

Research On the Transformation Path of The Traditional Fitness Industry Driven by The Integration of Physical Activity, Healthcare, And Nutrition

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Abstract. The integration of physical activity, healthcare, and nutrition ("Ti-Yi-Shi" fusion) is a key global trend and theoretical framework for addressing fragmented health services and promoting holistic well-being. This study, grounded in international practice and theory, analyzes how China can advance Ti-Yi-Shi fusion in the context of its unique health system challenges, policy environment, and population needs. This study proposes a localized policy pathway, including phased qualification liberalization, cross-sectoral standard recognition, and enhanced risk management tailored to China's regulatory landscape. The findings suggest that such policies promote the transformation of health service ecosystems from silos to integrated "Ti-Yi-Shi" models. Achieve one-stop chronic disease management and personalized preventive care. This convergence unlocks new value through data-driven precision interventions, innovative business models, and improved public health outcomes, while also creating challenges in cross-disciplinary coordination, data privacy, and food safety. Research shows that policy approaches tailored to local conditions can effectively promote Ti-Yi-Shi integration in China, offering practical insights for modernizing health services and informing global health innovation.

Keywords: Ti-Yi-Shi integration; Health service fusion; Healthy policy; China's fitness industry; Industry transformation; Value creation

1. Introduction

In recent years, the integration of physical activity, healthcare, and nutrition are commonly referred to as "Ti-Yi-Shi" fusion. It has emerged as a global trend in the modernization of health services. For instance, the UK, Sweden, and the United States have developed innovative service models like exercise referral schemes and integrated health management, effectively bridging the gap between fitness, medical care, and dietary guidance.

In line with the Healthy China 2030 strategy, public awareness of chronic disease prevention is growing. According to that, China's traditional fitness industry is undergoing a profound transformation. This shift is driven by three key factors: the rising demand for personalized health management, an increased emphasis on preventive care, and enhanced collaboration

Against this backdrop, a new generation of fitness enterprises is rapidly emerging across China. Leading brands like Zhonghang Health, Leke Fitness (LEFIT), and Yiji Fitness are at the forefront of this movement. They pioneering integrated service models that merge digital health management, professional training, nutrition guidance, and data-driven interventions into cohesive offerings. These innovative gyms offer diversified services including smart exercise equipment, health assessments, online coaching, and community-based wellness programs. However, there are big challenges remain in terms of industry standards, cross-disciplinary talent cultivation, data integration, and sustainable business models.

Through a case study analysis of Zhonghang Health, Leke Fitness, and Yiji Fitness, this paper assesses the current landscape of China's new-generation fitness enterprises. It subsequently investigates how the "Sports-Medicine Integration" (Ti-Yi-Shi) model could innovate health management services, pinpointing the primary opportunities and challenges for the industry's transformation. The significance of this research lies in providing a theoretical basis and practical reference for the transformation of China's fitness industry toward an integrated health service model.

By examining representative cases, this study aims to shed light on emerging trends and propose actionable strategies for industry stakeholders. It also contributes to the broader discourse on how fitness enterprises can evolve to meet public health needs and policy directions under the Healthy China framework.

This study employs a qualitative approach combining literature review, policy analysis, and comparative case studies. The framework follows a logical structure: identifying theoretical foundations and obstacles, designing an integrated service model, validating the model through enterprise cases, and finally proposing policy pathways and discussing implications for industry transformation.

2. Literature Review

2.1. Theoretical Framework of EMN-Integration

The concept of Exercise-Medical-Nutrition (EMN) integration is rooted in the pursuit of "holistic health." From a sport management perspective, its core theoretical supports include:

(1) Ecosystem Theory: Views health services as a complex ecosystem involving multiple stakeholders (government, businesses, users, industry associations). Successful integration requires restructuring how resources flow, information is exchanged, and value is distributed within the system, moving from zero-sum competition to symbiotic synergy [1].

(2) Resource Dependence Theory: Sports, medical, and nutrition institutions each possess unique core resources (e.g., client traffic, professional authority, scientific data) but lack others. The essence of integration is reducing uncertainty regarding external key resources. Strategic alliances, joint ventures, and mutual recognition of standards facilitate cross-boundary resource integration to enhance overall effectiveness [2].

(3) Value Co-Creation Theory: In an integrated ecosystem, value is no longer created independently by a single entity but is co-created by producers (e.g., coaches, doctors, nutritionists) and consumers (users) through interaction. Data platforms and personalized services are key enablers of this co-creation [3].

2.2. Multi-dimensional Practical Barriers

Despite solid theoretical foundations, China's EMN integration practice faces significant sport management challenges:

Credential Barriers and Talent Shortage: China's professional qualification system is highly segmented. Social sports instructors lack "prescription rights," while certifications for practicing physicians and clinical nutritionists fall under different administrative systems (health and market supervision), preventing professionals from practicing across domains within the legal framework and creating significant policy risk [4]. A deeper issue is that influenced by the current medical insurance payment system, hospital revenue relies primarily on pharmaceuticals and tests; preventive and exercise intervention services struggle to generate significant income. This leads to a lack of internal economic incentive for hospitals to cultivate or hire interdisciplinary talent (e.g., exercise prescription specialists) [5]. Simultaneously, rigid academic boundaries in higher education result in insufficient program development for interdisciplinary fields like sports rehabilitation and clinical exercise physiology, causing a serious mismatch between the talent cultivation system and market demand [6].

(2) **Departmental Silos and Interest Conflicts:** There is a lack of cross-sectorally recognized service standards, outcome evaluation standards, and data interoperability standards. Data generated by fitness apps is difficult to integrate into hospital HIS systems, and nutritional advice cannot seamlessly connect with exercise prescriptions, leading to poor coordination efficiency. The root cause lies in the deep bureaucratic separation and departmental interests between the sports system and the healthcare system, which are managed by different administrative bodies. Both sides prioritize

their own interests in data resources, financial investment, and performance evaluation, lacking incentives for sharing and collaboration, resulting in "data silos" and "resource fragmentation" [7].

(3) Single Business Models and Payment Obstacles: The traditional sports industry heavily relies on membership fees and session fees, lacking both the impetus and mechanisms to link with medical and insurance payers. This makes the commercial value of preventive health services difficult to realize [8]. A key barrier is that exercise prescription and other EMN services are not yet universally covered by national medical insurance, creating a lack of stable payers and making it difficult for service providers (whether hospitals or commercial entities) to form sustainable business models [9].

3. EMN Framework Design

3.1. Three-Tier Service Model

Based on market segmentation theory in sport management, this study proposes a three-tier Exercise-Medical-Nutrition (EMN) integrated service model designed to achieve comprehensive health coverage through a stratified service architecture. This framework is particularly aligned with the health governance needs of major metropolitan areas like Beijing. Its operational logic lies in the organic integration of physical activity services, medical resources, and nutritional guidance through a tiered, classified, and streamlined approach, forming a complete "prevention-intervention-treatment" health service chain. Against the backdrop of Beijing's strategic positioning as "Four Centers" and its development as an international metropolis, this model can be piloted and promoted in community health centers, international medical departments of tertiary hospitals, health industry parks, and digital health platforms, providing a practical pathway for building a modern health service system with Chinese characteristics.

The model consists of the following three synergistic and progressive service tiers:

Tier 1: Mass Health (Prevention and Health Promotion)

This tier targets healthy and sub-healthy populations, serving as the broad foundation of the EMN system. Services are delivered through community fitness centers, workplace health stations, and digital health platforms, focusing on standardized health education, scientific fitness guidance, and basic health screenings. Beijing can leverage its well-established community service system and digital infrastructure to incorporate this tier into the "Beijing Health Cloud" platform, achieving extensive coverage of resident health management. Representative case: Health workshops jointly organized by Leke Fitness and community health centers. This tier is a critical entry point for building the first line of defense in public health.

Tier 2: Precision Management (Targeted Intervention)

According to tier 2, focusing on high-risk groups for chronic diseases and patients in stable condition, representing the core value of the EMN system. Services require the collaboration of interdisciplinary teams, including exercise prescription specialists and clinical nutritionists, to provide personalized health intervention plans through health management institutions and wellness centers of tertiary hospitals. Beijing can utilize its rich medical resources and technological innovation advantages to establish sports-medicine integration innovation platforms in locations such as Zhongguancun Life Science Park, promoting technological R&D and model innovation. Representative case: C Health's "5P Health Management" system. This tier is the core link for health service value creation and an important manifestation of Beijing's role as an international science and technology innovation center.

Tier 3: Medical Integration (Clinical Integration)

The third tier serves diagnosed patients and those in rehabilitation, representing the deep integration of the EMN system. Services must be implemented within medical institutions by multidisciplinary teams (MDTs), incorporating exercise therapy and nutritional intervention into clinical pathways. Beijing can leverage its high-quality medical resources to launch demonstration projects at national medical centers such as Peking Union Medical College Hospital and Fuwai Hospital, exploring the inclusion of EMN services in the health insurance payment system.

Representative case: Cardiac rehabilitation programs collaboratively developed by OneSeason and Anzhen Hospital. This tier is an important breakthrough point for reforming the health service supply side, highlighting Beijing's leading position as a national medical and health center.

This tiered service system establishes a scientific division of labor and collaboration mechanism, forming a multi-level, comprehensive health service network. The initiative provides crucial health support to Beijing in its pursuit of becoming "an internationally first-class harmonious and livable capital." Furthermore, it establishes a replicable and scalable "Beijing Model" of sports-medicine integration, offering valuable insights and policy reference for nationwide implementation.

3.2. Market-Driven Mechanisms and Resource Integration Models

Building on the service model, the engine for making the EMN framework work involves designing clear market-driven mechanisms and resource integration models. From a strategic management perspective in sport management, this solves the fundamental questions of "who pays for the services" and "how to allocate resources efficiently."

3.2.1 Market-Driven mechanisms

A diversified payment system is essential to move beyond the current over-reliance on out-of-pocket spending and ensure sustainable operations. Key innovative payment models include:

Corporate Wellness Partnerships (B2B2C): There are many companies purchase comprehensive wellness packages as part of their employee benefits, especially in tech and multinational sectors. These programs including health risk assessments, group fitness classes, and nutrition coaching which are offered through collaborations between fitness providers and corporate HR departments. Businesses view them as strategic investments to improve productivity and reduce absenteeism.

Insurance Integration (B2B2C): To fund preventive healthcare more effectively, health insurers should incorporate proven EMN programs (e.g., diabetes prevention plans) and establish data-driven, risk-sharing agreements with providers that demonstrate tangible health improvements, thereby creating aligned incentives for better outcomes.

Consumer Payment Options (B2C): Flexible payment solutions should be categorized into three service tiers: affordable subscriptions for basic wellness (Tier 1), premium outcome-based packages for personalized interventions (Tier 2), and co-managed, revenue-sharing models with medical providers for clinical integration (Tier 3).

3.2.2 Resource integration models

(1) **Data-Driven Resource Aggregation Platforms:** Inspired by platform economy principles, the core strategy for integrated enterprises is to evolve into digital resource hubs that efficiently connect users, service providers, and health products into a single, cohesive ecosystem.

(2) **Intelligent Matching Mechanism:** Through algorithmic matching of detailed user health profiles (including biometric data, goals, and preferences), the platform ensures a curated selection of fitness coaches, nutritionists, and physicians. This enables precise resource allocation, enhancing operational efficiency and boosting user satisfaction.

(3) **Cross-Sector Value Exchange:** The platform's strategic imperative is to build a curated health service ecosystem by offering a compelling value proposition to third-party providers: standardized APIs for seamless integration and transparent, equitable profit-sharing rules. This strategy creates a powerful network effect. Its monetization strategy is twofold: generating revenue through transaction commissions and targeted advertising, while providing partners with access to a valuable, expanded client base.

(4) **Outcome Tracking and Continuous Optimization:** The system continuously gathers multi-dimensional service data, such as exercise adherence, physiological changes, and diet compliance. Thus, the effectiveness of interventions can be evaluated based on this data. This not only provides a basis for improving services a, but also demonstrates value to users and payers, forming a closed-loop cycle of "service-data-optimization."

Obviously, this model highlights the core role of commercial entities within the integrated ecosystem. They function not only as service providers but also as innovation drivers, resource coordinators, and value distributors, offering a practical strategy to overcome systemic barriers and achieve scalable growth.

4. Case Study and Validation

4.1. High-End Medicalization Transformation (C Health)

C Health exemplifies an "Upward Integration" strategy, transitioning from a traditional gym to a health service provider by incorporating medical resources such as health assessment centers and proprietary evaluation systems. Its "5P Health Management" model (Preventive, Predictive, Personalized, Participatory, Precise) adopts a differentiation strategy, offering high-value, medically endorsed services to attract premium clients. This strategy helps service providers overcome common challenges found in public healthcare, such as limited insurance reimbursement and an insufficient number of trained professionals. It achieves this by catering to wealthier clients who desire and have the means to pay for customized health services [10].

4.2. Community-Based Accessibility Model (LEFIT)

LEFIT has built its business around a platform model that creates convenient, neighborhood-based points of access to health services. By using digital tools and operating a network of small-scale venues that are open around the clock, the company keeps costs down and reaches more users. This approach incorporates services from partners like nutrition brands directly into members' workout regimens, making foundational EMN services both scalable and affordable [11].

4.3. Vertical Specialization (OneSeason)

OneSeason adopts a niche-focused strategy, specializing in running and trail sports. By collaborating with sports medicine clinics and physical therapists, it delivers targeted services in injury prevention and rehabilitation. This model thrives on deep expertise and community trust, illustrating the viability of specialized exercise-medicine integration in specific markets. OneSeason's approach showcases how commercial entities can overcome systemic integration barriers by forming targeted partnerships with medical experts, avoiding large-scale health system complexities [12].

5. Policy Pathways and Implementation for Promoting Industry Integration

5.1. Vision: Reshaping Health Service Industry Boundaries

The short-term goal is to break down administrative barriers and establish cross-sectoral coordination mechanisms in pilot areas. The medium-to-long-term goal is to build a seamless continuum from "exercise for health" to "health risk intervention" and finally "medical rehabilitation support," ultimately forming a new EMN integration ecosystem guided by the government, led by the market, and involving multiple stakeholders. It is crucial to acknowledge the current lack of motivation within the public medical system and place greater emphasis on encouraging commercial organizations and social capital to play an innovative and leading role in building this ecosystem [13].

5.2. Core Strategy: Phased Credentialing Reform and Standard Recognition

This is the core of sport management policy design. A gradual reform is recommended:

(1) Phase 1 (Pilot): Launch "qualification mutual recognition" pilots in specific regions (e.g., Hainan Boao, Chengdu Tianfu New Area) or specific fields (e.g., sports rehabilitation, diabetes management). Explore establishing new interdisciplinary qualifications like "Clinical Exercise Physiologist" or "Exercise Prescription Specialist" and develop training and certification systems.

Encourage commercial entities and industry associations to lead or participate in standard setting and talent certification, breaking the sole reliance on traditional education and hospital systems [14].

(2) Phase 2 (Promotion): Establish a national "EMN Integrated Service Standards Committee" jointly led by the General Administration of Sport, the National Health Commission, and the State Administration for Market Regulation to develop cross-sectorally recognized service process standards, data security and privacy standards, and outcome evaluation standards. The key is to establish interest coordination mechanisms to ensure the standard-setting process balances the interests of all parties, particularly safeguarding the legitimate rights and innovation space of commercial entities [15].

(3) Phase 3 (Deepening): Promote medical insurance payment system reform, exploring the inclusion of standardized, evidence-based "exercise prescription" and "nutritional intervention" items into insurance reimbursement. This approach addresses the core issue of sustainable financing and stimulates market vitality. At the same time, efforts are underway to develop models through which commercial health insurance can cover EMN services. Such a multi-payer system would create a more diversified funding environment and offer private-sector providers reliable sources of reimbursement.

5.3. Implementation Safeguards: Risk Management and Supporting Mechanisms

To ensure the sustainable development of integrated sports-medicine-nutrition services, three fundamental safeguards require attention:

(1) Comprehensive Risk Governance

A dual approach combining preventive and compensatory measures forms the foundation of risk control. Establishing an industry blacklisting system can exclude suppliers who repeatedly fail to comply, while mandatory liability insurance can provide financial protection against potential service-related incidents, such as sports injuries or nutritional complications.

(2) Privacy-Centric Data Stewardship

Protecting sensitive health information necessitates robust protocols governing its entire data lifecycle. This begins with clear regulations that define permissible data collection, mandate secure storage standards, and establish approved usage scenarios alongside reliable anonymization techniques. Furthermore, these measures must be designed to balance technological innovation with fundamental privacy rights, ensuring ongoing compliance within a dynamic legal landscape.

(3) Human Capital Development System

Sustainable integration of EMN is contingent upon three prerequisites. First, academic pipelines must be established through interdisciplinary curricula in sports and medical education, creating a workforce capable of working across traditional boundaries. Second, and crucially, healthcare institutions must implement operational reforms in performance metrics and compensation structures to make EMN services financially viable for hospitals and professionally rewarding for staff. Finally, these efforts must be bolstered by policy support, such as tax incentives for private training programs, to comprehensively accelerate workforce development.

By systematically addressing the core challenges of operational risk, data governance, and human capital, this framework establishes the essential foundation for successful and scalable integration across the sports, medical, and nutrition sectors.

6. Industry Transformation and Value Creation under the Integration Trend

Policy guidance is accelerating the blurring of industry boundaries and reshaping traditional value chains. The competitive edge of fitness centers is shifting from physical assets like space and equipment toward data-driven service platforms. Leading organizations are evolving into integrated health management providers, extending their reach into both preventive health and rehabilitative care. Within this transition, commercial players—benefiting from market agility, innovation capacity,

and user acquisition strengths—are positioned to establish central roles in the emerging health ecosystem more rapidly than system-constrained public hospitals.

The transformation of value creation follows three core mechanisms:

(1) Data Value: Integrated health data—spanning exercise, physiological metrics, and nutrition—forms a foundational asset for personalized and precision-based service innovation.

(2) Network Value: Platform enterprises exhibit exponential value growth as more users and service providers (trainers, doctors, nutritionists) join, consistent with Metcalfe's Law.

(3) Ecosystem Value: Companies increasingly operate within interconnected systems. For instance, wearable firms supply data to gyms, which in turn offer risk management insights to insurers. This collaborative approach expands total market value, with commercial entities showing particular strength in ecosystem orchestration.

However, integration introduces new risks that require proactive mitigation: 1) Preventing misleading marketing and pseudo-scientific claims under the banner of integration. 2) Limiting monopolistic use of health data and algorithmic discrimination. 3) Ensuring service inclusivity to avoid exacerbating health disparities across communities.

7. Conclusion

This study establishes that the integration of exercise, medical care, and nutrition (EMN) represents an inevitable direction for China's health service industry. Using a sport management lens, we identify three fundamental barriers—credentialing systems, standardization gaps, and unsustainable business models—and examine their structural origins: insufficient hospital motivation due to constraints of medical insurance reimbursement, fragmented interdepartmental resource coordination, and an underdeveloped talent pipeline.

Case evidence indicates that firms may pursue distinct strategic paths—such as premium medicalization, community-based platform services, or specialized vertical offerings—depending on their resources and market positioning. Notably, commercial organizations exhibit heightened adaptability and innovative capacity, positioning them as key catalysts in overcoming systemic barriers and advancing practical integration. Well-designed policy guidance holds the potential to reorganize the health ecosystem, unlocking significant value through data utilization, network expansion, and collaborative partnerships.

This research is primarily qualitative in nature. The proposed policy pathways and outcome assessments require further empirical validation through quantitative studies. Additionally, while supply-side factors (firms and policy) are examined in depth, future studies should place greater emphasis on demand-side dynamics, including consumer adoption, payment willingness, and behavioral change mechanisms.

Four promising directions for future research emerge:

Conducting long-term tracking and economic evaluation of pilot integration policies.

Employing big data and AI techniques to establish causal links between multi-dimensional EMN interventions and health outcomes.

Incorporating mental health into the framework to develop a holistic “Exercise-Medical-Nutrition-Mental” approach.

Examining the role and impact of commercial health insurance in EMN payment models and assessing the sustainability of market-led integration initiatives.

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