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An Analysis of the Relationship between the Adolescents' Intention to Continue Exercising Judo Training as Sports for All and the Satisfaction of Life

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Abstract

Purpose: The purpose of this study is to examine the influence of Judo practitioners on their intention to continue exercising and satisfaction of life through consideration of previous research related to intention to continue exercising and satisfaction of life, thereby improving the development of Judo for sports for all and the satisfaction of Judo practitioners for sports for all while providing the basic data to contribute to help improve the quality of life and ultimately improving the quality of life.

Method: The subjects of this study were 200 members attending middle and high schools who practice Judo as part of their daily sports, and were surveyed using stratified cluster random sampling. The collected data were subjected to factor analysis and reliability analysis using SPSS 20.0 and AMOS 20.0 programs.

Results: In this study, the independent samples t-test and one-way ANOVA were used to determine the effect of training according to the characteristics of Judo practitioners on intention to continue exercising and satisfaction of life. First, in the offset analysis of intention to continue exercising and satisfaction, the correlation coefficient between variables turned out to be somewhat high. Second, it turned out to have a positive effect on the intention to continue exercising. Third, it turned out to have a positive effect on the satisfaction of Judo practitioners.

Conclusion: The purpose of this study is to articulate and specify the impact of sports for all Judo training on the intention to continue exercising and satisfaction of life, and to provide the basic data that may be used to identify positive changes in individuals by improving mental, physical, and social health through Judo training.

Keywords: Adolescents, Sports for All, Judo Training, Intention to Continue, Satisfaction Life

1. Introduction

Physical activity provides the situations where people can realize their needs or increase their subjective well-being at a psychological level. Furthermore, it has been demonstrated that the physical strength factors such as muscle strength, muscular endurance, dexterity, flexibility, and cardiorespiratory endurance are improved through physical activity [1]. The interest in and management of physical strength is necessary not only for the adults but also for the adolescents. In the case of adolescents, they live with stress due to the entrance exam-oriented education system and poor educational environment [2]. Meanwhile, it has been reported that the people's working hours are gradually decreasing, but as daily life becomes more complex, people are suffering from a lot of stress [3]. At a minimum, it may be said that one must enjoy leisure life, engage in physical activity, diversion, and community activities to live a rewarding life in mass society. The effects of participating in physical activity indicate that it has had a positive effect in maintaining physical health, maintaining mental health, and helping with daily life.

These positive effects have resulted in a reduction in medical costs, which is a national problem[4].

As a means of reducing the medical costs, the state is encouraging the citizens to participate in sports for all [5]. As a policy to encourage health, the government supports the revitalization of recreational sports for many hobbyists. However, in order for space sports to become a recreational sports, efforts are needed to develop and apply programs for the physical and emotional characteristics of adolescents. In particular, Judo, which is a martial arts sport, is one which begins with examples and ends with examples, promoting interpersonal communication and maintaining social order. It is said that the higher the frequency of participation in Judo training, the more positive effects it has on personality, sociality, morality development, and emotional factors[6]. As evidence supporting such results, previous research results reported by Kim Young-Ok(2007) show that participation in physical activity has a positive effect on exercise emotions, and when participation is frequent or regular, negative exercise emotions are low. It turned out to be high in positive exercise emotions. Furthermore, in the study of Yi Jonghan & Park Eun-A(2010), the emotional factors included positive attitudes such as maturity and emotional harmony in terms of interpersonal relationships included in life, and it is a very sensitive and anxious period, so it is important to note that the developmental process of adolescents, while it was also said that it is more important than anything else to understand and maintain the emotional stability[7][8].

Kim Hun-Tae(2021) demonstrated that the higher the frequency of participation in Judo training, the more positive effects it has on emotional factors such as personality, sociability, and morality, while Roh Hyun-Sik(2017) systematically conducted a study on Judo athletes. It has also been reported that application of training programs has a positive effect on biological changes[9][10]. The data from a study of college students, both experienced and inexperienced in Judo, reported that Judo was difficult, risky, burdensome, attractive, or uninteresting. Examining such results, it is necessary to analyze the desires and intentions in participating in the sport of Judo so that anyone can participate in the sport of Judo [11]. It is said that the modern people feel a sense of meaning, responsibility, and purpose of life through participation in sports, and that satisfaction increases when individual leisure is satisfied, increasing the importance of sports[12]. Given such characteristics of continuous exercise performance, if the level of awareness of tendency, possibility, and reinforcement increases, the number of participants in daily sports exercise will likely increase. The most important factor is to provide many people with many benefits and encourage them to continuously participate in the sports for all [13]. Furthermore, the situation is such that, for the adolescents, most people expected that economic abundance would bring happiness, but instead, expectations and demands for quality of life such as leisure life, health, happiness, well-being, and healing increased stress[5]. While the society is aware of this phenomenon, there is a lack of clear alternatives to relieve stress among adolescents. Appropriate stress is a source of vitality for adolescents, yet the continuous stress causes the physical disorders such as difficulty sleeping, loss of motivation, or overeating, and mental disorders such as doubt, a sense of failure, apathy and indifference, nervousness, negative emotions, and a sense of victimization[14]. Among the leisure activities, adolescents tend to prefer daily sports activities. The reason is that the sports activities are considered useful activities to improve physical, mental, and social health by relieving stress and improving the quality of life through the relationship between health and social activities[15]. By examining previous research related to the intention to continue exercising and satisfaction of life, the impact on the intention to continue exercising and the satisfaction of life of Judo practitioners was identified, thereby improving the development of Judo as sports for all and the satisfaction of life of Judo practitioners while providing the basic data to contribute to improving the quality of life.

2. Research Method

2.1. Research subjects

The subjects of this study were 200 middle and high school students who practice Judo as a daily sport at 30 private studios located across Daegu, Gyeongbuk, Gyeongnam, and Busan in Korea, and were selected by using the stratified cluster random sampling. After conducting a survey on the sampled people, an outlier removal procedure was performed to exclude data with insufficient responses from the analysis, and data from 100 men and 100 women were subjected to the statistical processing. The general characteristics of the study subjects are as illustrated in <Table 1>.

Table 1. Demographic variables of the study subjects.

	Classification	Frequency	%
Gender	Male	100	50.0
	Female	100	50.0
Age	Teens	100	100
Period of participation	Less than 1 year	146	73.1
	1-2 years	27	13.8
	3-4 years	25	13.1
Frequency of participation	1-2 times/week	20	10.0
	3-4 times/week	120	60.2
	5-6 times/week	60	30.0

2.2. Measuring tools

The questionnaire used for this study concerns the impact of adolescents' physical education training on their intention to continue exercising and their satisfaction of life. It includes the practitioner's demographic variables (gender, age, period, frequency), intention to continue exercising (tendency, possibility, enhancement), and the questions on the satisfaction of life, yielding a total of 21 questions, as illustrated in <Table 2>.

2.2.1. Willingness to continue exercising

The questionnaire to measure Judo practitioners' intention to continue exercising was developed by Vallerand et al.(2003) and was developed by Jin, Jung-Eon, Jung Yang-Hee, and Lee Bong-Keun.(2000) used the questionnaire to measure the type of intention to continue exercising and modified it in line with this study. This questionnaire consisted of 9 questions on 3 factors (tendency, possibility, and reinforcement) and a 5-point Likert scale ranging from 1 'not at all' to 5 'very much'[16][17].

2.2.2. Satisfaction of life

The questionnaire used to measure the satisfaction of life of the Judo practitioners was selected and used by Kim Yun, Tae(2009), Kim In-Hyung(2010), and modified and supplemented by Jung Young(2020). The questionnaire in this study consisted of 8 factors and a 5-point Likert scale ranging from 1 point 'not at all' to 5 points 'very much' [18][19][20].

Table 2. Questionnaire's structure.

Composition indicators	Composition details	Question #	No. of questions
Demographic variables	Gender	1	4
	Age	1	
	Period of participation	1	
	Frequency of participation	1	
Intention to continue exercising	Tendency	3	9
	Functionality	3	
	Enhancement	3	
Satisfaction of life	Satisfaction of life	8	8

2.2.3. Data processing

The following analytical method was applied for the data collected for the purpose of this study with the purpose of identifying the impact of guided sports training in adolescents on their intention to continue exercising and satisfaction of life. The collected data were subjected to descriptive statistical analysis such as mean, standard deviation, question response frequency, kurtosis, and skewness to confirm the normal distribution of the collected data using SPSS 20.0 and AMOS 20.0 programs, and the construct validity of the test strip. Confirmatory factor analysis and reliability analysis were conducted to confirm reliability. In order to determine the effect of training according to the characteristics of Judo practitioners on their intention to continue exercising and satisfaction of life, independent samples t-test and one-way ANOVA were used to analyze. Furthermore, the relationships between the factors were analyzed by using correlation analysis and regression analysis. The statistical significance level for all data was set at $\alpha=.05$.

3. Results

3.1. Differences in the intention to continue exercising according to the demographic variables

Table 3. Results of the validation of differences in the intention to continue according to the demographic characteristics.

Classification (n)		Intention to continue exercising		
		Tendency continued	Function continued	Enhancement continued
Gender	Male students (100)	3.95 ± .75	3.68 ± .77	4.06 ± .65
	Female students (100)	3.89 ± .82	3.59 ± .78	3.90 ± .62
Age	Teens	3.99 ± .74	3.66 ± .78	3.99 ± .64
Period of practice	a. Less than 1 year (146)	3.88 ± .78	3.55 ± .75	3.93 ± .63
	b. 1-2 years (27)	4.00 ± .77	3.71 ± .82	4.02 ± .70
	c. 3-4 years (25)	3.85±.67	3.77±.62	4.08±.49
	F-value (p-value) Scheff	1.128 (.337) ns	3.801 (.010) c>a	4.053 (.007) c>a
Frequency	a. 1-2 times/week (20)	3.74 ± .75	3.39 ± .75	3.80 ± .67

	b. 3-4 times/week (120)	3.89 ± .71	3.64 ± .73	3.99 ± .64
	c. 5-6 times/week(60)	4.00 ± .74	3.67 ± .80	4.03 ± .62
	F-value (p-value) Scheff	3.053 (.58) ns	5.966 (.001) c>a	5.269 (.001) c>a

As illustrated in <Table 3>, the differences in the trend continuation according to gender turned out to be higher for the male students (3.95±.75) than for the female students (3.89±.82), but there was no statistically significant difference. The difference in terms of the functional continuation was higher for the male students (3.68±.77) than for the female students (3.59±.78), but there was no statistically significant difference. Meanwhile, the continuation of reinforcement was higher for the male students (4.06±.65) than for female students (3.90±.62), demonstrating a statistically significant difference (t=2.314, p<.021). Depending on age, there was no statistically significant difference between the groups in functional continuation and reinforcement continuation, but there was a statistically significant difference between the groups in trend continuation (F=3.712, p<.025). As a result of the post hoc testing based on significant differences, teenagers demonstrated higher scores than those in their 20s and 30s, and there was a statistically significant difference in teenagers and 30s. Meanwhile, in the difference in training period, there was no statistically significant difference in trend continuation, but it was statistically significant between the groups in function continuation (F=3.801, p<.010) and reinforcement continuation (F=4.053, p<.007). demonstrating a difference. Furthermore, despite the difference in frequency of participation, there was no statistically significant difference in trend continuation in the training period, but in the continuation of function (F=5.966, p<.000) and the continuation of reinforcement (F=5.269, p<.001). There was a statistically significant difference between the groups. As a result of conducting a post-hoc test based on the significant difference between the groups, statistically significant differences were found in both functional continuation and reinforcement continuation once or twice a week and 5 or 6 times a week.

3.2. Differences in the satisfaction of life according to the demographic variables

Table 4. Validation results of the differences in satisfaction of life according to the demographic characteristics.

Classification (n)		Satisfaction
Gender	Male students (100)	4.24 ± .71
	Female students (100)	4.17 ± .82
Age	Teens	4.29 ± .04
Period of practice	a. Less than 1 year (146)	4.29 ± .04
	b. 1-2 years (27)	4.04 ± .07
	c. 3-4 years (25)	4.01 ± .19
	F-value (p-value) Scheff	5.225 (.006) a>bc
Frequency	a. 1-2 times/week (20)	4.07 ± .69
	b. 3-4 times/week (120)	4.17 ± .75
	c. 5-6 times/week(60)	4.43 ± .81
	F-value (p-value) Scheff	3.433 (.017) b>a

As illustrated in <Table 4>, the difference in satisfaction by gender was higher for the male students (4.24±.71) than for the female students (4.17±.82), but there was no statistically significant difference. The difference in satisfaction depending on the participation period was highest at 1 to 2 years (4.29 ± .73) and lowest at less than 1 year (4.17 ± .78), but no statistically significant difference was found. Meanwhile, depending on the frequency of participation, the group that participated every day (4.43±.81) demonstrated the highest, and the group that participated once or twice demonstrated the lowest (4.07±.69), with a statistically significant difference between the groups. (F=3.433, p<.05).

3.3. Correlation between the intention of the adolescents as practitioners of judo as daily sport to continue exercising and the satisfaction of life

Table 5. Correlation between the intention of the adolescents as practitioners of Judo as daily sport to continue exercising and the satisfaction of life.

Classification	Intention to continue exercising			Satisfaction
	Tendency continued	Function continued	Enhancement continued	
Tendency continued	1			
Function continued	.590**	1		
Enhancement continued	.539**	.642**	1	
Satisfaction	.529**	.285	.459*	1

Note: *p<.05, **<.01, ***<.001.

As illustrated in <Table 5>, the relationship between the intention to continue exercising and satisfaction demonstrated a positive correlation between the intention to continue exercising and the continuation of reinforcement (r=.737) and satisfaction (r=.459). Furthermore, a positive correlation was shown between trend continuation (r=.440) and reinforcement continuation (r=.570). Furthermore, trend continuation (r=.529) and reinforcement continuation (r=.459) each demonstrated a positive (+) correlation with satisfaction.

4. Discussion

In this study, the impact of Judo training among adolescents in sports for all on their intention to continue exercising and satisfaction of life was examined. The middle and high school students who practice Judo as part of their daily sports at 30 private studios across Daegu, Gyeongbuk, Gyeongnam, and Busan in Korea. A study was conducted on 200 members currently attending school and participating in lifestyle sports induction training. The key results to achieve the purpose of the study are as follows. First, the differences in willingness to continue exercising and satisfaction according to gender. Second, the differences in willingness to continue exercising and satisfaction among teenagers. Third, the differences in willingness to continue exercising and satisfaction depending on training period. Fourth, the differences in intention to continue exercising and satisfaction according to participation frequency. Fifth, the relationship between intention to continue exercising and satisfaction of life. Six, the effect on intention to continue exercising and satisfaction was identified. It is intended to discuss such research results as follows.

Among the demographic variables, the difference in passion according to gender turned out to be higher for men than for women. Most of the previous studies have also confirmed that men's passion is often high. While direct comparison is difficult as there is no comparison of

Judo events, the results of previous research on students taking physical education classes by Lee An-Su(2010) and Song Ji-Hwan(2014) also demonstrate that men have higher scores than women, and the results of this study are supported by such relevant fact [21][22]. Moreover, in the case of martial arts, men have slightly higher basic physical strength and athletic ability than women, so they acquire and improve skills faster, so it is thought that men may have slightly higher passion than women. Furthermore, such results may be seen as largely consistent with the research results of Lee Ro-Sa(2010), which demonstrated differences between men and women in performing physical activities [23]. Hence, it is believed that when conducting Judo training activities, instructors implementing exercise programs that take into account the physical strength level, as well as the tendencies of men and women, can help increase women's passion. Second, depending on the age of Judo practitioners, those in their 30s demonstrated the highest rate. What is noteworthy in such results is that it may be said to be the cause of differences in the interest in Judo, or martial arts, depending on age, and it is thought that people in their 30s preferred Judo as a tool for physical activity and intense sports. Third, depending on the training period and frequency, the longer the period or the higher the frequency, the higher the passion. These results are thought to be the result of one's own expectations and satisfaction in the process of acquiring new skills influencing passion, and the enjoyment of interacting with various participants and belonging to a group, as well as the cultivation of confidence in the early cognitive process through participation in Judo training. Fourth, in the offset analysis of passion for Judo training, intention to continue exercising, and satisfaction, the offset coefficient between the variables turned out to be somewhat high. Fifth, the passion of Judo practitioners turned out to have a positive effect on their intention to continue exercising. YooJin& Chung KonNym(2008) reported that the passion for participating in physical education classes had a significant effect on the intention to continue exercising, and this study also demonstrated that both harmonious passion and obsessive passion had a significant effect in the detailed results of the sub-factors of passion. reported [24]. Similar to the research results of YooJin& Chung KonNym(2008), which demonstrated that a positive attitude toward dance greatly influences both harmonious passion and obsessive passion, this study may also view such as personal goals achieved through Judo in a similar context [24]. This means that if a controlled internalization process is achieved through conditioning to a valorized activity, obsessive passion can develop, and if an autonomous internalization process is achieved with an individual's identity without being conditioned to the activity, harmonious passion may be developed [25]. Hence, by emphasizing the passion for harmony in Judo training, participants prefer martial arts exercises and discover the need to have the will to continue for the purpose of acquiring and improving skills, which is an advantage in that they can voluntarily extend the frequency of participation and training period in Judo training. which will have to be discovered.

Meanwhile, it turned out that the adolescents' Judo training as sports for all has had a positive effect on the satisfaction of practitioners. Kim Sung-Hoon's(2018) study also supports the study that all of the subjects participating in physical activities actively participate in training content that is interesting, involves ability, and is worthy of effort [26]. This study also demonstrates that the passion for Judo training has a significant impact on the satisfaction of life, which demonstrates partial agreement. Through the Judo training, one not only naturally acquires attitudes and values toward training, but also develops a smooth relationship with the instructor, so it may be seen that Judo training has an impact on the satisfaction. Hence, it would be desirable to conduct an interesting and challenging program so that the practitioners can voluntarily and actively participate in Judo classes. Considering such results, it is necessary to help increase the practitioners' satisfaction of life through Judo training in order to maintain their health and have a valuable social life, so that their intention to continue Judo training increases, and it is necessary to increase the willingness to continue training in Judo. It is believed that diverse and interesting programs should be organized to support the wishes of participants, and that the quality of life is improved through Judo training as a sports for all, and active interest from leaders is required to contribute to maintaining and improving health.

5. Conclusion

The purpose of this study is to articulate and specify the impact of Judo as sports for all for all on the practitioners' intention to continue exercising and satisfaction of life, and to provide the basic data that can help identify positive changes in individuals by improving mental, physical, and social health, while providing opportunities. The purpose is to improve the quality of life through sports for all, to expand and revitalize the base of Judo as a sports for all, and to contribute to maintaining and improving health. The analytical results are as follows.

First, in the offset analysis of intention to continue exercising and satisfaction, the correlation coefficient between variables turned out to be somewhat high.

Second, it turned out to have a positive effect on the intention to continue exercising.

Third, it turned out to have a positive effect on the satisfaction of Judo practitioners.

Considering the results as in the above, it would be necessary to increase the satisfaction of life through Judo training in order to maintain health and have a valuable social life, so that the intention to continue training can increase, and to support the intention of participants who pursue the fun of training. Moreover, it is believed that the quality of life is improved through Judo training as a sports for all, and the active interest from instructors is needed to contribute to maintaining and improving health.

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7. Appendix

7.1. Author's contribution

	Initial name	Contribution
Author	YJ	<ul style="list-style-type: none">-Set of concepts <input checked="" type="checkbox"/>-Design <input checked="" type="checkbox"/>-Getting results <input checked="" type="checkbox"/>-Analysis <input checked="" type="checkbox"/>-Make a significant contribution to collection <input checked="" type="checkbox"/>-Final approval of the paper <input checked="" type="checkbox"/>-Corresponding <input checked="" type="checkbox"/>-Play a decisive role in modification <input checked="" type="checkbox"/>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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Analysis of Korean Judo Athletes' Use of Offensive and Defensive Techniques: Discussion on Scientific Training and Artificial Intelligence Judgment Support

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Abstract

Purpose: Modern Judo has developed with traditional techniques, changes in game rules, and increased international exchange. Recently, the rules have changed to a more aggressive direction, and coaches are studying new techniques inspired by Russian Sambo and Brazilian Jiu-Jitsu (BJJ). Accordingly, Judo training must become more scientific and systematic through data and video analysis. Therefore, this study was conducted to analyze the use of techniques by Korean middle and high school and university judo players to maintain international competitiveness in line with these changes.

Method: First, the frequency analysis was performed to examine and understand the general characteristics by using the SPSS/PC+23.0 program. Second, to validate the reliability of the survey questionnaire, the Cronbach's α coefficient was calculated. Third, exploratory factor analysis was conducted to find out the structure of the use of attack and defense techniques by judo players. Fourth, correlation analysis was conducted to find out the relationship between the use of attack and defense techniques by judo players. Fifth, regression analysis was conducted to find out the effect of the use of attack techniques by judo players on the use of defense techniques.

Results: The results of the correlation analysis of the use of attack and defense techniques by judo players showed a statistically significant correlation of $r=0.470$, $p=0.000$, and a simple linear regression analysis was conducted to determine whether the use of attack techniques affects the use of defense techniques. The results showed $F=55.000$ ($p<.001$), indicating an explanatory power of 22.1%. The use of various techniques by judo players can be explained by strategic diversity in their performance, complementary techniques, responding to various situations, strengthening body parts, improving endurance during the game, and weakening the response ability of opposing players.

Conclusion: In judo, the attack and defense techniques are Kuzushi (breaking the balance) - Tsukuri (taking the body position) - Kake (throwing), and each step has a direct and very important effect on the performance. However, in the recent era of artificial intelligence, artificial intelligence is being applied to all sports, and Korean judo must develop judo by combining traditional technology with a scientific approach as an IT powerhouse. To this end, it is necessary to utilize artificial intelligence image data analysis, virtual and augmented reality simulation training, motion capture technology, and AI-based customized training programs to provide appropriate feedback to athletes. In addition, in order to resolve the issue of controversy over match judgment, it is also an important task to introduce artificial intelligence referee judgment through international exchange programs to increase the objectivity of judo judgment. It is hoped that this study will lead the future international judo infrastructure and properly develop sports in the 4th industrial revolution.

Keywords: Korean Judo, Attack and Defense Techniques, Special Technique Completion, Scientific Training, Artificial Intelligence Referee

1. Introduction

1.1. Background of the study

Korean judo was first introduced to Korea in 1906 by Japanese educators. During the Japanese colonial period, judo gradually began to spread, and was especially influenced by Japanese judo in the 1910s and 1920s, but after Japan was liberated in 1945, Korean judo began to seek independent development[1][2][3]. In 1947, the Korea Judo Association was established, and in the 1950s, it began to participate in international competitions and gain international recognition[4].

When judo was adopted as an official event at the 1964 Tokyo Olympics, Korean judo began to stand out on the world stage. In particular, in the 1980s and 1990s, many judo players achieved outstanding results in the Olympics and world competitions, raising the status of Korean judo. Today, Korean judo is steadily developing through systematic training and participation in various international competitions[5][6].

In recent international competitions, Korean judo has consistently achieved excellent results at the Olympics. At the 2016 Rio de Janeiro Olympics, they won two gold medals, one silver medal, and one bronze medal, and at the 2020 Tokyo Olympics, they won one gold medal and three bronze medals, consistently winning medals. Korean judo players have also shown outstanding performance at the World Judo Championships[7][8]. They have been recognized internationally by winning many gold, silver, and bronze medals in various weight classes in recent competitions. In particular, Korean judo is showing strength at the Asian Games. At the 2018 Jakarta-Palembang Asian Games, they won a total of five medals (one gold, two silver, and two bronze). These results are due to the various activities of the Korea Judo Association for the development of Korean judo and international achievements[9]. They are strengthening the international competitiveness of Korean judo by supporting participation in international competitions, discovering and cultivating judo talent, and expanding the base of judo, and they are supporting Korean judo players to receive systematic and professional training at the National Team Training Center. In addition, many universities and professional teams related to judo are actively supporting judo players and preparing for international competitions[10][11][12].

In addition, the Korea Judo Association and each regional judo organization are making great efforts to discover and foster promising young players, strengthening cooperation with the International Judo Federation (IJF), and sharing techniques and strategies through exchanges with overseas judo powerhouses[13]. This is contributing to the overall improvement of the level of Korean judo.

Korean judo is consistently achieving results in international competitions and establishing itself as a powerhouse in the world of judo. Through systematic training and infrastructure, discovering and fostering promising players, and strengthening international exchanges, the potential for future development of Korean judo is very bright[14].

1.2. Purpose of the study

Modern Judo has changed and developed by introducing new techniques and strategies in addition to traditional techniques. These changes were mainly triggered by changes in the game rules and increased international exchanges[15][16].

Recent changes in the game rules show that they have changed in a more aggressive direction. This also means that matches are becoming more intense as penalties for inactive game management are given more strongly[17]. In addition, each country is researching and developing new techniques inspired by Russian Sambo and Brazilian Jiu-Jitsu (BJJ) to introduce them into Judo[18].

Therefore, the paradigm of Judo techniques should be transformed into more scientific and systematic Judo training due to the development of sports science, and players' techniques should be objectively evaluated and improved through data analysis, video analysis, etc. This goes beyond simply honing techniques to enhance game management skills and strategic analysis to improve game performance[19][20][21].

Judo athletes adapting to this paradigm not only improves their judgment and response skills according to the situation during the game, but also means that athletes improve their performance through more systematic training based on scientific analysis data. Korean Judo is continuously developing through modern changes and international exchanges while maintaining traditional techniques, but various factors such as changes in game rules, introduction of new techniques, and increasing importance of scientific approach and strategic analysis are changing the paradigm of judo techniques, and more research should be conducted to maintain international competitiveness. Among them, analysis data on middle school, high school, and college judo athletes, who can be considered future resources, can be said to be very important. Therefore, this study aims to analyze and provide the use of offensive and defensive techniques by Korean middle school, high school, and college judo athletes and suggest the future direction of judo competition.

2. Methods

2.1. Subject

To achieve the research purpose of this study, 200 people were selected as the population of Judo athletes in Daegu and Gyeongbuk region in 2020 by the convenience sampling, and a survey was conducted by using the self-administration method, and of the 200 collected questionnaires, 198 questionnaires were used as valid samples, except for the data in which the responses were insincere or some of whose contents were omitted.

Table 1. General characteristics of the research subjects.

	Classification	N(%)	Total
Gender	Male	119(60.1)	198
	Female	79(39.9)	
Grade	1st year in middle school	18(9.1)	198
	2nd year in middle school	20(10.1)	
	3rd year in middle school	22(11.1)	
	1st year in high school	17(8.6)	
	2nd year in high school	24(12.1)	
	3rd year in high school	22(11.1)	
	1st year in college or university	19(9.6)	
	2nd year in college or university	13(6.6)	
	3rd year in college or university	27(13.6)	
Athletes' career	2 years or less	52(26.3)	198
	3 to 5 years or less	48(24.2)	
	6 years or longer	98(49.5)	

Whether one has on awards	Yes	148(74.7)	198
	No	50(25.3)	
Whether one has represented his or her schools or organizations	Yes	118(59.6)	198
	No	80(40.4)	

The general characteristics of the research subjects were classified into the 5 categories of gender, grade, athletes' career, whether they have won awards, and whether they have the experience of representing their schools or organizations. In terms of gender, there were more men than women. In terms of grade, the number of respondents was the largest in the order of colleges and universities, high schools, and middle schools, and it turned out in the order of 3rd year, 2nd year in high school, 3rd year in high school, 3rd year in middle school, 2nd year in middle school, 1st year in college or university, 1st year in middle school, 1st year in high school, 4th year in college or university, and 2nd year in college or university. As for the athletes' career, 6 years or longer turned out to be the largest in number, followed by 2 years or less, 3 years or longer and 5 years or less. As for whether they have won awards, most have responded positively, and as for whether they have represented their schools or organizations, they have responded more positively than negatively.

2.2. Survey tool

2.2.1. Structure of the survey questionnaire

A survey questionnaire was used as a survey tool to achieve the purpose of this study, and the structure of the questionnaire was drafted based on the Judo's gaming and competition rules, which were then discussed with coaches and athletes, and then were revised and supplemented to structure them with offensive techniques(hand techniques, waist techniques, and foot techniques) and the defensive techniques(hand techniques, waist techniques, and foot techniques), whose details are as follows.

Table 2. structure of the survey questionnaire.

	Offensive techniques	Defensive techniques
Hand techniques	Throw over shoulder using both arms	Throw over shoulder using both arms and counter attack using opponent's techniques
	Throw over shoulder using a single arm	Throw over shoulder using a single arm and counter attack using opponent's techniques
	Pull and throw	Pull and throw and counter attack using opponent's techniques
	Throw or destroy with shoulder	Throw or destroy with shoulder and counter attack using opponent's techniques
	Grab a single color and throw	Grab a single color and throw and counter attack using opponent's techniques
Waist techniques	Throw with waist	Throw with waist and counter attack using opponent's techniques
	Throw over waist	Throw over waist and counter attack using opponent's techniques
	Pull and throw on waist	Pull and throw on waist and counter attack using opponent's techniques
	Lift and throw over with waist	Lift and throw over with waist and counter attack using opponent's techniques
	Hold belt, lift and throw over with waist	Hold belt, lift and throw over with waist and counter attack using opponent's techniques
Foot techniques	Lock opponent's leg	Lock opponent's leg and counter attack using opponent's techniques

	Lean towards a side and throw	Lean towards a side and throw and counter attack using opponent's techniques
	Lock opponent's leg and push and throw	Lock opponent's leg and push and throw and counter attack using opponent's techniques
	Tackle and apply foot techniques	Tackle and apply foot techniques and counter attack using opponent's techniques
	Invert and throw using foot techniques	Invert and throw using foot techniques and counter attack using opponent's techniques

2.2.2. Validity and reliability of the survey questionnaire

In this study, an appropriate method was chosen appropriately for each method of validation in order to enhance the content validity of the survey questionnaire and validate the construct validity. The validity of the content validity was secured via consultations with experts of the relevant field of research in order to adopt a survey questionnaire appropriate for the purpose of this study.

Reliability is the extent to which an individual's score appears consistently when the same test or a test of the same type is repeatedly conducted. Reliability is related to the stability and consistency in establishing a research method, and since it is one of the most important factors as it is a matter of whether the manipulated definition or indicator is measured consistently and reliably, in this study, reliability was validated based on the results of the survey questionnaire, and a result value of .930 was derived by using the Cronbach's α coefficient.

2.2.3. Data processing and the statistical method

The data processing of this study was conducted by using the SPSS 23.0 Program, which is a statistical package program, after recovering the distributed survey questionnaire, excluding the data determined to be incomplete or unreliable from the research subjects, and individually entering the data which may be analyzed into the computer, and performed the statistical validation as follows in line with the research hypothesis and the purpose of the data analysis.

First, the frequency analysis was performed to examine and understand the general characteristics by using the SPSS/PC+23.0 program.

Second, to validate the reliability of the survey questionnaire, the Cronbach's α coefficient was calculated.

Third, exploratory factor analysis was conducted to find out the structure of the use of attack and defense techniques by judo players.

Fourth, correlation analysis was conducted to find out the relationship between the use of attack and defense techniques by judo players.

Fifth, regression analysis was conducted to find out the effect of the use of attack techniques by judo players on the use of defense techniques.

3. Results

3.1. Exploratory factor analysis

3.1.1. Structure of judo players' attack skills

In order to determine the construct validity of the 15 items on the scale of the use of attack techniques by judo players, exploratory factor analysis (EFA) was conducted to extract latent factors. The standard deviation of the sampling adequacy (MSA) was 0.668, which means that the data are suitable for factor analysis. In addition, the results of Bartlett's sphericity test were $\chi^2=1832.232$, $p=0.000$, which means that the correlation between the variables of the 'judo players' attack technique use scale' was recognized at the significance level of 0.05, so it can be

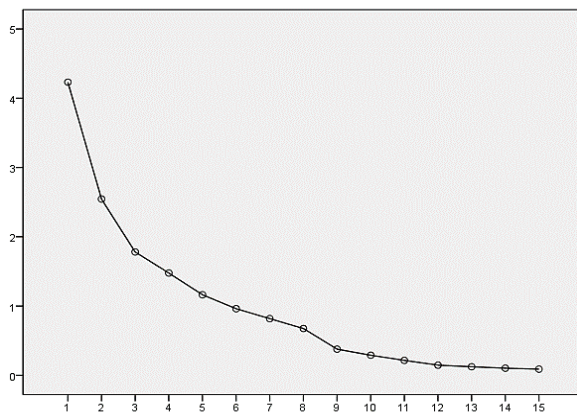
said that factor analysis is possible overall. Accordingly, five subfactors were extracted, and factor 1 of the 'judo players' attack technique use scale' was named 'waist technique, hand technique', factor 2 'hand technique, foot technique', factor 3 'foot technique, hand technique', factor 4 'hand technique, foot technique', and factor 5 'waist technique, foot technique', respectively.

Table 3. Test of the sphericity of the use of attack techniques by judo players.

KMO's sampling adequacy (MSA) test	0.668	
Bartlett's sphericity test	Approx χ^2	1832.232
	Degrees of freedom (<i>df</i>)	105
	<i>p</i>	.000***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1. Structure graph of the use of attack techniques by judo players.



Note: Y-axis: Eigenvalue, X-axis: Component number.

Table 4. The structure of the judo player's use of attack techniques.

Item	Commonality	Factor				
		1	2	3	4	5
Attack waist technique 1	.814	.895	.040	.069	.069	-.040
Attack waist technique 2	.744	.852	.004	.041	-.047	.124
Attack Hand Technique 1	.716	-.841	-.024	-.075	-.033	-.039
Attack waist technique 3	.777	.685	-.127	.013	-.088	.534
Attack Hand Technique 2	.503	-.640	.006	.099	-.108	-.268
Attack kick technique 1	.291	-.446	-.282	-.002	.110	.007
Attack Hand Technique 5	.897	.050	.936	.049	.119	-.030
Attack kick technique 5	.880	.034	.930	.014	.116	-.038
Attack kick technique 3	.937	.029	-.004	.967	.027	.010
Attack Hand Technique 3	.942	.053	.065	.963	.088	-.015
Attack Hand Technique 4	.886	-.018	.104	.124	.927	.012
Attack kick technique 4	.871	.037	.098	-.007	.927	-.016

Attack waist technique 4	.657	.271	-.144	-.116	-.079	.737
Attack waist technique 5	.828	.533	-.172	-.049	-.140	.701
Attack kick technique 2	.455	-.122	.145	.110	.131	.624
Factor name		The use of the waist and hands	The use of hands and feet	The use of feet and hands	The use of hands and feet	The use of the waist and feet
Eigenvalue		4.232	2.545	1.781	1.477	1.163
Variance ratio		28.216	16.965	11.874	9.848	7.753
Cumulative variance ratio		28.216	45.181	57.056	66.904	74.656

Note: Extraction method: CFA(common factor analysis).

3.1.2. Structure of defensive techniques of judo players

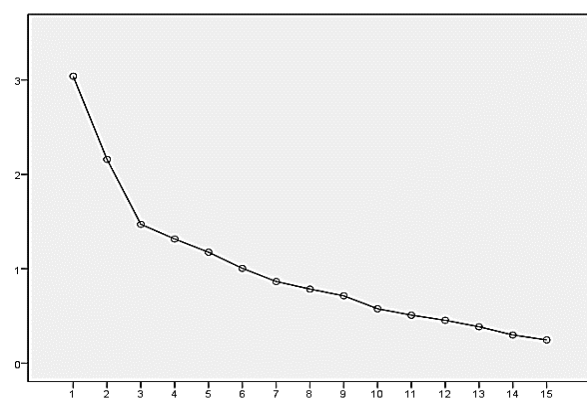
In order to determine the construct validity of the 15 items on the scale of defensive skill utilization by judo players, exploratory factor analysis (EFA) was conducted to extract latent factors. The standard deviation of the sampling adequacy (MSA) was 0.637, which means that the data are suitable for factor analysis. In addition, the results of Bartlett's sphericity test were =686.649, $p=0.000$, which means that the correlation between the variables of the 'Judo players' defensive skill utilization scale' was recognized at the significance level of 0.05, so it can be said that factor analysis is possible overall. Accordingly, six subfactors were extracted, and factor 1 of the 'Judo players' defensive skill utilization scale' was named 'waist use', factor 2 'hand and foot use', factor 3 'feet and hand use', factor 4 'waist use', factor 5 'feet and hand use', and factor 6 'feet and hand use', respectively.

Table 5. Test of the sphericity of stress in security police organizations.

KMO's sampling adequacy (MSA) test	0.637	
Bartlett's sphericity test	Approx χ^2	686.649
	Degrees of freedom (<i>df</i>)	105
	<i>p</i>	.000***

Note: * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Figure 2. Structure graph of defensive techniques used by judo players.



Note: Y-axis: Eigenvalue, X-axis: Component number.

Table 6. Structure of defensive techniques used by judo players.

Item	Commonality	Factor					
		1	2	3	4	5	6

Defensive waist technique 1	.777	.866	.127	.005	-.097	-.011	.035
Defensive waist technique 2	.740	.856	.043	.064	-.006	-.026	-.037
Defensive waist technique 3	.672	.641	-.080	-.011	.498	.074	-.038
Defensive hand technique 2	.768	.084	.832	.171	-.006	.102	.171
Defensive hand technique 1	.716	.170	.695	.381	-.116	-.008	.213
Defensive foot technique 2	.644	.125	-.598	.336	.038	-.011	.395
Defensive foot technique 4	.652	-.086	.042	.791	-.037	.110	-.069
Defensive hand technique 5	.464	.129	.143	.774	-.010	-.005	.085
Defensive waist technique 4	.760	-.142	.084	.017	.838	-.174	-.001
Defensive waist technique 5	.784	.164	-.182	-.083	.827	.121	-.139
Defensive foot technique 1	.739	.046	.145	.161	-.069	-.826	.050
Defensive hand technique 4	.565	-.029	.208	.346	.028	.574	.267
Defensive foot technique 5	.464	.065	.244	.311	-.229	.500	.036
Defensive foot technique 3	.738	-.106	.062	-.045	-.048	.005	.848
Defensive hand technique 3	.501	.171	.243	.121	-.213	.349	.480
Factor name		Using the waist	The use of hands and feet	The use of feet and hands	Using the waist	The use of feet and hands	The use of feet and hands
Eigenvalue		3.039	2.159	1.471	1.316	1.176	1.005
Variance ratio		20.260	14.391	9.807	8.771	7.837	6.699
Cumulative variance ratio		20.260	34.651	44.458	53.229	61.066	67.765

Note: Extraction Method: CFA(common factor analysis).

3.2. Correlation analysis

Table 7. Correlation between perception of judo players' use of offensive and defensive techniques.

	Judo Athlete's Offensive Techniques	Judo Athlete's Defensive Techniques
Judo Athlete's Offensive Techniques	1	
Judo Athlete's Defensive Techniques	0.470***	1

Note: *p<.05, **p<.01, ***p<.001.

In order to determine the relative influence of the use of attack and defense techniques by judo players, Pearson correlation analysis was performed to determine the correlation between the two variables. As a result, the correlation between the use of attack and defense techniques by judo players was confirmed to be statistically significant, with $r=0.470$, $p=0.000$.

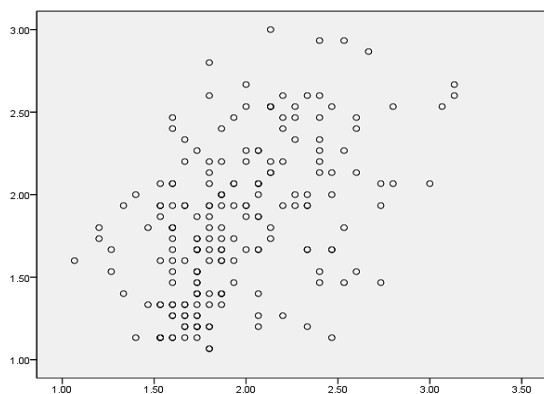
3.3. Regression analysis

Table 8. The effect of Judo players' offensive skills use on the utilization of defensive skills.

Variable	Unstandardized coefficient		Standardized coefficient	t(p)	F(p)	R ²
	B	SE	β			
(Constant)	0.742	0.149		5.003***	55.000***	0.221
Attacking technique of the judo player (Independent variable)	0.557	0.075	0.470	7.463***		

Note: *p<.05, **p<.01, ***p<.001.

Figure 3. Graph of the impact of a judo athlete's use of offensive techniques on their use of defensive techniques.



Note: Y-axis: Use of defensive skills, X-axis: Use of offensive skills.

In order to find out whether the use of offensive techniques by judo players affects the use of defensive techniques, a simple linear regression analysis was conducted. As a result of the analysis, $F=55.000$ ($p<.001$) was found to be appropriate for this regression model, and $R^2=0.221$ showed an explanatory power of 22.1%.

4. Discussion

As a result of factor analysis of the attack and defense techniques of Korean judo players, factor 1 of the 'Judo players' attack technique utilization scale' was structured as 'waist technique, hand technique', factor 2 as 'hand technique, foot technique', factor 3 as 'foot technique, hand technique', factor 4 as 'hand technique, foot technique', and factor 5 as 'waist technique, foot technique', respectively. In addition, factor 1 of the 'Judo players' defense technique utilization scale' was structured as 'waist use', factor 2 as 'hand and foot use', factor 3 as 'foot and hand use', factor 4 as 'waist use', factor 5 as 'foot and hand use', and factor 6 as 'foot and hand use', respectively. In addition, a statistically significant correlation was confirmed between the use of attack and defense techniques by judo players ($r=0.470$, $p=0.000$), and a simple linear regression analysis was conducted to determine whether the use of attack techniques by judo players affects the use of defense techniques. As a result, $F=55.000$ ($p<.001$), indicating that this regression model is appropriate, with an explanatory power of 22.1%. As such, the research results show that judo players in middle and high schools and universities in Korea are utilizing various hand, waist, and foot techniques.

First, if judo players can use all of their hand, waist, and foot techniques, it becomes difficult to predict which technique the opponent will use. This can secure strategic diversity in the game that makes the opponent's defense difficult and increases the success rate of the attack.

Second, judo players' hand, waist, and foot techniques each have different characteristics, so they can play complementary roles. For example, you can break the opponent's balance with a hand technique and then definitely pass it with a waist technique.

Third, judo matches can take place in various situations. Mastering hand, waist, and foot techniques allows you to respond flexibly to a variety of situations. For example, foot techniques can be useful when the opponent is in a low stance, and hand techniques can be useful when the opponent is in a high stance.

Fourth, when a judo player uses a variety of techniques, it can strengthen different parts of the body. Hand techniques develop upper body strength and flexibility, waist techniques develop core muscles and waist strength, and foot techniques develop lower body strength and sense of balance.

Fifth, when a judo player uses a variety of techniques, it can spread out the physical exhaustion rather than repeating the same technique. This helps improve endurance during the match.

Sixth, if the opposing judo player is only familiar with a specific technique, a judo player who uses a variety of techniques can weaken the opponent's ability to respond. This is advantageous in taking control of the match.

For this reason, using a variety of hand, waist, and foot techniques in a judo match is a very important strategic approach[22][23][24]. This allows the player to demonstrate a stronger and more flexible performance. Based on the results of this study, when judo is first practiced in Korea, the basic principles of judo's throwing techniques, which go through four stages of grabbing (Kumi-Kata), tilting (Kuzushi), tsukuri, and kake, are taught very importantly, and by accurately learning the movements of each stage, they are trained to effectively use various throwing techniques, such as techniques for connecting attack and defense techniques. It can be understood that Korean judo players were able to achieve excellent results in competitions by systematically learning and training these techniques. First, in grabbing (Kumi-Kata), in addition to the basic grabbing, they maintain a stable posture through various grabbing methods, tilting (Kuzushi) allows them to transmit power at an instantaneous timing in the direction of breaking the opponent's balance, and tsukuri is the final stage of the throwing movement, which maintains a stable state by adjusting the arms, legs, and center of gravity while maintaining close contact with the opponent. Finally, Kake is a precise movement that uses a momentary explosive force to knock down the opponent and prepare to move on to additional techniques, and this is systematically repeated by separating them[25].

This means faithfully practicing the basics of judo techniques, and in judo, the basics are to expand the performance through stable physical preparation and strengthening the mental concentration of the athlete.

5. Conclusion

In judo, victory or defeat is determined by the use of throwing techniques, and attack techniques effectively affect defense techniques. The use of such techniques can be largely divided into three stages, and training for breaking the balance (Kuzushi) - body positioning (Tsukuri) - throwing (Kake) is very important.

First, breaking the balance (Kuzushi) that shakes the opponent's balance requires using the arms, legs, and waist to move the opponent's center of gravity in the direction you want, and you must be able to utilize the moment when the opponent attempts an attack or moves in order to break the opponent's balance at the correct timing. Also, when breaking the opponent's center of gravity, training is necessary to accurately control the direction of force, and it

is important to find the point in time when you use force in a way that causes the opponent's balance to break through training.

Second, body positioning (Tsukuri) is the stage of preparing to throw an opponent whose balance has been broken, and you must position your body and the opponent's body in an appropriate position so that you can execute the throwing technique. At this time, you must lower your posture, stabilize your center of gravity, and keep a close distance from the opponent. Control the opponent's movements through close contact, and adjust your arms and legs while capturing the optimal position for the throwing technique.

Third, the throwing (Kake) is the step where you actually throw the opponent to the ground. In this step, you must use your entire body to transmit power, which is to use explosive power in a short period of time and maintain the accuracy of the technique. At this time, it is important to apply additional techniques until the opponent completely touches the ground, and to continue to subdue the opponent until the end or to prepare to continue with additional techniques.

In Korean Judo, the attack and defense techniques are Kuzushi (breaking the balance) - body positioning (Tsukuri) - throwing (Kake), and in each step, you seek a deep understanding of the technique not only physically but also mentally to perfect your own unique technique.

Based on such basic technical training, Korean Judo needs to expand its scientific approach as an IT powerhouse on top of its traditional foundation in order to maintain the international status of Korean Judo, and it is necessary to expand AI image data analysis, virtual reality and augmented reality simulation training, motion capture technology expansion, AI-based customized training programs, and real-time feedback support.

In addition, along with the development of such science and technology, we must expand international exchange programs and seriously discuss the introduction of artificial intelligence referee judgments to increase the objectivity of judo judgments, which has been controversial so far. To this end, we must further expand sports culture exchanges that can lead international judo infrastructure. I believe that we can properly navigate the sports era of the artificial intelligence era brought about by the 4th industrial revolution.

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7. Appendix

7.1. Author's contribution

	Initial name	Contribution
Author	SJ	<ul style="list-style-type: none">-Set of concepts <input checked="" type="checkbox"/>-Design <input checked="" type="checkbox"/>-Getting results <input checked="" type="checkbox"/>-Analysis <input checked="" type="checkbox"/>-Make a significant contribution to collection <input checked="" type="checkbox"/>-Final approval of the paper <input checked="" type="checkbox"/>-Corresponding <input checked="" type="checkbox"/>-Play a decisive role in modification <input checked="" type="checkbox"/>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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A Study on Strategies for Activating Silver Taekwondo

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Abstract

Purpose: The purpose of this study is to analyze the effectiveness of Silver Taekwondo in enhancing the physical and psychological health of elderly individuals in a super-aged society. Based on this analysis, the study aims to provide foundational data for expanding and revitalizing the practice of Silver Taekwondo and to propose methods for maintaining health through sustained physical activity among the elderly.

Method: This study used major academic databases like PubMed, Google Scholar, and KISS to find peer-reviewed papers and policy reports from the past decade with keywords such as 'Silver Physical Activities,' 'Elderly Physical Activities,' 'Taekwondo,' and 'Senior Taekwondo.' The literature was analyzed to assess the current state and key issues of Silver Physical Activities and Silver Taekwondo. Data reliability was ensured through repeated reviews and discussions by the researchers and a peer expert group.

Results: The study found that From 2015 to 2023, the number of Silver Taekwondo participants, programs, and facilities increased, with participation rates rising from 2.5% to 5.5%. Despite improved online support due to COVID-19, issues such as accessibility, economic constraints, and program inadequacy persist. While community cooperation and online support have increased since 2021, facility shortages and a lack of qualified experts remain unresolved, underscoring the need for comprehensive approaches and policy efforts.

Conclusion: To promote the active participation of elderly individuals in Silver Taekwondo, it is necessary to develop tailored programs that align with their physical conditions and health levels, improve accessibility to public and private Taekwondo facilities, enhance the expertise of instructors through training and certification systems, expand policy support and financial incentives, and establish regular feedback mechanisms. A strategic approach incorporating these elements is expected to improve both the physical and mental health of the elderly and increase participation rates.

Keywords: Taekwondo, Silver Taekwondo, Elderly Physical Health, Aging Society, Health Promotion

1. Purpose and Necessity of the Study

Advancements in science and medical technology, along with improvements in living standards, have enabled people to live longer than in the past. A society is considered "aging" when the proportion of individuals aged 65 and over exceeds 7%. South Korea entered an aging society in 2015, with 13.1% of its population being 65 or older. This proportion is projected to increase to 20% by 2027, 30.1% by 2037, and 40% by 2060, marking the transition to a super-aged society[1][2]. The emergence of a super-aged society necessitates not only an increase in population numbers but also significant social, economic, cultural, and political adjustments. As the elderly population grows, both personal and social issues arise, requiring a comprehensive understanding and response to the overall lives of the elderly.

Advances in medical and health technologies have reduced mortality rates and extended lifespans among the elderly, resulting in increased involuntary leisure time. The issue of how to effectively utilize this leisure time has become a significant social concern beyond mere livelihood challenges[3]. Additionally, advancements in production technology have decreased labor demand and intensified intergenerational employment competition, disadvantaging older adults and leading to reduced income and economic difficulties. These economic challenges can result in inadequate medical care, worsening health, and social and psychological isolation due to generational value differences[4].

The deterioration of physical health among the elderly is a major cause of reduced quality of life. In South Korea, 86.7% of individuals aged 65 and older suffer from one or more chronic diseases[5]. Physical inactivity and poor lifestyle choices contribute to an increase in chronic diseases, negatively impacting physical changes and daily functioning. Research has focused on preventing chronic conditions such as hyperlipidemia, hypertension, cardiovascular diseases, and diabetes[6][7]. The prevalence of metabolic syndrome, a precursor to chronic diseases, has surged and is closely related to obesity, increasing with age[8][9].

Reduced physical activity leads to increased body fat, which in turn decreases exercise performance and raises the risk of chronic diseases among the elderly[10]. Additionally, a lack of physical activity reduces joint range of motion, muscle function, and bone density, weakening overall physical function and increasing the risk of falls[11][12]. As elderly individuals lose their ability to regain balance, maximum muscle strength declines, the time required to build new muscle shortens, and general physical and mental functions related to walking deteriorate[13][14], presenting both personal and societal challenges.

While aging cannot be prevented, regular physical activity helps improve health. Previous research indicates that physical activity is effective in preventing and improving various conditions such as cardiovascular diseases, hypertension, stroke, diabetes, and obesity, while also enhancing strength, balance, and agility[15]. Resistance training contributes to improved quality of life, prevention or improvement of cardiovascular disease, and better insulin sensitivity for type 2 diabetes[16][17][18]. Moreover, elderly individuals who engage in high-intensity physical activities three or more times a week have a reduced risk of cognitive impairment[19].

Core stabilization exercises are utilized across various fields, including sports, respiratory exercises, and elderly fitness programs[20]. Recent studies suggest that combining resistance and aerobic exercises into a comprehensive program is effective. Forms of exercise that combine resistance training with walking or yoga are beneficial for physical fitness and health improvement[15][21][22]. Therefore, regular comprehensive exercise programs are crucial for enhancing cardiovascular function, reducing chronic diseases, and strengthening muscles.

With the advent of a super-aged society, managing the health and physical activity of the elderly is increasingly important. Taekwondo, especially in its adapted form for seniors known as "Silver Taekwondo," is gaining attention as an effective activity for maintaining physical function and psychological stability. Silver Taekwondo can positively impact both physical and mental health.

This study aims to analyze the development tasks of Silver Taekwondo in a super-aging society and provide basic data for expanding and activating training among the elderly. It will suggest practical ways for the elderly to maintain health through continuous physical activity, and will contribute to the development of balanced health promotion programs and physical and psychological stability. In particular, it will explore the intersection of martial arts and elderly care, and the innovative approach of Silver Taekwondo will provide a new perspective on promoting the health of the elderly.

2. Research Methods

The literature search for this study was conducted comprehensively using major academic databases including PubMed, Google Scholar, KISS, RISS, KOREA SCHOLAR, Korean Database, KSDC DB, and MOAZINE. Keywords related to 'Silver Physical Activities,' 'Elderly Sports,' 'Taekwondo,' and 'Elderly Taekwondo' were employed to locate the most recent research papers, review articles, policy reports, and books.

2.1. Selection criteria

The selection criteria focused on peer-reviewed research papers and reports published within the last 10 years, including empirical or theoretical discussions on silver physical activities and Silver Taekwondo. Preference was given to recent research and reports from the past decade that included empirical studies or theoretical discussions on silver physical activities and Silver Taekwondo. To ensure the reliability and validity of the research, priority was given to peer-reviewed academic sources.

2.2. Literature analysis methods

The analysis involved examining the usage of silver physical activities and Silver Taekwondo through statistical data and case studies, identifying major issues and constraints, and detecting patterns of similar issues or phenomena to derive comprehensive insights. Throughout this process, the researchers and a group of peer experts repeatedly reviewed and validated the collected data and analysis to enhance the reliability of the findings.

2.3. Data integrity

This researcher reviewed and discussed all stages and procedures of the study with a preformed peer expert group to ensure that the researcher's bias did not affect the research process. In addition, efforts were made to increase the objectivity of the study through consultation with colleagues from various perspectives.

2.4. Meta-analysis

This study aimed to derive more generalized conclusions by integrating various research results on silver sports activities and silver Taekwondo by statistically analyzing the results of several studies. To this end, the effect size of each study was calculated and the effects of silver Taekwondo were evaluated by synthesizing them. Through meta-analysis, the physical and psychological health promotion effects of silver Taekwondo can be more clearly identified and the consistency between the results of various studies can be confirmed. In addition, the results derived through meta-analysis can be used as important basic data for the development and improvement of silver Taekwondo programs.

3. Research Results

3.1. Utilization of silver physical activities (2015-2023)

As the importance of Silver Physical Activities has grown, the participation rates among the elderly have also been steadily increasing. This study analyzes the participation status of Silver Physical Activities from 2015 to 2023, covering major activities, issues, facility usage, and policy and support status, as detailed in <Table 1> below.

Table 1. Utilization status of silver physical activities (2015-2023).

Year	Participation rate	Key activities	Major issues	Facility utilization	Policy and support status
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2015	45%	Walking, Gymnastics, Fitness	Lack of facility accessibility, Economic constraints	Predominantly public sports facilities	Initial policy implementation, Basic support
2016	47%	Walking, Gymnastics, Badminton	Facility accessibility issues, Lack of programs	Increased use of public and private facilities	Policy strengthening, Expanded local government support
2017	49%	Walking, Gymnastics, Taekwondo	Economic burden, Lack of information	Mainly public facilities	Start of development of tailored programs
2018	50%	Walking, Gymnastics, Taekwondo, Dance Sports	Lack of program adequacy, Lack of experts	Increased use of public and private facilities	Policy improvements, Expanded financial support
2019	52%	Walking, Gymnastics, Taekwondo, Fitness	Lack of information, Facility accessibility issues	Increased use of community facilities	Additional financial support, Policy strengthening
2020	54%	Walking, Gymnastics, Taekwondo, Fitness	Economic constraints, Lack of program adequacy	Increase in public facilities, Expansion of private facilities	Covid-19 response policies, Enhanced support
2021	56%	Walking, Gymnastics, Taekwondo, Fitness	Lack of program adequacy, Lack of experts	Use of both public and private facilities	Reinforcement of policies, Strengthened Silver Physical Activities policies
2022	58%	Walking, Gymnastics, Taekwondo, Fitness, Yoga	Lack of experts, Lack of information	Increased use of public facilities, New facility expansions	Strengthened policies, Expanded financial support
2023	60%	Walking, Gymnastics, Taekwondo, Fitness, Yoga, Dance sports	Lack of program adequacy, Accessibility issues	Increased use of both public and private facilities	Strengthened policies, Enhanced support from government and local authorities

3.1.1. Participation rates and key activities

In 2015, the participation rate in Silver Physical Activities was 45%, with key activities including walking, gymnastics, and fitness. According to the research, basic physical activities were predominant during this period, and participation rates showed a steady annual increase [23]. From 2016 to 2023, participation rates gradually increased, reaching 60% by 2023. During this period, various activities such as Taekwondo, dance sports, and yoga were introduced, indicating a growing interest and involvement in physical activities among the elderly [24].

3.1.2. Major issues

The major issues in Silver Physical Activities have evolved over time. Initially, facility accessibility and economic constraints were identified as primary concerns [25]. Later, a lack of information and inadequacy of programs became prominent issues, with concerns about program suitability and accessibility continuing to be significant [26][27]. Notably, in 2020, economic constraints due to COVID-19 emerged as a new issue, directly affecting participation rates [28].

3.1.3. Facility utilization

Analysis of facility utilization revealed that in 2015, the use of public sports facilities was predominant, but the use of both public and private sports facilities increased over time [29]. In 2020, the number of public sports facilities increased, and private facilities also expanded, improving accessibility for the elderly [30]. By 2023, the utilization of both public and private facilities had increased, facilitating smoother participation in physical activities among the elderly.

3.1.4. Policy and support status

The status of policies and support has significantly impacted the development of Silver Physical Activities. In 2015, initial policy implementation and basic support were provided, followed by strengthened policies and expanded financial support[26][31]. In particular, COVID-19 response policies were introduced in 2020, and in 2023, financial support from the government and local authorities was enhanced[32][33]. This policy support has played a crucial role in increasing participation rates and advancing Silver Physical Activities.

The study aims to analyze the utilization of Silver Physical Activities by year to clarify the development process and issues of Silver Physical Activities and to propose future policy directions. Through this analysis, it is expected to provide foundational data for developing effective strategies and policies to enhance participation in Silver Physical Activities.

3.2. Analysis of silver taekwondo activity status(2015-2023)

This study analyzed the utilization of Silver Taekwondo from 2015 to 2023 to understand the development and issues of Taekwondo programs for seniors. The research results, including the number of participants, program offerings, facilities, participation rates, main activities, support programs, and issues, are summarized and analyzed in <Table 2> below.

3.2.1. 2015 survey results

From 2015, the number of participants in Silver Taekwondo was approximately 5,000, with 50 programs and 20 facilities. The participation rate was 2.5%, with key activities including basic Taekwondo and stretching. At that time, support programs included government subsidies and community support programs, but issues such as limited accessibility and economic burden were prominent problems[34][35].

3.2.2. 2016-2018 survey results

The number of participants steadily increased, reaching 8,000 by 2018. The number of programs rose to 65, and the number of facilities expanded to 28. This period saw the introduction of basic, intermediate, and advanced Taekwondo programs. Government financial support and program diversification were key support programs, but problems with facility accessibility, injury risks, and program adequacy remained[36][37].

Table 2. Silver taekwondo activity status survey (2015-2023).

Year	Number of participants	Number of programs	Number of facilities	Participation rate (%)	Main activities	Support Programs	Issues
2015	5,000	50	20	2.5	Basic taekwondo stretching	Government subsidies, community support programs	Lack of accessibility, financial burden
2016	6,000	55	22	3.0	Basic intermediate taekwondo	Expanded government subsidies, some private support	Lack of facilities, shortage of professional staff
2017	7,500	60	25	3.5	Basic advanced taekwondo	Increased government financial support, program diversification	Accessibility issues, risk of injury

2018	8,000	65	28	4.0	Basic, Intermediate Advanced taekwondo	Community programs, strengthened government subsidies	Lack of program appropriateness, lack of awareness
2019	9,000	70	30	4.5	Basic, Intermediate advanced taekwondo	Increased financial support, professional instructor training	Financial burden, accessibility issues
2020	9,500	72	32	4.8	Basic, Intermediate Advanced Taekwondo	Covid-19 related online support, strengthened government support	Accessibility issues, program efficiency problems
2021	10,000	75	35	5.0	Basic, Intermediate Advanced taekwondo	Online program support, increased government subsidies	Shortage of experts, lack of information
2022	10,500	80	37	5.3	Basic, Intermediate Advanced taekwondo	Strengthened community cooperation, expanded subsidies	Lack of facilities, need for program improvement
2023	11,000	85	40	5.5	Basic, Intermediate advanced taekwondo	Strengthened support from government and local governments	Accessibility issues, shortage of professional staff

3.2.3. 2020 survey results

The impact of COVID-19 led to enhanced online program support, increasing participants to 9,500. The number of programs grew to 72, and facilities increased to 32. Despite this, economic burden, accessibility issues, and program effectiveness remained major concerns. Support programs included online support and increased government subsidies[38].

3.2.4. 2021-2023 survey results

Participation reached 11,000, with 75 programs and 37 facilities. Basic, intermediate, and advanced Taekwondo programs continued, and online support and community cooperation were introduced as key support measures. However, issues such as facility shortages, lack of experts, and information gaps persisted[39][40].

continuously improved, with positive impacts from expanded support programs and facilities. However, issues such as accessibility, economic constraints, program adequacy, and gaps in information and expertise still exist. Comprehensive approaches and policy efforts are needed to address these issues, and various support measures should be explored to enable elderly individuals to participate more effectively in Taekwondo activities.

3.3. Issues in silver physical activities participation

This study analyzes the participation status and issues related to Silver Physical Activities. Despite the growing importance of Silver Physical Activities due to the increasing elderly population, several major issues persist, including limited accessibility, economic constraints, inadequate program suitability, lack of information, and shortage of experts.

3.3.1. Lack of accessibility

One of the most prominent issues in Silver Physical Activities participation is the lack of accessibility to public and private sports facilities. Many elderly individuals who wish to engage in physical activities face difficulties due to the distance to facilities or a lack of transportation options. According to research, key barriers to using sports facilities for the elderly include distance and transportation problems, which can significantly reduce participation rates [41].

3.3.2. Economic constraints

Economic burdens on the elderly are also a major factor hindering participation in Silver Physical Activities. Many sports facilities can be financially burdensome, with private facilities often having relatively high fees. Economic constraints create a significant barrier for elderly individuals, directly correlating with decreased participation rates [42].

3.3.3. Inadequate program suitability

Most of the currently available Silver Physical Activities programs are often unsuitable for the physical conditions and capabilities of the elderly. Existing programs frequently fail to adequately consider the fitness levels and health status of elderly participants, potentially increasing the risk of injury or reducing the effectiveness of exercise. Research indicates that many Silver Physical Activities programs do not reflect the individual physical needs of the elderly, leading to lower satisfaction among participants [43].

3.3.4. Lack of information

A lack of information and awareness about Silver Physical Activities also poses a significant problem. Many elderly individuals may not be well-informed about the benefits of such activities or may not recognize the necessity of physical exercise. Consequently, there is a lack of promotional activities to improve awareness and provide information about Silver Physical Activities programs. Studies have identified information deficits and low awareness as major factors contributing to lower participation rates [44][45].

3.3.5. Shortage of experts

The shortage of experts necessary for effectively running Silver Physical Activities programs is also a noted issue. There is a lack of specialized personnel, such as senior Taekwondo instructors or physical activity experts, who are capable of conducting activities for the elderly. This shortage can lead to a decrease in program quality. A lack of instructor expertise negatively impacts elderly participation and can limit the effectiveness of physical activities [35][46].

3.4. Issues with silver taekwondo activities

This study analyzes the participation status and issues related to Silver Physical Activities. Despite the growing importance of Silver Physical Activities due to the increasing elderly population, several major issues persist, including limited accessibility, economic constraints, inadequate program suitability, lack of information, and shortage of experts.

3.4.1. Accessibility and participation barriers

Accessibility and participation barriers are significant issues in the promotion of Silver Taekwondo. Research indicates that the lack of public sports facilities and the high costs of private sports facilities serve as major obstacles for the elderly participating in activities like Taekwondo [47][48]. Specifically, there is a shortage of conveniently accessible facilities, and many elderly individuals are unable to participate in physical activities due to distance or cost issues.

3.4.2. Program suitability

Another issue is the unsuitability of Taekwondo programs for the physical conditions and abilities of the elderly. Studies have found that existing Taekwondo programs often do not account for the physical fitness levels and health conditions of older adults, leading to an increased risk of injury or ineffective exercise[49]. The intense movements of Taekwondo may impose excessive strain on elderly participants, highlighting the need for customized programs tailored to their needs.

3.4.3. Insufficient policy support

Insufficient policy support for Silver Taekwondo is also a concern. While the government and related agencies have established various policies for senior physical activities, support for specific activities like Taekwondo remains relatively limited[50]. Additionally, there is a lack of budget allocation and research for effective policy development, leading to the often ineffective implementation of supportive measures.

Addressing these issues requires expanding public sports facilities and increasing support for private facilities to improve accessibility, developing Taekwondo programs tailored to the elderly, and strengthening policy support. A comprehensive approach is needed to enhance the physical and mental health of the elderly through the revitalization of Silver Taekwondo.

4. Discussion on Strategies for Revitalizing Silver Taekwondo

This study highlights that with the increasing elderly population, the importance of Silver Physical Activities has grown, and Taekwondo is gaining attention as an exercise that can contribute to both physical health and mental stability. However, increasing participation rates in Silver Taekwondo requires several strategic approaches. This discussion reviews the main strategic measures for revitalizing Silver Taekwondo, analyzing the necessity and effectiveness of each approach.

First, there is a significant need for the development of customized Taekwondo programs tailored to the physical conditions and health levels of the elderly. Existing Taekwondo programs often do not adequately consider the fitness levels and health conditions of older adults, which has been identified as a problem leading to increased risk of injury or insufficient exercise benefits[36]. Therefore, it is essential to adjust the intensity and difficulty of exercises based on age and fitness level and to provide appropriate exercise prescriptions through evaluations of physical fitness and health status[42]. Customized programs can contribute to increased participation and satisfaction among the elderly, thereby reducing injury risks and ensuring effective exercise.

Second, expanding public and private Taekwondo facilities that are easily accessible to the elderly and improving the accessibility of existing facilities are necessary. Research indicates that improving accessibility to sports facilities plays a crucial role in increasing participation rates[34][41]. Operating Taekwondo programs at community centers and senior centers and fostering participation through local community collaboration are effective strategies [51]. Enhancing accessibility is a critical factor in encouraging active participation in physical activities by the elderly. Therefore, collaboration between the government and private sector is needed to expand infrastructure and extend the geographic reach of programs.

Third, there is a need for the introduction of education programs and certification systems to enhance the professionalism of Silver Taekwondo instructors. Given that instructor competency significantly affects elderly participation, professional training and certification systems are es-

sential[40]. Additionally, promoting the benefits and effectiveness of Taekwondo through campaigns and sharing success stories is important for spreading positive perceptions[39]. Promotional activities can encourage elderly participation and increase interest in Taekwondo.

Fourth, the lack of policy support for Silver Taekwondo is another issue. Although the government and related agencies have established various policies for senior physical activities, support for specific activities like Taekwondo remains relatively limited[50]. There is a lack of budget allocation and research and development, leading to often ineffective policy measures. Therefore, expanding policy incentives and financial support, and providing funding and subsidies necessary for the operation of Silver Taekwondo programs to reduce economic burdens are needed.

Lastly, it is important to collect regular feedback from elderly participants and instructors in Silver Taekwondo programs and use it to improve the programs. A feedback system can help improve program operations by reflecting the needs and opinions of the elderly, addressing accessibility and participation barriers. Research indicates that the lack of public sports facilities and high costs of private facilities are major obstacles, and policy efforts and program improvements are required to address these issues. The revitalization of Silver Taekwondo requires a comprehensive approach to solve various problems and enhance the health and well-being of the elderly.

5. Conclusion and Recommendations

5.1. Conclusion

This study presents strategic measures for revitalizing Silver Taekwondo and discusses ways to enhance both the physical and mental health of the elderly population. According to the findings, developing customized Taekwondo programs that match the physical condition and health level of the elderly is crucial. Such programs can reduce the risk of injury and maximize the exercise benefits. Customized programs are essential for increasing participation and satisfaction among older adults, and it is necessary to provide appropriate exercise prescriptions based on evaluations of physical fitness and health status.

Additionally, it is essential to expand and improve the accessibility of public and private Taekwondo facilities that are easily reachable for the elderly. Operating Taekwondo programs in community centers and senior centers, and fostering participation through community collaboration, can help older adults engage more actively in physical activities. Strengthening the professionalism of instructors through training programs and certification systems also positively impacts elderly participation.

A significant obstacle to revitalizing Silver Taekwondo is the lack of policy support. Expanding financial support from the government and local authorities, and providing policy incentives are necessary to reduce economic burdens and encourage participation. Implementing a regular feedback system for Silver Taekwondo programs is also important, as it allows for continuous improvement of program effectiveness.

In conclusion, the revitalization of Silver Taekwondo requires a comprehensive approach that includes developing customized programs, improving facility accessibility, enhancing instructor professionalism, expanding policy support, and establishing a feedback system. Such strategic measures will contribute to the health and well-being of the elderly and play a crucial role in increasing participation rates in Silver Taekwondo.

5.2. Policy recommendations

To enhance Silver Taekwondo, it is essential to ensure ongoing training for professional instructors and develop customized curricula. Introducing dedicated gyms and digital technologies can create a safe and effective exercise environment. Additionally, expanding support from local communities and government is necessary to promote the positive effects of Silver Taekwondo and encourage participation through targeted programs.

5.3 Limitations and future research directions

5.3.1 Limitations of the study

This study is limited by its reliance on data from specific regions and programs, as well as its temporal scope covering 2015 to 2023. As a result, it may not fully reflect the overall situation of Silver Taekwondo. The sample may be biased towards particular groups, and the lack of qualitative data restricts in-depth analysis, which could limit the generalizability of the findings and the depth of the analysis.

5.3.2 Future research directions

Future research is needed to derive generalizable results by including participants from diverse regions and socioeconomic backgrounds so that Silver Taekwondo can substantially contribute to improving the health of the elderly. To this end, it is important to consider regional diversity and the health status of participants when comparing and analyzing programs, and to strengthen qualitative research through in-depth interviews and analysis of successful cases. Long-term follow-up studies and follow-up studies are needed to evaluate long-term health effects and social impacts, and the latest digital health technologies should be utilized to monitor effectiveness and explore data-driven improvement strategies. It is also important to develop innovative tools and technologies to enhance participant experience and design sustainable programs. Such an approach will provide more specific and actionable recommendations to expand and activate Silver Taekwondo training, and will contribute to increasing the practical utility of the results.

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7. Appendix

7.1. Author's contribution

	Initial name	Contribution
Lead Author	SP	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
Corresponding Author*	SS	-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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The Universality and Specificity of Health Qigong from a Beginner's Perspective

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Abstract

Purpose: Health Qigong is an exercise that moves slowly to rhythm and is a type of slow exercise based theoretically on Chinese medicine. In this study, we sought to find out how people who are practicing Health Qigong for the first time are experiencing changes in their perception. Accordingly, this study was conducted for the purpose of examining the universality and specificity of Health Qigong compared to other sports from the perspective of beginners practicing Health Qigong.

Method: Six beginners in Health Qigong who could provide sufficient answers to the research topic were selected as participants. The study participants participated in a total of 15 training programs and 1 presentation over 4 months and consisted of 3 men and 3 women. The data analysis process used Colaizzi's six-step analysis method in the phenomenological research method among qualitative research methods, and structured the changes in perception according to the participants' experiences by dividing them into universality and specificity. In addition, the participants' facial expressions and gestures were recorded and used as additional observation data and reflected in the research results.

Results: As a result of the study, 3 categories, 7 topic bundles, and 15 subjects were finally identified. In the category of universality, physical, emotional, and convenience of space use were identified, and in the category of differentiation, movement characteristics and exercise types were identified, and convenience and fun were identified in the Health Qigong presentation.

Conclusion: The results of this study will be meaningful in that they provide an opportunity to continue the cycle of participation by identifying the uniqueness of the Health Qigong program. In future research, specific and practical educational plans should be presented to expand the base of the program as well as research on the effects of Health Qigong training.

Keywords: Health Qigong, Universality, Specificity, Beginner, Perspective

1. Introduction

Modern society is carrying out international exchanges by incorporating various values into culture, and can be said to be the so-called era of culture. In particular, each country is putting a lot of effort into converting traditional movements into sports and adopting them as events in the Olympics or international competitions. The reason for this is that it can serve as a channel for achieving unity among the country's citizens by inspiring national pride, and furthermore, it can be created into various contents and related to the cultural industry [1].

Health Qigong is a cultural product that combines the characteristics of Chinese historical and cultural content and is a modernized health exercise method based on Chinese medicine. The Chinese government reorganized the ancient health exercise method and announced Health Qigong through Ordinance No. 4 of the State Administration of Sports on September 11, 2001.

Since then, it has been officially adopted as the 62nd sport by the General Administration of Sports of China and has a large number of enthusiasts. In August 2012, the World Health Qigong Federation was founded, and it is currently practiced in more than 45 countries around the world[2][3][4].

Health Qigong's health promotion principles are based on Traditional Chinese Medicine (TCM). The characteristic of TCM is that rather than focusing on disease, it has a perspective on people as a whole rather than parts, and focuses on harmony and balance. Therefore, many studies have been published recently showing that it is safe, has few side effects, and is effective in promoting health and preventing diseases[5][6][7][8]. The unique part of Health Qigong's training method is maintaining correct posture, controlling the frequency and depth of breathing, and controlling and controlling consciousness by linking it with movement. These are called the three regulating principles(三調合一) of controlling body(調身), controlling breathing(調息), and controlling mind(調心). Therefore, it can be considered a moving meditation method and has all the characteristics of slow exercise[9][10].

Health Qigong is known to have excellent effects on emotional health as well as improving physical health due to the slow and simple movements performed to traditional Chinese music[11][12]. However, in Korea, there are many opinions that the number of enthusiasts is small compared to other sports and that it is not easy for beginners to learn. This study focuses on the universal characteristics of Health Qigong as an exercise and its differentiation from other sports. Accordingly, in order to learn about the universality and specificity of Health Qigong from a beginner's perspective, a phenomenological research method was selected and explored using Colaizzi's six-step analysis method[13][14].

Phenomenological research, one of the qualitative research methods, is an inductive research method that uncovers the essential structure by identifying the process of change in perception and experience through in-depth interviews with research participants[15][16][17]. Accordingly, this study analyzed the experiences of Health Qigong beginners and confirmed the universality and specificity they perceive. Through the results of this study, it was possible to structure changes in perception according to the perceived experiences of Health Qigong beginners, and it can be used as practical data for constructing Health Qigong training programs in the future.

2. Research Methods

2.1. Selection of study participants

For this study, graduate students who participated in Health Qigong classes at M University in Korea were selected using a purposive sampling method. In the phenomenological research method, participants should be selected as people who can well reflect changes in experience and perception depending on the research topic and who can provide sufficient information to derive research results[18]. Therefore, sufficient explanation was provided to the research participants starting from the research design, and they were allowed to maintain a proactive attitude so that they could well express their experiences according to the research topic. In this study, three men and three women in their 30s to 50s were selected as final research participants, and their general characteristics are shown in <Table 1> below.

Table 1. General characteristics of study participants.

No	ID	Gender	Age	Occupation	Athletic experience
1	participant1	Male	54	IT company executive	Traditional sport wrestling

2	participant2	Male	42	Body type manager	Martial arts, bodybuilding
3	participant3	Male	30	Employee	Basketball
4	participant4	Female	60	Real estate agent	Table tennis
5	participant5	Female	50	Personal shop operation	Modern dance
6	participant6	Female	38	Postgraduate student	Swimming, handball

2.2. Participants' Health Qigong program composition and presentation

In this study, Baduanjin (eight section brocade) was selected from the Health Qigong standard program and conducted once a week for 15 weeks. One training session lasted 3 hours including theory learning, and each person was encouraged to practice at least twice a week in addition to the regular program. Health Qigong Baduanjin consists of a total of 8 movements, as shown in <Figure 1>.

Figure 1. 8 movements of Health Qigong baduanjin[19].



In this study, Baduanjin (eight section brocade) was selected from the Health Qigong standard program and conducted once a week for 15 weeks. One training session lasted 3 hours including theory learning, and each person was encouraged to practice at least twice a week in addition to the regular program. Health Qigong Baduanjin consists of a total of 8 movements, as shown in <Figure 2>.

Figure 2. Participant's Health Qigong presentation.



2.3. Data collection

The primary data collection for this study was a literature review for theoretical extraction, and the secondary data collection was conducted through in-depth interviews and narrative observation. Research participants filled out an informed consent form, two in-depth interviews were conducted per person, and a questionnaire was created to supplement any shortcomings. In addition, when research participants performed Health Qigong demonstrations, their facial expressions and actions were noted and additionally reflected in the research results. The structure and contents of the open-ended question are shown in <Table 2> below.

Table 2. Open-ended questions.

Question area	Question content
Participant background and introductory questions	▪ Please briefly introduce yourself.
	▪ What made you start practicing Health Qigong?
	▪ If you have any other sports experience, please tell us.
Questions about the universality and specificity of Health Qigong practice	▪ What do you think Health Qigong has in common with other slow exercises?
	▪ Is Health Qigong different from other exercises?
	▪ Have you seen any changes through Health Qigong training? If there are any physical or emotional changes, please tell us in detail.
	▪ Please tell us if there are any negative aspects of the Health Qigong training program.
	▪ What do you think about practicing Health Qigong to music?
Transition and closing questions	▪ What experiences did you have during the preparation process when demonstrating Health Qigong in front of a group of people?
	▪ If there is anything else you would like to say about the Health Qigong training program, please let us know.

2.4. Data analysis methods

The reliability of qualitative research increases when the researcher's bias and subjective viewpoint are excluded, thereby increasing theoretical orientation [20][21]. Accordingly, this

study used triangulation, which involves consultation with experts, during the data analysis process. And an in-depth analysis was conducted by applying the judgment criteria of truth value, applicability, consistency, and neutrality[22][23]. Specifically, Colaizzi's analysis method was used, and data were analyzed, collected, and structured through a total of six steps.

In the first stage of data analysis, the contents of the research participants' statements were checked to understand the implied meaning. In the second stage, duplicate content was excluded and meaningful statements were derived, and in the third stage, the statements were reorganized into a general form. In the 4th step process, the constructed meaning was grouped into themes and described, and in the 5th step process, the classified topics were derived into categories. In the final 6th stage, the process of finally organizing and describing the contents related to the research topic was carried out. The following <Table 3> summarizes the perceived contents of Health Qigong beginners according to Colaizzi's six-step analysis method.

Table 3. Interview analysis process of Health Qigong participants.

Procedure	Analysis content
Step 1	<ul style="list-style-type: none"> Understand the content of research participants' statements about their Health Qigong experience and understand the implied meaning.
Step 2	<ul style="list-style-type: none"> Exclude redundant content from separate meanings and derive meaningful statements
Step 3	<ul style="list-style-type: none"> Find meaningful statements about the universality and differentiation of Health Qigong and reconstruct them in a general form
Step 4	<ul style="list-style-type: none"> Make universality and differentiation a theme and write them as a bundle of topics
Step 5	<ul style="list-style-type: none"> Derived by organizing bundles of topics of universality and differentiation into categories
Step 6	<ul style="list-style-type: none"> Finally, write about your experience regarding the universality and differentiation of Health Qigong from a beginner's perspective.

3. Research Results

3.1. Categorization of data based on in-depth interviews

The research results on the universality and specificity of Health Qigong from a beginner's perspective were able to ultimately confirm 65 constituent meanings, 15 subjects, and 3 categories. In phenomenological research, it is said that it is a process of integrating the experience structures of research participants and including them into generalized sentences, and that a common structure of experience should appear[13][24].

The categories of universality between Health Qigong practice and other slow exercises perceived by research participants were identified in six subjects: 'smooth and slow movements', 'less space constraints', 'require accuracy of posture', and 'emphasis on flexibility'. , 'breathing is important', 'stress relieving effect', etc.

The details of the six subjects in the category of specificity are as follows. 'Made of dynamic postures without stopping movements', 'Movements are taken while being conscious of specific parts of the body', 'Meditation effect through matching posture and breathing', 'Bare hand exercise without using special tools', 'Music It was shown as 'It is performed in accordance with the pattern of movement', 'Easy to practice in daily life', etc. Lastly, three subjects were identified in the Health Qigong presentation category, including 'even beginners can attend the presentation', 'nervous and trembling feelings', and 'feeling of relief and pride'. This information is summarized in <Table 4> below.

Table 4. Categorization and subject classification based on participant interviews.

Category	Topic bundle	Subject
Universality	Physical universality	▪ Composed of smooth and slow movements
		▪ Requires correct posture
		▪ Emphasis on flexibility
	Emotional universality	▪ Breathing is important
		▪ Stress relieving effect
Use of exercise space	▪ Few space restrictions	
Specificity	Differentiation of operating characteristics	▪ Made in a dynamic posture without stopping motion
		▪ Performing movements while being conscious of a specific part of the body
		▪ Performed to music and has a pattern of movement.
		▪ Meditation effect through matching posture and breathing
	Differences in exercise format	▪ Bare hand exercise without using special tools
▪ Easy to practice in everyday life		
Health Qigong presentation	Convenience	▪ Even beginners can attend the presentation.
	Fun	▪ A nervous and trembling heart
		▪ Feeling relieved and proud

3.2. The essence of the experience of universality and specificity according to participation in Health Qigong

The participants in this study were beginners who were new to Health Qigong. Among the participating members, some had some information about the Qigong movement, but most had vague ideas. Afterwards, the participants began to experience changes in their perception as they experienced the Health Qigong training process, and their specific self-awareness began to change when they decided to attend the Health Qigong presentation and began intensive practice.

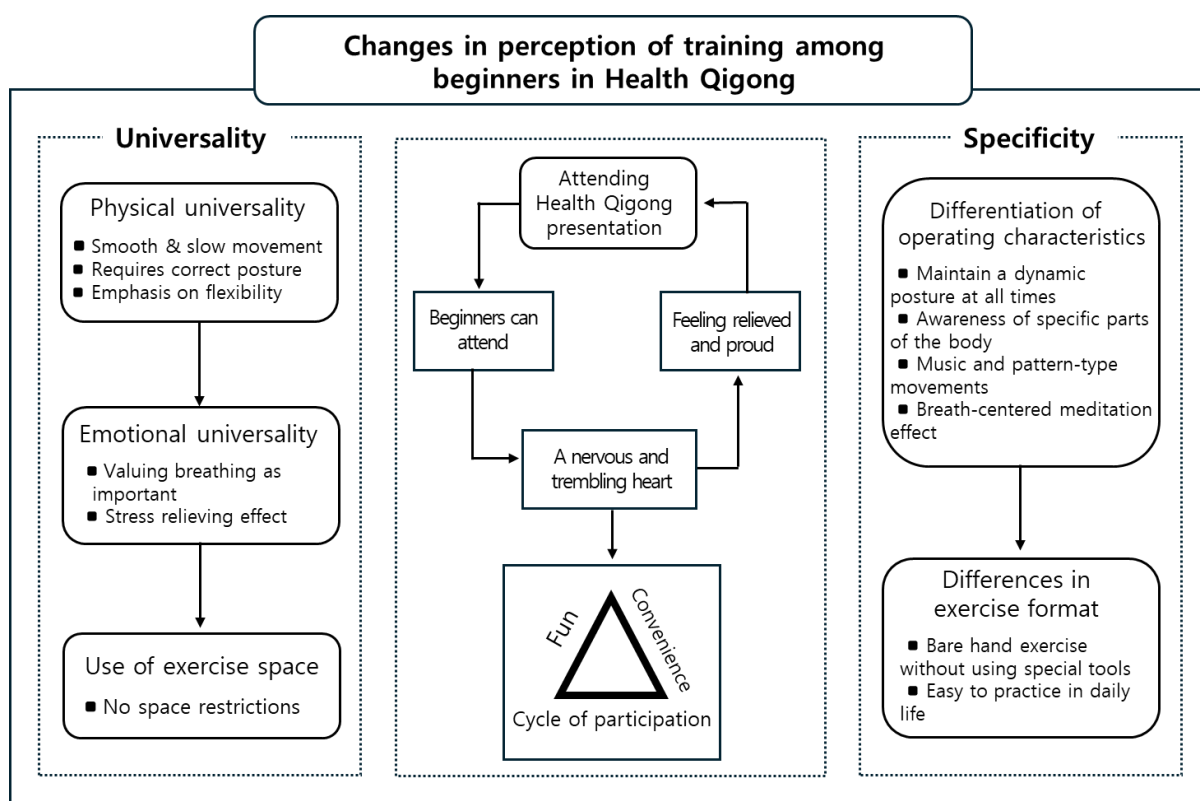
Participants recognized that Health Qigong, like other slow exercises, consists of soft and slow movements and is an exercise that gradually changes the mind and body. One of the most striking aspects of universality was that it was recognized as an efficient way to exercise because there were few space restrictions, and that exercising while sweating helped relieve stress.

What makes Health Qigong different from other slow exercises is its movement and exercise format. Most general exercises have a repeating pattern of pauses and continuations, but Health Qigong emphasizes that the movements flow like water without pauses, and it was said that by focusing on breathing, it felt like meditating. Participants said that it was an amazing experience to perform movements while being conscious of specific parts of the body. Regarding this reason, participants said that they were able to understand through learning the basic theories of Chinese medicine and that it helped them look at the body from a different perspective. Additionally, the participants felt that when practicing Health Qigong, they performed the

movements in time with the music, so they knew how to finish within a set time and that it helped them concentrate.

Attending the Health Qigong presentation provided participants with an opportunity to show others what they had been practicing. In addition, it was said that it became an intermediate procedure to check the extent to which the participants themselves had trained. Even though they were beginners, the participants had positive thoughts about being able to attend the presentation and said that they practiced intensively to avoid making mistakes because they were nervous and nervous. Participants said that they did not perform as well as they had hoped and made mistakes during the presentation, but they felt relieved and proud after completing it. And the participants said that through the Health Qigong presentation, they were able to better feel the universality and differentiation from other sports while practicing and being nervous. The following <Figure 3> presents the structure of the nature of change in perception following the participant's Health Qigong training as a situation model.

Figure 3. The essential structure of changes in perception according to participants' Health Qigong practice.



4. Conclusion and Recommendations

Health Qigong is a traditional Chinese sport that is performed by moving slowly to rhythm and has a theoretical background in Chinese medicine. Health Qigong training is a slow exercise that has many positive aspects, even when looking at many previous studies showing that it is a very effective exercise for treating chronic diseases and leading a healthy life [5][25][26][27]. In addition, a recent study on Health Qigong in Korea shows that it is effective not only physically, but also emotionally and educationally, such as reducing depression in participants, improving resilience, and positive changes in self-directed learning [6][7][14][28].

Despite the positive effects of practicing Health Qigong, some say that it is difficult and boring to learn compared to other sports, and some say that it is not easy for beginners to practice.

This is also said to be because Health Qigong training involves several constraints, such as having to learn and remember certain movement patterns and moving slowly by matching breathing and movement[29][30][31].

Accordingly, in this study, we conducted a study through in-depth interviews, paying attention to the common and distinctive aspects of Health Qigong compared to other movements from the perspective of beginners. The reason for this is that it was carried out keeping in mind that if the universality and differentiation of Health Qigong from a beginner's perspective are identified and structured, it can be applied in the Health Qigong instruction program. As a result of this study, physical universality, emotional universality, convenience of using exercise space, differentiation in movement characteristics, differentiation in exercise format, and fun and convenience of Health Qigong were derived.

This study was able to confirm the universality and differentiation from other exercises through changes in the perception of Health Qigong beginners' training. The significance of these research results is that they provided an opportunity to continue the cycle of participation by identifying the uniqueness of the Health Qigong program. In future research, specific and practical educational plans should be presented to expand the base of the program as well as research on the effects of Health Qigong training.

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6. Appendix

6.1. Author's contribution

	Initial name	Contribution
Lead Author	JL	-Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/> -Make a significant contribution to collection <input checked="" type="checkbox"/>
Corresponding Author*	DL	-Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/> -Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
Co-Author	YB	-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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