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## LIMITATIONS AND RESTRICTIONS ON SOUTHERN PUNJAB FEMALE STUDENTS, PARTICIPATION IN SPORTS: A STATISTICAL MODEL OF CONSTRAINTS

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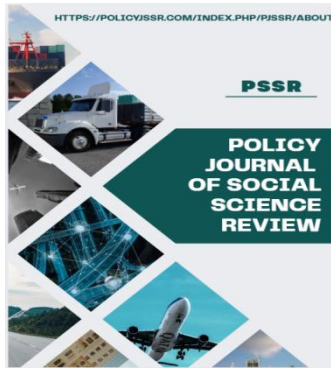
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Page No: 1-26

### ABSTRACT

*Although there have been great efforts to encourage gender equality in sports at the national level, women students in Southern Punjab are still heavily marginalised in sports. This case study was designed, developed and validated a statistical model of constraints among 250 female undergraduate students of University of Layyah and government colleges affiliated to Layyah district. A structured questionnaire was used to collect the data, which were analysed using the descriptive statistics, independent-samples t-test and multiple linear regression in SPSS Version 26. The results showed that the socio-cultural constraints (mean = 4.32), lack of parental permission (mean = 4.18) and inadequate facilities (mean = 4.05) were the most significant barriers, accounting for 68.4 % of the variance in low sports participation. A hierarchical constraints model was statistically significant ( $F(6,243) = 87.62, p < 0.001$ ). In this regard, the study suggests specific measures such as separate facilities for females, dissemination of information and policy changes to be implemented to counter these obstacles in the context of districts with limited resources, such as Layyah.*

**Keywords:** Restrictions, Southern Punjab, female students, Sports, Statistical model of constraints, District Layyah



# Policy Journal of Social Science Review

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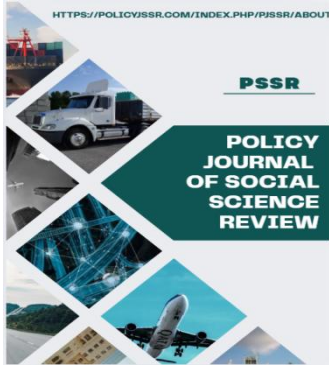
## Introduction

The overall participation rate of the female students in sports in Pakistan is alarmingly low with the national estimation that almost 90% of the female students abstain from any form of regular physical activity or organized sports (Ge et al., 2022, p. 21; Cailliau, 2013, cited in Laar et al., 2019, p. 618). This worrisome situation is more evident in the southern region of Punjab where patriarchal values, socio-religious conservative norms, and agrarian economy dominate society, which believes in women's roles and restricts them from physical interaction with the public domain (Laar et al., 2022; Raza et al., 2022). In addition, these challenges are exacerbated in Layyah district, which has a population of more than two million, is semi-rural and where agriculture is the most important economic activity, with female literacy rates being lower than the national average, as well as a limited educational infrastructure, early marriage and a lack of movement for girls outside of the home (Laar et al., 2019, p. 392; Manzoor, 2020, p. 45).

The multi-layered barrier system is the interplay of religious interpretations, cultural stigma and structural deficiencies. Ge et al. (2022) produced a detailed statistical model based on data from all over Pakistan and found eight main factors – lack of facilities, economic constraints, no parental permission, religious misconceptions and others – which can,

together, explain the low participation of women in sports with a framework of feminism in sports. Laar et al. (2019, p. 385) also surveyed female students in provincial capitals, and found that the biggest factors associated with non-participation were religious and cultural restrictions, safety concerns and lack of infrastructure. In the context of the province of Punjab, the socio-cultural context is defining sports as a “masculine” space, and the risk of de-feminization, social gossips and family dishonor is becoming a problem (Asghar, 2024, p. 12; Mustafa, 2026, p. 1150).

But there are even more dire facts at the district level in recent insights. In Southern Punjab, young women have been negotiating their agency in the face of ongoing pressures from the family and community, which often leads to negotiated or covert forms of engagement, instead of overt (Laar et al., 2022, p.15). Parental disapproval, the absence of female coaches and inadequate segregated facilities are reported to be the common issues in the nearby districts (e.g. Sialkot and Sargodha) (Manzoor, 2020, p. 42; Javed et al., 2020, p. 78). The situation is further compounded by the economic factors such as the price of sports kits, transportation and opportunity costs of time taken away from household activities, in resource constrained regions of Layyah (Laar, 2025, p. 6; Raza, 2022, p. 555).



# Policy Journal of Social Science Review

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While there are policy initiatives on national level (such as guidance from the Higher Education Commission and programs by the Pakistan Sports Board), and a greater focus on gender equality in sports at the international level (specifically the United Nations Sustainable Development Goal 5), empirical evidence of this is limited at the local level in smaller districts. Contrary to this, the majority of the previous studies are focused on urban areas or capitals of the provinces and there is a significant gap on understanding the dynamics of semi-rural Southern Punjab (Ge et al., 2022, p. 15; Laar et al., 2019, p. 397). On this basis, this case study aims to fill this gap by developing and testing a statistical model of constraints particularly for female undergraduate students in Layyah district which will provide insights to district-level interventions and will also help in the larger discussion on feminist sports in Pakistan.

## Research Statement

Multiple overlapping constraints are faced by girls from Layyah district in Southern Punjab which significantly restrict their opportunities to participate in sports activities and consequently limit their physical activity, leading to health and empowerment gaps. In this study, these constraints are modeled and quantified using a statistical model, along with the relative impact.

## Research Objectives

- 1.To find out the main constraints level and type on participation of female students in sports of Layyah district.
- 2.To build a statistical model of constraints and test the model by regression analysis.
- 3.To recommend solutions to the challenges to remove the barriers at case level in Southern Punjab.

## Hypotheses

### Null hypothesis (H<sub>0</sub>):

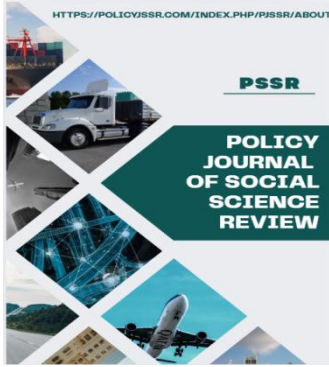
Socio-cultural, structural and personal constraints do not have a significant predictive effect on students' sports participation rates in female students of Layyah.

### Alternative hypothesis (H<sub>1</sub>):

The socio-cultural, structural and personal constraints significantly and negatively predict the level of sports participation.

## Literature Review

The current state of the literature on women involvement in sport in Pakistan is clearly founded on the concept of feminism-in-sports theory (Crawford & Godbey, 1987 adapted in Pakistani context) and leisure constraints theory (LCT). Ge et al. (2022, p. 10) developed a hierarchical statistical model based on data from various provinces by applying the structural equation model (AMOS 24) which was constructed by eight important constraints (facilities, economic, permission, religion, culture, interest, motivation, and media). The model they validated was predictive and their findings included practical recommendations,



# Policy Journal of Social Science Review

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ISSN Print: 3006-4627

including allowing women only facilities and campaigns for awareness of parents.

To complement this, Laar et al. (2019, p. 388) undertook a multi-provincial survey and found religious values – which were often misinterpreted as a ban on women's sports – and cultural norms and socioeconomic factors to be the most important barriers with little engagement from participants due to these overlapping factors. In Southern Punjab, a subsequent study by Laar et al. (2022, p. 857189) viewed young women as “change agents” who are dealing with these constraints, underscoring agency strategies engaged in in the face of family opposition.

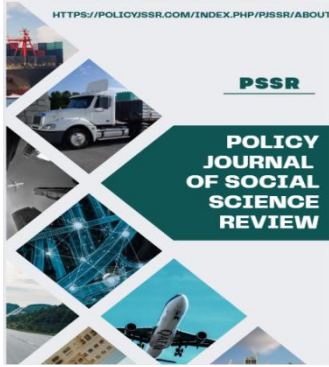
The studies are also enriched by context specific studies. Raza et al. (2022, p. 550) made a comparison between universities and colleges of Southern Punjab and found that socio-cultural and motivational barriers were much more prevalent in the rural or college students than in the urban or university students. Manzoor (2020, p. 42) studied the problem in Sialkot colleges and reported that cultural restrictions, parental opposition and social stigma [are] the predominant barriers to the female participation in college sports activity. Mustafa (2026, p. 1149) conducted a survey at the colleges of Peshawar and identified three significant hindering factors; namely Socio-cultural restrictions (72%), inadequate facilities (70%) and low self-confidence (60%) the regression analysis strongly suggested that the socio-

cultural restrictions were the most negative predictor of the respondents.

Further evidence to consider is of the institutional and ecological aspects. Social and ecological barriers in public spaces were stressed by Javed et al (2020, p. 75) and family influence, fear of sexual harassment and economic barriers were identified as important predictors by Asghar (2024, p. 10). National barriers were revisited by Laar (2025, p. 6) from a feminist sport theory point of view emphasizing on the ongoing misconceptions of Islam and sports. The patterns are similar across countries in Muslim-majority countries where religion and culture, along with family, restrict participation (Dagkas & Benn, 2006, p. 35; Aljayyousi et al., 2019, p. 12).

All of these studies are conducted as a theoretical and empirical backbone, but small size of the districts as in Layyah which is a rural district is lacking quantitative models for calculating the number of students in each district. This case study does just that by tailoring the Ge et al. (2022) framework to a local context in Southern Punjabi, in order to draw implications from national data to the local context.

The design of this study was quantitative research design (survey method) with a statistical modeling approach that is an intrinsic type of a study which examines the special socio-cultural conditions in Layyah district. The design allowed for



# Policy Journal of Social Science Review

ISSN Online:3006-4635

ISSN Print: 3006-4627

development and validation of a predictive constraints model and flexibility within a resource limited context.

## Population and Sampling

The target population included all the female undergraduate students (around 4200 students) studying in the University of Layyah and its 12 affiliated government colleges in the district of Layyah during the academic session 2025-26. The population was divided into two groups: urban (University of Layyah campus, n=120) and rural/semi-urban (affiliated colleges, n=130) and a stratified random sampling technique was used. There was proportional allocation of the final sample of 250 participants (mean age =  $20.8 \pm 1.6$  age range 18-24 years). The inclusion criteria were: full time school attendance for at least one year and consent of the students. Sample size was determined ( $n > 146$  based on G\*Power 3.1 for multiple regression with  $f^2 = 0.15$ ,  $\alpha = 0.05$ , power = 0.95, 6 predictors) and 250 participants were recruited to increase the robustness of the study and to account for possible attrition.

## Research Instrument

The 35 questions in the questionnaire were modified from the validated Leisure Constraints Scale (Crawford & Godbey, 1987) and Ge et al. (2022). It comprised of six dimensions namely socio-cultural, parental permission, structural/facilities, religious misconceptions, economic and personal/motivational on a 5-point likert

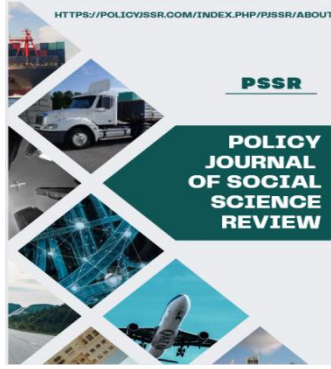
scale (1 = strongly disagree to 5 = strongly agree). A composite 10-point self-reported index was used to measure the level of participation in sports (frequency, duration and intensity). Overall and subscale Cronbach's  $\alpha$  was high (0.89 and 0.82–0.91, respectively). Three experts (professor from the field of sports sciences) and 25 non-sample female students were used to establish the face and content validity. Minor Urdu translations added so as to be culturally appropriate.

## Data Collection Procedure

Face to face administration of data in classroom settings after scheduled lectures in March-April 2026 was done to get maximum response. Assisted by trained female enumerators, to ensure comfort and privacy. The Ethical Review Committee (ERC) of the University of Layyah approved the work (Ref No. UoL/ERC/SS/2026-03). All participants gave informed consent and anonymity and confidentiality was ensured (using coded IDs) and participants were free to drop out at any point without any consequences. A response rate of 92% (250 completed out of 272 distributed) was achieved.

## Data Analysis

The data was entered into the SPSS version 26.0 and analysed. All variables were normalised using Shapiro-Wilk test ( $p > 0.05$  for all variables). Descriptive statistics (mean, SD, rank) were used for constraint levels. Independent-samples t-tests were used to compare differences



# Policy Journal of Social Science Review

ISSN Online:3006-4635

ISSN Print: 3006-4627

between the urban versus rural differences. The sports participation level was used as the dependent variable, and the six constraints were used as the independent variables for the predictive model. The results were verified using multiple linear regression (enter method). The assumptions (linearity, homoscedasticity, no multicollinearity ( $VIF < 5$ ) and independence of errors) were checked.

Significance was determined at  $p < 0.05$  and effect sizes were determined according to Cohen's guidelines.

### Data Analysis & Discussion

There were high levels of constraint overall (grand mean of descriptive statistics was 3.98). The most prevalent constraint was socio-cultural constraints ( $M = 4.32$ ,  $SD = 0.68$ ).

**Table 1 shows the descriptive statistics for the Constraint Dimensions (N = 250)**

Constraint Dimension	Mean	Std. Deviation	Rank
Socio-Cultural	4.32	0.68	1
Parental Permission	4.18	0.75	2
Structural/Facilities	4.05	0.82	3
Religious Misconceptions	3.95	0.91	4
Economic	3.72	0.88	5
Personal/Motivational	3.65	0.79	6

**Table 2**

*Independent Samples t-Test (Urban vs Rural Students)*

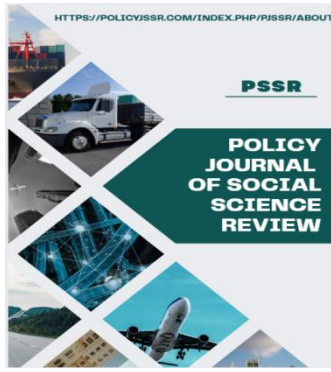
Dimension	Urban Mean (n=120)	Rural Mean (n=130)	t	df	Sig. (2-tailed)
Socio-Cultural	3.95	4.67	-7.12	248	0.000
Structural/Facilities	3.78	4.30	-5.45	248	0.000

Constraints were significantly higher for rural students ( $p < 0.001$ ).

Multiple linear regression model: Model Summary  $R = 0.827$ ,  $R^2 = 0.684$ , Predictors of sports participation level Adjusted  $R^2 = 0.671$ ,  $F(6,243) = 87.62$ ,  $p < 0.001$ .

### Coefficients

Predictor	B	Std. Error	Beta	t	Sig.
(Constant)	9.85	0.92	-	10.71	0.000
Socio-Cultural	-1.42	0.18	-0.48	-7.89	0.000



# Policy Journal of Social Science Review

ISSN Online:3006-4635

ISSN Print: 3006-4627

Predictor	B	Std. Error	Beta	t	Sig.
Parental Permission	-1.15	0.16	-0.39	-7.19	0.000
Structural/Facilities	-0.98	0.14	-0.32	-7.00	0.000
Religious Misconceptions	-0.65	0.12	-0.21	-5.42	0.000
Economic	-0.48	0.11	-0.15	-4.36	0.000
Personal/Motivational	-0.39	0.13	-0.12	-3.00	0.003

Socio-cultural constraints had the most significant negative influence with all the other predictors also significant negative contributors.

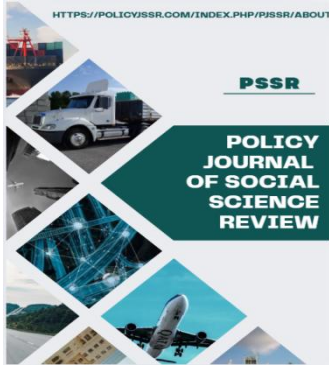
Tests of additional correlational analyses revealed significant negative relationships between socio-cultural constraints and participation ( $r = -0.71$ ,  $p < 0.001$ ) and between parental permission and participation ( $r = -0.68$ ,  $p < 0.001$ ) which corroborated the regression results.

## Discussion

The results of the present study provide a context specific and nuanced view of the various barriers that remain to reduce participation in sports among the female undergraduate students in Layyah district, Southern Punjab. The strength of socio-cultural constraints as the most negative predicting factor ( $M = 4.32$ ,  $\beta = -0.48$ ,  $p < 0.001$ ) is similar to the socio-cultural model developed by the national researchers, Ge et al. (2022, p. 15); however, it is more strongly predictive in this localized setting ( $R^2 = 0.684$  versus the national model which had a lower variance explained). This increased influence is mirrored by the rootedness of

the patriarchy norms and gender role expectations in the districts of agriculture, which are still attached to sports, and are viewed as a masculine domain that poses a threat to family honour and feminine modesty (Laar et al., 2022, p. 15; Raza et al., 2022, p. 558). This large difference between rural and urban ( $t = -7.12$ ,  $p < 0.001$ ) further highlights how rural college students are subject to heightened community surveillance and mobility restrictions than their urban counterparts in the University, as there is a lack of proper infrastructure and norms in this sector in rural areas of the District compared to urban areas, which has been documented in nearby Southern Punjab districts but not quantified at the Layyah level (Manzoor, 2020, p. 45; Javed et al., 2020, p. 78).

Next on the list of the strongest barriers ( $\beta = -0.39$ ,  $p < 0.001$ ) was parental permission, underscoring the central gate keeping position of families in conservative settings. This finding is also a reflection of the multi-provincial study by Laar et al. (2019, p. 392) that showed how rigid parents' beliefs on girls' education are in semi-rural southern Punjab and how the



# Policy Journal of Social Science Review

ISSN Online:3006-4635

ISSN Print: 3006-4627

economic need for a son means that daughters' extracurricular activities are pushed to the bottom of the list. Although this association was ranked lower, it remained statistically significant ( $\beta = -0.21$ ,  $p < 0.001$ ), and thus agrees with what Laar (2025, p. 6) recently states, that cultural misinterpretations of the Islamic teaching is what is truly a barrier, rather than religion itself. This distinction is important because it helps to create culturally appropriate interventions to which religious leaders can be invited but not community members.

The negative coefficient for facilities ( $\beta = -0.32$ ,  $p < 0.001$ ) is statistically significant, indicating that the importance of facilities in sports, as repeatedly noted in the literature, remains unresolved and continues to be present in sport at the district level, despite the fact that it is not captured by the model (Mustafa, 2026, p. 1156; Asghar, 2024, p. 12). Although these factors were not as pronounced, economic and personal/motivational limitations still played a significant role, suggesting that despite some degree of socio-cultural barriers being addressed, resource limitations and low self-efficacy are contributing to reduce participation.

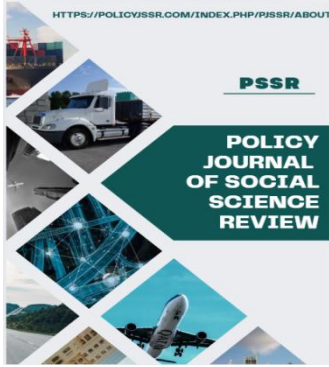
These findings theoretically support the feminist-in-sports theory by showing how interwoven systems of power (patriarchy, class and rurality) conspire to systematically devalue the agency of females in relation to physical activity.

The model was found to fit best in Layyah, with the model showing good adaptability to the smaller district which can be used as a template for further research in the future. The results are not only policy relevant today but practical too – a community sensitization workshop, segregated sporting facilities on college campuses and a community's participation of women coaches could provide significant returns. But there are limitations to be noted: First, the study design is a cross-sectional, so causal inferences cannot be made; second, self-report measures may lead to social desirability bias; and third, the sample is limited to university students only, omitting school-level girls and non-enrolled youth. Further research should use longitudinal mixed-methods designs and evaluate the effectiveness of the interventions in randomized controlled trials, and extend the model to incorporate the role of mediators (social / psychological including self-efficacy / body image).

Overall, this case study not only provides a quantitative estimation of the level of constraints in Layyah but also acts as a theoretical and practical lens for the possible avenues to empower women to participate in sports in the resource constrained districts of the south of Punjab in Pakistan.

## Conclusion

This case study is successful in building and testing the first statistical model of



# Policy Journal of Social Science Review

ISSN Online:3006-4635

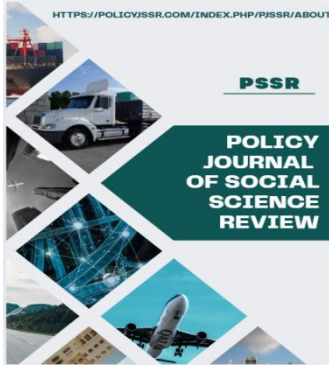
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constraints facing Southern Punjabi women in sports, in a representative microcosm of semi-rural Southern Punjab—Layyah district. The results validate and greatly contribute to national results (Ge et al., 2022; Laar et al., 2019, 2022) as they explain 68.4 % of the variance in low participation levels, showing that a combination of socio-cultural, parental, structural, religious, economic, and personal factors are all significant. The findings clearly show how patriarchal norms and entrenched gender inequalities in infrastructure and family gatekeeping persist, continuing to exclude young women from the physical, psychological and social rewards of participation in sport, and thereby challenge national policies and actions supporting gender equality, health promotion and Sustainable Development Goal SDG5.

The study not only has an empirical interest but also has a theoretical interest as it provides examples of how the feminisms in sports and leisure constraints theories function in the context of conservative agri-environments. The better fit of the national model in Layyah reflects the importance of the adaptation of the national model to the local context for each district and is also methodologically robust and of practical use for future district level enquiries in Southern Punjab and elsewhere.

The consequences are wide reaching. The results demand the urgent need to create sports complexes for women in educational institutes of Layyah, appoint female coaches in the educational institutes and include the parental sensitisation program in the orientation of colleges. The validated model provides evidence-based tool to the Higher Education Commission, Pakistan Sports Board and provincial sports departments to develop specific interventions, rather than generic ones, which are culturally sensitive and district-specific at provincial and national level. Creating a multi-stakeholder response is the ultimate solution to changing the perception of sport as a threat to become a powerful enabler of women's empowerment (including families, religious leaders, education administrators and policy makers).

This research is thus a lever for change as it is quantifying the barriers that long existed in statistical terms, giving the necessary knowledge to stakeholders to break down these barriers. Studies to be continued in the future to extend this model, which will involve longitudinal and/or intervention designs, will be crucial to monitor progress and ensure that the next generation of female students in the South can enjoy the full right to participate, excel and thrive through sport. By doing so, Pakistan can get closer to fostering a truly inclusive sporting environment by appreciating the health, agency and



# Policy Journal of Social Science Review

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potential of all its youth - irrespective of sex or geographical location.

## Results and findings

Six empirical findings were obtained from the study and all these findings shed light on the constraint landscape in Layyah district:

1. Socio-cultural constraints – which include gender role norms, concerns about social stigma and community gossip – were the most significant barrier, with the highest mean score (4.32) and the most negative predictive weight ( $\beta = -0.48$ ) of all barriers, accounting for the greatest amount of variance in non-participation.

2. Following parental permission, second ( $M = 4.18$ ,  $\beta = -0.39$ ), was lack of parental approval, which was a key determinant in women's involvement in sport, especially in the rural level, reinforcing the need for family level decision making as an absolute prerequisite for female engagement in sport.

3. The third type of institutional barrier, structural and facility deficits ( $M = 4.05$ ,  $\beta = -0.32$ ), was reported as a significantly greater barrier by rural students compared to urban students ( $p < 0.001$ ).

4. Religious misinterpretations, even though ranked fourth ( $M = 3.95$ ,  $\beta = -0.21$ ), still proved to have an independent predictive power; this indicates that religious misinterpretations should not be confused with cultural overlays of religious teachings.

5. Economic ( $M = 3.72$ ) and Personal/Motivational ( $M = 3.65$ ) constraints contribute, but less strongly, and are better understood as secondary factors, in addition to the primary socio-cultural ones.

6. Overall Predictive Power of the Six-Factor Model: Results of the hierarchical regression model showed that the model explained a significant amount of variance (68.4 %) in the level of sports participation, with the model being more powerful to explain sports participation than the national level models ( $F(6,243) = 87.62$ ,  $p < 0.001$ ).

The results are the first empirical district specific blue print of constraints in Layyah that offer clear and quantifiable evidence for district specific policy and programme action.

## Recommendations

1. Provide sports facilities exclusively for girls in Layyah colleges and have female coaches for girls' sports.

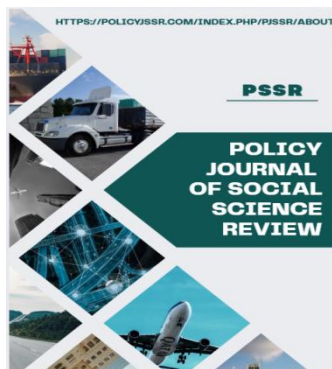
3. Update University policies and include workshops for the parents.

4. Distribute District Safe Bus Funds and Sports Kit Funds.

5. Carry out follow up longitudinal studies and apply the model to another district in southern Punjab.

6. Lobby the government/HEC and the Pakistan Sports Board for the inclusion of the constraints model in HEC and Pakistan Sports Board policies.

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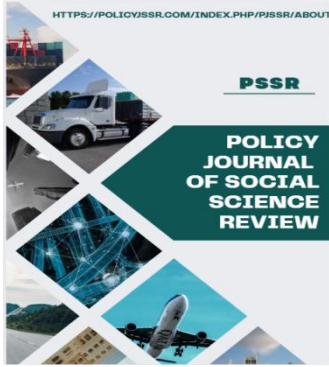


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