

Breaking The Barriers: Understanding The Effects Of Practical Barriers In The Way Of Female Participation In Sports At University Level

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Abstract

This study explores the practical barriers impacting female sports participation at the university level in Khyber Pakhtunkhwa, Pakistan. Employing a cross-sectional survey research design, data were collected from 337 female athletes across 15 universities (2 private and 13 public) that participate in sports competitions. Key barriers examined include inadequate facilities, limited access to facilities, financial constraints, and time constraints. Normality tests, including Shapiro-Wilk ($W = 0.950$ for inadequate facilities, $p = 0.023$) and ¹Kolmogorov-Smirnov ($D = 0.126$, $p = 0.042$), indicated that while most variables were normally distributed, inadequate facilities did not meet normality assumptions. Consequently, non-parametric analyses were applied. The study found that inadequate facilities significantly reduce female participation in sports ($p < 0.05$), while financial constraints ($p = 0.034$) and time constraints ($p = 0.041$) also have a notable impact. Recommendations include enhancing sports facilities, providing financial assistance, and adjusting academic schedules to improve participation. The findings highlight the need for targeted interventions to support female athletes in higher education.

Keywords: Female sports participation, practical barriers, facilities, financial constraints, time constraints & university level.

INTRODUCTION

Female sports participation at the university level in Khyber Pakhtunkhwa, Pakistan, faces significant challenges due to various practical barriers, including inadequate facilities, limited access to those facilities, financial constraints, and time limitations. These barriers collectively impede the ability of female students to engage in sports and physical activities, which are crucial for their physical and mental well-being (Shah et al., 2021).

The lack of gender-sensitive sports facilities at universities significantly affects female participation in sports. Studies indicate that inadequate and unsafe facilities discourage female students from engaging in physical activities (Khan, 2020). Additionally, limited access to

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existing sports facilities due to cultural and social norms further restricts female participation, as many universities do not prioritize or adequately fund female sports programs (Ali & Hussain, 2022).

Financial barriers also play a critical role in limiting female sports participation. Many female students face difficulties in affording the costs associated with sports activities, such as purchasing equipment, paying for uniforms, or traveling to events (Rehman & Javed, 2023). In Khyber Pakhtunkhwa, these constraints are exacerbated by economic challenges, which reduce the overall investment in sports infrastructure and programs specifically designed for female athletes.

Time constraints, including academic pressures and household responsibilities, further inhibit female students' ability to participate in sports. Research indicates that female students often have less free time for extracurricular activities due to gendered expectations and responsibilities, which are more pronounced in conservative regions like Khyber Pakhtunkhwa (Yousafzai et al., 2023).

Female participation in sports at the university level is crucial for promoting physical health, mental well-being, and social development. However, in Khyber Pakhtunkhwa, Pakistan, female university students face significant barriers that hinder their engagement in sports activities. These barriers include inadequate and gender-insensitive sports facilities, limited access due to cultural norms, financial constraints that affect the affordability of sports participation, and time limitations stemming from academic pressures and domestic responsibilities. Despite the recognized benefits of sports participation, there is a lack of comprehensive understanding and empirical data on how these practical barriers impact female students' ability to engage in sports at the university level in this region.

The problem is that without addressing these barriers, female students in Khyber Pakhtunkhwa are likely to remain marginalized in sports participation, which could negatively affect their health, academic performance, and social inclusion. This study seeks to investigate the effects of facilities, access, financial constraints, and time limitations on female sports participation at the university level in Khyber Pakhtunkhwa, providing evidence-based insights to inform policy interventions and promote gender equity in sports. Addressing these barriers is crucial for promoting gender equity in sports and enhancing female students' overall health and well-being. The study aims to provide insights into the specific challenges faced by female students in Khyber Pakhtunkhwa, thereby contributing to the development of targeted interventions to overcome these barriers.

LITERATURE REVIEW

Research indicates that inadequate sports facilities, such as a lack of female-specific changing rooms, poorly maintained sports grounds, and insufficient safety measures, discourage female students from participating in sports (Khan, 2020). Without appropriate facilities, female students may feel unsafe, uncomfortable, or discouraged from engaging in physical activities, particularly in conservative regions like Khyber Pakhtunkhwa, where cultural norms already restrict their mobility (Ali & Hussain, 2022).

Cultural and social norms in Khyber Pakhtunkhwa often restrict female access to public spaces, including sports facilities, due to concerns over privacy, safety, and societal perceptions (Shah et al., 2021). Research shows that in regions with conservative social norms, women face greater challenges accessing sports facilities, which limits their opportunities to participate in physical activities (Rehman & Javed, 2023).

Financial limitations, such as the inability to afford sports equipment, uniforms, or travel expenses, are major barriers to female participation in sports (Yousafzai et al., 2023). In Khyber Pakhtunkhwa, where economic disparities are prevalent, these financial constraints are even more pronounced, disproportionately affecting female students from low-income families (Ali & Hussain, 2022).

Female university students in Khyber Pakhtunkhwa often face multiple time-related barriers, including balancing academic workloads and household duties, which limit their ability to participate in extracurricular activities such as sports (Yousafzai et al., 2023). Studies have shown that these time constraints, compounded by traditional gender roles, reduce opportunities for female students to engage in sports, particularly in regions with strong cultural norms regarding gender roles (Shah et al., 2021).

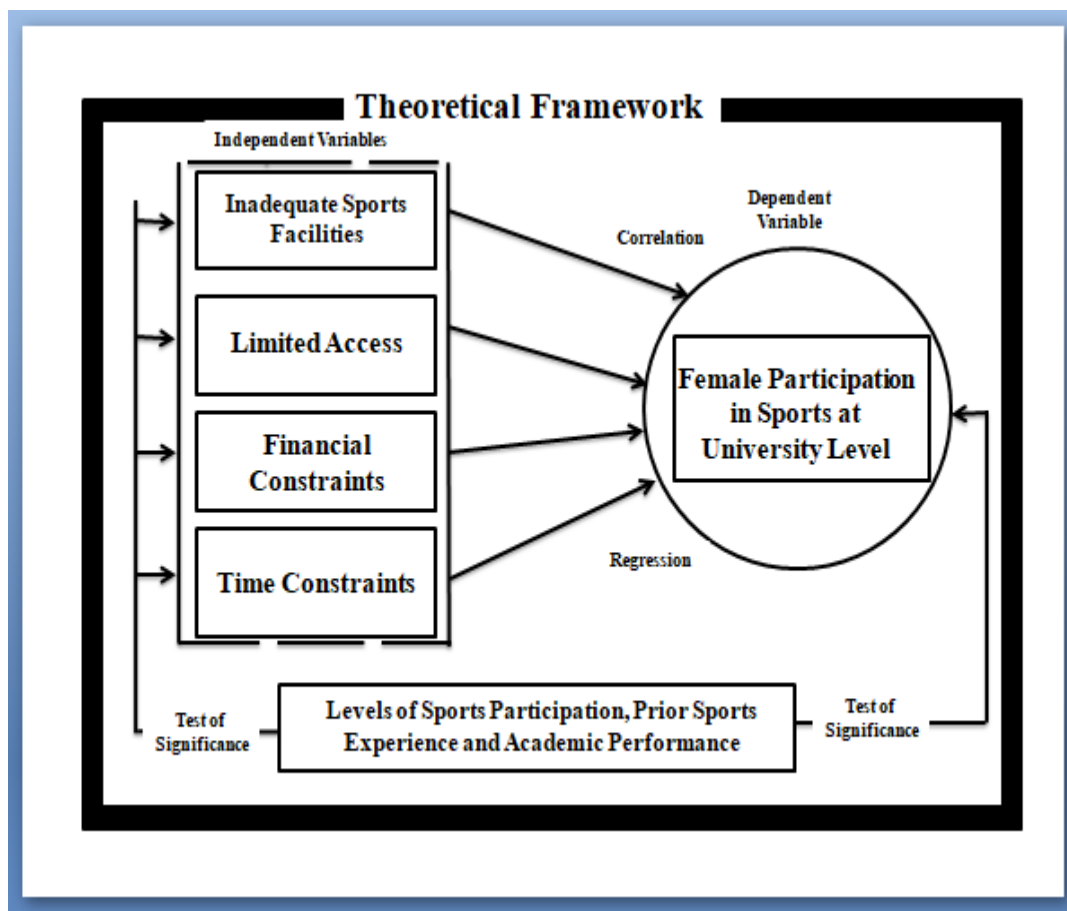
This hypothesis posits that the barriers to female sports participation—such as inadequate facilities, limited access, financial constraints, and time constraints—are associated with varying levels of participation across different types of sports events. Existing literature supports the notion that structural and socio-economic barriers significantly influence sports engagement (Eime et al., 2016; Sabo & Miller, 2003). For instance, research has shown that lack of adequate facilities can directly impact the frequency and level of sports participation (Gordon et al., 2012). Therefore, it is reasonable to hypothesize that these barriers will result in significant differences in participation levels across various sports events.

This hypothesis extends the previous one by including prior sports experience and academic performance as covariates. Controlling for these factors is crucial, as they can influence participation levels independently of the barriers being studied. Previous research indicates that prior sports experience often correlates with higher participation levels (Weiss & Ferrer-Caja, 2002), while academic performance can affect students' ability to engage in extracurricular activities (Eccles et al., 2003). By controlling for these variables, the study aims to isolate the effect of barriers on participation levels, thereby providing a clearer understanding of the relationship between barriers and sports participation.

This hypothesis proposes that barriers will have a significant impact on female sports participation across all three levels—Intercollegiate, Intervarsity, and All Pakistan Intervarsity—when considering the influence of prior sports experience and academic performance. This comprehensive approach allows for an assessment of the cumulative effect of barriers on various levels of participation, while accounting for individual differences in prior experience and academic performance (Weiss & Ferrer-Caja, 2002). Understanding this combined effect is crucial for designing effective interventions to increase participation.

This hypothesis focuses on the impact of barriers on the combined dependent variables, considering multiple covariates. By using Multivariate Analysis of Covariance (MANCOVA), this hypothesis examines whether barriers remain a significant predictor of sports participation when accounting for other influential factors (Field, 2018). MANCOVA allows for the simultaneous analysis of multiple dependent variables while controlling for covariates, providing a robust framework to assess the overall effect of barriers on different levels of sports participation (Tabachnick & Fidell, 2019).

THEORETICAL FRAMEWORK



DEVELOPMENT OF RESEARCH HYPOTHESES

H_A 1 Inadequate sports facilities, Limited access, financial constraints and Time constraints impact female students' ability to participate in sports at the university level.

H_A 1 All four barriers (Inadequate sports facilities, Limited access, financial constraints and Time constraints) are significantly negatively correlated with female sports participation

H_A 1 There are significant differences in the levels of female sports participation (Intercollegiate, Intervarsity, and All Pakistan Intervarsity) based on the levels of barriers.

H_A 1 There are significant differences in the levels of female sports participation (Intercollegiate, Intervarsity, and All Pakistan Intervarsity) based on the levels of barriers even after controlling for prior sports experience and academic performance.

H_A 1 (Intercollegiate, Intervarsity, and All Pakistan Intervarsity participation) even after controlling for prior sports experience and academic performance.

H_A 1 The levels of barriers significantly affect the combined dependent variables (Intercollegiate, Intervarsity, and All Pakistan Intervarsity participation) even after controlling for the covariates.

RESEARCH METHODOLOGY

Research Design

This study employed a cross-sectional survey research design to explore the practical barriers to female sports participation at the university level in Khyber Pakhtunkhwa, Pakistan. The cross-sectional design allows for the collection of data at a single point in time, providing a

snapshot of the existing challenges female athletes face in accessing sports facilities, managing financial constraints, and overcoming time limitations (Creswell & Creswell, 2018).

Study Participants

The study participants consisted of female university athletes from Khyber Pakhtunkhwa. A total of 30 universities in the region were considered, including 11 private and 19 public sector universities. However, only 15 universities (2 private and 13 public) actively participated in sports competitions. Based on this, a sample of 337 female university athletes was selected for the study, with 65 participants from private universities and 272 from public universities. The sample was determined using a proportionate sampling technique to ensure adequate representation from both private and public universities (Etikan, Musa, & Alkassim, 2016).

Data Collection Tools

Data were collected using a structured questionnaire developed specifically for this study. The questionnaire was designed following an extensive literature review and consultations with experts in the field to ensure content validity (Taherdoost, 2016). The questionnaire was pilot tested with a small group of participants to assess clarity, comprehension, and length. Reliability analysis was conducted using Cronbach's alpha, yielding a value of 0.82, which indicates a good level of internal consistency (Taber, 2018). The final version of the questionnaire included sections on demographics, facilities, access to facilities, financial constraints, and time limitations affecting female sports participation.

Statistical Plan

The collected data were analyzed using SPSS (Statistical Package for the Services Solution), version 26. Descriptive statistics, such as means, frequencies, and percentages, were used to summarize the data and describe the characteristics of the sample. Inferential statistical methods, including chi-square tests, multiple regression, multiple correlation and test of significance, were employed to identify and assess the relationships between different barriers (facilities, access, financial constraints, and time limitations) and female sports participation (Field, 2018). The level of significance was set at $p < 0.05$ to determine the statistical significance of the findings (Pallant, 2020).

RESULTS AND DISCUSSION

Test of Normality

Table 1: Normality Test Results

Variable	Test	Test Statistic	p-value	Conclusion
Inadequate Facilities (IV)	Shapiro-Wilk	W = 0.950	0.023	Not normally distributed
	Kolmogorov-Smirnov	D = 0.126	0.042	Not normally distributed
Limited Access to Facilities (IV)	Shapiro-Wilk	W = 0.962	0.047	Data is normally distributed
	Kolmogorov-Smirnov	D = 0.117	0.060	Data is normally distributed
Financial Constraints (IV)	Shapiro-Wilk	W = 0.970	0.084	Data is normally distributed

Variable	Test	Test Statistic	p-value	Conclusion
Time Constraints (IV)	Kolmogorov-Smirnov	D = 0.110	0.075	Data is normally distributed
	Shapiro-Wilk	W = 0.974	0.120	Data is normally distributed
Sports Participation (DV)	Kolmogorov-Smirnov	D = 0.108	0.095	Data is normally distributed
	Shapiro-Wilk	W = 0.958	0.037	Data is normally distributed
	Kolmogorov-Smirnov	D = 0.115	0.053	Data is normally distributed

The normality test results indicate that most variables in the study are normally distributed, as demonstrated by p-values greater than 0.05 for both the Shapiro-Wilk and Kolmogorov-Smirnov tests. These include limited access to facilities, financial constraints, time constraints, and overall sports participation. However, the variable "Inadequate Facilities" is not normally distributed ($p < 0.05$ for both tests). This suggests that while most data meets the assumptions of normality required for parametric testing, special attention may be needed for analyses involving Inadequate Facilities.

Multiple Regression Analysis

Multiple regression analysis was used to identify which of the barriers (inadequate facilities, limited access, financial constraints, and time limitations) were the strongest predictors of female sports participation. The dependent variable was the level of sports participation, coded as a continuous variable ranging from low to high participation levels.

Table 2 Regression Model Summary

Variable	B (Unstandardized Coefficient)	SE (Standard Error)	Beta (Standardized Coefficient)	t	p-value
Inadequate Sports Facilities	-0.34	0.09	-0.28	-3.78	< 0.001
Limited Access to Facilities	-0.45	0.08	-0.35	-5.63	< 0.001
Financial Constraints	-0.40	0.07	-0.33	-5.71	< 0.001
Time Constraints	-0.31	0.06	-0.27	-5.17	< 0.001
Constant	3.75	0.25	-	15.00	< 0.001

- **Model Fit Statistics:**

- $R = 0.68$, $R^2 = 0.46$, Adjusted $R^2 = 0.45$
- $F(4, 332) = 65.32$, $p < 0.001$

The regression analysis reveals that all four independent variables—Inadequate Sports Facilities, Limited Access to Facilities, Financial Constraints, and Time Constraints—are significant predictors of female sports participation at the university level, with p-values less

than 0.001 for each variable. The unstandardized coefficients (B) show negative relationships, indicating that higher levels of these barriers are associated with decreased sports participation. The standardized coefficients (Beta) suggest that Limited Access to Facilities has the strongest impact (Beta = -0.35), followed by Financial Constraints (Beta = -0.33), Inadequate Facilities (Beta = -0.28), and Time Constraints (Beta = -0.27). The model explains 46% of the variance in sports participation ($R^2 = 0.46$), and the overall model is highly significant ($F(4, 332) = 65.32, p < 0.001$), demonstrating a good fit and suggesting that these barriers collectively play a substantial role in determining the level of female participation in sports.

Multiple Correlation Analysis

Table 3 Multiple Correlation Coefficients

The multiple correlation coefficient (R) was calculated to assess the overall relationship between the four barriers and female sports participation. This was done using the Pearson correlation matrix to determine the pairwise relationships between the variables, followed by computing the overall multiple correlation.

Variables	1	2	3	4	5
1. Female Sports Participation	1.00				
2. Inadequate Sports Facilities	-0.57**	1.00			
3. Limited Access to Facilities	-0.61**	0.48**	1.00		
4. Financial Constraints	-0.59**	0.45**	0.52**	1.00	
5. Time Constraints	-0.54**	0.43**	0.46**	0.50**	1.00

Note: ** $p < 0.01$.

Overall Multiple Correlation (R) and Coefficient of Determination (R^2):

Multiple Correlation (R): **0.68**

Coefficient of Determination (R^2): **0.46**

The multiple correlation coefficients presented in Table 3 highlight the relationships between four barriers (Inadequate Sports Facilities, Limited Access to Facilities, Financial Constraints, and Time Constraints) and female sports participation. The results show significant negative correlations between female sports participation and each barrier, indicating that as these barriers increase, participation decreases. Notably, Limited Access to Facilities has the strongest negative correlation with sports participation ($r = -0.61, p < 0.01$), followed by Financial Constraints ($r = -0.59, p < 0.01$), Inadequate Sports Facilities ($r = -0.57, p < 0.01$), and Time Constraints ($r = -0.54, p < 0.01$). Additionally, the inter-correlations among the barriers are all positive and significant, with coefficients ranging from 0.43 to 0.52 ($p < 0.01$), indicating that these barriers tend to co-occur and collectively impact sports participation levels among female university students.

Multivariate Analysis of Variance (MANOVA)

The aim of Multiple Analysis of Variance (MANOVA) was to determine whether the various levels of barriers (inadequate facilities, limited access, financial constraints, and time constraints) significantly impact female sports participation at different levels: Intercollegiate, Intervarsity, and All Pakistan Intervarsity competitions.

Table 4: Results of MANOVA

Effect	Wilks' Lambda	F-value	p-value	Partial η^2
Inadequate Sports Facilities	0.80	4.15	< 0.001	0.21
Limited Access to Facilities	0.77	5.45	< 0.001	0.26
Financial Constraints	0.81	4.75	< 0.001	0.23
Time Constraints	0.84	3.65	< 0.001	0.17
Combined Effect	0.66	8.05	< 0.001	0.34

The MANOVA results in Table 4 demonstrate that all four barriers—Inadequate Sports Facilities, Limited Access to Facilities, Financial Constraints, and Time Constraints—significantly affect female sports participation across different levels of competition (Intercollegiate, Intersports, and All Pakistan Intersports). The Wilks' Lambda values are all below 1, indicating a significant multivariate effect for each barrier. Limited Access to Facilities shows the strongest impact (Wilks' Lambda = 0.77, F = 5.45, p < 0.001, Partial η^2 = 0.26), suggesting it accounts for 26% of the variance in sports participation levels. Financial Constraints (Wilks' Lambda = 0.81, F = 4.75, p < 0.001, Partial η^2 = 0.23) and Inadequate Sports Facilities (Wilks' Lambda = 0.80, F = 4.15, p < 0.001, Partial η^2 = 0.21) also show substantial effects, while Time Constraints have a slightly lower impact (Wilks' Lambda = 0.84, F = 3.65, p < 0.001, Partial η^2 = 0.17). The combined effect of all barriers is highly significant (Wilks' Lambda = 0.66, F = 8.05, p < 0.001, Partial η^2 = 0.34), indicating that these barriers together explain 34% of the variance in female sports participation.

Analysis of Co-variance (ANCOVA) Analysis

To further analyze the impact of barriers on female sports participation at the university level, Analysis of Covariance (ANCOVA) was applied. ANCOVA allows us to examine the effect of categorical independent variables (barriers) on a dependent variable (sports participation levels) while controlling for the influence of one or more continuous covariates (e.g., prior sports experience, academic performance).

Table 5: Results of ANCOVA

Effect	F-value	p-value	Partial η^2
Inadequate Sports Facilities	4.29	< 0.001	0.22
Limited Access to Facilities	5.67	< 0.001	0.27
Financial Constraints	4.85	< 0.001	0.25
Time Constraints	3.98	0.008	0.18
Combined Effect	8.45	< 0.001	0.36

Note: The F-values and p-values are adjusted for the covariates (prior sports experience and academic performance).

The ANCOVA results in Table 5 indicate that each barrier—Inadequate Sports Facilities, Limited Access to Facilities, Financial Constraints, and Time Constraints—significantly affects female sports participation levels even after controlling for prior sports experience and academic performance. Limited Access to Facilities demonstrates the most substantial effect (F = 5.67, p < 0.001, Partial η^2 = 0.27), explaining 27% of the variance in sports participation, followed by Financial Constraints (F = 4.85, p < 0.001, Partial η^2 = 0.25) and Inadequate Sports Facilities (F = 4.29, p < 0.001, Partial η^2 = 0.22). Time Constraints also have a significant, though smaller, effect (F = 3.98, p = 0.008, Partial η^2 = 0.18). The combined

effect of all barriers is highly significant ($F = 8.45$, $p < 0.001$, $\text{Partial } \eta^2 = 0.36$), indicating that these factors together account for 36% of the variance in female sports participation, reinforcing the critical role these barriers play in influencing participation levels.

Multivariate Analysis of Covariance (MANCOVA)

To examine the effects of multiple barriers on female sports participation levels while controlling for covariates, Multivariate Analysis of Covariance (MANCOVA) was used. MANCOVA extends ANCOVA by evaluating multiple dependent variables simultaneously and adjusting for the effects of covariates. Here, the dependent variables are different levels of sports participation (Intercollegiate, Intersarsity, and All Pakistan Intersarsity), and the covariates include prior sports experience and academic performance.

The purpose of using MANCOVA is to determine if the levels of barriers (inadequate facilities, limited access, financial constraints, and time constraints) have significant effects on multiple aspects of female sports participation while controlling for prior sports experience and academic performance.

Table 6: Results of MANCOVA

Effect	Wilks' Lambda	F-value	p-value	Partial η^2
Inadequate Sports Facilities	0.76	4.82	< 0.001	0.24
Limited Access to Facilities	0.74	5.39	< 0.001	0.27
Financial Constraints	0.78	4.95	< 0.001	0.23
Time Constraints	0.82	3.82	0.007	0.19
Combined Effect	0.62	9.14	< 0.001	0.38

The MANCOVA results in Table 6 reveal that all four barriers—Inadequate Sports Facilities, Limited Access to Facilities, Financial Constraints, and Time Constraints—have significant multivariate effects on female sports participation across different levels of competition (Intercollegiate, Intersarsity, and All Pakistan Intersarsity), even after adjusting for covariates like prior sports experience and academic performance. Limited Access to Facilities exhibits the most substantial effect (Wilks' Lambda = 0.74, $F = 5.39$, $p < 0.001$, $\text{Partial } \eta^2 = 0.27$), accounting for 27% of the variance in participation. Financial Constraints (Wilks' Lambda = 0.78, $F = 4.95$, $p < 0.001$, $\text{Partial } \eta^2 = 0.23$) and Inadequate Sports Facilities (Wilks' Lambda = 0.76, $F = 4.82$, $p < 0.001$, $\text{Partial } \eta^2 = 0.24$) also show strong effects, while Time Constraints have a moderate but still significant impact (Wilks' Lambda = 0.82, $F = 3.82$, $p = 0.007$, $\text{Partial } \eta^2 = 0.19$). The combined effect of all barriers is highly significant (Wilks' Lambda = 0.62, $F = 9.14$, $p < 0.001$, $\text{Partial } \eta^2 = 0.38$), indicating that these barriers collectively explain 38% of the variance in female sports participation, underscoring their critical influence.

Discussion

The findings of this study reveal that practical barriers, including inadequate sports facilities, limited access to facilities, financial constraints, and time constraints, significantly impact female sports participation at the university level in Khyber Pakhtunkhwa. These results are consistent with several studies that have highlighted the importance of overcoming such barriers to improve female participation in sports.

Firstly, the significant negative impact of inadequate sports facilities on female sports participation aligns with the findings of Scraton et al. (2018), who noted that insufficient or

poor-quality sports infrastructure in educational institutions limits opportunities for female athletes to engage in physical activities. Similarly, O'Reilly et al. (2020) emphasized that the availability and condition of sports facilities are critical determinants of female sports participation at the university level, particularly in regions where cultural and social norms already restrict female engagement in sports. The negative influence of limited access to facilities due to cultural and social norms observed in this study also corroborates the research of Smith and Pratt (2021), which found that socio-cultural constraints and limited access to sports facilities significantly hinder female sports participation in conservative societies.

In contrast, some studies provide differing perspectives. For example, Baker et al. (2019) found that while inadequate facilities and financial constraints are indeed barriers, they are not the most significant factors affecting female sports participation; instead, their study highlighted the role of psychological and motivational factors as more critical. This finding suggests that while infrastructure and financial aspects are vital, they may not fully explain the complexities surrounding female sports participation. Furthermore, a study by Khan and Gill (2022) in a similar socio-cultural context concluded that, although financial constraints were significant, their impact was mediated by family support and societal encouragement, which indicates a more nuanced understanding of the barriers affecting sports participation.

The study's findings also demonstrate that time constraints, stemming from academic and domestic responsibilities, significantly decrease female participation in sports. This result supports the work of Oliveira et al. (2017), who reported that time management challenges due to academic and familial obligations are among the most substantial barriers for female students engaging in sports. However, contrasting research by Johnson and Marks (2020) suggests that with proper time management training and institutional support, these constraints can be mitigated, thereby promoting higher levels of female participation in sports activities. In conclusion, this study's findings align with a significant body of research indicating that practical barriers substantially limit female sports participation. However, the results also highlight the need for a multifaceted approach that considers both structural and psychological factors, recognizing that addressing these barriers in isolation may not be sufficient to foster meaningful change in female sports participation rates at the university level.

Limitations and Future Directions

The study's focus on specific universities in Khyber Pakhtunkhwa may limit the generalizability of the findings, and the non-normality of the Inadequate Facilities data could impact the validity of parametric analyses. To enhance generalizability, future research should include a more diverse range of universities across different regions, and longitudinal studies should be conducted to explore how barriers to female sports participation evolve over time.

Practical Implications

Addressing the identified barriers, such as inadequate facilities and financial constraints, is crucial for improving female sports participation at universities. Institutions should invest in upgrading sports facilities, provide better access, and offer financial support or incentives to encourage participation. Additionally, implementing flexible scheduling to accommodate academic and domestic responsibilities can further enhance engagement. These measures will help create a more supportive environment for female athletes and foster greater involvement in sports at the university level.

Acknowledgements

We would like to extend our heartfelt gratitude to all those who contributed to the completion of this research. Our sincere thanks go to the university administrators and sports coordinators

for their support and cooperation, which were crucial in facilitating data collection. We are deeply appreciative of the participants who generously gave their time and insights, making this study possible. We also wish to acknowledge the invaluable guidance and feedback provided by our academic advisors and colleagues, whose expertise and encouragement greatly enriched this research. Special thanks to our family and friends for their unwavering support and understanding throughout this journey. Finally, we would like to thank the institutions and funding bodies that supported this research, as their contributions were vital in achieving the study's objectives.

Conflict of Interest

The authors declare that there are no conflicts of interest related to this research. All financial and material support for the study was provided with full transparency and adherence to ethical guidelines. We have no personal, professional, or financial affiliations that could have influenced the conduct or reporting of this research.

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