National Research Journal of Social Sciences
Volume-11, (Special Issue: March 2026)
PP: 247-253

ISSN: 2348-473X
Peer Reviewed & Refereed Journal (IF: 6.74)
Journal Website: www.nrjss.in

AN ANALYSIS OF PHYSICAL ACTIVITY PATTERNS AMONG INDIAN PARALYMPIC ATHLETES

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ABSTRACT

Physical activity plays a central role in the development, health, and performance of Paralympic athletes. This study analyzes physical activity patterns among Indian Paralympic athletes using secondary quantitative data drawn from government reports, national sports statistics, and official performance records. The paper examines trends in athlete participation, medal performance, institutional training infrastructure, and gender representation to understand the evolving landscape of para-sports in India. Findings indicate substantial growth in athlete participation and competitive success across recent Paralympic cycles, supported by increased government initiatives such as the Target Olympic Podium Scheme and institutional training facilities managed by the Sports Authority of India. Despite these advances, disparities related to gender participation, regional access to training infrastructure, and grassroots inclusion remain evident. The analysis further highlights the gap between the large population of persons with disabilities and the relatively small pool of elite para-athletes, indicating the need for broader physical activity promotion beyond high-performance sport. The study emphasizes the policy relevance of inclusive sports development and suggests that expanding institutional access, strengthening grassroots adaptive sports programmes, and improving gender inclusivity can enhance both participation and performance outcomes. The paper contributes to multidisciplinary discussions on sports policy, disability inclusion, and public health by offering a data-driven perspective on the development of physical activity among Indian Paralympic athletes.

Keywords: Paralympic athletes; Physical activity; Disability sport; Sports policy; India

INTRODUCTION

Physical activity is defined by the World Health Organization as "any bodily movement produced by skeletal muscles that requires energy expenditure" (World Health Organization, 2020). For athletes, physical activity extends beyond general movement to structured training, sport-specific conditioning, and competitive participation. In the context of disability sport, physical activity assumes additional physiological, psychological, and social significance due to its rehabilitative, empowerment, and performance dimensions.

Paralympic sport refers to high-performance competitive sport for athletes with physical, visual, or intellectual impairments governed internationally by the International Paralympic Committee and nationally in India by the Paralympic Committee of India (Paralympic Committee of India, 2023). In India, disability is officially classified under the Rights of Persons with Disabilities Act, 2016, which recognizes 21 categories of disabilities (Government of India, 2016). According to Census 2011, India has 26.8 million persons with disabilities, representing 2.21% of the total population (Office of the Registrar General & Census Commissioner, 2011). More recent estimates from the National Family Health Survey (NFHS-5) suggest that approximately 4.5% of households report at least one member with a disability (International Institute for Population Sciences, 2021).

Within this demographic landscape, organized disability sport participation has shown measurable expansion over the past decade. Government of India annual reports from the Ministry of Youth Affairs and Sports indicate increased financial allocation toward para-sports, including targeted

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funding under the Target Olympic Podium Scheme (TOPS) and assistance through the Sports Authority of India (Ministry of Youth Affairs & Sports, 2023). India's medal tally at the Tokyo 2020 Paralympic Games rose to 19 medals, compared to 4 medals at Rio 2016 and 2 medals at London 2012, reflecting structural growth in training systems and athlete participation (Ministry of Youth Affairs & Sports, 2022).

Despite these improvements in elite performance outcomes, there remains limited academic synthesis of physical activity patterns among Indian Paralympic athletes, particularly from a quantitative secondary-data perspective. Most government reports emphasize medal outcomes, infrastructure funding, and policy initiatives rather than detailed documentation of training frequency, regional distribution, gender participation, and access to facilities.

Data from the Sports Authority of India (SAI) indicates that para-athlete training has increasingly been institutionalized through National Centres of Excellence, with specialized coaching support and sports science integration (Sports Authority of India, 2022). However, disparities remain in geographic access to training centres, with higher concentration in metropolitan and southern states compared to central and northeastern regions.

Gender participation is another important dimension. Government data reveal that female para-athlete representation, though improving, remains lower than male participation. At the Tokyo 2020 Paralympics, approximately 40% of India's para contingent were women, representing a significant increase from previous editions but still reflective of structural participation gaps (Ministry of Youth Affairs & Sports, 2022).

Understanding physical activity patterns among Indian Paralympic athletes is crucial for several reasons including as it contributes to policy evaluation under Khelo India and TOPS. It identifies regional and infrastructural disparities. It informs inclusive sports development planning. It provides insight into training intensity and competitive preparedness. Furthermore, physical activity in para-sport is strongly linked to broader health outcomes. The World Health Organization (2020) emphasizes that persons with disabilities are at higher risk of physical inactivity and non-communicable diseases. Structured athletic participation therefore plays a protective role in cardiovascular health, musculoskeletal strength, and psychological well-being. From a multidisciplinary perspective, analyzing physical activity patterns among Indian Paralympic athletes integrates sports science, public health, disability studies, and development policy. Given the Government of India's increasing investment in sports infrastructure and disability inclusion, a quantitative secondary-data analysis is both timely and necessary.

The present study aims to examine physical activity patterns among Indian Paralympic athletes using secondary government data sources, with particular attention to participation trends, gender distribution, institutional training structures, and policy-backed support mechanisms.

OBJECTIVES

The present study is guided by the following objectives:

1. To examine trends in participation of Indian Paralympic athletes using secondary government data.
2. To analyze gender-wise representation among Indian para-athletes.
3. To assess institutional training support and infrastructural access through government schemes and Sports Authority of India initiatives.

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4. To know the distributional and structural patterns of physical activity participation in Indian para-sport.
5. To evaluate the policy implications of observed trends in relation to national sports development initiatives.

METHODS

Research Design

The present study adopts a descriptive and analytical research design based exclusively on secondary quantitative data obtained from official government sources.

Data Sources

Data have been collected from the following secondary sources like Ministry of Youth Affairs & Sports Annual Reports (2016–2023), Sports Authority of India performance and training reports, Target Olympic Podium Scheme (TOPS) documentation, Census of India 2011 disability statistics, National Family Health Survey (NFHS-5) disability indicators, Paralympic Committee of India participation records.

Nature of Data

The study uses quantitative data including the number of para-athletes participating in international competitions, medal tallies across Paralympic Games, gender distribution statistics, government funding allocations, institutional training centre data, athlete support program participation. These datasets are publicly available through official government portals and published annual reports.

Data Analysis

The data are analyzed using Trend analysis (longitudinal comparison across years), Percentage distribution analysis (gender and participation share), Comparative analysis (across Olympic cycles), Descriptive statistical interpretation. No primary data collection or field survey has been undertaken.

Scope and Limitations

The study is limited to officially recorded government data and does not include informal or non-registered para-athletic participation. Variations in reporting standards across years may influence comparative interpretations.

RESULTS AND INTERPRETATION

Growth of Indian Paralympic Participation and Performance

Participation in Paralympic sport serves as a measurable indicator of structured physical activity among elite athletes with disabilities. Government reports indicate consistent growth in athlete representation and performance outcomes.

Table 1: India's Participation and Medal Performance in Recent Paralympic Games

Paralympic Games	Number of Indian Athletes	Total Medals Won	Gold Medals
London 2012	10	2	0
Rio 2016	19	4	2
Tokyo 2020	54	19	5

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Source: Ministry of Youth Affairs & Sports Annual Report (2022); Paralympic Committee of India (2023).

Table 1 demonstrates a substantial increase in participation levels across successive Paralympic cycles. The number of Indian athletes increased more than fivefold between 2012 and 2020. This rise reflects enhanced physical training programmes, improved scouting, and greater institutional investment in para-sports. Medal performance shows a parallel upward trajectory, suggesting that increased physical activity exposure and structured training environments have translated into competitive success.

Government Support and Institutional Training Infrastructure

Physical activity patterns among Paralympic athletes are highly dependent on access to specialized training centres, sports science services, and coaching support.

Table 2: Government-Supported Institutional Structures for Para-Athletes

Indicator	Reported Value
National Centres of Excellence (SAI)	23 centres
Athletes Supported under TOPS (including para-athletes)	300+ athletes
Dedicated para-sport support programmes	Present
Sports science support (physio, nutrition, psychology)	Available in major centres

Source: Sports Authority of India (2022); Ministry of Youth Affairs & Sports (2023).

The expansion of National Centres of Excellence indicates increasing institutionalization of physical activity among elite para-athletes. Structured facilities allow athletes to engage in high-frequency, sport-specific activity, which differs from recreational physical activity due to its planned intensity and monitoring. However, reports indicate uneven geographical distribution of centres, with greater concentration in southern and urban regions. This suggests that access to systematic physical activity opportunities remains spatially unequal, affecting athlete development pathways.

Gender Distribution among Indian Paralympic Athletes

Gender participation is an important dimension in understanding physical activity access.

Table 3: Gender Representation in India's Paralympic Contingent (Tokyo 2020)

Gender	Number of Athletes	Percentage Share
Male	33	61%
Female	21	39%
Total	54	100%

Source: Ministry of Youth Affairs & Sports (2022).

Table 3 indicates improving female representation compared to previous Paralympic cycles, reflecting increasing inclusion of women in structured physical activity and competitive sports. Nevertheless, the gap between male and female athletes highlights persistent social and infrastructural barriers affecting

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participation. Government initiatives promoting inclusive sports environments appear to be generating gradual change, but data suggest continued need for targeted interventions aimed at female para-athletes.

Disability Population Context and Participation Potential

Understanding athlete participation requires comparison with the broader disability population.

Table 4: Disability Statistics in India

Indicator	Value
Total persons with disabilities (Census 2011)	26.8 million
Percentage of national population	2.21%
Households reporting disability (NFHS-5)	approx. 4.5%

Source: Census of India (2011); NFHS-5 (IIPS, 2021).

The contrast between the large national disability population and the relatively small elite Paralympic athlete pool highlights significant gaps between potential and participation. While elite sports participation has increased, physical activity opportunities remain limited for the wider disabled population. This suggests that current growth is concentrated among competitive athletes rather than reflecting a broad culture of physical activity among persons with disabilities. Expanding grassroots-level access remains a critical policy issue.

Discussion

The analysis reveals several significant patterns regarding physical activity among Indian Paralympic athletes.

The steady rise in athlete numbers and medal outcomes indicates that structured physical activity opportunities have expanded considerably over the past decade. Government schemes such as TOPS and institutional support provided by the Sports Authority of India have played a transformative role in strengthening athletic preparation and regular training routines. Increased exposure to professional coaching and sports science has likely improved training intensity and consistency, key markers of advanced physical activity behaviour.

Institutional infrastructure emerges as a major determinant of activity patterns. Athletes trained within National Centres of Excellence benefit from systematic schedules, nutritional guidance, and medical support, resulting in higher competitive readiness. However, geographic concentration of facilities suggests unequal opportunities across regions, limiting the development of a wider participation base.

Gender participation trends indicate gradual progress towards inclusivity. While female representation has improved, disparities remain. This imbalance may reflect broader social factors including access to sports facilities, mobility constraints, and socio-cultural perceptions surrounding disability and female participation in sport.

Comparison with national disability statistics highlights a significant gap between potential participants and elite representation. The data suggest that high-performance para-sport in India is growing faster than community-level physical activity participation among persons with disabilities.

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This calls for policy shifts towards creating inclusive sports ecosystems extending beyond elite performance targets.

From a multidisciplinary perspective, physical activity among Paralympic athletes cannot be understood solely through sports science. It intersects with public health, disability rights, social inclusion, and development policy. The quantitative trends identified in this study reflect not only athletic commitment but also changing institutional attitudes toward inclusive sports development in India.

Policy Relevance and Implications

The findings of this study have significant policy relevance within the context of inclusive sports development and national physical activity promotion in India. The observed rise in Paralympic participation and performance demonstrates the effectiveness of recent government interventions such as the Target Olympic Podium Scheme (TOPS), enhanced athlete funding, and institutional training support through the Sports Authority of India (Ministry of Youth Affairs & Sports, 2022). However, the analysis also highlights structural gaps that require policy attention.

The concentration of elite training facilities in select urban regions indicates a need for greater geographic decentralization of para-sports infrastructure. Establishing regional training centres and district-level inclusive sports facilities can broaden participation pathways and improve physical activity access for athletes from rural and underserved regions. Gender disparities evident in athlete participation suggest that targeted strategies for female para-athletes remain necessary. Policies supporting safe training environments, financial incentives, and community-level awareness programmes may increase participation among women with disabilities.

Although elite performance indicators have improved, the large difference between the overall disability population and elite athlete representation suggests limited grassroots engagement in physical activity. Government initiatives such as Khelo India may benefit from stronger integration of adaptive sports programmes at school and university levels to promote early identification and sustained engagement. Policy frameworks should increasingly incorporate sports science support, including physiotherapy, nutrition, and psychological training, as integral components of physical activity development. These interventions not only enhance performance but also contribute to long-term health and rehabilitation outcomes among persons with disabilities.

From a broader developmental perspective, promoting structured physical activity among persons with disabilities aligns with national goals of social inclusion and health promotion. Increased participation in adaptive sport can contribute to reduced sedentary lifestyles, improved psychosocial well-being, and strengthened representation of persons with disabilities in public life.

CONCLUSION

The present study examined physical activity patterns among Indian Paralympic athletes using secondary quantitative data obtained from government reports and official sports statistics. The analysis indicates a clear upward trend in participation, performance outcomes, and institutional support over the past decade, reflecting the growing importance of para-sports in India's national sports framework. This analysis highlights that investment in adaptive sports is not only a performance-driven endeavour but also a critical component of inclusive public health and social development policy. Future research may benefit from integrating longitudinal athlete-level data and regional participation trends to deepen understanding of physical activity patterns across different disability categories.

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