

# THE CONSTRUCTION OF SPORTS PUBLIC SERVICE SYSTEM FOR THE ELDERLY FROM THE PERSPECTIVE OF HEALTHY AGING



ORIGINAL ARTICLE  
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ESTRUCTURA DEL SISTEMA DE SERVICIOS PÚBLICOS PARA LOS DEPORTES DE EDAD EN EL CONTEXTO DEL ENVEJECIMIENTO SALUDABLE

CONSTRUÇÃO DE UM SISTEMA DE SERVIÇO PÚBLICO DE DESPORTOS PARA IDOSOS SOB A PERSPECTIVA DO ENVELHECIMENTO SAUDÁVEL

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## ABSTRACT

With the gradual improvement of people's quality of life, the average life expectancy of our country has been extended. It is estimated that the total number of the elderly population in China will exceed 250 million by the end of 2020. Therefore, promoting healthy aging is a necessary measure to cope with the coming aging society in China, and physical exercise is an important method to keep the physical and mental health of the elderly. In order to promote the development of healthy aging in China, this study focused on the current level of public sports services for the elderly. This study uses the expert consultation method to test the rationality of the evaluation index, and uses the method of questionnaire survey to score each evaluation index, and uses the analytic hierarchy process (AHP) to calculate the weight of the index. Finally, the paper takes the public sports service of the elderly in a city as an example to verify. The results show that the level of sports public service for the elderly in this city is only 77,928. Especially the two aspects of allocation of sports venues and the use of funds are the most unsatisfactory ones. It can be targeted to improve these two aspects, so as to improve the level of public sports services for the elderly. It is hoped that, through this study, we can provide some reference for improving the level of sports public service for the elderly from the perspective of healthy aging.

**Keywords:** Elderly people; public service; sports; analytic hierarchy process; expert consultation method.

## RESUMO

Com a melhoria gradual da qualidade de vida das pessoas, a expectativa média de vida do nosso país foi ampliada. Estima-se que o número total de pessoas idosas na China excederá 250 milhões até o final de 2020. Por isso, promover um envelhecimento saudável é uma medida necessária para lidar com a futura população idosa na China, e o exercício físico é um método importante para manter a saúde física e mental dos idosos. A fim de promover o desenvolvimento de um envelhecimento saudável na China, este estudo centrou-se no nível atual de serviços desportivos públicos para os idosos. Este trabalho utiliza o método de consulta de especialistas para testar a racionalidade do índice de avaliação, e utiliza o método de levantamento por questionário para marcar cada índice de avaliação, e utiliza o processo hierárquico analítico (AHP) para calcular o peso do índice. Finalmente, a pesquisa toma como exemplo o serviço público de desportos dos idosos numa cidade. Os resultados mostram que o nível de serviço público desportivo para os idosos nesta cidade é apenas 77.928. Em especial, os aspectos da atribuição de espaços desportivos e a utilização de recursos financeiros são os mais insatisfatórios. Pode visar-se melhorar esses dois aspectos, de modo a melhorar o nível dos serviços desportivos públicos para os idosos. Espera-se que, através deste estudo, possamos oferecer uma referência para melhorar o nível de serviço público desportivo para os idosos sob a perspectiva do envelhecimento saudável.

**Descritores:** Idosos; serviço público; desporto; processo hierárquico analítico; método de consulta de especialistas.

## RESUMEN

Con la mejora paulatina de la calidad de vida de las personas se ha ampliado la esperanza de vida media de nuestro país. Se estima que el número total de personas añosas en China superará los 250 millones a finales de 2020. Por lo tanto, promover un envejecimiento saludable es una medida necesaria para hacer frente al aumento de la edad de la sociedad en China. El ejercicio físico es un método importante para mantener la salud física y mental de las personas mayores. Con el fin de promover el desarrollo del envejecimiento saludable en China, este estudio se centró en el nivel actual de los servicios deportivos públicos para las personas añosas. Este estudio utiliza la consulta de expertos para probar la racionalidad del índice de evaluación, la encuesta de cuestionario para calificar cada índice de evaluación, y el proceso de jerarquía analítica (PJA) para calcular el peso del índice. Finalmente, el trabajo toma como ejemplo a ser verificado, el servicio público deportivo de la tercera edad en una ciudad determinada. Los resultados muestran que el nivel de servicio público deportivo para personas añosas en esa ciudad es de solo 77.928. Especialmente los aspectos de la asignación de instalaciones deportivas y del uso



de fondos son los más insatisfactorios. Se debe apuntar a mejorar estos dos aspectos, a fin de conseguir un mejor nivel de servicios deportivos públicos para las personas ańosas. Esperamos que, a traves de este estudio, podamos proporcionar una referencia para mejorar el nivel de servicio publico deportivo para las personas ańosas desde la perspectiva del envejecimiento saludable.

**Descriptor:** Personas de edad; servicios publicos; deportes; analisis de niveles; asesoramiento de expertos.

**INTRODUCTION**

With the continuous improvement of economic level, people’s quality of life has been gradually improved, and the proportion of the elderly in the total population of the country is rising, and China is facing the situation of social aging.<sup>1</sup> In response to the problem of aging population, comrade Xi Jinping pointed out in the nineteen major reports of the party that we should adopt a positive attitude to cope with the aging of the population. Healthy aging is a method proposed by who in 1990 to deal with population aging.<sup>2</sup> Its core theory is that the elderly adapt to the society well, mental health and physical health. According to the book “old age health Blue Book: China’s elderly health research report”, physical exercise is an effective way to improve the physical health of the elderly, and it also has a positive effect on the mental health of the elderly.<sup>3</sup> At present, there are still some deficiencies in China’s elderly sports public service, but the evaluation of the elderly sports public service is too subjective and fuzzy, there are no certain indicators and more accurate results, so it is difficult to evaluate the current level of sports public service for the elderly in China.<sup>4</sup> Hope that through this study, can provide a certain reference for the construction of sports public service for the elderly in China.<sup>5</sup>

Through the research and analysis of domestic and foreign scholars, it can be seen that AHP has been used in various fields, and the effect is mostly good. This study not only uses the analytic hierarchy process, but also revises the research index through expert analysis method. It is hoped that this study can provide some reference for the further development of sports public service for the elderly in the perspective of healthy aging in China.

**The analytic hierarchy process (AHP) is used to evaluate the public service for the aged in a city**

In order to ensure the scientificity and scientificness of the study, five experts in related fields were consulted by e-mail, telephone and door-to-door visit. The following Table 1 is the weight table of the first level index obtained by this study combined with expert guidance and AHP.

The above table is the weight table of the first level evaluation index in this study and the test results of its consistency.  $CR = 0.0328 < 0.1$  shows the rationality of the selected indicators. The following Table 2 shows the weight values of secondary indicators and their consistency inspection.

The above table is the weight table of the secondary evaluation index in this study and the test results of its consistency. It can be seen from the table that the consistency index value is less than 0.1, so the

**Table 1.** The weight of the first-level evaluation index is the consistency test.

First-level indicators	A	B	C	D	E
$M_i$	12	3/4	24	1/36	1/6
$\bar{W}_i$	1.423	0.871	2.225	0.487	0.501
$W^T$	0.213	0.147	0.298	0.226	0.116
$A*W^T$	1.412	0.793	1.201	0.428	0.665
$\lambda_{max}$	5.147				
CI	0.329				
RI	1.12				
CR	0.0328				
Eligibility	YES				

selection of secondary index is also reasonable. The following Table 3 shows the three-level indicators of this study (Iacono et al 2015).

The above table is the verification table of the weight of the three-level indicators in this study and the rationality of the index selection. It can be seen from the above table that the maximum consistency index value of the three-level indicators is 0.064, which is less than the specified value of 0.1. Therefore, it can be considered that the selection of three-level indicators in this study is reasonable. Therefore, these indicators can be directly used to study the elderly sports public service system from the perspective of healthy aging. The data collection place of this study is the Sports Square in a city of China. Through the verified evaluation indicators, the elderly people who exercise in the square are investigated

**Table 2.** The weight of the secondary evaluation index is the consistency test.

Secondary indicators	$M_i$	$\bar{W}_i$	$W^T$	$A*W^T$	$\lambda_{max}$	CI	RI	CR	Eligibility
A1	2/3	1.037	0.412	1.012	2.115	0.115	0	/	Yes
A2	3/2	1.337	0.588	0.958					
B1	2	2.106	0.583	0.887	2.136	0.360	0	/	Yes
B2	1/2	0.855	0.417	1.364					
C1	3	2.436	0.324	1.212	3.016	0.008	0.58	0.014	Yes
C2	1/4	0.601	0.247	0.741					
C3	4/3	1.124	0.429	0.885					
D1	2	1.527	0.377	1.369	2.104	0.104	0	/	Yes
D2	1/2	0.854	0.623	1.027					
E1	4	2.667	0.637	0.694	2.123	0.123	0	/	Yes
E2	1/4	0.617	0.363	1.121					

**Table 3.** Three-level evaluation index weight is consistency test.

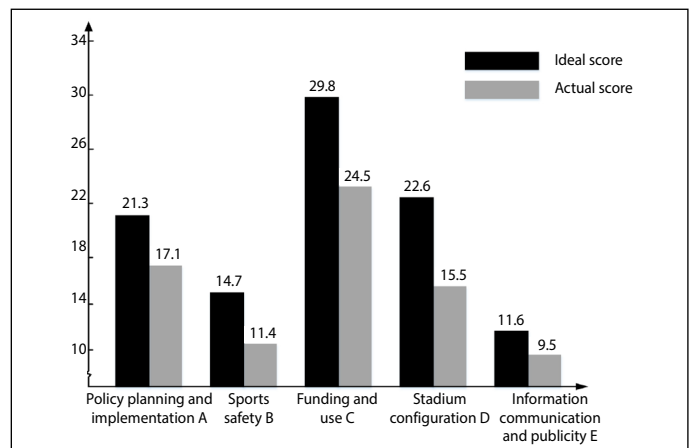
Third-level indicators	$M_i$	$\bar{W}_i$	$W^T$	$A*W^T$	$\lambda_{max}$	CI	RI	CR	Eligibility
A11	1/2	0.842	0.416	0.986	2.012	0.012	0	/	Yes
A12	2	1.417	0.584	1.384					
A21	1	1.231	1	1.214	1.032	0.032	0	/	Yes
B11	2	1.365	0.396	1.267					
B12	1/3	0.742	0.321	1.156	3.015	0.008	0.58	0.013	Yes
B13	3/2	1.003	0.283	0.906					
B21	2	1.327	0.301	0.993					
B22	1/2	0.681	0.247	0.815	3.024	0.012	0.58	0.021	Yes
B23	1	1.004	0.425	1.402					
C11	4	2.361	0.661	1.521	2.104	0.104	0	/	Yes
C12	1/4	0.479	0.339	0.780					
C21	3	1.658	0.417	0.917	2.097	0.097	0	/	Yes
C22	1/3	0.745	0.583	1.283					
C31	1	1.024	1	1.231	1.022	0.022	0	/	Yes
D11	5	2.553	0.287	0.947	3.074	0.037	0.58	0.064	Yes
D12	1/7	0.524	0.336	1.109					
D13	7/5	0.995	0.377	1.244					
D21	6	2.669	0.498	1.145	2.101	0.101	0	/	Yes
D22	1/6	0.631	0.502	1.155					
E11	1	1.143	1	1.203	1.024	0.024	0	/	Yes
E21	3/2	1.389	0.441	0.970	2.037	0.037	0	/	Yes
E22	2/3	0.875	0.559	1.230					

by questionnaire survey, and the three-level indicators are evaluated by scoring in the survey report, and the total score is 100. In the process of this study, 500 questionnaires were made according to the above evaluation indexes, and 365 questionnaires were collected after they were sent out. Moreover, there were some problems, such as incomplete data, damaged questionnaires, dirty data in the questionnaires. After simple pretreatment, a total of 315 questionnaires were sorted out. The average number in the questionnaire was taken as the result of each evaluation index. After sorting out, the results are shown in the Table 4 (Li Yanjiang et al 2017).

The above table shows the survey results of this study. Through the score of each value and the weight of each index, the comprehensive score of sports public service construction for the elderly in the city can be calculated as 77.928, which indicates that although the score of the elderly sports public service under the perspective of healthy aging in this City has passed, the score is not high, which indicates that the elderly sports public service in this city is not high. The service level can also be improved. The weight of policy planning and implementation a in the table is 21.3%, but its score is only 17.1. The proportion of sports safety B was 14.7%, and the score was 11.4. In terms of capital investment and use, C accounted for 29.8%, with a score of 24.5. The weight of sports field allocation D is 22.6%, and its score is 15.5. The weight of sports information dissemination and publicity e is 11.6%, and the final score is only 9.5. The full score of this study is 100 points. The Figure 1 shows the comparison between the score of each first level index according to its weight and the actual score.

**Table 4.** Survey results.

First-level indicators	Secondary indicators	Third-level indicators	Score				
A	0.213	A1	0.412	A11	0.416	82	
		A2	0.588	A21	1	80	
	B	0.147	B1	0.583	B11	0.396	65
B12					0.321	92	
B13					0.283	90	
B2		0.417	B21	0.301	88		
			B22	0.247	74		
			B23	0.425	68		
C	0.298	C1	0.324	C11	0.661	74	
				C12	0.339	86	
		C2	0.247	C21	0.417	91	
	C22			0.583	77		
	D	0.226	D1	0.377	C31	1	85
					D11	0.287	96
D12					0.336	50	
D2			0.623	D13	0.377	77	
				D21	0.498	63	
				D22	0.502	68	
E	0.116	E1	0.637	E11	1	81	
				E21	0.441	79	
		E2	0.363	E22	0.559	85	



**Figure 1.** The ideal score and actual score of each indicator.

As can be seen from the above figure, the gap between the two indicators of sports venue allocation, capital investment and use and the ideal state is the largest. Therefore, we can improve the sports public service for the elderly from the perspective of healthy aging from the perspective of improving the allocation of sports venues, investment and use of funds.

## CONCLUSIONS

The aging of the population is a problem that China has to face at present. The report of the 19th National Congress of the Communist Party of China pointed out that the health promotion action for the elderly is the top priority of the healthy China action. In order to improve the health level of the elderly and promote the development of healthy aging in China, this study combined with four principles to extract the current factors affecting the elderly sports public service, through expert consultation method, questionnaire method, analytic hierarchy process, and took the status quo of sports public service for the elderly in a City as the object, and verified by the way of examples. The results show that the scores of the five first level evaluation indexes extracted by this research have not reached their ideal values, and the allocation of sports venues and the use of funds are far from the ideal state. We hope that through this study, we can make a certain role in promoting the construction of sports public service for the elderly in our country. In the process of improving the public service system of sports for young people, we should aim at the existing problems and optimize them. However, there are still some deficiencies in this study. Due to the limitation of time and the number of researchers, the study only analyzes one city, and the universality of the study remains to be discussed.

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