

## Infrastructure and Facility-Oriented Perceptions of Sports Tourism Development in Ladakh

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### Abstract

**Background:** This study explores the role of infrastructure and facilities in developing sports tourism in Ladakh, India, within the larger context of sports tourism as a driver of destination competitiveness and economic growth. **Method:** Using an exploratory qualitative research design, semi-structured interviews were conducted with 35 stakeholders from the sports and tourism sectors, including government officials and tourism service providers. The data were analysed using qualitative content analysis, supported by NVivo-based word clouds and thematic coding. **Results:** The findings highlight a strong focus among stakeholders on infrastructure-driven development, revealing deficiencies in sport-specific facilities—especially for winter sports—and facing limitations in transport connectivity and supporting tourism infrastructure. The study shows a shift in stakeholder discourse from emphasising nature-based approaches to implementation readiness, stressing the importance of government intervention, public–private collaboration, and region-specific planning to advance sports tourism. **Conclusion:** Although Ladakh has notable natural and climatic advantages for adventure and winter sports, strategic investments in infrastructure, accessibility, and institutional coordination are necessary to transform the region into a well-structured and competitive sports tourism destination capable of hosting training programs and sporting events.

**Keywords:** sports tourism; infrastructure; Destination; Development; Ladakh

### Introduction

The intersection of sport and tourism has become an increasingly influential factor for economic growth and destination competitiveness in the modern global tourism economy (Bazzanella et al., 2023; Liberato et al., 2021). Key to the success of sports tourism destinations is the availability, quality, and appropriateness of infrastructure and facilities that support both sporting activities and quality visitor experiences. More generally, tourism infrastructure is a fundamental element of destination development, influencing visitor satisfaction, destination image, and long-term sustainability (Haneef, 2017; Mandić et al., 2018).

Sports tourism infrastructure comprises an integrated set of physical assets and service provisions, including specialised sport venues, recreational and training facilities, and supporting tourism amenities such as accommodation capacity, transport systems, and complementary services (Hassan et al., 2022). Existing scholarship indicates that the presence and standard of sport-related infrastructure significantly influence participation behaviours and destination appeal (Hallmann et al., 2012), while targeted investment in recreational and sport facilities provides a necessary platform for the growth of sports tourism (Hadzik & Grabara, 2014).

Assessing sports tourism infrastructure presents unique planning and governance challenges, as destinations must balance the technical and safety demands of sport-specific activities with broader tourism functions and accessibility (Gobin et al., 2019; Moradi et al., 2022). Empirical studies also show uneven infrastructure development across different contexts, with many destinations experiencing shortages of vital facilities that limit tourism growth prospects (James & Essien, 2019; Valeriani et al., 2020). In sports tourism, the relationship between infrastructure quality and competitiveness is particularly important, as the quality of facilities and service readiness directly influence a destination's positioning and the overall on-site experience (Jovanović & Ilić, 2016).

Although the strategic importance of infrastructure for sports tourism is widely recognized, systematic and context-sensitive assessment frameworks are still limited. Many destinations continue to face challenges related to insufficient provision, inadequate maintenance, and weak integration between sport infrastructure and broader tourism systems (Lucian & Leguna, 2021; Marsudi et al., 2024). This persistent mismatch between infrastructure needs and actual capacity highlights the need for comprehensive evaluation methods that support strategic planning, prioritisation, and investment in sports tourism development.

Therefore, establishing an evidence-based understanding of the current state of sports tourism infrastructure—and developing effective methods to evaluate it—remains essential for destinations aiming to use sport as a catalyst for tourism growth and regional economic development. To address this gap, the present study investigates the infrastructural and facility conditions that support sports tourism development.

Within this context, Ladakh has gained increasing recognition for its potential to host adventure and winter-sport activities; however, the extent to which this potential can be realised depends on the availability and adequacy of sport-specific facilities, connectivity, and supporting tourism infrastructure. This article investigates stakeholder perceptions of sports tourism development in Ladakh with particular emphasis on infrastructure, accessibility, and sport-related facilities. The study aims to assess the potential for adventure sports tourism in Ladakh and is guided by one overarching research question: What infrastructure enhancements and facility upgrades are required to unlock Ladakh's sports tourism potential? To address this question, qualitative interviews were conducted with key regional stakeholders and sport and tourism officials.

## Methodology

This study employed an exploratory qualitative research design. Primary data were collected through semi-structured interviews with 35 participants purposively chosen for their expertise and familiarity with tourism in Ladakh. The sample included officials from the Department of Sports and Tourism and key tourism stakeholders, such as travel agency staff, taxi drivers, and hotel managers from various locations across the Ladakh region. Regarding gender, the participants consisted of 5 women and 30 men.

## Ethical approval

The study was conducted in accordance with established research ethics principles. Before participation, all respondents received a clear explanation of the study's purpose, expected benefits, and possible risks. Participation was completely voluntary, and informed consent was obtained from each participant. To safeguard privacy, participant identities and personal data were kept confidential and used solely for academic and research purposes.

## Data analysis

Interview data were analysed using qualitative content analysis. NVivo 15 software supported the analytic process through word cloud queries and systematic thematic coding, enabling the identification of salient concepts, recurring patterns, and dominant themes within stakeholder accounts.

## Results



Fig.1 Word cloud of NVivo analysis

The qualitative word cloud generated from stakeholder interviews indicates that infrastructure expansion and facility upgrades are seen as the main factors driving sports tourism growth in Ladakh. The most prominent and frequently mentioned terms—such as infrastructure, facilities, sports, need, develop, rinks, stadiums, airport, and tourism—suggest that respondents mainly view the potential for sports tourism in terms of development readiness and operational capacity, rather than relying on the region’s natural resources.

Public-sector engagement emerged as a key theme, demonstrated by frequent references to government, support, construction, completion, investment, and upgrade. This pattern suggests that stakeholders see state-led intervention as crucial for initiating, financing, and maintaining the infrastructure needed for sports tourism. Simultaneously, terms such as private, collaborate, and sector indicate an awareness of public–private partnership arrangements as a practical way to speed up infrastructure development and improve service delivery.

Stakeholders also clearly expressed sport-specific infrastructure needs. Frequent terms such as rinks, skating, ice hockey, stadiums, turf, football, arenas, and courts highlight a perceived need for specialised, standardised, and event-ready facilities—especially for winter and ice sports. The presence of terms such as winter, slopes, chairlifts, and gondolas further emphasises Ladakh’s perceived advantage in winter sports tourism while also indicating key infrastructure gaps that limit its capacity to host national and international competitions.

Accessibility and connectivity were similarly emphasised. The use of terms such as airports, flights, roads, highways, access, and connectivity underscores the belief that physical accessibility is essential to the expansion of sports tourism. Additionally, frequent mentions of hotels, resorts, rentals, and capacity emphasise that stakeholders recognise the need to grow tourism infrastructure—especially in peripheral and rural areas—to meet the demand for sports-related travel.

Finally, the repeated use of geographically specific terms—including Kargil, Zaskar, Drass, Srinagar, and Delhi—indicates that respondents perceive infrastructure provision as uneven across the region, with some areas identified as priorities for targeted investment and sports tourism planning.

## Discussion

The results indicate a clear shift in stakeholder framing—from emphasising nature-based potential to viewing sports tourism development as driven by infrastructure. Unlike early discussions of adventure tourism that emphasise landscape, terrain, and environmental features, participants in this study consistently identified facilities, transport connectivity, and institutional support as key factors for growth. This pattern aligns with the broader idea in sports tourism research that destinations tend to progress from relying on natural resources to more structured, facility-focused development as they grow (Weed & Bull, 2012). It also aligns with work emphasising the need to systematically identify and assess “conditions for practice”

in outdoor and sport tourism contexts, where enabling infrastructure, access, and support services become essential for activity viability and destination readiness (Silva et al., 2021).

The frequent focus on infrastructure and facilities suggests that stakeholders view Ladakh as having valuable natural assets for sports tourism; however, it lacks the developed environment and services necessary for large-scale participation, systematic training, and hosting events. This supports the idea that natural resources alone are insufficient to compete in sports tourism markets, where the quality and accessibility of infrastructure heavily influence destination success (Higham & Hinch, 2018). In line with Silva et al. (2021), these findings suggest that Ladakh's development strategy would benefit from criteria-based assessment frameworks that evaluate facility adequacy, accessibility, and readiness by activity type and area, rather than relying solely on general perceptions of potential.

### **Importance of government and institutional support**

The prominent use of governance-related terms highlights stakeholders' views that state-led planning, investment, and coordination are crucial for developing sports tourism in Ladakh. The frequent connection of government participation with facility construction, upgrades, and project completion suggests an expectation that public agencies should lead, especially in high-altitude and border areas where private investment might be limited due to higher risks, substantial capital needs, and operational challenges. This aligns with research emphasising the government's supportive role in sports tourism through infrastructure development, regulatory and policy frameworks, and destination marketing strategies (Hall, 2011). At the same time, mentions of private-sector involvement also indicate support for teamwork and partnership-based governance approaches, increasingly seen as ways to promote more sustainable sports tourism growth. Consistent with the multi-stakeholder approach proposed by Silva et al. (2021), coordinated engagement between public agencies, private operators, and local actors is likely necessary to turn perceived potential into actual sports tourism infrastructure and services.

### **Winter sports tourism as a strategic niche**

The prominent use of terms related to rinks, skating, ice hockey, slopes, and chairlifts shows that winter sports tourism is viewed as a strategic opportunity for Ladakh. Considering the region's climate, stakeholders appear to see Ladakh as having advantages in ice- and snow-based sports, positioning it within a specialised segment of the sports tourism market. Simultaneously, the repeated emphasis on developing and upgrading facilities indicates that current infrastructure is inadequate to meet event and performance standards, especially those required at national and international levels. This interpretation aligns with scholarship noting that winter sports destinations depend on capital-intensive, technically advanced infrastructure to remain competitive (Hudson, 2010). The activity-specific focus evident in the word cloud also supports the argument of Silva et al. (2021) that sport tourism planning should evaluate

requirements and conditions by sport type, since winter sport infrastructure has unique technical and safety requirements compared to other outdoor sports.

### **Accessibility and supporting tourism infrastructure**

Stakeholders' ongoing focus on transport infrastructure and accommodation highlights accessibility as a major obstacle to the expansion of sports tourism. Limited connectivity can restrict the growth of event tourism, athlete mobility, and spectator travel, especially in remote and peripheral destinations (Getz & Page, 2016). The findings indicate that respondents view investment in airports, roads, and air services as crucial to enhancing Ladakh's capacity to attract and host sports-related travel. Furthermore, references to hotels, resorts, and rentals suggest that stakeholders view sports tourism as a system where sport-specific facilities—particularly in rural areas—must be supported by adequate hospitality capacity and related services to satisfy visitors and sustain demand. This aligns with Silva et al.'s (2021) emphasis on assessing supporting conditions (e.g., access, services, and infrastructure) as part of a comprehensive evaluation of outdoor and sport tourism potential.

### **Conclusion**

In conclusion, interviewees' narratives suggest that Ladakh's sports tourism potential is increasingly seen through an infrastructure-focused lens, where the adequacy of facilities, connectivity, and institutional support is considered a key factor for development. Although the region is recognized for its strong natural and climatic advantages—especially for winter and adventure sports—its growth into a competitive, event-ready destination is limited by gaps in sport-specific venues, transportation access, and supporting tourism services. Addressing these challenges through coordinated government efforts, enhanced public–private partnerships, and region-specific planning could help Ladakh progress from emerging potential to actual readiness, thereby increasing its capacity to host training camps, competitions, and other major sporting events.

### **Disclosure statement**

No potential conflict of interest was reported by the author(s).

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