

Research on the Application Mode of Hebei Province's Characteristic Folk Sports in the Integration of Sports and Medicine in Elderly Communities in the Digital Age

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Abstract: With the intensification of population aging and the iteration of digital technology, the demand for elderly community health services has become diversified, and the integration of sports and medicine has become a key path to improve the health level of the elderly. Hebei Province has abundant resources of characteristic folk sports, which combine fitness functions with cultural attributes, providing a unique practical carrier for the integration of sports and medicine in elderly communities. This study takes the digital age as the background and comprehensively uses literature research, field research, and case analysis methods to systematically sort out the current development status and existing problems of the integration of sports and medicine in elderly communities in Hebei Province. It deeply analyzes the empowering mechanism of digital technology for the integration of characteristic folk sports into sports and medicine integration, and then constructs three major application models: "online and offline combined folk sports teaching model", "personalized folk sports prescription model", and "community folk sports cultural activities and sports and medicine service collaboration model". Research has shown that characteristic folk sports in Hebei Province can effectively adapt to the health needs and exercise preferences of the elderly population. With the support of digital technology, it can significantly improve the accuracy and participation enthusiasm of elderly community sports and medical integration services. This not only provides reference for the sustainable application of this model in Hebei Province, but also provides reference for other regions to explore the integration path of folk sports and elderly health services.

Keywords: digital age; characteristic folk sports; elderly community; integration of sports and medicine

1. Introduction

In the current era of deep penetration of digital technology into social life, its potential for application in the field of elderly health continues to be released, and the acceleration of China's population aging process has made the health issues of the elderly a focus of social attention [1]. As an innovative health management model, the integration of sports and medicine, with the organic synergy of sports and medicine as its core, plays a key role in improving the health level of the elderly, delaying the aging process, and reducing medical costs [2]. It has become an important strategy to actively respond to population aging.

Hebei Province boasts rich and diverse folk sports resources such as Cangzhou martial arts and Wuqiao acrobatics. These folk sports not only have practical functions for strengthening the body, but also carry the profound cultural heritage of Yan and Zhao, and are a vivid carrier of regional culture. Integrating Hebei Province's characteristic folk sports into the elderly community sports and medical integration system has dual value: on the one hand, it can provide elderly people with sports choices that are both interesting and culturally meaningful, effectively enhancing their enthusiasm and compliance in participating in sports activities, and thereby promoting physical health; On the other hand, it can promote the inheritance and promotion of excellent traditional culture in Hebei Province, enhance the cultural identity and sense of belonging of the elderly. And with the empowerment of digital technology, it can break through the limitations of time and space, allowing more elderly people to conveniently participate

in folk sports activities, obtain personalized sports guidance and health management services, and inject momentum into the high-quality development of elderly community sports and medical integration.

This study adopts the literature research method to lay a theoretical foundation by reviewing relevant literature on the integration of sports and medicine, folk sports, and digital technology applications at home and abroad; This paper use case analysis method, select representative elderly communities in Hebei Province, analyze their practice of integrating sports and medicine and the development of folk sports activities, summarize experiences and problems; This paper use questionnaire survey and interview methods, conduct research on elderly community residents, medical staff, sports workers, etc., to grasp their understanding, attitudes, and needs towards the integration of sports and medicine and Hebei Province's characteristic folk sports; This paper use mathematical statistics to quantitatively analyze survey data and reveal inherent patterns and trends.

2. Analysis of the current situation of physical and medical integration in elderly communities in Hebei Province

2.1 Development process of physical and medical integration in elderly communities in Hebei Province

The integration of elderly community sports and medical care in Hebei Province has gone through three stages of gradual exploration, standardized development, and deepening upgrading, presenting an evolutionary feature of policy driven, practical innovation, and technological empowerment.

In the early exploration stage, with the worsening of population aging and the increasing demand for elderly health, Hebei Province initially attempted to combine sports and medical care. Some communities spontaneously organized elderly fitness activities and invited medical staff to hold health lectures, but the cooperation between the two was loose and lacked systematic norms. After the release of the "Healthy China 2030" plan in 2016, the province launched an exploration of the integration of sports and medicine. Some communities and medical institutions cooperated to provide physical fitness monitoring and exercise guidance services. However, due to limitations in experience and models, there were deficiencies in the integration of service content and resources.

The key node in the development stage is the implementation of policies. In 2017, the "Medium - and Long Term Plan for the Prevention and Control of Chronic Diseases in Hebei Province (2017-2025)" clearly promoted the integration of sports and medicine, integrated medical and sports resources throughout the province to build a sports and medicine integrated health promotion service center, approved the pilot of the only fitness and health integration center in the country, built a network data platform to achieve real-time reporting of physical fitness monitoring data at the provincial, municipal, and county levels, formed a characteristic model of Hebei, gradually introduced professional talents into elderly communities, and continuously enriched personalized service content and forms.

In recent years, digital technology has become the core driving force in the deepening stage. Some elderly communities use intelligent wearable devices and health apps to monitor health data, and rely on the Internet to carry out telemedicine and online guidance to improve service accessibility; In 2024, the "Jixin'an" smart health control system will be included in the "Jishijian" platform, becoming a demonstration project for the integration of sports and medicine. At the same time, we rely on provincial universities and research institutions to cultivate composite talents, providing talent support for the in-depth development of the integration of sports and medicine.

2.2 Survey on the current situation of physical and medical integration in elderly communities in Hebei Province

This study adopts a mixed research method of "questionnaire survey+in-depth interview" to conduct a systematic investigation on the current situation of physical and medical integration in elderly communities in Hebei Province. The questionnaire survey covers 10 elderly communities in core cities such as Shijiazhuang, Tangshan, and Baoding (Table 1 for basic information of sample communities). A total of 500 questionnaires were distributed, and 450 valid questionnaires were collected, with an effective response rate of 90%; The in-depth interviews covered 30 elderly community residents, 5 community managers, 10 medical staff, and 5 sports workers, with a total of 50 interviews conducted to ensure the representativeness and comprehensiveness of the research data, as shown in Table 1.

Table 1. Basic information of sample elderly communities

City	Community name	Construction period	Number of elderly population (person)	Whether to carry out integrated sports and medical services
Shijiazhuang	Yangguang	2010	820	Yes
Shijiazhuang	Xingfu	2012	750	Yes
Tangshan	Xianghe	2008	680	Yes
Tangshan	Kangning	2015	910	No
Baoding	Fushou	2011	730	Yes
Baoding	Ankang	2013	850	No
Handan	Lekang	2009	620	Yes
Qinhuangdao	Haiyun	2014	780	Yes
Langfang	Yiju	2016	890	No
Cangzhou	Yunhe	2017	950	Yes

In terms of service content, the current integrated sports and medical services for elderly communities in Hebei Province mainly include physical fitness monitoring, exercise guidance, health lectures, chronic disease management, etc., as shown in Table 2.

Table 2. Current status of service content supply

Service type	Coverage/popularity	Service frequency	Core issue
Physical fitness monitoring	80% of communities are equipped with basic equipment such as height and weight meters, blood pressure monitors, etc	Once every quarter	The device has a single function and lacks dynamic monitoring capability; Data is not interconnected with medical institutions
Sports guidance	60% of communities regularly conduct fitness exercises and Tai Chi classes	1-2 times a week	Lack of professionalism (sports instructors lack medical knowledge), lack of personalization; Not combined with folk sports projects
Health lecture	95% community development (high-frequency service type)	1-2 times a month	Imbalance between frequency and quality, insufficient targeting and practicality; The content focuses more on disease prevention and less on sports rehabilitation
Chronic disease management	Only 30% of communities have established a comprehensive management system	Follow up once every quarter	Narrow coverage and fragmented intervention measures; No "monitoring evaluation intervention" closed loop has been formed

In terms of facility construction, certain progress has been made in the construction of sports and medical facilities in elderly communities. In terms of sports facilities, 90% of communities have fitness plazas or activity centers equipped with simple fitness equipment such as horizontal bars, parallel bars, fitness trails, etc. However, some equipment is aging or damaged, and maintenance is not timely; At the same time, indoor sports facilities are relatively insufficient to meet the exercise needs of the elderly in adverse weather conditions. In terms of medical facilities, 70% of communities have medical rooms or health service stations that can provide basic medical services such as diagnosis and treatment of common diseases, drug distribution, etc. However, the medical equipment is relatively simple and lacks professional rehabilitation treatment equipment. For some complex health problems, elderly people still need to go to large hospitals for treatment.

In terms of personnel allocation, there is a relative shortage of professional personnel for the integration of elderly community sports and medical services. In terms of medical staff, the number of medical staff in community clinics or health service stations is limited, and most of them are general

practitioners, lacking professional rehabilitation physicians, nutritionists, etc; Some medical staff have insufficient understanding of the concept of integrating sports and medicine, and it is difficult to organically combine sports intervention with medical treatment when providing services for the elderly. In terms of sports workers, there are relatively few professional sports instructors in the community, and most of them are part-time. Their professional backgrounds and qualifications vary greatly, and some sports instructors have not received systematic training in elderly sports guidance, which cannot meet the diverse sports needs of the elderly, as shown in Table 3.

Table 3. Current status of professional staffing for integrated sports and medical services

Personnel type	Equipment rate/proportion	Professional qualification status	Core issue
General practitioner	90% of the community is equipped (with an average of 1.2 people per community)	80% have the qualification of practicing physicians	Insufficient quantity, serving 680 elderly people per capita; Lack of the concept of integrating sports and medicine
Rehabilitation physician/nutritionist	Only 5% of the community is equipped	100% possess professional qualifications, but the quantity is extremely small	Narrow coverage, unable to meet the rehabilitation needs of chronic diseases
Professional sports instructor	30% community staffing (with an average of 0.8 people per community)	45% have received systematic elderly sports guidance training	Mostly part-time (accounting for 80%), with unstable service hours; Lack of medical knowledge

2.3 Problems in the integration of physical education and medicine in elderly communities in Hebei Province

At present, there are still many problems and challenges in policy implementation, resource integration, and professional talent for the integration of elderly community sports and medicine in Hebei Province, which restrict the high-quality development of sports and medicine integration services.

In terms of policy implementation, although the country and Hebei Province have issued a series of policy documents to support the integration of sports and medicine, there are difficulties in implementing these policies in practice. Some local governments do not attach enough importance to the integration of sports and medicine, and lack specific implementation rules and supporting measures, which makes it difficult to effectively implement policies. The division of responsibilities among various departments in the integration of sports and medicine is not clear enough, and there is a phenomenon of shirking responsibilities, which affects the coordinated promotion of work. For example, in the construction and operation process of the integrated sports and medical service center, multiple departments such as sports, health, and civil affairs are involved. Due to the lack of effective coordination mechanisms, the construction progress is slow and the service efficiency is low.

In terms of resource integration, the integration of sports and medical resources in elderly communities is facing the problem of insufficient integration of sports and medical resources. The information communication between the sports department and the health department is poor, the degree of resource sharing is low, and effective synergy cannot be formed. Some community sports and medical facilities are managed by different departments, and there is a lack of coordination and coordination in their use and maintenance, resulting in resource waste. The enthusiasm of social resources to participate in the integration of sports and medicine is not high, and enterprises, social organizations, etc. invest less in elderly community sports and medicine integration services, lacking diversified financial support and service supply.

The shortage of professional talents is a major bottleneck for the integrated development of elderly community sports and medicine in Hebei Province. At present, there is a serious shortage of composite professionals who understand both medicine and sports, which cannot meet the demand for integrated sports and medical services. There is a disconnect between the establishment of relevant majors and

talent training models in universities and actual needs, and the students trained are difficult to adapt to the requirements of the integration of sports and medicine in terms of knowledge structure and practical ability. The training system for in-service personnel is incomplete, lacking targeted and systematic training courses, which makes it difficult to effectively improve the professional level of existing practitioners. Due to limited benefits and career development opportunities for the integration of elderly community sports and medicine, it is difficult to attract and retain outstanding professional talents.

3. The impact of the digital age on the integration of characteristic folk sports in Hebei Province into elderly community sports and medical integration

3.1 Opportunities brought by digital technology for the dissemination of characteristic folk sports

The rapid development of digital technology has provided breakthrough opportunities for the dissemination of characteristic folk sports in Hebei Province, such as Cangzhou martial arts and Wuqiao acrobatics. By expanding communication channels, innovating communication forms, and optimizing communication effects, it has effectively supported the participation of the elderly population.

In terms of the expansion of communication channels, the Internet platform has become the core carrier. Social media such as WeChat, Weibo and Tiktok rely on their huge user base to release videos, pictures and text content of folk sports, breaking traditional geographical restrictions and expanding their influence. For example, Cangzhou martial arts training videos, competition clips and cultural knowledge shared by martial arts enthusiasts on the Tiktok platform were widely praised and forwarded; Wuqiao acrobats interact with the audience in real-time through live performances, bringing them closer to the public and enabling folk sports to reach a wider audience, as well as providing convenient access for the elderly.

The rise of short video platforms further innovates communication forms. Its simple, intuitive and vivid characteristics can quickly focus on the essence of folk sports, produce exquisite short videos of Cangzhou martial arts and Wuqiao acrobatics, and stimulate the audience's interest by showing action skills and cultural connotation, which not only attracts the attention of young groups, but also allows the elderly to watch through mobile phones at any time, so as to easily obtain folk sports knowledge and skills.

Digital technology also optimizes the dissemination effect from two aspects: first, virtual reality (VR) and augmented reality (AR) technology build immersive experiences, allowing elderly people to "personally" experience Cangzhou martial arts performances and feel the rhythm of movements through VR; AR technology makes the acrobatics props and scenes in Wuqiao more vivid, enhances fun and interactivity, and effectively increases the willingness of elderly people to participate. The second is to rely on big data analysis to achieve precise push, by mining the interests, health status, and exercise needs of the elderly, targeted push of adapted content - pushing Cangzhou martial arts health exercises to elderly people who pay attention to health preservation, recommending Wuqiao acrobatic performance videos and offline activity information to elderly people who prefer leisure, significantly improving the accuracy and effectiveness of communication, and helping the elderly participate in characteristic folk sports activities.

3.2 Changes in sports and health needs of the elderly in the digital age

The arrival of the digital age has profoundly reshaped the lifestyle of the elderly population, with a significant transformation in their sports and health needs [3]. The core is reflected in the diversified innovation of sports exercise methods and the precise upgrading of health management needs.

In terms of physical exercise methods, the elderly group has broken through the traditional single exercise mode and turned to diversified, personalized, and intelligent demands. With the popularization of digital products such as smart wearable devices and fitness apps, elderly people can access rich exercise information and guidance. Fitness apps cover courses that are suitable for the elderly, such as Tai Chi and Baduanjin, supporting them to choose based on their physical condition and interests. They also have exercise record analysis functions, real-time monitoring of exercise duration, steps, heart rate and other data, and generating personalized suggestions to ensure the scientific and safe exercise. At the same time, online fitness courses and activities are popular, and sports training institutions and experts provide professional guidance through live streaming and recording. Elderly people can participate and interact without leaving their homes, enhancing the fun and socialization of exercise; Online marathons,

fitness challenges, and other activities further stimulate their enthusiasm for participation, enhance their motivation and sense of achievement, and break the limitations of time and space.

In terms of health management needs, the elderly population has higher demands for precision and convenience. Empowered by digital technology, smart wristbands, watches and other devices can monitor physiological data such as heart rate, blood pressure, and sleep quality in real time, and synchronize them to the health management platform. Doctors and health managers can develop accurate assessments and plans based on this. If abnormal heart rate or other situations are detected, the devices can promptly warn and provide feedback to doctors, helping with risk prevention and control. In addition, the elderly have changed their way of acquiring health knowledge, preferring to acquire knowledge of disease prevention, health care, sports rehabilitation, etc. anytime and anywhere through health APP, websites, official account and other channels, in the form of images, videos, audio, etc., to improve their own health management capabilities.

4. Construction of application mode of Hebei Province's characteristic folk sports in the integration of sports and medicine in elderly communities

4.1 Folk sports teaching mode combining online and offline methods

Utilize online platforms to carry out rich and diverse folk sports knowledge teaching, providing convenient learning channels for the elderly. We develop specialized folk sports learning apps or utilize existing online education platforms to upload teaching videos of Cangzhou martial arts and Wuqiao acrobatics, including action demonstrations, skill explanations, cultural background introductions, and more. These videos should be made concise, clear, vivid and interesting according to the learning characteristics and acceptance ability of the elderly, accompanied by clear subtitles and voice explanations, to facilitate their understanding and learning. We regularly hold online live courses and invite professional folk sports experts and coaches for real-time teaching and interactive Q&A. Elderly people can ask questions during live broadcasts, communicate with experts and other students, and enhance the interactivity and fun of learning. Through online platforms, it is also possible to publish textual and visual materials on the historical origins, cultural connotations, and inheritance stories of characteristic folk sports, enriching the knowledge reserves of the elderly and stimulating their interest in folk sports.

Offline, organize practical teaching activities to allow elderly people to personally experience the charm of characteristic folk sports. We set up fixed folk sports teaching venues in the elderly community, equipped with professional sports instructors, and regularly conduct practical courses on Cangzhou martial arts and Wuqiao acrobatics for the elderly. Sports instructors provide personalized guidance and training based on the physical condition and learning progress of elderly people, correct their movement deviations, and ensure the safety and effectiveness of sports. We organize various folk sports activities and competitions, such as Cangzhou Wushu Performance Competition, Wuqiao Acrobatics Fun Challenge, etc., to provide a platform for the elderly to showcase themselves and enhance their sense of participation and achievement. Encourage elderly people to communicate and learn from each other, and create a good learning atmosphere.

In order to increase the participation of the elderly in the combination of online and offline teaching models, a series of effective promotion and incentive measures need to be taken. We use community announcements, promotional posters, social media and other channels to widely promote characteristic folk sports teaching activities and increase awareness among the elderly; we establish a point reward system, where elderly people can earn points by participating in online learning and offline activities, which can be exchanged for sports equipment, health gifts, etc; we organize a volunteer team to provide technical support and accompanying learning for the elderly, helping them overcome the difficulties of online learning.

4.2 Personalized folk sports prescription model

Developing personalized folk sports prescriptions based on the health status of the elderly is the key to achieving precise integration of sports and medicine. By utilizing advanced digital health monitoring devices such as smart bracelets, smartwatches, portable health all-in-one machines, etc., comprehensive and real-time monitoring of the physical condition of the elderly can be carried out. We collect physiological data such as heart rate, blood pressure, blood oxygen saturation, sleep quality, and exercise steps of elderly people, and transmit these data in real-time to the health management platform through

wireless communication technologies such as Bluetooth or Wi Fi. We regularly conduct comprehensive health check ups for the elderly, including physical function tests, chronic disease screening, and exercise ability assessments. We evaluate the cardiovascular endurance of elderly people through a 6-minute walk test, assess muscle strength through a grip strength test, and evaluate body balance through a balance test. Based on health monitoring data and physical examination results, a comprehensive evaluation of the health status of elderly people is conducted, analyzing their physical advantages and potential risks.

Based on the health assessment results of the elderly, personalized folk sports exercise prescriptions are jointly developed by professional sports instructors and doctors. For elderly people with cardiovascular diseases, when choosing the Cangzhou martial arts program, high-intensity and high confrontational movements should be avoided. It is recommended to use some soothing health exercises, such as Tai Chi, Eight Section Brocade, etc. The exercise intensity should be controlled at a moderate level, and the exercise time should not be too long. 3-5 times a week, 30-45 minutes each time; For elderly people with poor joints, excessive joint flexion, extension, and weight-bearing movements should be avoided in Wuqiao acrobatics training. Instead, some balance techniques with less joint pressure should be chosen, such as simple balance board exercises, single foot standing exercises, etc. The exercise frequency is 2-3 times a week, 20-30 minutes each time. The exercise prescription should also include detailed exercise precautions, such as warm-up preparation before exercise, safety protection during exercise, and relaxation and stretching after exercise.

Real time monitoring and guidance using digital technology during the execution of exercise prescriptions for the elderly. Through the health management platform, real-time tracking of exercise data of elderly people, such as exercise intensity, exercise duration, calorie consumption, etc., to determine whether they are exercising according to the exercise prescription. If it is found that the exercise intensity of elderly people is too high or too low, timely reminder information should be pushed through the APP, suggesting that they adjust their exercise intensity; If elderly people experience physical discomfort during exercise, such as abnormal heart rate, difficulty breathing, etc., smart devices will immediately issue warning signals to notify community medical staff and family members to take corresponding measures in a timely manner. We regularly evaluate the health status and exercise effectiveness of elderly people, adjust exercise prescriptions based on the evaluation results, and ensure the scientific and effective nature of exercise prescriptions.

4.3 Collaborative model of community folk sports and cultural activities and integrated sports and medical services

During the Acrobatics Culture Festival, the Wuqiao Acrobatics into the Community Activity will be carried out, organizing professional acrobatics teams to perform for the elderly and setting up interactive activities to allow the elderly to experience the joy of acrobatics firsthand. Through these activities, not only has the spiritual and cultural life of the elderly been enriched, but their sense of identification and belonging to characteristic folk sports has also been enhanced.

Strengthen cooperation between communities, medical institutions, sports institutions, and social organizations to jointly promote the coordinated development of community folk sports and cultural activities and integrated sports and medical services. The community is responsible for organizing and coordinating activities, providing venues and facility support; Medical institutions provide medical security and health guidance services; Sports institutions are responsible for providing professional sports guidance and training; Social organizations can leverage the advantages of resource integration and volunteer services to provide human and material support for activities. Through collaborative efforts from all parties, a joint force is formed to jointly create a healthy and harmonious community environment.

5. Conclusion

This study deeply explores the application mode of characteristic folk sports in elderly community sports and medical integration in the digital age of Hebei Province. Through investigation and analysis of the current situation of sports and medical integration in elderly communities in Hebei Province, it is found that there are problems in policy implementation, resource integration, and professional talent in the current sports and medical integration, such as difficult policy implementation, insufficient integration of sports and medical resources, and shortage of composite professional talents. These problems constrain the high-quality development of sports and medical integration services.

The digital age has brought new opportunities and challenges for the integration of characteristic folk sports into elderly community sports and medical integration in Hebei Province. Digital technology has expanded the dissemination channels of characteristic folk sports, enhanced the dissemination effect, and met the needs of the elderly group for diversified and personalized physical exercise, as well as precise and convenient health management. At the same time, the application of digital technology in health monitoring, exercise guidance, medical services, and other aspects of integrated physical and medical services in elderly communities has improved the quality and efficiency of services.

Three application models of Hebei Province's characteristic folk sports in the integration of sports and medicine in elderly communities have been constructed. The combination of online and offline folk sports teaching mode provides rich teaching resources and interactive communication opportunities through online platforms, and organizes practical teaching and activities offline, which enhances the learning interest and participation of the elderly in characteristic folk sports; A personalized folk sports prescription model is developed based on the health status of the elderly, and real-time monitoring and guidance are provided using digital technology, achieving precise integration of sports and medicine; The collaborative model of community folk sports and cultural activities and integrated sports and medical services organically combines folk sports and cultural activities with integrated sports and medical services, creating a healthy community atmosphere and promoting the physical and mental health and comprehensive development of the elderly.

To promote the application of characteristic folk sports in the integration of sports and medicine in elderly communities in Hebei Province, policy support and guarantees can be strengthened, and policies such as funding support and improved regulatory systems can be introduced.

Acknowledgement

This work was supported by the Sports Science and Technology Research Project of Hebei Provincial Sports Bureau: Research on the Application Mode and Implementation Path of Hebei Province's Characteristic Folk Sports in the Integration of Sports and Medicine in Elderly Communities in the Digital Age (2026QT06); Humanities and Social Sciences Research Project of Higher Education Institutions in Hebei Province (SZ2024073).

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