

Countermeasures to Aging Society through Daily Sports Activities

- Utilizing the Individual Budget System -

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Abstract

In order to cope with the crisis of aging society, this study examined the current status of daily sports activities and satisfaction levels among middle- and old-aged people between 50 and 64 years old in South Korea. A total of 357 structured questionnaires were distributed and 299 (84%) were fully completed and used for analysis. As a result of the analysis, statistically significant differences were found by the type of sports activity centers with respect to the number of sports activities, goals, service satisfaction, and willingness to use the individual budget system. The users of membership sports centers reported the highest level of satisfaction. Considering that all tax-based public services should aim to improve public welfare, the universal provision of daily sports services should be regarded as a part of social security policies to address various problems in aging society.

Key words: daily sports, aging society, satisfaction level of daily sports service, individual budget system

1. Introduction

Korean society is undergoing rapid changes due to low fertility and aging. In 2018, the elderly aged 65 and over accounted for 14.3% of the total population, which means that Korean society has entered an aging society. In 2026, this rate is expected to increase by 20%, indicating a super-aged society. Compared to the fact that Japan took 24 years, the US took 73 years, and France took 113 years to enter an aging society, Korea's aging pace of 17 years is much faster than other developed countries.

Korea's Low Fertility Aging Index is the last of the 35 OECD member countries, and its main social indicators are among the worst among OECD countries. In particular, subjective health measures, life satisfaction, and social isolation in the 50s are in a bottom rank among the OECD member countries (OECD, 2016).

An increase in the elderly population means an increase in the population in need of care. This leads to an increase in welfare costs, such as a reduction in the number of productive individuals, a shrink of the economic market, a decline in social vitality due to the

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lowered social integration, and a rise in medical expenses. It is clear that aging will have long-term negative effects in socio-economic terms, but the degree of influence varies from country to country.

South Korea's elderly suicide rate and poverty rate rank first among OECD countries. The poverty rate of the elderly aged 65 or older in Korea is 48.8%, 36.7% higher than the OECD average (12.1%), and there is a huge gap with Australia (25.7%), the second ranking.

To address the suicide issues, the WHO stressed the establishment of national suicide prevention strategies and the appropriate suicide prevention policies at the municipal level (WHO, 2014). According to OECD and WHO statistics, South Korea's suicide rate has been the number one among OECD member countries since 2003, although the ranking fell to second place in 2018 when Lithuania joined as a OECD member country.

However, in terms of suicide rate by age group, South Korea's suicide rate is still the number one, with 36.9 people in their 60s, 62.5 people in their 70s, and 83.7 people over 80 years old. In particular, suicide rates for those aged 70 and over are twice as high as those of Slovenia, the second-largest (Central Suicide Prevention Center, 2018).

The poverty rate and suicide rate of the elderly are related to their quality of life, and it is impossible to increase life satisfaction only with individual efforts when a government does not intervene. According to the 2018 National Statistical Office's analysis of Korean life satisfaction according to age, high household income and economic stability were associated with high life satisfaction. This is related not only to income, but also to differences in health conditions, social networks and leisure activities based on the household income (Shim, 2018).

Among the many factors that affect health, exercise is

essential. In Korea, the medical expenses of the elderly aged 65 and over are the majority of the total population. Although exercise is not a panacea, it is necessary for an independent life in old age. The extension of life expectancy due to advances in medicine and technology has led to an increase in the elderly population, which has led to an increase in chronic diseases and medical costs as well. In the third quarter of 2018, Korea's medical expenses for the aged 65 and over were 23.11 trillion won. This was an increase of 13.1% year-on-year. Inpatient fees for people 65 years and over increased by 15.5%, from ₩9,399.9 billion in the third quarter of 2017 to ₩1,107.9 billion in the third quarter of 2018. Outpatient expenses increased 11.9% from ₩6.71 trillion in the third quarter of 2017 to ₩7.5 trillion in the third quarter of 2018. The cost of using pharmacies increased 9.6% from ₩4.87 trillion in the third quarter of 2017 to ₩4.86 trillion in the third quarter of 2018 (Health Insurance Review and Assessment Institute, 2018). In the third quarter of 2018, dementia was the highest-cost disease for the elderly (Health Insurance Review and Assessment Institute, 2018). Exercise contributes to preventing dementia and slowing down its progression. Dr. Ronald Peterson, director of the Mayo Clinic Alzheimer's Research Center, said regular physical exercise helps improve heart health and enhance memory of people with mild cognitive impairment. Mild cognitive impairment is an intermediate step between cognitive decline and more severe dementia in normal aging. Compared to changes in cognitive function following normal aging, these patients experience more severe declines in memory, language, thinking and judgment. Although these changes generally do not significantly degrade daily life and daily activities, they increase the risk of dementia caused by Alzheimer's disease and other neurological problems in the future. The Revised

recommendations for cognitive impairment in the American Neurological Association's guidelines suggested that exercise twice a week contributes to the management of mild cognitive impairment symptoms. Dr. Peterson also encouraged people with mild cognitive impairment for 150 minutes a week for active walking, jogging, or sports of interest. A little sweaty workout intensity is recommended, whereas too strong intensity to the extent that individuals cannot talk to each other is not necessary. Exercise can slow the progression from mild cognitive impairment to dementia (The Science Time, 2019). As such, the more frequent diseases of the elderly, including dementia, can be prevented through regular physical activities, namely exercise, which also leads to lower medical costs.

Therefore, various social problems caused by aging can be partially relieved by sports activities. In addition to health care, exercise plays a key role in relation to the important objectives of a healthy and independent lifestyle, not simply longevity, and a reduced population of productivity and a decrease in social vitality. This can be one way to reduce medical expenses for dementia, which occupies the largest proportion of Korean elderly medical expenditures, and the effects of exercise encompass the provision of life sports services as universal welfare.

In this regard, this study specified the middle and old age, which is the pre-aged stage of elderly, as an important period of life, and examined the current state of sports activities and satisfaction of elders. Based on the analysis, the study intends to suggest the provision of universal sports services as part of the social security policies in response to the aging society. As an example of universal daily sports service, the study applied the UK's individual budget system that dramatically shifted social care service from provider-centered to service

user's needs-centered to the Korean system. The results of this analysis are expected to be used as basic data for policy measures for universal sports services.

II. Research Method

1. Research Participants and Data Collection

The population of this study included elders aged 50 to 64. By using the convenient sampling, the regular users of membership sports centers, general fitness centers, and public sports centers in Seocho-gu, Seoul, which had a relatively high evaluation of public sports facilities and programs compared to other regions, not at the national scale, were chosen.

For the survey, researchers with survey experiences were selected and pre-trained. The researchers distributed the questionnaire to elders who agreed to participate in the study, and asked the participants to fill in the questionnaire. The completed questionnaires were collected immediately. The survey lasted three weeks from April 1, 2019 to April 21, 2019. Of the 357 collected questionnaires, a total of 299 copies were used for the final analysis, excluding 57 copies containing unsatisfactory responses or missing data and 1 copy that were detected as an outlier upon the analysis.

2. Survey Organization and Variable Measurement

The questionnaire of this study, which referred to the questionnaires of Korean studies on sports activities, service satisfaction, and daily sports centers, was structured through basic data collection and content analysis. The overall survey items consisted of open/closed questions about the demographic background of the research participants, the status of sports centers, satisfaction level, and closed questions about the willingness to pay for services. The details of the items

Table 1. Survey organization

	Level	Question Number / Number of items	
Dependent Variables	Individual Budget System	Status of use	II-12/ 1
		Institution of interest	II-12-1/ 1
		Reason of unwillingness	II-12-3/ 1
Independent Variables	Type of sports centers	I-7/ 1	
	Service satisfaction	I-7-4/ 1	
	Interest	IV-2-9/ 1	
Control Variables	Gender	I-1-(1-2)/ 2	
	Age	I-2/ 1	
	Sports activity history	I-7-2/ 1	
Others	Demographic characteristics	Marital status	I-3/ 1
		Educational attainment	I-4/ 1
		Income	I-5/ 1
		Occupation	I-6/ 1
	Sports activity-related factors	Weekly usage	I-7-1/ 1
		Goal	I-7-3/ 1
		Reason of service satisfaction	I-7-5/ 1
		Reason of center choice	I-7-6/ 1
		Monthly fee	I-7-7/ 1
		Number of exercise peer	I-7-8/ 1
		Participating event	I-7-9/ 1
Willingness to continue	I-7-10/ 1		

are shown in <Table 1>. The dependent variable is the willingness to use the individual budget system. The independent variable is the type of participating sports centers, service satisfaction, and a scale of 13 items on interest factors.

The interest factors from Lee & Nam(2003) were modified for this study. Of the 21 items, 13 items were used in the survey. The responses were measured by the Likert scale from 'strongly disagree' (1 point) to 'strongly agree' (5 points). After analysis, a total of 10 items, excluding three items of No. 10, 12, 13 that lowered the reliability of the interest factor scale, were used for the analysis (Cronbach's alpha= 0.742). The control variables were three items on gender, age, and sports activities. Moreover, the study conducted a preliminary survey targeting 20 people prior to the main survey to examine the validity of whether there was no problem in understanding the contents of the questionnaire.

3. Data Analysis

After coding and error test, the data was analyzed using SPSS 22.0 program. The process of data analysis is as follows.

First, descriptive statistical analysis was conducted to understand the demographic characteristics and daily sports characteristics of the participants.

Second, a series of cross-analyses were conducted on the sports activities, service satisfaction, and individual budget system according to participating sports institutions.

Third, a logistic regression analysis was conducted on the factors influencing the willingness to use the personal budget system.

Fourth, the Cronbach's internal reliability coefficient was calculated to verify the reliability of the measurement tool.

The significance level in all the analyses above was <.05.

Table 2. The demographic characteristics of the study participants

		frequency	Percentage
Gender	Male	122	40.8
	Female	177	59.2
Age	50-55	138	46.2
	56-60	127	42.5
	60-65	34	11.4
Marital status	Not currently married	252	84.3
	Currently married	47	15.7
Educational Attainment	High school graduate	10	3.3
	College graduate	194	64.9
	Post-college graduate	95	31.8
Income	₩1,500,000 ~ ₩2,500,000	44	14.7
	₩2,500,000 ~ ₩3,500,000	94	31.4
	₩3,500,000 ~ ₩4,500,000	58	19.4
	₩4,500,000 ~ ₩5,500,000	62	20.7
	More than ₩5,500,000	41	13.7
Occupation	Housewife	3	1.0
	Self-employed/sales/service	45	15.1
	Semi-professional/technical worker (engineer, architecture, nurse, etc.)	21	7.0
	Professional (doctor, attorney, judge, prosecutor, professor, writer, artist, journalist, pharmacist, teacher, etc.)	104	34.8
	administration/executive (corporate executive, high-rank public official, etc.)	45	15.1
	Office worker (office worker, banker, public official, police officer, etc.)	81	27.1
Total		299	100.0

III. Results

1. Demographic Characteristics

In terms of the demographics characteristics of the research participants, gender, age, marital status, educational attainment, income, and occupation were examined, as shown in <Table 2>.

2. Sports activity frequency by type of participating sports institutions

<Table 3> presents the results of a cross-sectional analysis of the number of sports activities per week of the study participants by type of participating sports institutions. In case of the membership sports centers, the most frequent use was once or twice a week (50%), followed by 3-4 times (42%). In case of the general

Table 3. Exercise frequency by type of participating sports institutions

	Types of participating sports institutions			Total	χ^2
	Membership sports center	General fitness center	Public sports center		
Exercise frequency	1-2	50 50.0%	17 17.0%	20 20.2%	87 29.1%
	3-4	42 42.0%	61 61.0%	56 56.6%	159 53.2%
	5-6	8 8.0%	22 22.0%	23 23.2%	53 17.7%
Total	100 100.0%	100 100.0%	99 100.0%	299 100.0%	34.690***

Table 4. The exercise goals by type of participating sports institutions

	Types of participating sports institutions			total	χ^2	
	Membership sports center	General fitness center	Public sports center			
Exercise goals	For Health	63 63.0%	19 19.0%	63 63.6%	145 48.5%	89.339***
	For Leisure	9 9.0%	6 6.0%	10 10.1%	25 8.4%	
	For Social interactions	22 22.0%	70 70.0%	14 14.1%	106 35.5%	
	For keeping the body in shape	2 2.0%	5 5.0%	10 10.1%	17 5.7%	
	For rehabilitation	4	0	2	6	
	Total	100 100.0%	100 100.0%	99 100.0%	299 100.0%	

※ The minimum predicted frequency is 1.99.

*** $p < .001$

fitness centers, 61% used the centers 3-4 times and 22% used the centers 5-6 times. In case of public sports centers, 57% used the centers 3-4 times and 23% used the centers 5-6 times. As for the membership sports centers, the gap between 1-2 times users and 3-4 times users was relatively small at 8%, while the general fitness center overwhelmingly had 3-4 times users, and the public sports centers mostly had 3-4 times users. With respect to the statistical distribution difference between these groups, the χ^2 value was 34.690 ($p = .000$), which indicated a statistically significant difference.

3. Goals by type of participating sports institutions

<Table 4> presents the results of the cross-analysis of

the study participants' life and sports activities according to the type of participating sports institutions. 63.0% and 63.6% of the users of the membership sports center and public sports centers responded 'for health', while the majority of the users of the users of the general fitness centers, 70.0%, responded 'for social interactions'. With respect to the statistical distribution difference between these groups, the χ^2 value was 89.339 ($p = .000$), which indicated a statistically significant difference.

4. Sports service satisfaction

<Table 5> presents the results of cross-analysis of the satisfaction level of the research participants' daily sports activities according to the type of participating sports

Table 5. Sports service satisfaction by type of participating sports institutions

	Types of participating sports institutions			Total	χ^2	
	Membership sports center	General fitness center	Public sports center			
satisfaction	Moderate	0 .0%	25 25.0%	82 82.8%	107 35.8%	220.545***
	Satisfied	35 35.0%	63 63.0%	17 17.2%	115 38.5%	
	Very satisfied	65 65.0%	12 12.0%	0 .0%	77 25.8%	
	Total	100 100.0%	100 100.0%	99 100.0%	299 100.0%	

※ 0cell(.0%) has a predicted frequency smaller than 5. The minimum predicted frequency is 25.49. *** $p < .001$

Table 6. Willingness to use the individual budget system by the type of participating sports institutions

		Types of the participating sports institutions			Total	χ^2
		Membership sports center	General fitness center	Public sports center		
Willingness to use	Yes	59	66	87	212	29.617***
		59.0%	66.0%	87.9%	70.90%	
	no	41	34	12	87	
		41.0%	34.0%	12.1%	29.10%	
	Total	100	100	99	299	
		100.0%	100.0%	100.0%	100.0%	

※ 0 cell(.0%) has a predicted frequency smaller than 5. The minimum predicted frequency is 15.56.*** $p < .001$

institutions. In case of the member sports centers, the majority of the users, 65.0%, responded 'very satisfied'. In case of the general fitness center, the majority of the users, 63.0%, responded 'satisfied'. On the other hand, the majority of the users of the public sports centers, 82.8%, responded 'moderate'. With respect to the statistical distribution difference between these groups, the χ^2 value was 220.545 ($p = .000$), which indicated a statistically significant difference.

5. willingness to use the individual budget system

<Table 6> presents the results of cross-analysis of the research participants' willingness to use the individual budget system in the future by type of the participating sports institutions. In case of the membership sports centers, 59% of the users had the willingness. while 66.0% of the general fitness center users and 87.9% of the public sports centers users had the willingness, which showed the increasing tendency. With respect to the statistical distribution difference between these groups, the χ^2 value was 29.617 ($p = .000$), which indicated a statistically significant difference.

6. Model verification of determinants for the willingness to use the individual budget system

A logistic regression analysis was conducted to verify the model of determinants for the willingness to use the individual budget system. A linear regression and a

logistic regression have similarities in that they represent a relationship between dependent and independent variables in a linear function. Nevertheless, a linear regression uses continuous dependent variables, while a logistic regression uses categorical dependent variables (Hair, *et. al.*, 2009). Because the dependent variable of this study was the willingness to use the individual budget system and the possible responses were 'yes' or 'no', each of them was coded 0 or 1 to be used as the dependent variable.

The research model included gender, age, sports activity history as control variables, and type of participating sports institution, service satisfaction, and interest factors as independent variables. As shown in <Table 7>, the logistic regression analysis of the effects of the type of the participating sports institution, service satisfaction, and interest factors on the willingness to use the individual budget system revealed that, as for institution type D2 (public), the interest factors were significant at the $p < 0.05$ level, and service satisfaction was significant at the $p < 0.05$ level. In the overall model coefficient tests, $\chi^2 = 88.472$ ($p = .000$) was statistically significant. Hosmer & Lemshow's statistics was 6.174 ($p > .05$), which was small enough to adopt the null hypothesis. Thus, it was confirmed that the model was properly constructed. The classification accuracy was 82.6%, and Nagelkerke R^2 was .364; the regression model had 36.45% explanatory power for the dependent

Table 7. The logistic regression results on the determinants of the willingness to use the individual budget system

	B	S.E.	Walds	Significance	Exp(B)
constant	-7.717	1.363	32.03	.000	.000
Control variables					
Gender	.787	.307	6.58	.010	2.196
Age	.042	.028	2.25	.133	1.043
Sports activity history	-.001	.002	.28	.592	.999
Independent variables					
Center type D1(general)	.039	.028	1.96	.161	1.040
Center type D2 (public)	.081	.025	10.31	.001	1.085
Satisfaction	.058	.028	4.26	.039	1.060
Fun	.934	.340	7.532	.006	2.545
Model fit					
Classification accuracy			82.6		
Model χ^2			88.472(.000)		
Hosmer & Lemshow $\chi^2(p)$			6.174(.628)		
Nagelkerke R^2			.364		

variable. Furthermore, in terms of B and Exp (B) of the variables included in the equation in Table 7, since the statistically significant institution type D2 (public), service satisfaction, and interest factors B were positive (+), it was interpreted that an 1-unit increase in the institutional type D2 (public), service satisfaction, and interest factors was associated with an increase of 8.5%, 6.0%, and 254.5% of the willingness to use the individual budget system, respectively.

IV. Conclusion

Presenting daily sports activities as part of the countermeasures against the crisis of the aging Korean society, this study focused on the middle and old age. As a result of the survey analysis, the most common goal of the daily sports activities was 'for health'. Therefore, as part of social security policies, it is necessary to provide universal sports services, which can ultimately lead to improved quality of life of elders. In particular, the study focused on the individual budget system, a payment method of services, and conducted a cross-analysis by type of participating sports institutions in applying the system. For the membership sports centers, 57% of the users chose the current center, compared to 50% for the general fitness center users. In case of the

public sports centers, 88.9% responded that they would like to use a better facility than the current centers. That is, most of them wanted a better sports institution than the one they were currently using. The individual budget system is a new way of paying for services in which individuals can choose, purchase, and control their services. Considering that the public service users had a high need for better quality of service, the introduction of this system would increase overall service satisfaction and experience.

The UK's individual budget system began as part of a social security policy for people with disabilities, but is now gradually expanding the range of people who can use it. The UK Health Department has declared that it will soon provide all adult social services through the individual budget system. This system has the advantage that the scope of use is not limited to any one field and can be used self-directed regardless of the amount of money wherever it is desired. On the other hand, although Korea has a system called 'Sport Voucher', the scope of benefits is limited to those who are 5 to 18 years old children of basic living beneficiaries or next upper class, and the monthly support is 80,000 won with annual support period is limited to 8 months or more. But, there is no physical welfare system for adults, including the elderly. Based on the fact that the elderly respond most

that the purpose of life sports activities is for the health, it can be seen that adults need sports and welfare system for preventive rather than ex post prescription.

Therefore, if the individual budget system, which is a service cost payment method as part of the social security policies for the disabled in British Commonwealth of Nations, is also applied to the field of sports in Korea, the gap in status and alienation in sports would be reduced. The individual budget system does not have to be limited to people with disabilities; Australia, the most active actor of the system among the Commonwealth countries, relies on the individual budget system for all services for people with disabilities other than income. However, the system requires a substantial amount of initial fiscal investment costs and public consensus on tax and health finance issues. Therefore, when establishing the system, reference can be made to the German individual budget system, in which the existing payment method and the individual budget system can be selected separately (Jung, 2019). The limitations of this study and suggestions for further research are as follows.

First, it is difficult to generalize the results of this study to other regions due to the regional nature of this study, Seocho-gu, Seoul. For future studies, however, it is recommended to apply the main factors appropriately to the local site.

Second, the participants of this study only included the elders who already participate in sports. Yet, non-

participants-targeting studies are also necessary to provide sports services as part of universal welfare. Given the Shim's(2018) finding that the main variable that improves the life satisfaction of the elderly was active leisure status, which is in line with this study, follow-up studies taking this limitation into account are needed.

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생활체육활동을 통한 고령사회 대응방안

- 개별예산제 활용 -

국문초록 본 연구는 고령사회로 인한 위기에 대한 대응의 한 방향을 설정하기 위해 노년기 전 단계인 중고령기를 중요한 단계로 특정하였고, 이들의 생활체육 활동에 대한 현황 및 만족도를 파악하고자 하였다. 모집단은 만 50세~64세까지의 중고령자로 표집의 대상은 서울 서초구에 위치한 회원제 스포츠센터, 일반 피트니스센터, 공공형 생활체육센터 등에서 생활체육활동을 하는 중고령자를 대상으로 편의표집하였다. 구조화된 설문지는 총 357부가 배포되고 최종 299부가 분석에 사용되었다. 분석결과 생활체육 활동기관 유형별 생활체육 활동횟수, 목적, 서비스만족도, 개인예산제도 이용 의사 등에서 통계적으로 유의미한 차이가 있었다. 검증결과 회원제 스포츠센터의 이용에서 가장 만족도가 컸고, 이러한 연구결과를 토대로 공공형 체육시설에서 회원제 스포츠센터 수준의 서비스를 제공할 필요가 있다고 사료된다. 고령화에 따른 사회적 문제의 해결책으로 사회보장정책의 일부로서 보편적인 생활체육 서비스 제공을 제안하며 본 연구의 결과가 이러한 정책 방안 모색을 위한 기초자료로서 유용하게 활용되기를 기대한다.

주제어 : 생활체육, 고령화, 중고령자, 생활체육 서비스 만족도, 개인예산제도

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