); Coach Identification (CI), Self-efficacy (SE).

Table 11: Results of Bootstrap Test for Parallel Mediated Effects (Y=Team Performance)

	Effect	LLCI	ULCI	Effect ratio
Total	0.793	0.695	0.891	100%
Indirect effect (Total)	0.609	0.458	0.736	76.81%
ALQ→TR→TP	0.242	0.149	0.336	30.50%
ALQ→CI→TP	0.367	0.205	0.496	46.31%
TR—CI	-0.126	-0.311	0.094	/

Authentic leadership (ALQ); Teammate relationships (TR); Self-efficacy (SE); Team performance (TP).

Table 12: Results of Bootstrap Test for Chained Mediation Effect (Y=Self-Efficacy)

	Effect	LLCI	ULCI	Effect ratio
Total	0.757	0.647	0.866	100%
Indirect effect (Total)	0.583	0.374	0.723	76.98%
Ind1: ALQ→TR→SE	0.152	0.078	0.233	20.12%
Ind2: ALQ→CI→SE	0.368	0.196	0.501	48.59%
Ind3: ALQ→TR→CI→SE	0.063	0.014	0.123	8.27%
Ind1—Ind2	-0.216	-0.384	-0.010	/
Ind1—Ind3	0.090	-0.014	0.188	/
Ind2—Ind3	0.305	0.156	0.444	/

Authentic leadership (ALQ); Teammate relationships (TR); Coach Identification (CI), Self-efficacy (SE).

Table 13: Results of Bootstrap Test for Chained Mediation Effect (Y=Team Performance)

	Effect	LLCI	ULCI	Effect ratio
Total	0.793	0.695	0.891	100%
Indirect effect (Total)	0.609	0.455	0.734	76.81%
Ind1: ALQ→TR→TP	0.242	0.151	0.338	30.50%
Ind2: ALQ→CI→TP	0.314	0.176	0.435	39.58%
Ind3: ALQ→TR→CI→TP	0.053	0.012	0.104	6.73%
Ind1—Ind2	-0.072	-0.240	0.123	/
Ind1—Ind3	0.188	0.073	0.302	/
Ind2—Ind3	0.260	0.136	0.392	/

Authentic leadership (ALQ); Teammate relationships (TR); Self-efficacy (SE); Team performance (TP).

Conclusion

In conclusion, this study delved into the intricate dynamics of authentic leadership within the context of the Chinese Women's Football League (CWFL) teams, highlighting the pivotal roles played by coach identification and teammate relationships. The findings underscored the significant positive impact of authentic leadership on various

dimensions, shedding light on its influence on team efficacy, teammate relationships, coach identification, self-efficacy, and overall team performance.

The results affirmed that a coach's authentic leadership style contributes significantly to the team's effectiveness. By embodying internalized ethics, balanced processing, and transparent relationships, coaches foster a positive team

atmosphere and organizational culture. The demonstrated influence on team members' perceptions positively shapes their attitudes toward the team as a whole.

Moreover, the study emphasized the multifaceted nature of authentic leadership by elucidating its positive impact on specific team-related factors. Coach identification, teammate relationships, and self-efficacy were identified as crucial intermediary elements through which authentic leadership influences team members. These factors collectively contribute to enhancing the athletes' confidence, satisfaction, and overall team cohesion.

Furthermore, the exploration of parallel and chained mediation effects provided nuanced insights into the underlying mechanisms. Coach identification emerged as a more potent mediator compared to teammate relationships, indicating the paramount importance of athletes' recognition and connection with their coach. This insight directs attention to the coach's pivotal role in shaping athletes' perceptions, fostering a sense of belonging, and ultimately influencing their self-efficacy and team performance.

Practical implications for university coaches were discussed, emphasizing the need to go beyond individual athlete development and focus on fostering positive interpersonal interactions within the team. Strategies to enhance collaboration, learning environments, and peer relationships were proposed to elevate overall team cohesion and efficacy. In essence, this study contributes to the growing body of literature on authentic leadership in sports contexts, providing valuable insights for coaches, administrators, and researchers alike. The intricate interplay between authentic leadership and various team dynamics highlighted in this research serves as a foundation for future studies and practical interventions aimed at optimizing team performance and athlete satisfaction in women's football.

Acknowledgments

I would like to express my sincere gratitude to Professor ERNELL B. GUTIERREZ, my doctoral supervisor, and Professor Huang Wenbin from Hunan Normal University for their encouragement and meticulous guidance throughout the entire research period. Their professional insights had a positive impact on the design and execution of the study, providing valuable academic support.

Special thanks to Coach Zhou Ying for her dedicated work during the on-site investigation, collecting valuable data that played a crucial role in supporting the research. Her collaborative spirit and expertise greatly enhanced the entire research project.

In the declaration, I solemnly declare that there are no circumstances in this research work that could lead to any conflicts of interest. Upholding the principles of scientific research and a commitment to honesty and integrity, we are dedicated to advancing developments in the relevant field.

References

1. Lin Zhaoyan. A study on the effects of shared leadership behaviors on team effectiveness [dissertation]. Shanghai Institute of Physical Education; c2022.
2. Dou HB, Ding ZF, Liu CH. A study on the relationship between team cohesion and team efficacy in high-level collective ball sports in colleges and universities. *J Beijing Sport Univ.* 2015;03:132-138. DOI:10.19582/j.cnki.11-3785/g8.2015.03.023.
3. Lee Changyu, Wong Chi Sum. The effect of team emotional intelligence on team process and effectiveness. *J Manag Organ*, 2019, 6. DOI:10.1017/jmo.2017.43.
4. Zhou X, Che Cheng SN, Zhu WJ, Cheng J, Jin YW, Pan JF. An empirical study of transformational leadership on team effectiveness building in public hospitals. *Mod Hosp.* 2022;02:257-258-262.
5. Wang L, Sun FF, Xing ZJ. The Effects of Leader-Member Exchange Relationship Differentiation on Individual and Team Effectiveness. *J Northeast Univ Finance Econ.* 2019;04:39-46. DOI:10.19653/j.cnki.dbcjdx.2019.04.005.
6. Yixiang Ji. Enhancing Coaching Leadership: A New Strategy for Upgrading Team Effectiveness. *Mod Commer Banking.* 2020;19:84-87.
7. Murphy C, Sayer M. Standing on the shoulders of the science of team effectiveness: Building rigour into your team coaching design. *The Practitioner's Handbook of Team Coaching.* Routledge; c2019. p. 75-88.
8. Avolio BJ, Gardner WL, Walumbwa FO, Luthans F. Unlocking the mask: A look at the process by which authentic leader's impact follower attitudes and behaviors. *Leadership Quarterly.* 2004;15(6):801-823.
9. Malik MF, Qurat ul Ain B, Khan MA. The role of HEXACO in the development of authentic leadership and its consequences on task performance. *Leadership Organ Dev J.* 2023, 1. DOI:10.1108/LODJ-08-2022-0356.
10. Fransen K, Haslam SA, Steffens NK, *et al.* Making 'us' better: High-quality athlete leadership relates to health and burnout in professional Australian football teams. *Eur J Sport Sci.*; c2019. DOI:10.1080/17461391.2019.1680736.
11. Malloy E, Kavussanu M. A comparison of authentic and transformational leadership in sport. *J Appl. Soc. Psychol.* 2021;7. DOI:10.1111/JASP.12769.
12. Li Y, Ma H. The effect of shared mental modeling on team efficacy in ice hockey players: the mediating role of team communication. In: *Abstracts of the 24th National Psychology Conference.* Shenyang Sports Institute; c2022. p. 2092-2093.
13. Liu XT. A study of the effects of team emotional intelligence on team efficacy in dragon boat sport. In: *Compendium of Abstracts of the Twelfth National Sport Psychology Conference.* Tianjin Sports Institute, 2023, 181.
14. Li YW, Ren ZZ. The effects of coaching leadership on team effectiveness: a cross-level mediation effects model. In: *Abstracts of the 23rd National Psychology Conference.* Renmin University of China, 2021, 587.
15. Li XY, Yang YG, Tan LL. College student leadership affects team effectiveness: the mediating effect of team climate. *J Guangdong Second Normal Coll.* 2023;04:100-112.
16. Fang J, Zhang MQ, Qiu H. Tests of mediation effects and effect size measures: A review and outlook. *Psychol Dev Educ.* 2012;28(1):105-111.
17. Dou HB. A study of team effectiveness in high-level collective ball sports in Chinese universities (Doctoral dissertation). Beijing Sport University; c2014.
18. Xie C. The relationship between soccer coaches' leadership behaviors and team effectiveness: The chain mediating role of team trust and organizational

- citizenship behaviors. *Chin Sports Coaches*. 2020;03:12-17. DOI:10.16784/j.cnki.csc.2020.03.003.
19. Yang W. The Relationship between Paternalistic Leadership and Team Cohesion of College and University Snooker Players with Peer Relationship as a Mediating Role [D]. Taipei: Taiwan Normal University; c2018.
 20. Lei CY. Study on the Leadership Style of Korean Archery Coach Gou Ziqing of Chinese Taipei Team. *Journal of Physical Education and Sports*, Pingtung University of Science and Technology. 2018;(9):17-29.
 21. Zhan Y. The Effect of Coach Training Style on Teacher-Student Interaction Teacher-Student Interactions. Mediated by Gratitude [D]. Tainan: Tainan University; c2020.
 22. Chen W, You Z. A Study of Perceived Coach Leadership Behavior, Team Cohesion and Satisfaction of College and University Open Division I Baseball Players. *Evergreen Journal of Sports and Leisure*. 2020;(14):45-57.
 23. Li W, Huang Q, Liu Z. Perceived Coach Training Behavior, Peer Relationships, and Coaching in College Athletic Players-coaching behaviors, peer relationships, and coach-player relationships. *Player Relationships*. *Journal of Physical Education and Sports*, National Taiwan University. 2018;(34):27-37.
 24. Tsai CL, Chen Z, Ju J. The Mediating Role of Pro-social and Antisocial Behaviors between Team Trust and Sport Commitment in College Basketball Players. *Eur J Sport Sci*. 2021;9:11-16.