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The impact of leisure sports activities in older adults on wellness awareness, perceived freedom, and subjective well-being

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Abstract

The purpose of the study is to determine the relationship between leisure sports activities among the elderly, wellness awareness, perceived freedom, and subjective well-being. In order to achieve the purpose of this study, the study subjects were selected as the population aged 65 or older who lived in the Gwangju Metropolitan City area in 2022 and engaged in leisure sports activities. As for the sampling method, samples were extracted using cluster random sampling. A total of 300 people, 150 male and 150 female, were sampled.

The survey tool was modified and supplemented according to this study based on the questionnaire that had been verified for reliability and validity in previous studies, and all questionnaire items were composed of a 5-point scale. The statistical analysis used for data analysis was frequency analysis, exploratory factor analysis, reliability analysis, and multiple regression analysis using SPSS Windows 21.0 Version. First, it was found that the wellness perception of the elderly partially affects the perceived sense of freedom. Second, it was found that the wellness perception of the elderly partially affects psychological happiness. Third, the elderly's perceived sense of freedom was found to affect their subjective well-being. Considering these research results, in order to effectively improve the quality of life in old age, it is important to promote physical, mental, emotional, and social relationships through nature-friendly sports activities to improve subjective life motivation, satisfaction, and happiness. It can be said that it increases the sense of well-being.

Keywords: Leisure Sports, Wellness Awareness, Perceived Freedom, Subjective Well-being

1. INTRODUCTION

In modern society, a new revolution called the 4th Industrial Revolution is integrating the physical, biological and digital worlds based on big data, and is taking place in all fields such as economy and industry. In other words, the 4th industrial revolution can be said to be the next-generation industrial revolution achieved through the convergence of information and communication technology (ICT), and this new technological innovation has brought about changes in the social environment and values. In particular, technological innovation in the medical field has resulted in a continuous increase in the average life expectancy of humans. In this trend of human society, one of the biggest social issues in Korea is that the aging of the population is rapidly progressing

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unprecedentedly in the world. In the case of Korea, the aging of the population is progressing rapidly, which is unprecedented in the world. Based on data from the National The elderly population aged 65 or older accounted for 17.5% of the total population as of September 2022, and is expected to increase to 46.4% in 2070. An aging society brings about changes in existing social values and social systems. Social awareness of the health of the elderly also emphasized only physical health, which is a general social wisdom, but the necessity and importance of mental health is being emphasized. Happiness, which can be said to be an internal factor of human beings, means the degree of overall satisfaction felt in all areas of individual life [1]. An effective way to increase psychological happiness in old age is to participate in leisure sports activities accompanied by dynamic physical activities. In other words, active leisure sports activities can improve physical health, social relationships, and increase motivation and vitality for life. In relation to such psychological happiness, the concept of wellness has recently emerged. Wellness puts physical health and mental stability as the top priority, and means health, stability, leisure, and happiness [2]. In other words, as a new concept of health, it means a complete state in which physical, social, mental, intellectual, and emotional well-balanced efforts are made to make the body and mind in an optimal state [3, 4]. The physical activity of the elderly plays an important role in the expression of desire, sociality, and interpersonal relationships, and since it is based on the spontaneity of the activity, it greatly contributes to enhancing the perceived sense of freedom. Perceived freedom is a key factor in determining leisure behavior, and is defined as the cause of the behavior and the feeling of spontaneously choosing a behavior [5, 6]. In other words, the concept of perceived freedom is not an objective or absolute, but a relative and subjective state of mind, and can be regarded as the most important factor in an individual's participation in physical activity as a leisure activity. In the end, in order to increase psychological happiness, which can be said to be a quality-of-life evaluation scale in old age, when all areas of life feel a sense of decline and loss, leisure sports activities accompanied by physical activities prevent deterioration of physical function and physical function It not only promotes health, but also promotes psychological and social health [7, 8]. Therefore, the purpose of this study is to determine the relationship between leisure sports activities in the elderly, wellness awareness, perceived freedom, and subjective well-being.

2. ANALYSIS METHOD AND SURVEY TOOL

2.1. Study Subjects

The study subjects were selected as a population of seniors aged 65 years or older who live in the Gwangju metropolitan area and engage in leisure sports activities in 2022. The sampling method was cluster random sampling. A total of 300 people, 150 males and 150 females, were sampled. The details of the study subjects are shown in <Table 1>.

Table 1. Study Subjects

Variable		N	%
Gender	Female	150	39.3
	Male	150	60.7
Age	65 - 69 years old	149	49.7
	70's	85	28.3
	80's	66	22.0

	Upper	146	48.7
Health level	Middle,	90	30.0
	Lower	64	21.3

2.2. Research Tool

The survey tool was modified and supplemented according to this study based on the questionnaire that had been verified for reliability and validity in previous studies, and all questionnaire items were composed of a 5-point scale. For specific details, first, Wellness awareness means actions to improve the quality of life. In other words, it includes contents such as maintaining health, physical management, volunteer activities, and recognizing values through leisure and recreational activities of the elderly [9]. Therefore, this study consisted of physical health, intellectual health, social health, mental health, and emotional health as sub-factors. In addition, the perceived freedom is defined as a subjective concept of freedom that is recognized through the leisure/recreation activities of the elderly, other than the apparent freedom, and freely recognized for leisure/recreation activities by oneself. In other words, leisure/recreation activities or experiences that occur during the time that is free and feel leisure through leisure/recreation activities [10]. In this study, the sub-factors consisted of control, self-confidence, desire, and immersion. Lastly, psychological happiness means the sum of subjective well-being in the cognitive and emotional aspects of an individual's quality of life and psychological well-being that affects an individual's life in the social aspect [11]. In other words, it reflects general emotions or emotions and means improvement in self-realization, quality of life, etc. In this study, it is composed of satisfaction and happiness. The detailed composition of the questions on the test paper is shown in <Table 2>.

Table 2. Questionnaire Composition Indicator

Factor	Sub-factor	Number of questions
Wellness awareness	Physical health,	6
	Intellectual health,	4
	Social health	3
	Mental health,	4
	Emotional health	3
Perceived freedom	Control,	5
	Confidence,	10
	Desire and Commitment	10
Subjective well-being	Satisfaction,	4
	Happiness	5

3. VALIDITY AND RELIABILITY OF THIS STUDY

3.1. Exploratory Factor Analysis

The results of exploratory factor analysis on wellness awareness are shown in <Table 3>. Looking at <Table 3>, the six questions showing factor loadings (over 0.560) for factor 1 are 5, 1, 2, 3, 4, and 6, all of which are

related to physical health. The four questions showing factor loadings (more than 0.622) for factor 2 are 8, 7, 9, and 10, all of which are related to intellectual health. The three questions showing factor loadings (more than 0.602) for factor 3 are questions 12, 13, and 11, all of which are related to social health. The four questions showing factor loadings (more than 0.617) for Factor 4 are 16, 14, 15, and 17, all of which are related to social health. The three items showing high loadings (over 0.510) on factor 5 are items 19, 18, and 20, all of which are related to emotional health. And the cumulative ratio explaining the five factors of wellness awareness: physical health, intellectual health, social health, mental health, and emotional health was found to be approximately 66.025%. The results of this analysis show that wellness awareness was measured relatively validly. The results of the exploratory factor analysis on perceived freedom are shown in <Table 4>. Looking at <Table 4>, the questions showing factor loadings (more than 0.553) for factor 1 are five items: 4, 6, 12, 2, and 13, all of which are related to confidence. The seven questions showing factor loadings (more than 0.501) for Factor 2 are questions 22, 17, 15, 11, 20, 10, and 3, all of which are related to control, and three questions 7, 9, and 18. was removed because the factor loading value was low. The eight questions showing factor loadings (more than 0.465) for factor 3 are 8, 1, 16, 25, 23, 24, 5, and 4, all of which are related to desire and commitment. Two questions, questions 19 and 21, were removed due to low factor loading values. And the cumulative ratio explaining the three factors of perceived freedom: confidence, control, desire, and immersion was found to be about 77.968%. The results of this analysis show that the perceived sense of freedom was measured relatively validly. The results of exploratory factor analysis on subjective well-being are shown in <Table 5>. Looking at <Table 5>, the four items showing factor loadings (more than 0.511) on factor 1 are 2, 4, 1, and 3, all of which are related to happiness. Item 5 was removed because the factor loading value was low. The three questions showing factor loadings (more than 0.415) on factor 2 are questions 7, 6, and 8, all of which are related to satisfaction. Question 9 was removed because the factor loading value was low. And the cumulative ratio explaining the two factors of subjective well-being, happiness and satisfaction, was found to be about 54.560%. The results of this analysis show that subjective well-being was measured relatively validly.

Table 3. Exploratory factor analysis on wellness awareness

Variable		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Physical health	Q05	0.808	0.172	0.157	-0.110	-0.053
	Q01	0.768	0.169	0.048	0.129	0.135
	Q02	0.632	0.214	0.054	0.216	0.236
	Q03	0.604	0.026	-0.058	0.337	0.381
	Q04	0.597	0.153	0.188	0.279	-0.059
	Q06	0.560	0.201	-0.014	0.407	0.294
Intellectual health	Q08	0.044	0.786	0.258	0.161	0.098
	Q07	0.104	0.742	-0.034	0.086	0.197
	Q09	0.045	0.706	0.220	0.155	-0.042
	Q10	0.128	0.622	0.350	0.208	0.029
Social health	Q12	0.273	0.149	0.750	0.065	0.236
	Q13	0.079	0.079	0.689	0.162	0.287
	Q11	0.104	0.154	0.602	0.466	-0.034

Mental health	Q16	0.210	0.138	0.159	0.739	0.002
	Q14	0.075	0.516	0.176	0.598	0.305
	Q15	0.151	0.158	0.170	0.563	0.013
	Q17	0.030	0.265	0.286	0.517	0.273
Emotional health	Q19	0.259	0.082	0.117	0.252	0.705
	Q18	0.104	0.151	0.121	0.153	0.664
	Q20	0.235	0.222	0.102	0.159	0.510
Eigen Value		2.222	1.957	1.918	1.904	1.902
Variance (%)		14.817	13.043	12.786	12.696	12.683
Accumulation (%)		14.817	27.860	40.646	53.342	66.025

Table 4. Exploratory factor analysis of perceived freedom

Variable		Factor 1	Factor 2	Factor 3
Confidence	Q04	0.779	0.109	0.197
	Q06	0.747	0.150	0.246
	Q12	0.691	0.043	0.341
	Q02	0.655	0.187	0.084
	Q13	0.553	0.056	0.067
Control	Q22	0.059	0.732	0.081
	Q17	0.055	0.655	0.105
	Q15	0.201	0.602	0.195
	Q11	0.343	0.564	0.204
	Q20	0.086	0.532	0.128
	Q10	0.103	0.522	0.143
	Q03	0.201	0.501	0.195
Desire/ Indulgence	Q08	-0.053	0.172	0.680
	Q01	0.135	0.169	0.651
	Q16	0.236	0.214	0.602
	Q25	0.281	0.026	0.588
	Q23	0.153	0.153	0.554
	Q24	-0.059	0.236	0.492
	Q05	0.049	0.153	0.442
	Q04	0.174	0.153	0.435
Eigen Value		2.356	2.023	1.858
Variance (%)		29.451	25.292	23.225
Accumulation (%)		29.451	54.744	77.968

Table 5. Exploratory factor analysis of subjective well-being

Variable	Factor 1	Factor 2
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Happiness	Q02	0.747	0.175
	Q04	0.732	0.143
	Q01	0.618	0.119
	Q03	0.511	0.038
Life satisfaction	Q07	0.066	0.727
	Q06	0.073	0.518
	Q08	0.010	0.415
Eigen Value		3.239	1.671
Variance (%)		35.994	18.566
Accumulation (%)		35.994	54.560

3.2. Reliability analysis results

The results of the questionnaire reliability analysis in this study are shown in <Table 6>. Looking at <Table 6>, the Cronbach’s α value of the elderly’s perception of wellness was found to be 0.89 to 0.91, and the Cronbach’s α value of the perceived sense of freedom was found to be 0.82 to 0.88. Additionally, the Cronbach’s α value of psychological well-being was found to be 0.85 to 0.87. In this study, the Cronbach’s α value, which is the reliability coefficient for all factors, was found to be at a high level, making it a reliable item.

Table 6. Reliability analysis

Factor	Sub-factor	Cronbach’s α
Wellness awareness	Physical health	0.91
	Intellectual health	0.89
	Social health	0.81
	Mental health	0.91
	Emotional health	0.81
Perceived freedom	Control	0.88
	Confidence	0.82
	Desire and Commitment	0.88
Subjective well-being	Satisfaction	0.87
	Happiness	0.85

4. STATISTICAL ANALYSIS

The survey procedure of this study was collected in such a way that the researcher and assistant directly visited the sampled subjects and distributed and collected questionnaires. First, after explaining the method of answering the questionnaire and precautions, the questionnaire was collected after answering in the self-written form. Answered questions were collected for data analysis, and valid samples were coded according to the coding guidelines, excluding double or non-entry data. After inputting the coded data individually into the

computer, frequency analysis, exploratory factor analysis, reliability analysis, and multiple regression analysis were performed using the SPSS Windows 20.0 statistical program. The statistical significance level was set at $p < 0.05$.

5. RESULTS

5.1. Impact of wellness awareness on perceived freedom in older adults

The results of a multiple regression analysis to determine the effect of the elderly's awareness of wellness on their perceived sense of freedom are shown in <Table 7>.

Table 7. Multiple regression analysis of the effect of elderly people's wellness awareness on their perceived sense of freedom

Variable	Control		Confidence		Desire and Commitment	
	β	t	β	t	β	t
Constant		10.256		7.601		9.311
Physical health	0.195	2.655**	0.239	3.527***	0.065	0.932
Intellectual health	0.076	1.023	0.040	0.587	0.216	3.0688**
Social health	-0.002	-0.021	0.153	2.145*	0.032	0.428
Mental health	0.104	1.328	0.029	0.407	0.090	1.210
Emotional health	0.214	3.051**	0.253	3.924***	0.274	4.123***
R ²	0.245		0.361		0.322	
F	19.075***		33.240***		27.923***	

** $p < 0.05$, * $p < 0.01$, *** $p < 0.001$

Looking at <Table 7>, in the final regression equation, the elderly's awareness of wellness was found to have a statistically significant effect at the 0.1% level on the control of perceived freedom, confidence, desire, and commitment. Looking at this specifically, First, physical health and emotional health of perceived well-being were found to have a significant effect at the 1% level on the ability to control perceived freedom. Physical health and emotional health of well-being were found to have a significant effect on confidence in perceived freedom at the 0.1% level, and social health was found to have a significant effect at the 5% level. Looking at the beta (β) value indicating the relative contribution, wellness awareness in control is emotional health (0.214), physical health (0.195), mental health (0.104), intellectual health (0.076), and social health (-0.002), showing an explanatory power of 24.5%. In addition, wellness awareness influenced confidence in perceived freedom in the order of emotional health (0.253), physical health (0.233), social health (0.153), intellectual health (0.040), and mental health (0.029). It shows an explanatory power of 36.1%. And the perceived desire for freedom and commitment to wellness were in the order of emotional health (0.274), intellectual health (0.216), physical health (0.065), mental health (0.090), and social health (0.032). It has an influence and shows an explanatory power of 32.2%.

Looking at previous studies based on the results of this study, it has been revealed that participation in leisure activities improves awareness of wellness and that this influences factors such as freedom experienced in leisure activities [12]. Perceived freedom can be said to be an important factor in determining human leisure behavior [13]. In other words, in the field of sports, it is defined as freedom in leisure phenomena through

leisure sports activities in voluntarily choosing a certain action within oneself. Therefore, perceived freedom is the most important factor in an individual's participation in physical activity as a leisure activity, and among the internal factors of leisure behavior, cognitive freedom can be said to be a factor that has a higher impact than motivation or cognitive skills. Considering this comprehensively, the wellness awareness that influences the perceived sense of freedom in this study can be said to be influential as a preceding factor of the perceived sense of freedom, and it explains the validity of this study's variable settings.

5.2. Effect of wellness awareness on subjective well-being in older adults

The results of a multiple regression analysis to determine the effect of the elderly's awareness of wellness on subjective well-being are shown in <Table 8>.

Table 8. Multiple regression analysis of the effect of elderly people's awareness of wellness on their subjective well-being

Variable	Life satisfaction		Happiness	
	β	t	β	t
Constant		8.160		5.450
Physical health	0.019	0.302	0.218	3.001**
Intellectual health	-0.043	-0.834	0.051	0.838
Social health	0.299	4.953***	0.069	0.982
Mental health	0.274	3.936***	0.226	2.773**
Emotional health	0.183	2.777**	0.104	1.345
R ²	0.373		0.143	
F	29.064***		8.158***	

p<0.01, * p<0.001

Looking at <Table 8>, in the final regression equation, the elderly's perception of wellness was found to have an effect on subjective well-being, life satisfaction, and happiness at the 0.1% level. Looking at this specifically, First, emotional health from wellness awareness was found to have a significant effect at the 1% level and physical health at the 5% level on life satisfaction of subjective well-being, and mental health from wellness awareness had a significant effect of 0.1% on happiness from subjective well-being. It was found to have a significant effect at the level. Looking at the beta (β) value, which indicates the relative contribution, the perception of wellness is related to life satisfaction. It affects emotional health (0.183), physical health (0.169), intellectual health (0.138), social health (0.071), and mental health (0.009) in that order, showing an explanatory power of 22.7%. In addition, wellness awareness had an effect on the happiness of perceived freedom in the following order: emotional health (0.253), physical health (0.233), social health (0.153), intellectual health (0.040), and mental health (0.029). It shows an explanatory power of 36.1%. And the perceived desire for freedom and commitment to wellness were in the order of mental health (0.300), emotional health (0.073), social health (0.057), physical health (0.040), and intellectual health (-0.002). It has an influence and shows an explanatory power of 17.8%. Looking at previous studies based on the results of this study, in a study on the wellness and subjective happiness of the elderly, it was reported that the higher the perception of mental health, physical health, social health, and intellectual health, the higher the perception of happiness,

and that emotional health did not show a significant relationship with happiness. there is [14]. It shows research results in the same context as the results of this study. In this study, wellness awareness can be viewed as an action to maintain health-related improvements in the elderly. Accordingly, in various previous studies on health promotion behavior, happiness, quality of life, and subjective well-being, which have similar concepts to this variable, a significant positive relationship between health promotion behavior and quality of life was found in studies on the relationship between health promotion behavior and quality of life in the elderly. It is reported that there is a correlation [15]. This indirectly supports the results of this study. Meanwhile, previous studies related to healthy lifestyle and quality of life also show a positive correlation between psychological happiness and the similar concept of quality of life. People with a high healthy lifestyle report that they perceive factors such as life satisfaction, happiness, and well-being to be high [16]. Considering these results together, it can be seen that the psychological well-being of the elderly is influenced by the wellness perception factors established in this study. Therefore, in order for the elderly to live a life of high happiness, wellness awareness must be increased.

5.3. Effect of perceived freedom on subjective well-being in older adults

The results of a multiple regression analysis to determine the effect of the elderly's perceived freedom on their subjective well-being are shown in <Table 9>.

Table 9. Multiple regression analysis of the effect of perceived freedom in older adults on subjective well-being

Variable	Life satisfaction		Happiness	
	β	t	β	t
Constant		5.983		1.299
Confidence	0.491	8.033***	0.035	0.846
Control	0.022	0.344	0.111	2.582*
Desire/Indulgence	0.167	2.678**	0.791	18.502***
R ²	0.361		0.700	
F	46.236***		91.521***	

** p<0.05, * p<0.01, *** p<0.001

Looking at <Table 9> in detail, the final regression equation showed that the elderly's perceived sense of freedom influenced subjective well-being, life satisfaction, and happiness at the 0.1% level. Looking at this in detail, first, the control power of perceived freedom was found to have a significant effect on subjective well-being and life satisfaction at the 0.1% level, and desire and commitment were found to have a significant effect at the 1% level. In addition, the control power of perceived freedom and self-confidence were found to have a significant effect on subjective well-being and happiness at the 1% level, and the control power of perceived freedom was found to have a significant effect at the 5% level. Looking at the beta (β) value, which indicates the relative contribution, perceived freedom is related to life satisfaction. Wellness awareness affects life satisfaction in the order of emotional health (0.183), physical health (0.169), intellectual health (0.138), social health (0.071), and mental health (0.009), with an explanatory power of 22.7%. is showing. In addition, wellness awareness had an effect on the happiness of perceived freedom in the following order: emotional

health (0.253), physical health (0.233), social health (0.153), intellectual health (0.040), and mental health (0.029). It shows an explanatory power of 36.1%. And the perceived desire for freedom and commitment to wellness were in the following order: mental health (0.300), emotional health (0.073), social health (0.057), physical health (0.040), and intellectual health (-0.002). It has an influence and shows an explanatory power of 17.8%. Looking at previous studies based on the results of this study, In a study on perceived freedom and psychological well-being among golf participants, the higher the confidence in perceived freedom, the higher the sense of achievement in psychological well-being, and the higher the control, desire, and immersion in perceived freedom, the higher the satisfaction in psychological well-being. It is reported that it is highly recognized, supporting the results of this study [17]. Additionally, in a study targeting bowling participants, it was reported that immersion through bowling participation increases the sense of freedom from everyday life, which has a positive effect on psychological well-being [18]. This shows the validity of setting the variables in this study. Considering these results together, perceived freedom means feeling free through leisure activities, and this is achieved through leisure activities. This has a positive impact on one's own life and acts as a factor in increasing satisfaction and happiness.

6. CONCLUSION

The purpose of this study is to determine the effect of wellness awareness on the perceived freedom and subjective well-being of older adults participating in leisure sports. To achieve this research purpose, 300 leisure sports participants aged 65 or older were selected as research subjects. The collected data were statistically processed for the purpose of analysis. The results obtained through this process are as follows.

First, the wellness awareness of older adults participating in leisure sports was found to partially affect their perceived sense of freedom. In other words, the higher the perception of physical health and emotional health in the elderly's wellness awareness, the higher the perceived control of freedom and self-confidence. In addition, the higher the social health and emotional health of the elderly's wellness awareness, the higher the perceived desire for freedom and commitment.

Second, the wellness awareness of elderly people participating in leisure sports was found to partially affect their subjective well-being. In other words, the higher the emotional health and physical health of the elderly's wellness awareness, the higher the perceived life satisfaction of subjective well-being. In addition, the higher the perception of mental health in the elderly's perceived sense of freedom, the higher the perception of happiness in subjective well-being.

Third, the perceived freedom of older adults participating in leisure sports was found to partially affect their subjective well-being. In other words, the higher the perception of control, desire, and immersion in the elderly's perceived sense of freedom, the higher the perceived life satisfaction of subjective well-being. In addition, it was found that the elderly's perceived sense of freedom, confidence, and control was highly perceived.

Considering these research results, in order to effectively improve the quality of life in old age, it is important to promote physical, mental, emotional, and social relationships through nature-friendly sports activities to improve subjective life motivation, satisfaction, and happiness. It can be said that it increases the sense of well-being.

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