Project Zariya: A Historical and Policy Analysis of Gendered Gaps in Sports Medicine and Women's Cricket in Punjab

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ABSTRACT

This paper presents the findings of Project Zariya, a five-month interdisciplinary research and intervention initiative in Punjab, India, investigating the intersection of public health, the history of science, and gender in sports. Through over eighty interviews with players, coaches, and medical professionals, along with workshops, surveys, and a custom-built health-tracking application, this study identifies the historical, institutional, and scientific barriers to equitable participation for girl cricketers. It traces these barriers to the colonial roots of Indian sports medicine, where women's physiology was ignored or pathologized. The project integrates historical inquiry with field-based public health education to propose a reform framework that connects historical understanding to modern policy solutions.

1. INTRODUCTION

The underrepresentation and underpreparedness of women in Indian sports are not isolated problems of resources or awareness. They are embedded in the longer intellectual history of science and medicine. Project Zariya examines how the foundations of sports science and public health were shaped through colonial structures that prioritized the male body as a scientific standard. It documents how these legacies persist today, particularly in the physiology-based exclusion of women from modern cricket systems. This research seeks to bridge that gap through field-based education, data collection, and the design of health technology for women athletes.

2. HISTORICAL CONTEXT: COLONIAL SCIENCE AND WOMEN'S EXCLUSION

The colonial period established many of the norms that continue to define health and athletic policy in India. Nineteenth-century European medicine categorized the female body as biologically fragile and cyclically impaired, a concept reinforced through colonial education systems and administrative policy. British authorities introduced physical training to Indian schools as part of a moral and disciplinary regime, but female students were excluded from these programs. Medical literature of the period described menstruation as a disabling condition and associated physical exertion with risks to reproductive stability.

Historians such as Londa Schiebinger and Emily Martin have shown how scientific metaphors framed women's bodies as passive, wasteful, or biologically inefficient. In India, these biases were internalized within postcolonial institutions, shaping the design of physical education curricula, athletic testing, and medical research. Consequently, even today, national-level cricket relies on physiological metrics like the YoYo endurance test and 2K run, both derived from male military data, without accounting for sex-based differences in aerobic capacity, joint flexibility, or hormonal variance.

3. METHODOLOGY

Project Zariya employed a mixed-method approach combining historical analysis with participatory fieldwork. The study involved: Multiple structured interviews with coaches, players, medical professionals, and officials from the Punjab Cricket Association. Three regional workshops in Amritsar, New Chandigarh, and Jalandhar, attended by multiple participants. Surveys administered before and after sessions to measure knowledge acquisition. Creation of a bilingual health booklet in English and Punjabi focusing on injury prevention, menstrual health, and hydration. Development of a

mobile application to track sleep, hydration, energy levels, and menstrual cycles. The workshops and app prototype were complemented by consultation with physiotherapists and sports physicians to ensure scientific accuracy. This participatory framework positioned girl athletes not merely as research subjects but as collaborators in shaping solutions.

4. FINDINGS

4.1 Fitness Education and Exclusion

Most girl athletes were unaware of how to prepare for the mandatory YoYo and 2K endurance tests. These tests, originally designed for European male recruits, privilege endurance metrics that are physiologically different in adolescent girls. Inadequate preparation leads to unnecessary exclusion from state selections. To address this, Project Zariya collaborated with Mr. Sapan Chopra, former Chairman of the Punjab Cricket Association's Men's Senior Selection Committee, who conducted a hands-on workshop teaching girls pacing techniques, interval training, and test strategy based on aerobic science.

4.2 Gendered Injury Patterns

Female athletes experience higher incidences of anterior cruciate ligament (ACL) injuries due to anatomical and hormonal differences, such as a wider Q-angle and cyclical ligament elasticity. However, few grassroots coaches understand these mechanisms. Common injuries like shin splints, patellar tendinitis, and pelvic stress fractures are misdiagnosed or ignored, perpetuating a culture of silence around pain. This mirrors colonial and postcolonial medical hierarchies that devalue women's pain.

4.3 Menstrual Health and Scientific Ignorance

Menstrual health remains stigmatized in cricket academies. Players reported concealing symptoms to avoid exclusion. Modern physiology recognizes the performance implications of estrogen fluctuations, yet no Indian sports manuals address training during menstrual phases. This silence originates in the colonial portrayal of menstruation as pathology rather than physiology.

4.4 Mental Health and Stigma

Psychological recovery after injury remains neglected. Many girls expressed anxiety and loss of confidence upon rejoining training. The absence of institutional counseling perpetuates stigma, reinforcing stereotypes of emotional fragility.

4.5 Rural Coaching and Structural Inequality

Interviews revealed that rural academies in Gurdaspur and outer Jalandhar still teach outdated cricket techniques. Girls are rarely exposed to modern biomechanics or data-based training. Project Zariya addressed this through on-site demonstrations, providing practical exposure to scientific warm-ups, safe posture correction, and injury prevention techniques.

4.6 Parental Hesitation and Economic Insecurity

A recurring theme in interviews was parental hesitation to let daughters pursue cricket as a career. Families expressed concern about the lack of financial stability and job opportunities for female players, contrasting sharply with the employment structures available to male cricketers. Men's cricket benefits from professional contracts, sponsorships, and jobs in railways, public sector undertakings, and franchises that provide long-term income security. Women's cricket lacks comparable pathways, reinforcing social and economic apprehension.

One proposed solution is to expand employment schemes for female athletes. Government departments and private franchises can replicate the male model by offering salaried positions and sports quotas for women cricketers. This would not only improve gender parity in sports employment but also reassure parents that their daughters can pursue cricket while remaining financially independent.

5. INTERVENTIONS

5.1 Workshops

Interactive two-hour sessions covered hydration science, menstrual cycle tracking, heat management, and strength conditioning. Surveys recorded an 87 percent improvement in awareness of injury signs and preventive care.

5.2 Health-Tracking Application

The Project Zariya mobile app enables users to log health metrics including hydration, fatigue, and menstrual phases. It also includes a detailed section on common injuries such as ACL tears and shin splints, with visuals explaining symptoms, prevention, and recovery. An embedded AI module provides mental health support through guided reflection, stress management techniques, and referrals to helplines. A printable version was distributed for athletes with limited smartphone access.

5.3 Educational Material

The bilingual health booklet combines scientific illustrations with simplified explanations of anatomy, recovery timelines, and training practices. Its design draws from the tradition of community health manuals developed during India's National Rural Health Mission but adapts them for athletic contexts.

6. POLICY IMPLICATIONS

The findings suggest the need for reform at multiple policy levels.

1. **Curricular Integration:** The Punjab Sports Department should institutionalize mandatory health literacy and menstrual awareness modules in all cricket academies. Gender-Specific
2. **Testing Standards:** The Board of Control for Cricket in India (BCCI) and state associations should adopt sex-differentiated endurance benchmarks grounded in physiological research rather than military norms.
3. **Infrastructure and Equipment Reform:** Partnerships with sports technology firms should prioritize the design of gear suited to female proportions.

4. **Injury Prevention Policy:** The National Centre for Sports Science and Research should mandate injury prevention protocols in training curriculums for under-19 players.
5. **Rural Outreach:** State sports councils must allocate funding to upgrade rural coaching infrastructure and provide annual health audits for girl athletes.
6. **Mental Health Integration:** All state-level sports bodies should include certified sports psychologists and train coaches in trauma-informed mentoring.
7. **Employment and Parental Confidence:** The government and major cricket franchises should expand contractual opportunities, offering women cricketers stable employment under existing sports quotas. The integration of female athletes into railway, bank, and state franchise systems can transform parental attitudes, normalizing sports as a sustainable career for girls. These recommendations align with the broader objectives of Khelo India and Fit India programs, extending their scope to gender equity and scientific literacy in sports.

7. IMPACT AND RECOGNITION

Project Zariya reached over seventy young athletes and engaged directly with senior PCA officials. Multiple academies expressed interest in adopting its educational materials. Feedback surveys indicated measurable gains in awareness and self-efficacy. The initiative has been acknowledged informally by members of the Punjab Cricket Association and discussed for integration into regional training systems.

8. CONCLUSION

Project Zariya demonstrates that the historical exclusion of women from sports science continues to produce structural inequities in training, health, and representation. By merging historical research with public health education and technological innovation, this initiative transforms historical critique into practical reform. The project's participatory model offers a replicable blueprint for gendered health literacy in sports. Expanding job security and institutional backing for women cricketers will be central to ensuring both equality and long term social acceptance of women in professional sports.

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