

Original Paper

Collaborative Development of Sports and Leisure Towns from the Perspective of Complex Adaptive Systems

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Abstract

Using methods such as literature review, field research, and logical analysis, this study explores the systematic nature, challenges, and optimization paths for the collaborative development of sports and leisure towns from the perspective of complex adaptive systems. The systematic characteristics of collaborative development in sports and leisure towns include seven fundamental properties: aggregation, flow, nonlinearity, diversity, identification, building blocks, and internal models, along with two operating modes: a multidimensional collaborative operation system and an external linkage development mechanism. The main challenges are as follows: (1) "Identification" distortion – insufficient depth in core content excavation; (2) "Building Blocks" fragmentation – ineffective integration of regional resources; (3) "Internal" differentiation – improper management and organization of diverse stakeholders; (4) "Aggregation" disorder – inadequate collaboration for multidimensional integrated development; (5) "Talent" shortage – weak guidance in talent cultivation and recruitment policies. The proposed optimization paths include: (1) tracing back to the origins to shape unique cultural couplings; (2) deep interweaving to strengthen precise resource allocation; (3) conjugate driving to standardize governance systems for multiple stakeholders; (4) network construction to formulate multidimensional development blueprints; (5) local-university collaboration to empower talent cultivation and introduction policies.

Keywords

Sports and leisure town, Complex adaptive system theory, Characteristic town, Collaborative development

1. Introduction

As a critical carrier for spatial reconstruction and industrial transformation in modern society, sports and leisure towns, with their distinctive cultural heritage and economic potential, have emerged as vibrant

connections between urban and rural landscapes. In 2021, the National Development and Reform Commission, the Ministry of Natural Resources, the Ministry of Culture and Tourism, along with eight other ministries, jointly issued the "Guidelines for the Standardized and Healthy Development of National Characteristic Towns" (Ministry of Culture and Tourism, et al., n.d.), highlighting the potential for regions with specific resource endowments to focus on developing specialized towns in areas such as commerce, culture, tourism, sports, and tertiary industry integration. This policy has injected significant momentum into the development of sports and leisure towns, signaling their broad potential at the intersection of multiple fields.

Amid the deep intertwining of globalization and regionalization, the operational logic of these towns has evolved beyond linear, single-dimensional growth, becoming a complex adaptive system characterized by multi-layered and multi-element interactions. The introduction of complex adaptive system theory provides a new analytical framework for studying sports and leisure towns, moving beyond traditional static models to emphasize the emergent properties of dynamic change and the overall patterns formed through local interactions.

This study takes the first batch of nationally recognized sports and leisure towns within Sichuan Province as a case study to explore the mechanisms of collaborative development, aiming to promote their sustainable and healthy growth. It seeks to reveal the internal logic driving the development of these towns, providing theoretical foundations and practical guidance for resource allocation, functional planning, and cultural integration.

2. Systematic Analysis of Collaborative Development

2.1 Characteristics of Complex Adaptive Systems

The theory of complex adaptive systems was formally proposed by Professor John H. Holland of the University of Michigan in 1994, marking the tenth anniversary of the Santa Fe Institute (Li Na, 2019). A complex adaptive system consists of numerous interacting elements or individuals. These elements, through local, nonlinear interactions and feedback mechanisms, generate collective behaviors and patterns. The key feature of such systems is their ability to adapt to changes in the external environment through self-organization and adaptive behavior, with individual evolution driving the system's progression (Lyu Li, 2022). The complex adaptive systems theory offers a new theoretical perspective for deeply understanding and researching the collaborative development of sports and leisure towns.

The collaborative development of sports and leisure towns involves multidisciplinary knowledge and the operation of multiple stakeholders, characterized by four key properties of complex adaptive systems: aggregation, nonlinearity, flow, and diversity, as well as three mechanisms: identification, internal models, and building blocks. For example:

Aggregation: During the development of Baima Pass Sports and Leisure Town, various individuals such as the Fulong Holdings Group, Shudi Leisure Culture Resort, and outdoor tourists gathered continuously, forming key stakeholders and generating significant economic benefits.

Flow: Government policies in Baima Pass Sports and Leisure Town guide the flow of capital from Fulong Holdings Group into the town. At the same time, the flow of information attracts talent to return, aiding in the construction of the Baima Pass Motorcycle Tourism Theme Park.

Nonlinearity: Zengjia Town Sports and Leisure Town, selected as one of the first batch of national sports and leisure towns, attracts large numbers of tourists with its unique outdoor snow and ice resources, involving nonlinear changes with multiple stakeholders.

Diversity: Although both Zengjia Town Sports and Leisure Town and Longtan Township Canyin Valley Sports and Leisure Town are located in Sichuan Province, their development focuses differ based on local resources. Zengjia Town focuses on snow leisure, while Longtan Township focuses on scenic views, each attracting tourists through precise targeting.

Identification: Longtan Township Canyin Valley Sports and Leisure Town is known for its unique landscapes such as bizarre mountains, picturesque waters, mysterious caves, beautiful gorges, waterfalls, lakes, springs, and strange rocks. It also houses the only known Canyin cave-dwelling tribal site in China, with the Laolong Cave landscape often referred to as the "Underground Louvre."

Building Blocks: For example, the Sichuan Provincial Department of Culture and Tourism, the Guangyuan Cultural Radio and Television Tourism Bureau, and the Chaotian District Cultural Tourism and Sports Bureau provide instructions and convey them step by step to the local regions, where adaptive adjustments are made to attract tourists.

Internal Models: Shangteng New Village Sports and Leisure Town relies on the Huanghe Town Reservoir and integrates agricultural and fishery activities to offer visitors grape picking, leisure fishing, and art tours. At the same time, it optimizes local infrastructure to accommodate more visitors and meet their personalized needs.

2.2 Multidimensional Collaborative Operation System: Echo Model

The echo model, originating from ecology and systems theory, is a model that emphasizes feedback and memory. In complex adaptive systems, the echo model mainly describes how individuals or elements within a system adjust adaptively based on past experiences and environmental feedback (Li Hui, Qu Luping, & Sun Wei, 2024).

In sports and leisure towns, under the influence of factors such as the flow of capital, materials, and energy, various systems interact and evolve in a dynamic and complex manner. These include the town's attraction system (core attractions, other attractions, supporting attractions, etc.), town facilities system (accommodation, transportation, shopping, entertainment, etc.), town service system (tourist reception, lodging, tour services, etc.), town management system (destination planning, development management, environmental management, etc.), town marketing system (branding, destination tourism image, online channels, public relations and advertising, etc.), adaptive individual systems (government, enterprises, merchants, etc.), and external environment systems (policies, economy, market conditions, etc.) (see Figure 1).

With the release of central policies, local governments begin to introduce investment attraction policies and tap into local core resources. Enterprises, guided by planning objectives, invest funds into the projects, which then attract large companies and small merchants, leading to the development of related industries. Meanwhile, the government continuously improves infrastructure based on market demand and strengthens management of businesses to increase regional visibility and attract tourists. This iterative cycle of feedback and adaptation allows the system to evolve.

For instance, Zengjia Town Sports and Leisure Town reached an agreement with Guangyuan Spring and Autumn International Travel Agency in 2014 to invest in the construction of the Zengjia Mountain Ski Resort, with an initial investment of 250 million RMB. As the project progressed, the construction of a star-rated hotel, children's amusement park, agricultural sightseeing park, mountain bike race track, and related businesses providing essential services such as food, accommodation, transportation, and entertainment were established. These developments helped meet tourist demand, and the ski resort launched winter discount activities to attract visitors, building a strong customer base. Over time, this led to the formation of a large-scale outdoor leisure and sports gathering place that received positive feedback from visitors.

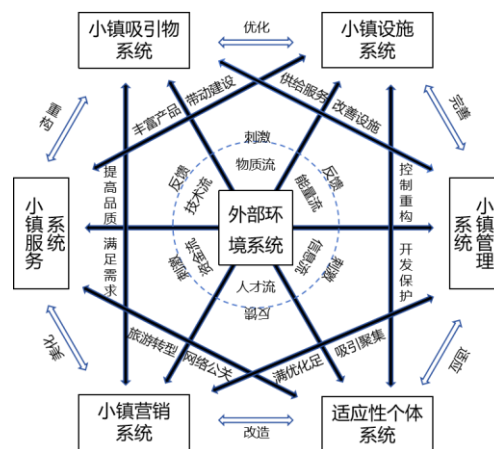


Figure 1. Multidimensional Collaborative Operation System of Sports and Leisure Towns

2.3 External Linkage Development Mechanism: Stimulus-Response Model

The stimulus-response model is a classic behavioral theory, often used to describe how individuals react to external stimuli. In complex adaptive systems, the stimulus-response model is primarily used to analyze how elements within the system perceive changes in the environment and immediately respond with corresponding behavioral actions. In this context, when a detector (If) detects a change in the external environment, the responder (Then) executes specific actions as instructed by a set of rules, producing adaptive changes (R) (Wang Xiangquan & Tu Juan, 2024).

By integrating the stimulus-response model with the development of sports and leisure towns, we can observe the self-adaptive operational mechanism of the sports and leisure town system from a micro perspective of sub-systems (see Figure 2). For example:

Detector: Since the introduction of the concept of "characteristic towns," both the national and local governments have successively issued policies encouraging town development. Key policies such as the "Notice on Establishing a High-Quality Development Mechanism for Characteristic Towns and Villages" (Office of the National Development and Reform Commission, n.d.), "Guiding Opinions on Promoting Sustainable Rural Tourism Development" (Ministry of Culture and Tourism, et al., n.d.), and "Notice on Issuing Guidelines for the Standardized and Healthy Development of National Characteristic Towns" have shifted the focus of work, resulting in changes to the external environment of Shangteng New Village and forming the information set for the collaborative development of sports and leisure towns.

If-Then Rule Set: In 2019, in response to national strategies to promote the construction of characteristic towns and the development of rural tourism, Shangteng New Village began to plan the "Sweet Town" and a 2300m² pottery cultural complex. The plan included the establishment of a pottery cultural center that integrates pottery exhibitions, academic exchanges, creative experiences, and teaching research—known as the Daqian Color Pottery Art Research Institute.

Responder: In the same year, the Provincial Science and Technology Department approved a project by Neijiang Normal University titled "Research on the 'Triple Integration' Construction Model for Sichuan Color Pottery Characteristic Villages and Towns Under the Rural Revitalization Strategy" (Peng Feisheng, 2023), initiating a model of cooperation between the university and local government.

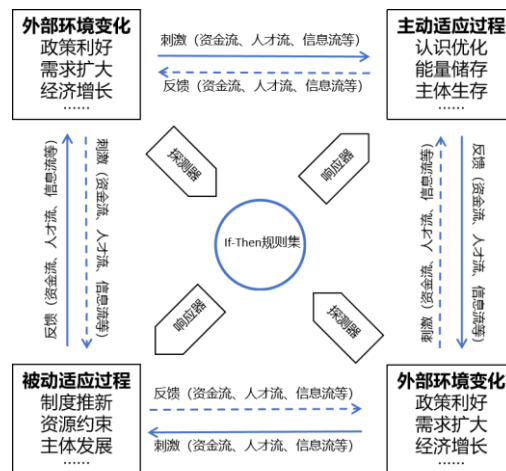


Figure 2. External Linkage Development Mechanism of Sports and Leisure Towns

3. Challenges Encountered

3.1 "Identification" Distortion: Insufficient Depth in Core Content Exploration

In the collaborative development of sports and leisure towns, the excessive pursuit of multifunctionality and broad scope often leads to a lack of deep exploration of cultural connotations and uniqueness. This

tendency results in many towns failing to form distinct characteristics in shaping their core competitiveness, leading to unclear themes and an inability to highlight competitive brands (Wu Qi, 2022; Nie Chunli, & Deng Yanxiang, 2022). Particularly in the high degree of integration of sports, tourism, and culture, the inheritance and innovation of traditional culture have not been effectively merged, causing a loss of cultural depth in the town. Many towns focus on architectural forms and artificial landscapes in their construction, neglecting the deep excavation of local culture and the preservation of intangible cultural heritage. This superficial construction model causes the town to lose its unique cultural style, affecting its market attractiveness and long-term development potential. For example, in Shangteng New Village Sports and Leisure Town, despite large investments in rural tourism and agricultural sightseeing, the project scale has gradually increased, but there is a lack of deep and innovative cultural experiences in traditional craftsmanship, folk culture, and farming experiences, making it difficult to meet visitors' demand for unique experiences and cultural understanding.

3.2 "Building Blocks" Fragmentation: Poor Regional Resource Integration

Sports and leisure towns face challenges in regional resource integration, primarily in maximizing resource utilization and optimizing allocation. Although many towns develop based on local natural, cultural, and historical resources, they fail to effectively integrate and share these resources, which reduces their attractiveness, competitiveness, and sustainability. The adequacy of infrastructure is one of the key factors limiting effective resource flow. Poor transportation, inadequate accommodation, and low-quality supporting facilities fail to meet visitors' needs in terms of food, accommodation, transportation, entertainment, and shopping, limiting visitors' stay duration and willingness to spend (Lu Zhiqin, Chen Linxiang, & Ren Bo, 2023; Si Jingmei, 2021). For instance, the Zengjia Mountain Ski Resort typically receives 6,000 to 8,000 visitors on winter weekends. Although this brings a certain amount of tourism revenue to nearby dining, accommodation, and shopping areas like Hanwang Old Street, Rongle Ancient Street, and Zhi Zhu Hot Springs Hotel, most visitors tend to visit on the same day, with overnight visitors being insufficient compared to the total number of visitors. Additionally, there are significant issues with the allocation and flow of public resources. Despite a series of favorable policies from the national and local governments that direct public resources into the towns, the lack of precision and transparency in resource allocation leads to inefficiency and polarization in resource movement (Zhang Haibin, Wei Fahuai, & Yang Gang, 2022). This unreasonable resource allocation hinders the development of characteristic industries in the towns, making it difficult to achieve industry diversification and collaborative development.

3.3 "Internal" Differentiation: Improper Management and Organization of Multiple Stakeholders

The construction and development of sports and leisure towns rely on close collaboration between the government, market entities, social forces, and relevant industries. However, in the current management mechanisms, weak coordination and ambiguous responsibilities lead to fragmented governance systems and irrational resource allocation (Si Liang & Chen Miao, 2022). Although the government is responsible for planning and policy formulation, there is often a mismatch between management gaps and overreach

during actual implementation, with unclear functional divisions and inadequate industry supervision, leading to slow policy execution and deviations in implementation. For example, the Qu County government originally planned to improve the transportation system around the Canyin Valley Sports and Leisure Town by constructing the Qu County Lin Can Expressway, but neglected to consider the impact on the scenic area's water supply, causing the project to stagnate. This reflects flaws in government planning and execution, failing to effectively coordinate interests and resources, leading to deviations in development goals and delays in progress. Additionally, the involvement of market entities and social forces is often limited to investment and construction, lacking sufficient innovation and market competition mechanisms. This single participation model fails to stimulate the town's internal vitality and has not effectively driven industry upgrading and brand development, making it difficult for the town to stand out in a competitive market. Furthermore, conflicts of interest between developers, operators, and local governments further exacerbate power imbalances among the governance entities. Particularly in the allocation of sports-related power, uneven power distribution leads to disagreements, affecting the scientific nature and implementation of decisions, with inefficient information feedback mechanisms, making the town's operational efficiency low and unable to respond quickly to changes in market and social demands, further amplifying management blind spots.

3.4 “Aggregation” Disorder: Ineffective Multidimensional Integration and Development

The construction and development of sports and leisure towns require coordination and integration between the sports, tourism, culture, and other related industries. Currently, many towns still exhibit weak integration across horizontal industry chains. Although relying on natural resources and unique geographical locations, they have attracted large numbers of visitors and investments, but the synergistic effects between industries have not been effectively released (Guo Wenjing, 2022). The sports and tourism industries are the dual cores of town development, but the connection between them is still weak. Mechanisms for project cooperation and resource sharing have not been established, leading to the town's operational efficiency and industrial benefits falling far short of expectations. For example, in Sichuan Province, although activities such as marathons, cycling, and ATV races have combined sports with scenic spots, these events are periodic and have limited influence, failing to create stable market demand and visitor loyalty, leading to short visitor stays and low occupancy rates (Du Chengyang, 2020; Yang Menglin, 2021). Moreover, in the vertical industrial chain, the complete industry chain from “R&D—manufacturing—sales” has not been established, and many sports products still rely on external markets, lacking independent production capacity. This prevents the formation of a closed loop in the industrial chain of sports-themed towns, resulting in insufficient brand development and market promotion. Additionally, the application of new technologies such as the internet and 5G in town construction remains slow. Although some towns have adopted online reservations for venue bookings, the technology application is still at an early stage and has not been deeply integrated. In particular, the lack of intelligent equipment and VR technology limits the town's breakthroughs in smart services, data-driven decision-making, and personalized experiences.

3.5 "Talent" Shortage: Ineffective Policies for Cultivation and Recruitment

In the construction and development of sports and leisure towns, talent recruitment and cultivation have always been key factors restricting efficient operation and collaborative development. Although the demand for various talents continues to rise, many towns face a dual dilemma of insufficient talent supply and low quality due to ineffective recruitment policies and lack of support (Zhang Zejun, Zhang Jianhua, & Zhang Jian, 2019). Particularly the shortage of compound talents has become a bottleneck for industrial innovation, management model transformation, and market expansion. For example, in Baima Pass Sports and Leisure Town, although there is a professional sports management team, most grassroots service personnel lack systematic sports training, leading to a disconnect between management and service staff. Currently, there are only 9, 21, and 101 universities offering sports tourism, sports economics and management, and leisure sports programs in China, respectively. The insufficient cultivation of multi-field sports talents in universities is the root cause of the significant mismatch between market demand and talent supply. Moreover, local governments often focus on strengthening policy support and financial investment for the sports industry, neglecting matching talent recruitment policies. The lack of long-term effective incentives and protection measures results in issues such as blind recruitment of talents without focusing on quality, unclear talent positioning, inefficient utilization, and core talent outflow. These problems undoubtedly pose the greatest threat to the collaborative development of the towns.

4. Optimization Paths

4.1 Tracing Back to the Origins: Shaping the Integration of Unique Cultural Elements

Regional characteristic culture embodies the history and cultural accumulation of local people over generations, serving as the soul of a sports and leisure town's survival and development. To achieve the healthy development of sports and leisure towns, promote sustainable construction, and enhance brand core competitiveness, it is essential to deeply integrate local culture with sports elements, giving the town unique charm and vitality. In the face of modern industrial culture's influence, changes in content, form, and concepts are inevitable. If regional characteristic culture is entirely adhered to while rejecting industrial culture, the existing cultural advantages cannot be transformed into the town's industrial strengths. Conversely, relying solely on the construction of the sports industry can lead to a homogeneity in towns, making sustainable development difficult. Therefore, only by organically combining local history, ethnic culture, and sports activities can a town highlight its regional features, enhance market appeal, and foster cultural identity among visitors, laying a unique cultural foundation for success in a highly competitive environment. For instance, Jin Can Town combines the local silk and sericulture culture with a series of cultural events such as the "Golden Silkworm Cultural Festival" and "Silk Road Fashion Art Festival," blending traditional and industrial cultures to create a competitive creative cultural brand (Cao Hailin & He Jingwei, 2024). This integration not only preserves the town's cultural heritage

but also elevates the cultural value of its industry through innovation, successfully driving the dual development of its economy and culture, injecting vitality into the town's collaborative development.

4.2 Deep Interweaving: Strengthening Precise Resource Allocation

Accurate resource allocation is undoubtedly the core hub for the collaborative development of sports and leisure towns. Resource configuration goes beyond infrastructure improvement; it involves the organic integration of natural resources, cultural assets, market demand, and social capital. By carefully sorting and systematically integrating both internal and external resources, a resource system that aligns closely with the town's sports and leisure tourism brand can be created, facilitating deep complementary interactions between sports projects and tourism resources. This configuration not only significantly enhances the town's attractiveness and competitiveness, creating unique cultural and industrial brand advantages, but also promotes the sustainable growth of the overall industry. By optimizing resource allocation, the town can precisely match market demands, flexibly mobilize internal and external resources, and drive regional coordinated development, meeting the ever-changing needs of tourists. Meanwhile, the improvement of transportation, healthcare, and other public service facilities will directly affect visitors' leisure and sports experiences (Yang Zhongbing, Wang Jiangping, & Gu Xiaoyan, 2020). Well-developed safety facilities and a high-quality professional rescue team will ensure the safety of various outdoor activities, enhancing visitors' trust and participation, thus increasing their likelihood of revisiting, injecting continuous user potential into the town's collaborative development.

4.3 Conjugate Driving: Standardizing the Governance System of Stakeholders

The development of sports and leisure towns involves multiple stakeholders. While each stakeholder is positioned differently, their varied views on interests, values, and development paths are crucial for the healthy development of the town. Therefore, a standardized governance system is vital as the foundation for the town's development. The government, as the representative of public interest and the leading force in the governance system, must establish a multi-party governance framework through systematic policy guidance and planning, breaking down traditional single-management barriers to ensure coordination and resource optimization. By optimizing top-level design, precisely defining government functions, and appropriately "delegating power," more construction and operational responsibilities can be entrusted to market entities and enterprises, enabling them to transform their advantages into regional advantages. This approach not only stimulates innovation but also improves the efficiency of market-based resource allocation, promoting industrial structure upgrading and optimization. Residents and merchants, as the most numerous participants in town construction, can enhance their awareness of shared governance, encouraging them to autonomously participate, supervise, and provide feedback, thus promptly addressing flaws in governance by the government and enterprises. This process helps close gaps between stakeholders, solidify consensus, and promote a multi-party governance system based on co-construction, co-governance, and shared benefits, injecting endogenous power into the town's collaborative development.

4.4 Network Construction: Formulating a Multidimensional Development Blueprint

Industrial agglomeration can effectively solve issues such as insufficient industrial synergy, unstable market demand, and lagging technological applications in sports and leisure towns. Formulating a multidimensional industry development blueprint should not only focus on the deep integration of related industries such as sports, tourism, and culture but also emphasize the horizontal and vertical connectivity of industry chains and the innovative application of information technology. As the dual cores of town development, the sports and tourism industries' relationship must deepen through innovative cooperation mechanisms, resource-sharing platforms, and cross-sector collaborative projects. By deeply integrating the internet and digital technologies, breaking down traditional industry boundaries, and implementing the "sports + tourism" model, continuous market demand and stronger user engagement can be formed. Encouraging the linkage of online platforms with offline events can extend visitors' stay, improve overall occupancy rates, and increase economic benefits, thereby promoting organic industry growth. In the vertical industry chain, enhancing local R&D, production, and sales capabilities of sports products will reduce dependence on external markets, helping to create independent brand IP and form a self-sustaining industrial closed loop, thus enhancing the town's competitiveness. Optimizing R&D systems and improving emerging industries such as smart sports and intelligent tourism services will involve introducing advanced production technologies and utilizing 5G, IoT, AI, and VR technologies to build digital platforms. By leveraging big data and cloud computing, every stage of product design, operation management, and marketing can precisely capture consumer demands, improving personalized service customization and quality, thus infusing the town with new vitality.

4.5 Local-University Collaboration: Empowering Talent Cultivation and Recruitment Mechanisms

The path to innovation lies in acquiring talent. To attract and retain talent, it is necessary to expand avenues for talent storage. Only by deepening reforms in talent cultivation and recruitment mechanisms, combining global perspectives with local characteristics, can the construction of sports and leisure towns achieve multidimensional progress. Establishing a talent development strategy that combines "bringing in" and "going out" can attract interdisciplinary talents and promote collaboration between academia, industry, and local governments, forming a talent ecosystem that integrates production, education, and research. Additionally, relying on the think tank role of higher education institutions and sports colleges, the development of compound talents can be directed through scientific evaluation and incentive mechanisms. By aligning local needs in areas such as sports tourism, leisure sports, and cultural creativity, a resource platform for attracting, gathering, and retaining talent can be established, supported by systematic policy initiatives. Furthermore, constructing a complete professional training chain and standardized certification system, and regularly inviting professionals to provide systematic and specialized training to workers, will help standardize industry development, enhance the comprehensive quality of employees, and improve overall service quality and management standards. This will promote the healthy development of the industry and inject powerful intellectual energy into the town's collaborative development.

5. Conclusion

From a sport-oriented vantage point, the coordinated growth of sports-leisure towns should follow the evolutionary logic of complex adaptive systems. First, a distinctive sporting culture must crystallize the town's core identity, nurturing a shared sense of place and purpose. Second, the precise matching of sporting resources—venues, events, and tourism facilities—should energize the entire industrial chain, stimulating both investment and employment. Third, a pluralistic governance structure that unites government, market, and community actors is essential to reconcile competing interests and keep development on a fair playing field. Finally, relentless innovation driven by skilled professionals and emerging technologies—such as smart wearables, data analytics, and immersive media—will safeguard long-term competitiveness.

Only through continual self-calibration within the dynamic interplay of agglomeration, circulation, non-linearity, and diversity can a sports-leisure town remain resilient and vibrant amid intense market pressure, achieving a harmonious integration of economic prosperity, social well-being, and ecological balance while fueling high-quality regional growth. Future research should focus on the resonance among technological advances, shifting sport-tourism preferences, and evolving policy environments, thereby injecting forward-looking insights and actionable pathways into the sustainable evolution of sports-centered towns.

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References

- Cao Hailin, & He Jingwei. (2024). Empowerment Growth and Embedded Development: How Special Towns in Poverty-stricken Areas Shift from "Poverty Alleviation" to "Rural Revitalization" - Based on Field Investigation of the "Silkworm Town" in Shiquan County, Shaanxi Province. *Seek Truth*, 2024(02), 96-108.
- Du Chengyang. (2020). *Research on the Diagnosis and Cultivation Path of Sports Special Towns in Sichuan Province*. Chengdu Sport University.
- Guo Wenjing. (2022). The Rise of Central Rural Areas: Research on the Regional Synergistic Development of Sports and Leisure Characteristic Towns. *Agricultural Economy*, 2022(02), 136-138.
- Li Hui, Qu Luping, & Sun Wei. (2024). Research on the Synergistic Development Operation Mechanism and Implementation Path of Traditional Sports Characteristic Schools under the CAS Theory. *Sports Culture Guide*, 2024(08), 105-110.
- Li Na. (2019). *Research on the Spatial Development of Characteristic Towns Based on the Theory of Complex Adaptive Systems*. Tianjin University.

- Lu Zhiqin, Chen Linxiang, & Ren Bo. (2023). Research on the Integration of Sports and Tourism in China's Sports and Leisure Characteristic Towns from the Perspective of the Value Chain Model. *Journal of Shenyang Sport University*, 42(02), 102-108.
- Lyu Li. (2022). *Research on the System Evolution Process, Mechanism and Rural Revitalization Effects of Rural Tourism Destinations in the Periphery of Large Cities*. Central China Normal University.
- Ministry of Culture and Tourism, et al. (n.d.). Guidelines for the Standardized and Healthy Development of National Characteristic Towns. Retrieved from https://www.mct.gov.cn/whzx/whyw/202110/t20211011_928210.htm
- Ministry of Culture and Tourism, et al. (n.d.). Opinions on Promoting the Sustainable Development of Rural Tourism. Retrieved from https://www.gov.cn/zhengce/zhengceku/2018-12/31/content_5439318.htm
- Nie Chunli, & Deng Yanxiang. (2022). Analysis of the High-Quality Development Path of Sports and Leisure Characteristic Towns under the Background of Rural Revitalization. *Sports Culture Guide*, 2022(06), 15-22.
- Office of the National Development and Reform Commission. Notice on Establishing a High-Quality Development Mechanism for Characteristic Towns and Small Towns. Retrieved from http://big5.www.gov.cn/gate/big5/www.gov.cn/xinwen/2018-09/28/content_5326338.htm
- Peng Feisheng. (2023). Thoughts on the Service of Traditional Ceramic Industry to Rural Tourism Economy: A Case Study of Shangteng New Village in Yong'an Town, Neijiang City. *Guangdong Sericulture*, 57(08), 136-138.
- Si Jingmei. (2021). Research on the Development of Sports Industry Clusters in China's Sports and Leisure Characteristic Towns from the Perspective of Rural Revitalization. *Journal of Xi'an University of Physical Education and Sports*, 38(06), 713-718.
- Si Liang, & Chen Miao. (2022). The Connotation, Dilemmas and Guarantee Paths of the Standardized and Healthy Development of Sports Characteristic Towns in China. *Journal of Shenyang Sport University*, 41(05), 124-130.
- Wang Xiangquan, & Tu Juan. (2024). Research on the Diversified Governance of Public Sports Services in Smart Communities from the Perspective of CAS Theory. *Journal of Shanghai University of Sport*, 48(07), 66-75.
- Wu Qi. (2022). Local Experience and Implications of the Construction of Sports and Leisure Characteristic Towns in China: A Case Study of Hengbi Football Town. *Journal of Guangzhou Sport University*, 42(04), 110-118.
- Yang Menglin. (2021). *Research on the Influencing Factors of the Development Model of Sports and Leisure Towns*. Southwest University.
- Yang Zhongbing, Wang Jiangping, & Gu Xiaoyan. (2020). Analysis of the Sustainable Development of Sports and Leisure Special Towns in Guizhou Province under the Background of Rural Revitalization Strategy. *Guizhou Nationalities Research*, 41(09), 112-115.

- Zhang Haibin, Wei Fahuai, & Yang Gang. (2022). Research on the Governance of Sports and Leisure Characteristic Towns in China from the Perspective of Blockchain: Realistic Dilemmas, Resolution Mechanisms and Strategy Suggestions. *Journal of Shandong Sport University*, 38(01), 15-25.
- Zhang Zejun, Zhang Jianhua, & Zhang Jian. (2019). A Cold Reflection on the "Hot" Development of Sports and Leisure Special Towns in China. *Sports Culture Guide*, 2019(01), 77-82.