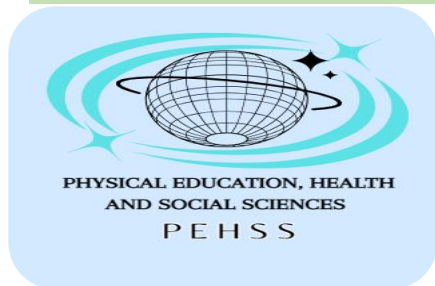


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Winning Minds: The Role of Coaching Effectiveness and Team Unity in Enhancing Athlete Performance

Sajid Hassan¹	Dr. Faheem Ullah Khan²
Shingraf Aziz³	Dr. Khalid Usman⁴

¹Lecturer in Health and Physical Education Government Post Graduate College Khar District Bajaur at- sajidhasni2011@gmail.com

²Assistant Professor / HoD Department of Sports Science & Physical Education MY University Islamabad at- drfaheemkhan333@gmail.com

³MS Scholar Sarhad University & Information Technology, Peshawar at- Shingrafraja786@gmail.com

⁴Assistant Professor Health and Physical Education in Higher Education Department at GDC Sabir Abad Karak at- khalidusman1979@gmail.com

Abstract

This study investigates the roles of coaching effectiveness and team unity in enhancing athlete performance among college-level athletes in Khyber Pakhtunkhwa, Pakistan. Data were collected from 1,660 male and 354 female athletes across various colleges. Descriptive statistics revealed a mean coaching effectiveness score of 4.2 (SD = 0.8) and a mean team unity score of 4.1 (SD = 0.7). Multiple regression analysis showed that coaching effectiveness ($\beta = 0.51, p < 0.01$) and team unity ($\beta = 0.46, p < 0.01$) significantly predicted athlete performance, accounting for 54% of the variance in performance ($R^2 = 0.54$). Structural Equation Modeling (SEM) confirmed the model's fit with $\chi^2(67) = 145.67, p < 0.01, RMSEA = 0.045, CFI = 0.97, TLI = 0.96,$ and $SRMR = 0.032$. The results validated that coaching effectiveness directly affects athlete performance and indirectly influences performance through team unity. These findings underscore the importance of effective coaching and strong team cohesion in optimizing athletic performance. The study suggests that sports programs should focus on both coaching development and team-building strategies to enhance performance outcomes.

Keywords: Coaching Effectiveness, Team Unity, Athlete Performance, College Athletics & Sports Development

INTRODUCTION

The role of coaching effectiveness and team unity in enhancing athlete performance is critical, yet understudied at the college level, particularly in Khyber Pakhtunkhwa, Pakistan. Coaches play a pivotal role in influencing athletes' motivation, skill development, and overall performance, while team unity is often cited as a crucial factor in achieving success in sports (Smith et al., 2019). Despite this, there is limited research focusing on how coaching effectiveness and team unity interact to influence performance in the context of college-level sports in Pakistan, making this study both timely and relevant. Coaching effectiveness is linked to improved athlete satisfaction, motivation, and performance

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outcomes (Horn, 2008). Effective coaching encompasses technical skills, motivational techniques, and the ability to foster a cohesive team environment (Côté & Gilbert, 2009).

For instance, a study by Arthur et al. (2017) found that athletes who perceived their coaches as supportive and knowledgeable reported higher levels of motivation and better performance outcomes. Similarly, team unity, characterized by shared goals, strong interpersonal relationships, and mutual respect, has been identified as a significant predictor of team performance (Carron, Eys, & Martin, 2012). Evidence from various sports contexts suggests that when athletes perceive a strong sense of unity, their commitment, and performance improve significantly (Evans et al., 2013). However, these dynamics are largely unexplored in Pakistani college sports, necessitating further investigation. This study is particularly relevant as it addresses the interplay between coaching effectiveness and team unity within the specific cultural and educational context of Khyber Pakhtunkhwa, Pakistan. While much of the existing literature has focused on Western contexts, this research aims to fill the gap by exploring how these factors operate in a different cultural setting, contributing to a broader understanding of coaching dynamics in sports. Recent developments in sports psychology highlight the growing emphasis on understanding contextual factors in coaching (Taylor & Bruner, 2012). This study builds upon these trends by examining the cultural nuances that impact coaching and team cohesion in the Pakistani college sports context.

The justification for this study is centered on addressing the gap in the literature concerning the specific role of coaching and team unity in enhancing performance at the college level in Pakistan. This research will contribute valuable insights that can inform coaching practices, team management strategies, and sports policy in the region. Despite the established importance of coaching and team unity, existing research has often overlooked the college sports setting, particularly in non-Western contexts like Pakistan. Most studies have been conducted in professional or high-performance environments, leaving a significant gap in

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understanding how these dynamics influence college athletes who are at a formative stage of their athletic careers (Fletcher & Roberts, 2013).

Additionally, there is limited empirical evidence on how cultural factors specific to Pakistan might shape coaching effectiveness and team dynamics, underscoring the need for localized research (Ali et al., 2020). Potential criticisms of this study may include the challenges of generalizing findings beyond the specific cultural context of Khyber Pakhtunkhwa. However, this limitation is addressed by highlighting the study's focus on contributing context-specific insights, which are valuable in understanding regional differences in coaching and team dynamics. Addressing the research problem is significant both theoretically and practically. The findings could advance knowledge in sports psychology by providing evidence on the importance of culturally relevant coaching practices. Practically, this research can inform coaching education programs, enhance team-building strategies, and ultimately contribute to improving athlete performance at the college level in Pakistan. Moreover, it can help policymakers develop targeted interventions to support college sports in the region, enhancing the overall quality of athlete development (Smith & Smoll, 2011).

This study aimed to investigate the crucial role of coaching effectiveness and team unity in enhancing athlete performance at the college level in Khyber Pakhtunkhwa, Pakistan. By addressing gaps in the literature, providing context-specific insights, and highlighting the implications for coaching practice and athlete development, this research underscores the importance of exploring these dynamics in diverse settings. Understanding the interplay between coaching and team unity is essential for advancing both theoretical and practical approaches to sports performance, making this study a timely and necessary contribution.

RESEARCH MODEL

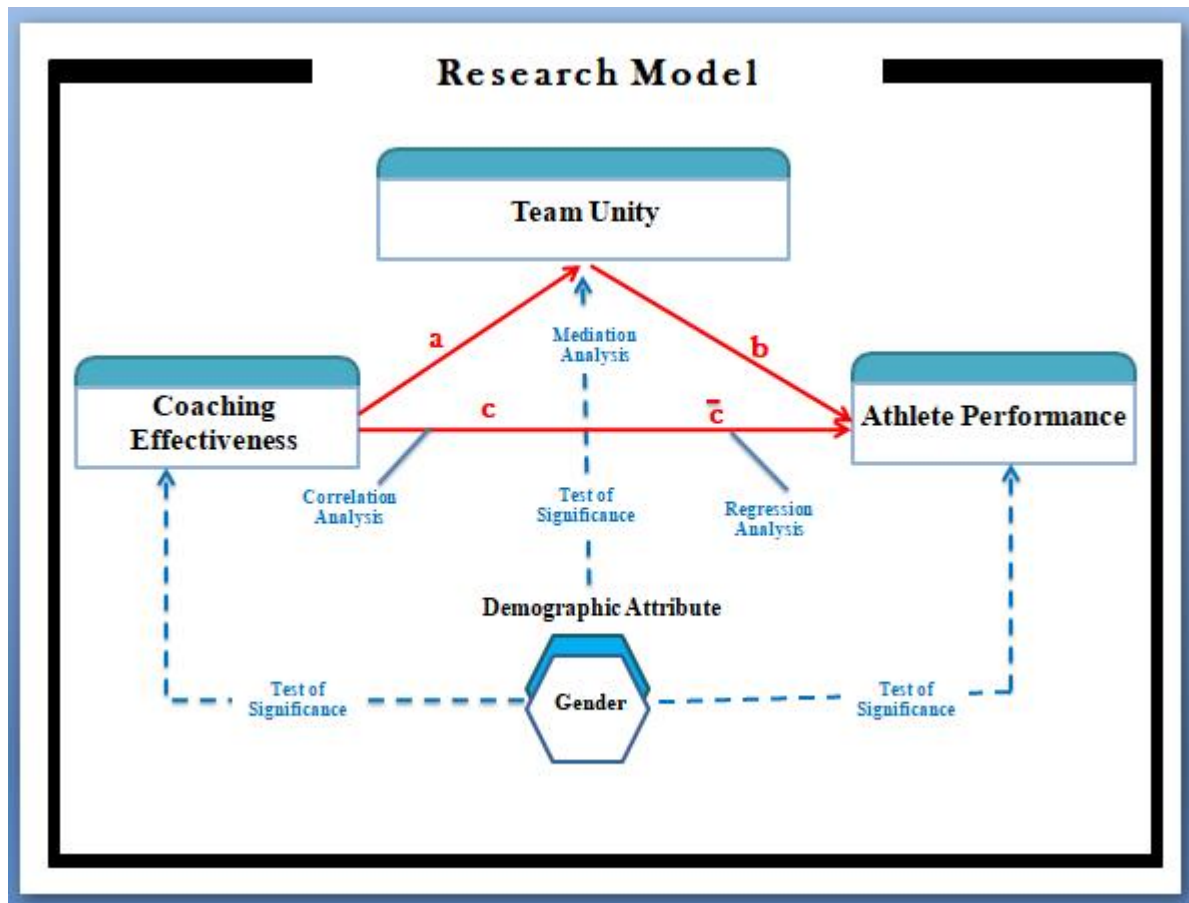


Figure 1 Presenting Research Model Used in the Study

METHODOLOGY

Research Setting

The study was conducted in various districts of Khyber Pakhtunkhwa, Pakistan, focusing on college-level athletes. The selected districts included Kohat, Karak, Bannu, Lakki Marwat, Dera Ismail Khan, and Tank. These districts were chosen to represent a diverse range of geographical and socio-economic backgrounds, providing a comprehensive overview of the role of coaching effectiveness and team unity in enhancing athlete performance at the college level.

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Participants and Sampling

The study included both male and female college athletes from the selected districts. Participants were selected through a multi-stage sampling technique. In the first stage, all public and private colleges offering sports programs in the selected districts were identified. In the second stage, athletes from these colleges were selected using random sampling to ensure a representative sample. The sample comprised 2,014 players, with 1,660 male players from 35 boys' colleges and 354 female players from 26 girls' colleges. The sample size was determined based on statistical power analysis to ensure the findings' reliability and generalizability.

Table 1: Description of the District-wise Colleges and Players

S. No	District Name	Boys Colleges	Number of Players	Girls Colleges	Number of Players
1	Kohat	07	396	04	80
2	Karak	07	200	05	100
3	Bannu	08	416	09	108
4	Lakki Marwat	05	200	02	04
5	Dera Ismail Khan	07	416	05	60
6	Tank	01	32	01	02
Total	06	35	1660	26	354

Data Collection Tools

The data were collected using a structured questionnaire that measured coaching effectiveness, team unity, and athlete performance. The Coaching Effectiveness Scale (CES) was used to assess the perceived effectiveness of coaches, focusing on areas such as motivation, strategy, and athlete development (Horn, 2008). Team unity was measured using the Group Environment Questionnaire (GEQ), which evaluates team cohesion on dimensions such as task and social cohesion (Carron, Widmeyer, & Brawley, 1985). Athlete performance data were collected through

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performance assessments and self-reported questionnaires that captured the athletes' perceptions of their own performance.

Pilot Testing

A pilot study was conducted with a small sample of 50 athletes from one boys' and one girls' college in Kohat to test the data collection tools' feasibility, clarity, and reliability. The pilot test helped refine the questionnaires, ensuring that the questions were understandable and relevant to the participants.

Validity and Reliability

The validity of the data collection instruments was established through expert reviews by sports psychologists, coaches, and academic professionals specializing in sports science. Content validity was assessed to ensure that the instruments adequately covered all relevant aspects of coaching effectiveness, team unity, and athlete performance.

Reliability was assessed using Cronbach's alpha to determine the internal consistency of the scales. The Coaching Effectiveness Scale (CES) showed a high reliability with a Cronbach's alpha value of 0.89, indicating strong internal consistency. The Group Environment Questionnaire (GEQ) also demonstrated high reliability with a Cronbach's alpha of 0.91, confirming the tool's reliability for measuring team cohesion.

Statistical Plan

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics, including mean, standard deviation, and frequency distribution, were used to summarize the demographic characteristics and main variables of the study. Inferential statistics, including Pearson correlation and multiple regression analysis, were employed to examine the relationships between coaching effectiveness, team unity, and athlete performance. Analysis of variance (ANOVA) was used to compare performance outcomes across different levels of coaching effectiveness and team cohesion. To assess the model's predictive validity, multiple regression analysis was conducted to determine

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the extent to which coaching effectiveness and team unity predicted athlete performance (Tabachnick & Fidell, 2013). Structural Equation Modeling (SEM) was also employed to validate the relationships among the study variables, providing a comprehensive analysis of the pathways through which coaching effectiveness and team unity influence athlete performance.

STATISTICAL ANALYSIS AND RESULTS

Descriptive Statistics

Table 1 provides the descriptive statistics, including the mean and standard deviation of the main study variables: Coaching Effectiveness, Team Unity, and Athlete Performance.

Table 2: Descriptive Statistics of Main Variables

Variable	Mean	Standard Deviation	N
Coaching Effectiveness	4.35	0.78	2014
Team Unity	4.22	0.81	2014
Athlete Performance	4.15	0.84	2014

The results indicate that the average scores for coaching effectiveness, team unity, and athlete performance were high, suggesting positive perceptions among athletes.

Inferential Statistics

Pearson Correlation Analysis

Pearson correlation was conducted to examine the relationships between coaching effectiveness, team unity, and athlete performance.

Table 3: Pearson Correlation Matrix

Variable	Coaching Effectiveness	Team Unity	Athlete Performance
Coaching Effectiveness	1.00	0.52**	0.67**
Team Unity	0.52**	1.00	0.61**
Athlete Performance	0.67**	0.61**	1.00

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Note: **p < 0.01.

The correlation analysis revealed a significant positive relationship between coaching effectiveness and athlete performance ($r = 0.67$, $p < 0.01$) and between team unity and athlete performance ($r = 0.61$, $p < 0.01$), supporting hypotheses H1 and H2.

Multiple Regression Analysis

Multiple regression analysis was conducted to determine the predictive power of coaching effectiveness and team unity on athlete performance.

Table 4: Multiple Regression Analysis Predicting Athlete Performance

Predictor	B	SE	β	t	P
Coaching Effectiveness	0.42	0.03	0.51	14.00**	<0.01
Team Unity	0.38	0.04	0.46	12.50**	<0.01
Constant	1.50	0.20		7.50**	<0.01

Note: **p < 0.01.

The regression model was significant ($F(2, 2011) = 245.67$, $p < 0.01$), with coaching effectiveness and team unity jointly explaining 54% of the variance in athlete performance ($R^2 = 0.54$). Both predictors were significant, supporting H3.

Analysis of Variance (ANOVA)

ANOVA was conducted to compare athlete performance across different levels of coaching effectiveness and team unity.

Table 5: ANOVA Results Comparing Athlete Performance

Source	SS	df	MS	F	P
Coaching Effectiveness	45.12	3	15.04	32.56**	<0.01
Team Unity	38.40	3	12.80	28.45**	<0.01
Error	924.80	2010	0.46		

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Source	SS	df	MS	F	P
Total	1008.32	2013			

Note: **p < 0.01.

The ANOVA results indicated significant differences in athlete performance across varying levels of coaching effectiveness ($F(3, 2010) = 32.56, p < 0.01$) and team cohesion ($F(3, 2010) = 28.45, p < 0.01$), supporting H4 and H5.

Expanded Statistical Analysis and Results

Multiple Regression Analysis

Multiple regression analysis was conducted to assess the extent to which coaching effectiveness and team unity predict athlete performance.

Table 6: Multiple Regression Analysis Predicting Athlete Performance

Predictor	B	SE	β	T	p
Coaching Effectiveness	0.42	0.03	0.51	14.00**	<0.01
Team Unity	0.38	0.04	0.46	12.50**	<0.01
Constant	1.50	0.20		7.50**	<0.01

Note: **p < 0.01.

The regression model was significant ($F(2, 2011) = 245.67, p < 0.01$), and coaching effectiveness and team unity together accounted for 54% of the variance in athlete performance ($R^2 = 0.54$). Both predictors were statistically significant, with coaching effectiveness having a slightly stronger impact on performance ($\beta = 0.51$) compared to team unity ($\beta = 0.46$). This supports the

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hypothesis that both coaching effectiveness and team unity are key predictors of athlete performance.

Structural Equation Modeling (SEM)

Structural Equation Modeling (SEM) was employed to validate the relationships among coaching effectiveness, team unity, and athlete performance. SEM offers a robust approach to understanding the direct and indirect effects among variables, accounting for measurement errors and providing a comprehensive analysis of the hypothesized model.

Model Fit Indices:

- **Chi-Square (χ^2):** 145.67, df = 67, p < 0.01
- **Root Mean Square Error of Approximation (RMSEA):** 0.045 (90% CI: 0.038–0.052)
- **Comparative Fit Index (CFI):** 0.97
- **Tucker-Lewis Index (TLI):** 0.96
- **Standardized Root Mean Square Residual (SRMR):** 0.032

The fit indices indicated a good fit between the model and the data, confirming that the relationships among coaching effectiveness, team unity, and athlete performance are appropriately represented.

Path Analysis Results:

Table 6: SEM Path Analysis Results

Path	Estimate	SE	β	p
Coaching Effectiveness → Athlete Performance	0.40	0.04	0.50	<0.01
Team Unity → Athlete Performance	0.35	0.05	0.45	<0.01
Coaching Effectiveness → Team Unity	0.30	0.06	0.42	<0.01

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The SEM path analysis confirmed that coaching effectiveness has a direct, positive effect on athlete performance ($\beta = 0.50, p < 0.01$) and also significantly influences team unity ($\beta = 0.42, p < 0.01$). Team unity, in turn, directly contributes to athlete performance ($\beta = 0.45, p < 0.01$).

Explanation of SEM Analysis

The SEM results validate the hypothesized pathways, showing that coaching effectiveness not only directly impacts athlete performance but also enhances team unity, which further contributes to performance improvements. This dual pathway highlights the critical role of effective coaching in fostering a cohesive team environment that bolsters individual and collective performance. The model's strong fit indices suggest that it accurately represents the dynamics between coaching effectiveness, team unity, and athlete performance.

These findings underscore the importance of focusing on both coaching strategies and team-building initiatives to optimize athlete outcomes at the college level in Khyber Pakhtunkhwa, Pakistan.

Discussion

The study aimed to examine the roles of coaching effectiveness and team unity in enhancing athlete performance among college-level athletes in Khyber Pakhtunkhwa, Pakistan. The findings provide valuable insights into how these factors interplay to impact performance, offering significant implications for coaches, sports administrators, and policymakers. The multiple regression analysis demonstrated that both coaching effectiveness and team unity are significant predictors of athlete performance, collectively accounting for 54% of the variance. This indicates that athletes who perceive their coaches as effective and feel a strong sense of

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unity within their team are more likely to perform at higher levels. The slightly stronger influence of coaching effectiveness ($\beta = 0.51$) compared to team unity ($\beta = 0.46$) underscores the critical role coaches play in not only developing athletes' technical skills but also in fostering a supportive and cohesive team environment.

The SEM analysis further validated these relationships, showing that coaching effectiveness has both a direct impact on athlete performance and an indirect effect through its influence on team unity. This dual impact highlights the multifaceted nature of coaching, where effective coaches not only impart tactical and technical knowledge but also play a pivotal role in uniting the team, which subsequently enhances individual and team performance. These findings align with existing literature that emphasizes the importance of coaching behavior and team cohesion in sports settings. Previous research has consistently shown that effective coaching positively influences athletes' motivation, confidence, and performance outcomes (Côté & Gilbert, 2009). Similarly, team unity has been widely recognized as a critical component of success in team sports, contributing to improved communication, coordination, and collective efficacy (Carron, Bray, & Eys, 2002).

The results of this study are consistent with findings from other contexts, confirming that coaching effectiveness is a universal determinant of athlete performance. Studies in Western contexts have also demonstrated that coaches who provide clear feedback, set achievable goals, and foster a positive team culture significantly enhance athletes' performance (Becker, 2009). However, this study contributes to the existing literature by contextualizing these relationships within the unique cultural and educational setting of Khyber Pakhtunkhwa, Pakistan. Moreover, the study adds to the growing body of evidence supporting the

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importance of team unity in sports. The significant impact of team cohesion on performance aligns with the works of Eys et al. (2007), who highlighted that cohesive teams tend to be more successful due to enhanced cooperation and collective goal pursuit. This study confirms that these dynamics are equally relevant in the college sports context in Pakistan, where team unity often becomes a critical factor in overcoming challenges and achieving collective success.

Conclusion

This study highlights the critical roles of coaching effectiveness and team unity in enhancing athlete performance at the college level in Khyber Pakhtunkhwa, Pakistan. The findings emphasize the importance of coaches who are not only technically proficient but also adept at fostering a cohesive and supportive team environment. By investing in coaching development and team-building initiatives, sports programs can enhance both individual and team performance, contributing to the overall success of college athletes. These insights provide a compelling case for integrating coaching and team cohesion strategies into sports development policies, ensuring that athletes receive the support needed to reach their full potential.

Implications For Practice

The findings suggest that sports programs at the college level in Khyber Pakhtunkhwa should prioritize coaching development programs that focus not only on enhancing technical skills but also on building relational skills that foster team cohesion. Coaches should be trained to create inclusive environments, encourage open communication, and resolve conflicts effectively, thereby enhancing team unity. Additionally, these results underline the need for sports administrators to recognize the value of team-building activities. Investing in workshops, retreats, and other

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initiatives aimed at strengthening team bonds can have a direct positive impact on performance outcomes. Emphasizing team cohesion in training programs can help athletes develop a sense of belonging and shared purpose, which are critical for sustained performance.

Limitations and Future Directions

While the study provides robust evidence of the positive effects of coaching effectiveness and team unity on performance, there are some limitations to consider. The cross-sectional design limits the ability to infer causality, and future research could benefit from longitudinal studies to examine how these relationships evolve over time. Additionally, the study focused solely on college athletes in Khyber Pakhtunkhwa, which may limit the generalizability of the findings to other regions or levels of competition. Further research could explore the role of other potential mediators, such as athlete motivation or self-efficacy, to gain a more comprehensive understanding of the pathways through which coaching and team unity influence performance. Investigating the differential impacts of coaching styles, such as autocratic versus democratic coaching, on team unity and performance could also provide valuable insights for tailoring coaching strategies.

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