Strategies and Foundational Elements Necessary for the Integrated Development of China's Sport Industry and Pension Industry

Jinghao Zhang and Parinya Kwanmuangvanich
Suan Sunandha Rajabhat University, Bangkok, Thailand
Corresponding Author, Email: s64584950001@ssru.ac.th

****

Abstract

Promoting the integration of the sports industry and the senior care industry is an important hand in fostering new forms of sports consumption in China. Literature research, expert interviews and quantitative analysis methods are used to reveal the economic logic of the integration of China's sports industry and pension industry in the new era, and to analyze the development potential of the integration of the two industries through the degree of coupling coordination and grey prediction.

It is found that the integration of the two industries is an integrated innovation process in which senior sports market players actively explore new forms of senior sports and recreational consumption under the rational constraints of the growth of the sports industry and the endogenous incentives of the growth of the senior care industry and the goal of promoting the overall improvement of consumer welfare and producer surplus; the degree of coordination of the coupling between the sports industry and the senior care industry is increasing year by year, but the overall level of equilibrium is not yet reached, and the development opportunities and challenges for the sports industry and the senior care industry in China in the new era have been analyzed by means of interviews with experts and quantitative analysis. The development opportunities and challenges of the integration of the two industries co-exist; the future consumption space of China's senior sports market will continue to expand along with the growth of per capita disposable income of the urban elderly, but the overall trend of growth is slowing down, and the development of the integration of the two industries is expected to be good and the task is still arduous. Based on this, we put forward concrete suggestions such as focusing on stimulating the vitality of the main players in the senior sports market, steadily increasing the ability of the elderly to pay for sports consumption, and pragmatically carrying out national education on population aging embedded in the national fitness program.

Keywords: Sports Industry; Pension Industry; Industrial Integration; Coupling Coordination Degree; Gray Prediction

* Received: November 15 2023; Revised: December 15 2023; Accepted: December 16 2023

Introduction

Industrial convergence originated from the electronic information technology revolution in the mid-to-late 20th century, due to the penetration and diffusion of technology at that time triggered the interaction and integration of products and services, organizations, and market operations between the computer industry, the communications industry, and the media industry, and the boundaries of the industry continued to blur or even disappeared, resulting in the formation of inter-industry convergence and development pattern (Zhou, 2003). With the continuous improvement of industrial regulation policies, the continuous evolution of enterprise business models and the ubiquitous application of Internet technology in various countries around the world, industrial convergence has become an important industrial phenomenon that affects global market economic activities. Academics generally believe that the phenomenon of industrial convergence is actually not caused by a change in industrial boundaries in the theoretical sense, but rather the phenomenon of cross-industry existence of established economic activities of a certain industry in the real economy under the established boundaries of various industries, such that it is difficult to classify the organization of such economic activities with dual-industry attributes as an existing industry (Han, 2006 : 54-61); Industrial integration implies that enterprises with different industries focus on the cross-industry allocation and utilization of resources around consumer demand, launch cross-industry competition and cooperation, fundamentally reshape the industrial structure, build a cross-industry division of labor and collaboration system, and produce a huge composite economic effect (Kong, 2014 : 160); The process of industrial integration refers to the integration of different types of production factors through a new carrier, and the industrial integration result is the formation of new industries that can satisfy people's new needs.

The integrated development of sports industry and related industries refers to the dynamic development process of sports industry and related industries breaking the industrial boundaries with each other, through the penetration, extension and reorganization of the value chain of their respective industries, taking the resources of sports industry as the basis and the elements of related industries as the carrier, and through the technological fusion, business fusion and market fusion gradually integrating and developing a new type of sports industry formed with the resources of sports as the core and the characteristics of related industries . The dynamic development process (Yang, 2013 : 21). As the growth trajectory of different industries determines the divergence of the integration development trend between different industries, the integration trend of sports industry and pension industry will reflect the commonality of the integration and development of sports and related industries, but also show its specificity, so take the development characterization of China's sports industry and pension industry in the growth stage as the entry point of the study, which is conducive to a better explanation of the economic logic of the integration of the two industries in the new era.

Since the first proposal of "promoting the integration of sports and senior care services" in Document No.46 (PRC, 2014) of the State Council, the innovative development trend of the integration of China's sports industry and senior care industry has become increasingly prominent according to the international experience and national strategy of actively responding to population aging. At present, the academic research on "sports + pension" is in an exploratory stage, and the related literature mainly focuses on the integration degree of the two industries (Han & Wang, 2017:1-5) (Ye, 2019:62-69), the integration

mechanism (Ye, 2017:442-446), the integration path (Ye, 2018:31-36), and its impact on the industrial structure.), integration mechanism (Ye, 2017:442-446), integration path (Ye, 2018:31-36), and its impact on industrial structure (Ye, 2017:410-414) (Ye, 2019:36-43), etc.

Practice shows that, with the "sports + tourism, culture, health, pension" in recent years, "happy industry" between the market cross-border action is constantly upgrading, marathon tourism, ice and snow tourism, sports culture and creativity, sports rehabilitation and other sports consumption of new forms of gradual emergence, to discuss the development of sports and related industries has become a new trend. The integration and development of sports and related industries has become the focus of China's sports industry research in the new era, and the integration of sports industry and pension industry has also become a hot spot in the focus. Although this helps to improve people's understanding of the trend of integration between the sports industry and the senior care industry, the possibility and feasibility of the integration of "sports + senior care" in the existing research still needs to be further deepened. Although this has helped to raise awareness of the trend of the integration of the sports industry and the senior care industry, the existing studies still need to further deepen their arguments about the possibility and feasibility of the integration of "sports+ senior care".

Research Objective

This paper will combine the methods of normative analysis and empirical analysis to study the integration foundation and integration prospect of "Sports + Pension", in an attempt to provide more references for the economic and social decision-making on the integration of sports and pension industries in China: (1) to combining the characteristics of industrial development to reveal the economic logic of the integration of the two industries; (2)to using quantitative measurement models to predict the development potential of the two industries.

Research Methods

1. Evaluation of coupling coordination degree

The concept of coupling originated from physics describes the degree of strength and weakness of system interactions, and later gradually used in geography, economy and tourism research fields (Zhang & Zhu, 2013:17), and joined the coordination degree analysis is used to evaluate the synergistic relationship formed by multiple industrial systems due to their close association and influence on each other.

1.1 Evaluation method

The economic logic of the integration of the sports industry and the pension industry implies the coupling principle: Sports are the supporting conditions for the comprehensive development of the pension industry, and elements such as the scale of the sports industry, industrial structure, industrial resources, industrial demand and so on will have an impact on the growth of the pension industry, while the pension injects a new and powerful impetus for the high-quality development of the sports industry, and elements such as the scale of the pension industry, the industrial structure, the industrial resources, industrial demand and so on will also play a feedback role on the growth of the sports industry plays a feedback role. According to the concept and framework of capacity coupling in the coupling theory and the analytical idea of "quantitative with qualitative" (Liu, 2015), the development situation of the integration of the two industries is analyzed through the coupling and coordination

measurement of the sports industry and the pension industry. To this end, the sports industry and the pension industry are set as two mutually coupled systems, and the coupling coordination measurement model is established as follows.

$$D = (C \times T)^{0.5} \quad (1)$$

$$C = [A_1 \times A_2 / (A_1 + A_2)^2]^{0.5} \quad (2)$$

$$T = \alpha A_1 + \beta A_2 \quad (3)$$

$$A_1 = \sum_{i=1}^{n} \lambda_{ij} \times X_{ij} \quad (4)$$

$$A_2 = \omega_{ij} \times Y_{ij} \quad (5)$$

In equation (1), D is the coupling coordination degree, C is the coupling degree between the sports industry and the pension industry, and T is the comprehensive coordination index between the sports industry and the pension industry, reflecting the contribution of the overall development level of the industry to the coordination degree. In equation (2), A1 and A2 are the comprehensive evaluation indexes of the sports industry subsystem and the pension industry subsystem, respectively. In Eq. (3),αandβare coefficients to be determined, taking into account that the sports industry and the pension industry are of equal importance to economic and social development, so we draw on the common practice and take the value of 0.5. In Eq. (4),λ_{ij} is the index weight of the sports industry subsystem, and Xij is the standardized value of the jth index of the sports industry subsystem in the ith year. In Eq. (5), ω_{ij} is the indicator weight of the pension industry subsystem, and Yij is the standardized value of the jth indicator of the pension industry subsystem in the ith year. The value interval of D $\in$[0, 1] is set with reference to the relevant literature, and the division standard of coupling coordination degree is established as 10 coupling coordination levels (Tian, 2017).

1.2 Data collection and Source of data

In order to ensure the accessibility and uniformity of data, according to the principle of frequency statistics of industrial indicators, the selection of evaluation indicators for the coupling coordination degree of the sports industry and the pension industry is mainly based on the relevant statistical data of the two industries, and 15 indicators are first selected initially respectively, and then 10 indicators are finally obtained respectively after the factor analysis screening and expert scoring (Table 1).

Considering the fact that 2013 is recognized by the industry as "the first year of policies for the development of the senior care industry" (Li, 2015:29), and the fact that sports consumption has been growing strongly since 2017, through the China Statistical Yearbook, the Statistical Bulletin of National Economic and Social Development, the Statistical Bulletin of the Development of Social Services, and the China Sport Industry Development Report" as well as information published by the State General Administration of Sports, Ministry of Finance and other government departments, the data of the measurement indicators of the sports industry and the pension industry in 2017-2021 were collected and organized.

1.3 Indicator weights

In order to avoid the factor bias caused by subjective assignment, the entropy weight method is applied to determine the indicator weights of the industrial subsystem. The calculation process is as follows:(1)Standardize the indicator data according to the formula $\overline{S}_{ij}=(S_{ij}-S_{min})/(S_{max}-S_{min})$, i=1, 2..., m indicates the order of the year, and j=1, 2..., n

indicates the number of indicators; and (2) Calculate the weight of the jth indicator in the ith year according to the formula P_{ij}=ij/ $\overline{S}_{ij}$; (3) Calculate the entropy value of the j the indicator according to the formula $E_j=-K\sum_{i=1}^{n} PijlnPij$, with the adjustment coefficient K=1/ln(n)>0; (4) Calculate the entropy value of the jth indicator according to the formula $W_j=1-E_j/n-E_j$ and $E_j=\sum_{i=1}^{n} E_j$ to find out the weight of each indicator. The weights of each index of the coupling system of sports industry and pension industry are calculated (Table 2).

Table 1 Indicator data for the coupled coordination measurement of the sports industry and the senior care industry in China, 2017-2021

coupling system	normative layer	indicator layer	year				
			2017	2018	2019	2020	2021
Sports industry	industry scale	X1 Total output of the sports industry (billions of dollars)	11000	13574.71	17107	19011.3	21987
		X2 Value added of sports services industry (billion yuan)	1215.12	1357.17	2703.6	3560.6	4449
	industry structure	X3 Value Added of Sporting Goods Manufacturing Industry (billion yuan)	2189.57	2546.99	2755.5	2863.9	3264.6
		X4 Value added of sports construction industry (billion yuan)	159	136.82	35.3	50.3	97.8
		X5 National public financial expenditure on sports (billion yuan)	299.08	370.75	356.48	389.48	474.48
		X6 Investment in sports fixed	1040.98	1041.62	1031.83	1421.34	1809.72

		assets (billion yuan)					
	Industry resources	X7 Number of sports system organizations (number)	7089	7106	7069	7067	7081
		X8 Number of national sports industry base members (number)	8	8	26	45	49
		X9 Number of sports market employees (ten thousand)	387.97	425.77	438.78	440.65	455.35
	Industrial Demand	X10 Per capita cultural and sports consumption expenditure of residents (yuan)	1398	1536	1723	1915	2086
	Industry Scale	Y1 Number of elderly beds (ten thousand)	493.7	577.8	672.7	730.2	744.8
		Y2 Population aged 65 and above (ten thousand)	13161	13755	14386	15003	15831
pension industry	industry structure	Y3 Community home care-community stay-at-home and day-care places (10,000)	64.1	187.5	298.1	322.9	338.5
		Y4 Institutionalized elderly care-all kinds of facilities of elderly service institutions (ten thousand)	4.2	9.4	11.6	14	15.5
		Y5 National public financial expenditures on	160.26	208.78	259.62	305.08	354.68

		aging affairs (billion yuan)					
		Y6 Accumulated balance of basic pension insurance for urban workers (billion yuan)	28269.2	31800	35344.8	38580	43844.6
	Industry resources	Y7 Number of national organizations for the elderly (units)	2571	2588	2280	1828	1600
		Y8 Number of aging service organizations and schools for the elderly nationwide (10,000)	15.3	15.5	14.5	14.3	13.3
		Y9 Number of various types of activity rooms for the elderly nationwide (10,000)	36	34.9	37.1	35.9	35
	industry demand	Y10 Per capita consumption expenditure of elderly residents (yuan)	6610	7245.5	7856	8555.5	9161

Table 2 Indicator weights of the coupled system of sports industry and pension industry

Sports industry	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
weights	0.0756	0.1103	0.0680	0.0927	0.0732	0.1998	0.1145	0.1282	0.0559	0.0818
pension industry	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
weights	0.0899	0.1057	0.0808	0.0804	0.1003	0.1052	0.1020	0.0843	0.1499	0.1015

2. Spatial forecasting of consumption

2.1 Method design

Due to the unique characteristics of the service object of the senior sports market, the size of the market consumption space, in addition to the impact of the size of the urban and rural aging population, the consumption tendency of the elderly improvement expenditure (Zhang & Li, 2021:6), the per capita payment ability of the elderly users to buy sports goods, and the level of effective supply of the product and other factors, which fundamentally depends on the economic income of the elderly, because the personal income of the personal improvement expenditure as a proportion of total personal consumption expenditure has a positive stimulating effect (Wu & Xu & Yang, 2017:87-88), which reflects the growth potential of the new industry of senior sports and recreation consumption, and thus the development prospect of the integration of the two industries can be investigated by predicting the changes in the consumption space of the senior sports market. In fact, in daily life, the economic income of the elderly consists not only of retirement salary or pension insurance premiums, but also usually includes expenses from family support, asset savings, or social support (e.g., financial subsidies, income from the minimum living standard guarantee, etc.). For this reason, based on the consideration of data availability and authenticity of the economic income of the elderly, the per capita disposable income of the elderly in urban areas is regarded as a proxy indicator for the measurement of the consumption space of the senior sports market. In this paper, according to the basic principles of the gray system, using the gray prediction model GM (1,1) can be relatively scientific prediction in the uncertain system of "poor information" (Wang & Hu & Li, 2016:3), selected China's average disposable income of the elderly in urban areas in the years of 2012-2021, and the data for the years of 2022-2029, the average disposable income of the elderly in urban areas in the years of 2022-2029, and the data for the years of 2022-2029. The data of China's 2012-2021 urban disposable income for the elderly is chosen to project the corresponding values for 2022-2029.

2.2 Modeling steps

In the first step, the modeling feasibility is analyzed by the level-ratio test given the original sequence "$X^{(0)}$= ［$X^{(0)}$(1),$X^{(0)}$(2),…,$X^{(0)}$(n)］, where$X^{(0)}$(k)≥0,k=1,2,…,n". analyze the modeling feasibility, which can be judged by the bounded area of the level ratio $\sigma^{(0)}$(k)of $X^{(0}$. In the second step, let $X^{(1)}$= ［$X^{(1)}$(1),$X^{(1)}$(2),…,$X^{(1)}$(n)］" be a one-time cumulative generating sequence of $X^{(0)}$, where $X^{(1)}(k)=\sum_{i=1}^{k} X^{(0)}(i)$,k=1,2,…,n, which can generate GM(1)(k) = X(0)(i). , the original form of the GM(1, 1) model can be generated: $X^{(0)}$(k)+a$X^{(1)}$(k)=b; since the former is essentially a difference equation, its parameter $\hat{a}$ = ［a,b］^{T} can be estimated by applying the least squares method. In the third step, the mean form of the GM(1, 1) model can be obtained by constructing the sequence of background values $S^{(1)}$ according to $X^{(1)}$:$X^{(0)}$(k)+a$Z^{(1)}$(k)=b; similarly, the whitened differential equation in the mean form of the GM(1, 1) model can be obtained by applying the least-squares method of estimation:$dX^{(1)}/dt+aX^{(1)}$=b. In the fourth step, the solution of the whitened differential equation can be constructed with the aid of the the mean mixed form of the GM(1, 1) model for prediction, i.e., the differential, differential mixed model of the GM(1, 1) time-response equation:$X^{(1)}(k+1)=(X^{(1)}(k+1)-b/a)e^{-ak}+b/a$, with the reduced value of $\hat{X}^{(0)}(k+1)=\hat{}X^{(1)}(k+1)$

—^$X^{(1)}$(k); where -a represents the model development coefficient and b is the gray role quantity, the former reflects the development trend of $\hat{X}^{(1)}$ and $\hat{X}^{(0)}$, and the GM(1, 1) model can be used as a medium- and long-term forecast when -a≤0.3. In the fifth step, the accuracy level of GM (1, 1) model was examined by residual test (mean relative errorα), correlation test (absolute correlationε_0), and post-hoc difference test (mean-variance ratio C_0 and probability of small error p_0), respectively, so as to validate the accuracy of the prediction results, and the specific calculation program and the reference table of the accuracy test level can be referred to the related literature (Liu & Xie, 2013).

2.3 Forecasting process

First of all, we obtain the per capita disposable income data of urban residents from 2012 to 2021 through the China Statistical Yearbook, and draw on the concept of "standard income population" put forward by Hu Naijun and other scholars (2014), and refer to the concept of "underage population (0-14 years old): working population (15-64 years old): elderly population (65 years old and above) = 0:1:0.0".): working population (15-64 years old):old population (65 years old and above) = 0:1:0.88" standard disposable income coefficient (Hu & Yang & Yu, 2014:61-66), calculated to obtain the per capita disposable income of the urban elderly in 2017-2021 (Table 4), that is, the original model constituting the GM (1(1), 1) model. 1) model of the original series.

Table 4 Data on per capita disposable income of urban residents and per capita disposable income of the elderly in China, 2008-2017 (unit: yuan)

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Urban per capita	15781	17175	19109	21810	24565	26467	28844	31195	33616	36396
Elderly per capita	1441	1596	1818	2119	2467	2741	3115	3494	3896	4511

Secondly, after the rank-ratio test " $\sigma^{(0)}(k)=\sigma^{(0)}(k-1)/\sigma^{(0)}(k)$,k=2,3,⋯,10", it is found that $\sigma^{(0)}$=(0.9029,0.8779,0.8580,0.8589,0.9000,0.8799,0.8915,0.8968,0.8637)T", it is not a good idea for us to use this method, and since "n=10, $\sigma^{(0)}(k)\in$ ［0.833752918,1.199396102］" (Xiao, 2013), the 2012 -2021 urban elderly per capita disposable income data constitute the original series meets the GM (1, 1) modeling conditions. Again, according to the modeling steps to calculate, to find the parameters a=-0.126, b=1360.953, where -a≤0.3, indicating the reliability of the model for medium- and long-term forecasting; according to the model of the whitening differential equation to find its time corresponding equation $\hat{x}^{(1)}(k+1)=12279.871e^{0.126k}-10838.871$, and make k = 1, 2, ..., 8, can be obtained to predict the generating series (Table 5), that is, the value of per capita disposable income of the elderly in urban areas from 2022 to 2029.

Table5 Gray projected values of disposable income per capita for urban seniors, 2022-2029 (unit: yuan)

Year	2022	2023	2024	2025	2026	2027	2028	2029
Older persons per capita	5086.071	577.66515	6537.993	7412.683	8404.394	9528.782	10803.597	12248.964

Finally, (1) the average relative error between the original and simulated values of the model is found to be 1.0451% ($\alpha < 0.05$) and the precision level is Grade II by residual difference test, indicating that the model predicts the results more accurately; (2) the gray correlation between the original and simulated sequences of the model is found to be 0.9996 ($\varepsilon_0 > 0.9$) and the precision level is Grade I by correlation test, which further indicates that the model's prediction accuracy is very high; (3) through the a posteriori difference test found that the model of the original sequence and the residual sequence of the mean squared error ratio of 0.04 ($C_0 < 0.35$), the probability of small error is 1 ($p_0 > 0.95$), both indicators show that the accuracy level is first class, and once again verified that the model prediction results have a high degree of credibility.

Results

The index data and weights were substituted into the coupling coordination degree measurement model to find the coupling coordination degree of China's sports industry and pension industry in 2017-2021 (Table 3). The numerical results show that: First, A1, A2 and C show a general growth trend during 2017-2021, with the average annual increase of A1 reaching 57%, the average annual increase of A2 reaching 30%, and the average annual increase of C only 0.5%, indicating that although the comprehensive development level of the sports industry and the senior care industry has improved significantly, the coupling degree of the interaction between the industrial systems changed very little during the 5-year period; second, the degree of coupling coordination between the sports industry and the senior care industry in China was calculated by substituting the index data and weights into the model. years with minimal changes; second, A1<T, A2>T during 2017-2020, i.e., the level of development of the pension industry contributes more to the degree of coordination of the two industrial systems, indicating that the latter has a smaller effect on the former than the impact of the pension industry on the growth of the sports industry; third, A1> T, A2<T in 2021, i.e., the level of development of the sports industry contributes more to the degree of coordination of the two industrial Third, A1>T and A2<T in 2021, i.e., the level of development of the sports industry contributes more to the degree of coordination between the two industries, indicating that the latter plays a smaller role in the former than the impact of the sports industry on the growth of the senior care industry; fourth, although D also shows a general trend of growth in the period of 2017-2021, its average is only 0.4797, which is the coupling of the "on the verge of dysfunctional" level. coordination grade, indicating that the coupling coordination between the sports industry and the pension industry is still in a poor situation. Comprehensive analysis shows that although the coupling and coordination degree of China's

sports industry and senior care industry has been improving year by year, the overall level has not yet reached equilibrium, and the development of the integration of the two industries has both opportunities and challenges.

The numerical results of the gray prediction of urban elderly per capita disposable income from 2022 to 2029 show that: Firstly, with the incremental increase of China's urban residents' per capita disposable income over the years, China's urban elderly per capita disposable income in the future shows a synchronous growth trend, and the end of the prediction period in 2025 will reach the level of 8.5 times that of the prediction base period of 2008, which is in line with the predictions of the This forecast result is consistent with the inference of "the market scale of national aging industry will grow rapidly" (Chen & Huang & Xu, 2020:79-80)（chen,2022:82-90）(Tang,2022:45-62)(Guo&Quan,2022:174-179)put forward by Chen Junhua et al., indicating that during the period of "14th Five-Year Plan", the new consumption mode of senior sports and recreation will be developed by carefully cultivating, scientifically developing, and reasonably developing the senior sports market, and the new consumption mode of senior sports and recreation will be developed. Secondly, the average annual growth rate of the forecast period is 0.1 percentage point lower than that of the base period, and the growth rate of per capita disposable income of the elderly in urban areas in China in the future will be slightly slowed down, which indicates that the expansion and upgrading of the consumption space of the senior sports market cannot be achieved overnight, and that building a new consumption pattern of the elderly in sports and recreation is a long term "protracted war" (Chen & Huang & Xu, 2020:79-80). It is a long-term "protracted battle" to build a new industry of senior sports and recreation consumption. Comprehensive analysis shows that the future consumption space of China's senior sports market will continue to expand along with the growth of per capita disposable income of the urban elderly, but the overall trend of growth has slowed down, and the development of the integration of the two industries is expected to be good, and the task is still arduous.(Feng&Xiao,2020:58-70）This is the same as Feng and Shaw's findings.

Conclusion

China is "running" into a deeply aging society, while the national economic structure is also "breaking down the old and establishing the new". In order to comply with the trend of personalized and diversified development of residents' consumption demand, the innovative development direction of the integration of China's sports industry and pension industry is becoming clearer and clearer in the context of the new era of "strong momentum of sports consumption and comprehensive enhancement of pension consumption". It is found that: the integration of the two industries is an integrated innovation process in which senior sports market players actively explore new forms of senior sports and recreational consumption under the rational constraints of the growth of the sports industry and the endogenous incentives of the growth of the senior care industry and the goal of promoting the overall improvement of the welfare of consumers and the surplus of producers; the coupling and coordination between the sports industry and the senior care industry is improving year by year, but the overall level of equilibrium is not yet reached, and the two industries have not yet reached a balanced level, and the development of the two industries has not yet reached a balanced level. Although the coupling and coordination degree of sports industry and pension industry has been improving year by year, the overall level of balance has not yet been

reached, and the development opportunities and challenges of the integration of the two industries coexist; in the future, the consumption space of China's senior sports market will continue to expand along with the growth of per capita disposable income of the elderly in cities and towns, but the overall trend of growth has slowed down, and the development of the integration of the two industries is expected to be good and the task is still difficult.

Recommendations

(1) Efforts should be made to stimulate the vitality of the main body of the senior sports market. First, introduce special policies and corresponding supporting measures to promote "sports + elderly care", and guide the establishment of unified and standardized quality standards for elderly sports services and market credit system; second, build a long-term mechanism for dynamic evaluation of the business environment of the elderly sports market, and encourage and support the development of private elderly sports enterprises; third, make up the short boards of infrastructure in the field of public services for the elderly, and improve the infrastructure of the elderly sports industry; third, make up the short boards of infrastructure in the field of public services for the elderly. infrastructure short boards in the field of public services, and provide basic hardware and software conditions to guarantee the construction of the senior sports market; fourthly, give play to the central role of the senior sports associations, the senior sports enterprise alliance and other commercial organizations to participate in the industry's governance, strengthen the demonstration effect and driving effect of the group-type and backbone-type senior sports enterprises, and cultivate the self-supporting function and long-term adaptive capacity of entrepreneurship-type and small and micro-sized senior sports enterprises.

(2) Steadily improve the ability of the elderly to pay for sports consumption. First, expand the coverage of basic pension insurance for urban and rural residents, improve the treatment determination and contribution adjustment mechanism of basic pension, and improve the basic economic income level of elderly residents; second, accelerate the pension financial reform, establish and improve the multi-level and multi-pillar pension security system, vigorously develop the commercial insurance products for senior sports and related pension fund services, and provide support for the elderly's sports consumption activities through multiple channels;. Third, strengthen the organic connection between the public service system for senior sports and the market trading mechanism for senior sports, promote the establishment of a system for supplying senior sports products that involves government departments, social organizations and enterprises, and reduce the costs and prices of commercial senior sports services, so as to address the sports service needs of different groups of senior consumers.

(3) Pragmatically carry out national education on population ageing embedded in national fitness. First, establish an institutionalized, regularized and characteristic mechanism for national education on population aging, integrate national education knowledge on actively coping with population aging in the promotion of national fitness activities in accordance with local conditions and time, and purposefully incorporate publicity on national fitness knowledge in the popularization of national education on population aging, so as to create a social and cultural atmosphere suitable for the development of the gerontological sports market; second, promote the science of kinesiology, Secondly, promote the professional cross-fertilization of multiple disciplines, such as physical education, medicine, management,

and demography, and offer courses on geriatric sports and health management or specialize in geriatric sports in general colleges, vocational colleges, and other educational institutions with the necessary conditions, so as to cultivate high-quality, specialized geriatric sports service personnel.

References

Ye, S,Z& Qiu, J. (2019). Research on the Integration and Development of Pension Industry and Sports Industry in the Context of Aging. *Journal of Xi'an Institute of Physical Education.* (04), 410-414.

Ye, S,Z. (2019). Empirical study on the impact of the integration of sports and pension industry on the structural upgrading of sports industry. *Journal of Wuhan Institute of Physical Education*. (05), 36-43.

Ye, S,Z. (2019). Research on the evaluation of the coordination degree of the integrated development of the sports industry and the pension industry--taking 11 provinces and cities in the eastern region of China as an example. *Journal of Chengdu Sports Institute*. (02), 62-69.

Ye, S,Z. (2018). Evolutionary Process and Path Selection of the Integration of Sports Industry and Pension Industry. *Journal of Xi'an University of Architecture and Technology (Social Science Edition).* (01), 31-36.

Han, S & Wang, L. (2017). Measurement and evaluation of the integration posture of China's sports industry and pension industry. *Sports Science*. (11), 3-10.

Ye, S,Z.(2017). Interaction mechanism and integration process of sports industry and pension industry. *Journal of Xi'an Institute of Physical Education*. (04), 442-446.

Han, S & Wang, L. (2017). Measurement and Evaluation of the Integration Dynamics of China's Sports Industry and Pension Industry. *Sports Science.* (11), 3-10.

Tian,Q.(2017). *Doctoral dissertation on the research of coupling development of sports industry and tourism industry, Shanghai* Institute of Physical Education).

Wu, K,p,Xu, H,Y & Yang, C. (2017). Analysis of Influencing Factors on the Structure of Residents' Consumption Expenditure in the Context of Aging. *Journal of Economics.* (01), 62-90.

Wang, Z. Z, Hu, H. & Li, M. (2016). Forecasting the scale of elderly consumption demand and analyzing the influencing factors. *Practice and Understanding of Mathematics*. (21), 1-9.

Zhang, D,p & Li, J. (2016). Measurement and analysis of China's regional aging industry market potential. *Research on Aging Science*. (04),3-14.

Chen, J. H, Huang, Y. C. & Xu, R. Q. (2015). Research on Market Size Forecast of China's Aging Industry. *China Population Science*. (05), 67-80+127.

Hu,N,j&Yang,Y,S&Yu,M.(2014).Study on population aging and urban residents' consumption in China's cities and towns. *Journal of Population*. (05),61-71.

Kong, G,b. (2014). Modularization and industrial integration. *Economic Forum*. (04),160-162.

Yang,Q. (2013). Research on the internal mechanism and external dynamics of the integration and development of sports industry and related industries. *Journal of Beijing Sport University.* (11), 20-24+30.

Zhang, D, F& Zhu, H,Y. (2013). *An empirical study on the coupling and coordination degree of cultural industry and tourism industry in Southwest China*. Regional Research and Development. (02), 16-21.

Han, X,M. (2006). Theoretical research on industrial integration. *Teaching and Research*. (06),54-61.

Chen, H.J. (2022). Theoretical and Empirical Research on the Integration Dynamics of Sports Industry and Pension Industry. *Journal of Shandong Institute of Physical Education.* (03), 82-90.

Tang,J.(2022). *Research on the Integration and Development of Sports Industry and Recreational and Nursing Industry in South Sichuan Region under the Background of Population Aging Master's Thesis*, Chengdu Institute of Physical Education).

Guo,R&Quan,R.(2022). Research on the Coupling and Coordination Degree of Integrated Development of Culture Industry and Pension Industry in Northwest China. *Operation and Management.* (02), 174-179.

Feng,J&Xiao,S,H. (2020). Research on the integration of sports and nutrition under the perspective of industrial integration: concept, role and development status. *Journal of Beijing Sport University.* (12), 58-70.