

Assessment of Sports Infrastructure in Higher Education Institutions of Rajasthan: A Comparative Study of Urban and Rural Colleges

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Abstract—This study examines the status, quality, and effectiveness of sports infrastructure in 50 colleges across Rajasthan, a region where physical education is gaining prominence yet remains inadequately supported. Using a structured survey method, data were collected from both urban and rural institutions to evaluate key facilities, including playgrounds, indoor courts, gymnasiums, equipment standards, maintenance practices, coaching availability, and administrative support. The analysis reveals that although most colleges possess basic outdoor facilities, the overall condition and usability show significant variation. Approximately 85% of the institutions have playgrounds, but many lack proper maintenance. Advanced facilities such as swimming pools, synthetic tracks, and multipurpose indoor halls are primarily found in urban colleges, highlighting a pronounced urban–rural disparity. Furthermore, student participation in sports remains moderate, with female engagement particularly low due to insufficient inclusive amenities and the scarcity of trained female instructors. Only about half of the colleges employ full-time physical education teachers, limiting structured training opportunities. Despite the restricted sample size and reliance on self-reported data, the study provides a realistic overview of the existing sports infrastructure in Rajasthan’s higher education sector. The findings emphasize the need for improved funding, planned facility development, and stronger policy implementation under initiatives like Khelo India and Fit India to enhance access, participation, and overall sports development in the region.

Index Terms—Sports infrastructure, Urban–rural sports disparity, Infrastructure quality evaluation.

I. INTRODUCTION

Sports infrastructure plays a vital role in nurturing physical fitness, developing athletic talent, and promoting the holistic growth of students in higher education institutions. In today’s academic environment, well-equipped sports facilities are increasingly recognized as essential for fostering discipline, teamwork, mental well-being, and an active lifestyle among students. However, despite national initiatives such as Khelo India and the Fit India Movement, the state of sports infrastructure in many Indian colleges remains inconsistent and under-researched, particularly in Rajasthan.

Rajasthan presents a diverse educational landscape, encompassing both well-resourced urban colleges and underfunded rural institutions. While some colleges have developed modern playgrounds, gymnasiums, and indoor sports facilities, many others continue to struggle with inadequate funding, poor maintenance, limited equipment, and lack of trained personnel. These disparities directly influence student participation in physical activities, especially among female students, who often face additional challenges related to safety and inclusivity.

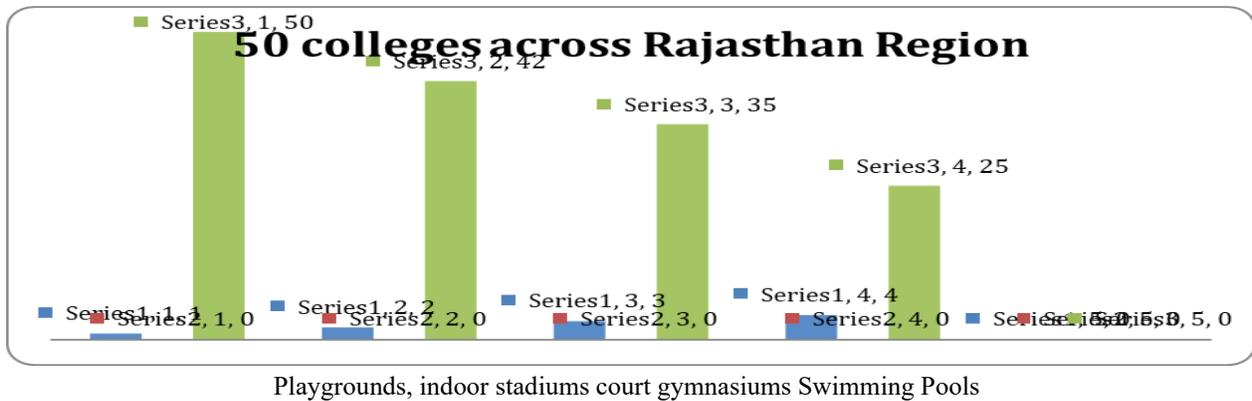
Given these concerns, a systematic evaluation of sports infrastructure across Rajasthan’s colleges is essential. This study assesses the availability, condition, and utilization of sports facilities while comparing urban and rural contexts. The findings aim to guide policymakers and institutional leaders in strengthening infrastructure, ensuring equitable access, and fostering a culture that supports physical education and athletic development.

II. OBJECTIVES OF THE STUDY

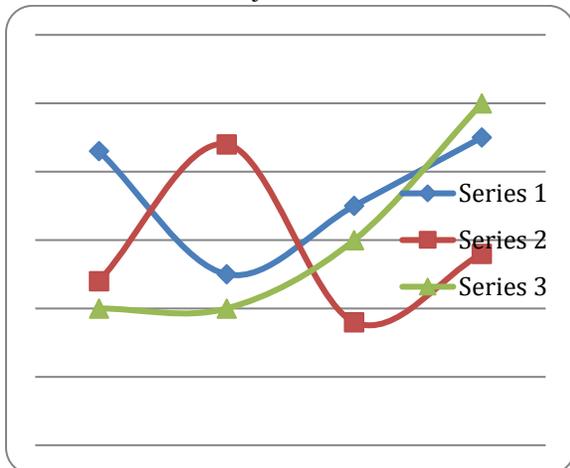
The study was conducted with the following objectives:

1. To assess the availability and condition of sports facilities such as playgrounds, indoor stadiums, courts, gymnasiums, and other essential infrastructure in colleges across Rajasthan.
2. To examine students' access to sports facilities, including the availability of gender-inclusive spaces and safety provisions that influence participation.
3. To evaluate the quality, maintenance, and usability of sports equipment and infrastructure provided by colleges.
4. To analyze the role of college administrations in promoting sports, supporting physical education programs, and developing infrastructural resources.
5. To identify challenges and constraints such as limited funding, space shortages, poor maintenance, and inadequate staffing that hinder the growth of sports infrastructure.
6. To compare the status of sports infrastructure between urban and rural colleges, highlighting disparities in availability, quality, and student participation.
7. To propose evidence-based recommendations for improving sports infrastructure and enhancing student involvement in physical activities and athletic development.

Here is a sample graph table for "The Survey of Sports Infrastructure in Various Colleges of Rajasthan State". This table can be used for reporting or to visualize data before turning it into charts or graphs like bar or pie charts.



Survey of Sports Infrastructure in Various Colleges of Rajasthan State



III. FINDINGS AND ANALYSIS

The findings of the survey are analyzed across five key dimensions: availability of sports infrastructure, condition and maintenance, student participation and coaching support, funding and institutional backing, and urban-rural disparities. Collectively, these dimensions provide a detailed overview of the current status and challenges of sports infrastructure in Rajasthan's higher education institutions.

1. Availability of Sports Infrastructure

- Outdoor Facilities

The survey indicated that nearly 85% of the colleges possess playgrounds, yet only 60% of these are maintained at a satisfactory level. Football and cricket

grounds emerged as the most commonly available facilities, while athletics tracks were present in just 25% of institutions. Rural colleges reported major limitations, including inadequate space, poor turf quality, and unsafe playing surfaces, which hinder the regular conduct of outdoor sports activities.

- **Indoor Facilities**

Indoor sports infrastructure was found to be comparatively limited. Only 40% of colleges had indoor facilities, predominantly offering badminton and table tennis. Advanced indoor sports such as squash, gymnastics, or multi-sport complexes were available in fewer than 15% of colleges, indicating substantial gaps in all-weather sports provision.

- **Gymnasiums and Swimming Pools**

Functional gymnasiums were available in only 30% of colleges, most of which were urban and privately managed. Swimming pools were extremely scarce, present in less than 10% of institutions, and largely limited to high-end private campuses. This scarcity highlights significant inequities in access to holistic fitness infrastructure such as strength training and aquatic sports.

2. Condition and Maintenance of Facilities

Approximately 65% of colleges reported issues related to poor maintenance. Common problems included outdated or broken equipment, uneven fields, lack of drainage systems, and inadequate storage. Urban colleges demonstrated comparatively better maintenance due to higher budgets and regular oversight. In contrast, many rural colleges struggled with insufficient funds and lack of technical staff, resulting in deteriorated facilities that compromised student safety and usability.

3. Student Participation and Coaching Support

Student participation levels were moderate to low, with only 35% of students regularly engaging in sports activities. Female participation was especially low at 20%, primarily due to the absence of gender-inclusive facilities such as separate changing rooms, secure practice areas, and availability of female instructors. Coaching support was also inadequate. Only 50% of colleges employed full-time physical education instructors, and fewer than 25% had specialized coaches for particular sports. The shortage of trained professionals negatively affected both the quality of training and the consistency of sports programs.

4. Funding and Institutional Support

Nearly 70% of colleges relied heavily on limited government grants for sports infrastructure, with little or no dedicated budget provisions. While private institutions had relatively superior facilities, they served smaller, often more privileged student populations. The overall lack of systematic and long-term financial planning severely restricted infrastructure expansion, routine maintenance, and the introduction of new sports programs.

5. Urban–Rural Disparities

A clear disparity was observed between urban and rural colleges. Urban colleges possessed sports infrastructure that was two to three times better in both availability and quality when compared to rural institutions. Greater funding, administrative focus, and accessibility to training centers contributed to better outcomes in urban areas. Consequently, urban colleges exhibited significantly higher student participation in sports. Rural institutions, on the other hand, continued to face issues related to funding shortages, limited space, and weak administrative engagement.

These disparities underscore the need for targeted policy interventions to promote equitable sports development and ensure inclusive access to physical activity opportunities across all regions of Rajasthan.

IV. LIMITATIONS OF THE STUDY

Despite the meaningful insights generated, the study was subject to several limitations that may influence the interpretation and generalizability of its findings:

1. Limited Sample Coverage

The study included only a selected number of colleges across Rajasthan due to time, travel, and resource constraints. As a result, the findings may not fully represent all higher education institutions in the state.

2. Dependence on Self-Reported Data

Most information was obtained through self-reported responses from administrators, physical education faculty, and institutional records. The accuracy of data may have been affected by reporting bias, outdated documentation, or subjective judgments.

3. Time-Bound Data Collection

The assessment reflects the status of sports infrastructure during a specific survey period. Any

improvements, deterioration, or policy interventions implemented afterward were not captured in the study.

4. Absence of Longitudinal Analysis

The cross-sectional nature of the study does not allow for evaluation of long-term trends, changes in facility quality, or patterns of student utilization over time.

5. Accessibility Barriers in Remote Areas

Some remote rural colleges could not be physically visited due to logistical constraints. Data from these institutions were collected via digital or telephonic communication, which may not fully reflect on-ground realities.

6. Incomplete Financial Information

Although funding emerged as a key factor influencing infrastructure quality, detailed financial records regarding sports budgets and expenditures were not consistently available, limiting the depth of financial analysis.

V. DELIMITATIONS

The delimitations of a study refer to the boundaries set intentionally by the researcher to define the scope, focus, and direction of the investigation. The present study on sports infrastructure in Rajasthan's colleges was guided by the following delimitations:

1. Focus on Higher Education Institutions

The study was limited to colleges and did not include schools, universities with extensive autonomous sports programs, or private sports academies.

2. Selected Sports Facilities Only

The research concentrated on major infrastructure components such as playgrounds, indoor facilities, gymnasiums, swimming pools, and track & field areas. Minor or recreational facilities (e.g., yoga rooms, fitness corners, multipurpose halls) were excluded.

3. Geographical Boundaries Restricted to Rajasthan

The survey was conducted exclusively within the state of Rajasthan. No comparative analysis with institutions from other Indian states was included.

4. Institutional Participation Based on Accessibility

Only those colleges that provided consent and accessible data were included. Some institutions that did not respond or lacked adequate records were excluded from the final sample.

5. Cross-Sectional Survey Design

The study was designed as a one-time survey. It did not aim to assess seasonal changes, long-term trends, or year-to-year variations in infrastructure quality.

6. Emphasis on Physical Infrastructure Over Performance

The study focused on the availability and condition of physical sports infrastructure and did not evaluate student sports performance, competitive results, or health outcomes.

VI. CONCLUSION

The present study provides a comprehensive assessment of sports infrastructure across selected colleges in Rajasthan, revealing significant disparities in availability, quality, and accessibility of facilities. While many institutions possess basic outdoor grounds, the overall standard of infrastructure remains uneven, with advanced facilities such as gymnasiums, indoor complexes, and swimming pools present in only a limited number of colleges. Rural institutions, in particular, lag behind due to inadequate funding, poor maintenance, and lack of administrative attention.

The findings make it clear that the condition of sports infrastructure has a direct influence on student participation and engagement. Insufficient facilities, shortage of trained instructors, and lack of gender-inclusive spaces contribute to low student involvement, especially among female students. The study also highlights the critical role of consistent funding and institutional commitment in sustaining and enhancing sports environments within higher education settings.

Urban-rural disparities emerged as a prominent concern, underscoring the need for targeted policy interventions that prioritize resource allocation, regular maintenance, and the establishment of standardized sports development programs. Strengthening sports infrastructure, particularly in underserved rural colleges, is essential for promoting physical fitness, holistic development, and talent identification at the grassroots level.

Overall, the study emphasizes that improving sports infrastructure is not merely an operational requirement but a vital component of fostering equitable sports opportunities, aligning with national initiatives such as Khelo India and the Fit India Movement. Addressing

infrastructural gaps and enhancing institutional support can significantly contribute to creating inclusive, safe, and motivating environments where students can actively participate and excel in sports.

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