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The Effect on Training Satisfaction and Training Continuation in the TAEKWONDO Gym Training Program

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Abstract

Purpose: The purpose of this study is to provide the basic data for the leaders of Taekwondo to plan effectively their training programs by practically analyzing the training satisfaction and training continuation of the trainees according to the training program for the trainees who are practicing Taekwondo.

Method: The subjects are elementary school 4-6 graders, middle school students, and high school students who are training Taekwondo in Jeon-la Province, and the total number of subjects are 305, and the data was processed through frequency analysis, independent t-test, One-Way ANOVA, correlation analysis, and linear regression analysis, and the result is as follows.

Results: First, regarding the satisfaction of training according to gender, women was higher than men at Taekwondo and body strength($p<.01$), ($p<.05$). Regarding the satisfaction of training according to training period, the trainees who trained for less than 1 year was higher than the trainees who trained for more than 3 years at personality and leadership($p<.05$). Regarding the satisfaction of training according to the objective of training, It was higher than the development of character at body strength($p<.05$). Second, regarding the continuation of training according to having official grade, the trainees who have the official grade was higher than the trainees who was delayed at the will of conveying the know-how($p<.05$). Regarding the continuation of training according to training period, the trainees who trained less than 1 year was higher than the trainees who trained more than 3 years at the will of conveying the know-how($p<.05$). Third, regarding to the correlation between satisfaction and continuation of training according to Taekwondo training program, satisfaction of training showed statistically meaningful positive effect to continuation of training($p<.001$). Fourth, regarding to satisfaction of training according to Taekwondo training program, Taekwondo, body strength, and leadership showed statistically meaningful positive effect at every lower grade factor of continuation of training, and personality showed statistically meaningful positive effect at the will of recommendation and the will of conveying know-how.

Conclusion: Regarding to the correlation between satisfaction and continuation of training according to Taekwondo training program, satisfaction of training showed statistically meaningful positive effect to continuation of training. regarding to satisfaction of training according to Taekwondo training program, Taekwondo, body strength, and leadership showed statistically meaningful positive effect at every lower grade factor of continuation of training, and personality showed statistically meaningful positive effect at the will of recommendation and the will of conveying know how.

[Keywords] Training Satisfaction, Training Continuation, Taekwondo, Training Program, Trainee

1. Introduction

Taekwondo is a representative exercise which can help promote the physical, mental, and the social development of young people, and is also widely supplied not only in Korea but also across the globe. According to Yim and Yang[1], the trainees of Taekwondo aim to help themselves learn about the concept of self-realization, that is, the Way(道), and apply it to their lives by cultivating the mental

world through the physical training and practice. In particular, unlike many general sports, Taekwondo does not place importance on the participation itself, but on the positive influence on the behavior and mind of the trainees via the training process. The effectiveness of Taekwondo is also intimately related to the training program. The training program is consisted of the basic movements of Taekwondo such as kicking, striking, throwing, and blocking, as well as Poomsae, which is practiced in a certain line of movements through the principle of hand and foot techniques against a virtual opponent, along with the main application of kicking embedded with sports like meaning, and Gyeorugi(or sparring), a movement of application, Shibeom, or demonstration to show the technique to the world outside, and the self-defense techniques for protecting one's self[2][3].

Recently, the Taekwondo center training programs have been diversified and include various application programs including everyday etiquette education, character education, school physical education, recreation, promotion and promotion(Dan) examination events, participation in various contests, and outdoor events, etc. While there are experts who are critical of the introduction of application programs which go beyond the essence of Taekwondo, the general view is that the provision of such programs will contribute to bringing about positive change to the trainees[4]. That is, the aforesaid Taekwondo programs include basic movements, Taekwondo techniques including Poomsae and Gyeorugi, physical education for school physical education and various physical skills, plays including recreation and various events, and mental education including everyday etiquette and character education. However, such programs are structured differently for each Taekwondo center and according to the leader's competency[5].

The Taekwondo program adheres to multiple training principles, among which the leader provides various positive feedbacks while instructing the trainees not only to overcome the difficult training process but master Taekwondo techniques. Furthermore, it is the leader who plays a most instrumental role in the popularization and activation of Taekwondo, cultivation of correct awareness, and the development of the instruction program. According to Huh[4], 'the quality of education cannot surpass that of teachers.' This demonstrates how important teachers are in education, and what the teachers believe and how they behave can be said to be the criterion for determining the success or failure of education. It is undeniable that the Taekwondo program and leaders have played an instrumental role in the development of Taekwondo. Taekwondo has become a foundation for dissemination not only in Korea but also across over 200 countries[6] around the globe for the first time in 30 years, and this is because it has been designated as an important symbol of the Korean culture and the formation of the Taekwondo Park is promoted as a national project[3].

Examining the current status of Taekwondo centers, which form the foundation for the dissemination of Taekwondo, as of 2000, there are 4,464 Taekwondo centers across the nation in 2006, and approximately 10,374 centers are opened. Furthermore, Taekwondo centers, as they are influenced by the economic downturns, no longer enjoy easily securing trainees[7]. In addition, in order to overcome the difficulties of Taekwondo center's management, efforts to improve services in response to the various needs of the consumers and various approaches to saving the customer satisfaction are required[8].

In order for a Taekwondo center manager to satisfy the customers and maintain the trainees continuously, a marketing strategy for the customer satisfaction ought to be planned by giving full considerations to the characteristics of the Taekwondo center, and in particular, it may be said that it is most important to actively review the orientation of the service providers and the orientation of services which could have a significant impact on the customer satisfaction[9]. Numerous Taekwondo centers and consulting companies provide Taekwondo education through their educational programs, and the training programs of consulting companies invest a lot of manpower and time to provide more systematic and diverse contents than general centers. While the contents have become more detailed and rich, there are many leaders who are not satisfied with the educational effect and utilization[10]. Hence, in this study, in order to provide the basic data which can contribute to the effective trainee management for the front-line Taekwondo center managers for their efficient operation of their Taekwondo centers, it is considered that a study on the training satisfaction and training continuation according to the Taekwondo training program is needed.

2. Research Method

2.1. Research participants

As for the subjects of this study, 10 Taekwondo centers were selected by applying a random sampling method to 4th through 6th graders, middle school and high school trainees who were practicing Taekwondo at a Taekwondo center located in Jeollabuk-do in 2012. For each Taekwondo center set, 4th through 6th graders, middle school and high school trainees were surveyed, and the questionnaires were filled out by using the self-evaluation method. A total of 350 Taekwondo trainees were surveyed, and a total of 305 questionnaires were used for the final study, excluding 45 copies in which the collected questionnaire related response data were insincere or some parts of the survey contents were omitted. The demographic variables of the study subjects who participated in this study are as illustrated in <Table 1>.

Table 1. General characteristics of the study subjects.

Variable	Classification	No. of people	Percentage(%)
Gender	Male	187	61.3
	Female	118	38.7
Educational background	Elementary school	146	47.9
	Middle school	92	30.2
	High school	67	22.0
Presence or absence of Dan	Non-promoted trainee	106	34.8
	Dan holder	199	65.2
Training period	Less than 1 year	56	18.4
	1 year and less than 2 years	88	28.9
	2 years and less than 3 years	63	20.7
	3 years or longer	98	32.1
Purpose of training	Health(weight control)	93	30.5
	Self defense	88	28.9
	Personality development	36	11.8
	Others(athletic purpose)	88	28.9

2.2. Measuring tool

A structured questionnaire was used for this study. The questionnaire consisted of demographic variables in connection with the research model and training satisfaction and training continuation according to the Taekwondo training program, and the background variables set in this study were consisted of 5 questions of demographic variables including gender, educational background, presence or absence of Dan(Poom), training period, and purpose of training.

As for the measure of the training satisfaction in the training programs, Taekwondo, physical fitness, personality, and leader derived by Lee[11], Kim[12], and On[13] in an explorative manner were measured by supplementing some of the questions in line with the purpose of study.

The sub-variables of the training satisfaction according to the Taekwondo training program consisted of a total of 16 questions, including 4 questions for Taekwondo, 4 questions for physical strength, 4 questions for personality, and 4 questions for the leader. As for the measure of the training continuity, the questions used by Kim [12] Choi [14] were revised and supplemented for use. The sub-variables of the training continuity were consisted of a total of 6 questions, including 2 questions for the intention to recommend, 2 questions for the intention to orally spread, and 2 questions for the intention to reregister.

2.3. Taekwondo training program

<Table 2> illustrates the contents of each type of Taekwondo training program.

Table 2. Contents of each type of taekwondo training program.

Type	Details of structure
Taekwondo	Basic movements, poomsae, kicks, gyeorugi(sparring), self-defense, and taekwon gymnastics, etc.
Physical strength	Music jumping rope, flexibility, round-trip running, jumping, and burpee test, etc.
Personality	Meditation, mental concentration, reflection, etiquette education, confidence education, caring for others related education, and cooperative spirit related education, etc.
Leader	Acting as referee, leader's qualities, and leader's satisfaction, etc.

2.4. Data processing

As for the processing of data, data were processed in the following manner by using the SPSS 18.0 statistical program. First, the frequency analysis was performed to examine the demographic variables. Second, the independent t-test and the one-way ANOVA analysis were performed to validate the differences between the training satisfaction and the training continuation according to the training program of Taekwondo center trainees, and the Scheffe's was used for the ex post validation. Third, the correlation analysis was performed to examine the relationship between the training satisfaction and the training continuity according to the training program of Taekwondo center trainees. Fourth, the regression analysis was performed to examine the effect of the training satisfaction of Taekwondo center trainees on the training continuity. All level of statistical significance were set to .05.

3. Results and Discussions

3.1. Differences in the training satisfaction of taekwondo trainees according to demographic variables

In order to analyze the differences in the training satisfaction of Taekwondo trainees according to the demographic variables of the subjects of this study, the results of the independent t-test and One Way-ANOVA analysis performed are as follows.

According to the results of <Table 4> which illustrates the differences in the training satisfaction according to gender, the difference in the training satisfaction according to the training program of Taekwondo trainees by gender turned out to have a statistically significant difference in Taekwondo($t=2.845$). ($p<.01$), and there turned out to be a statistically significant difference in the physical strength($t=2.005$) ($p<.05$). Furthermore, according to <Table 4>, which demonstrates the differences in the training satisfaction according to the presence or absence of Dan((段), it turned out that for Taekwondo, Dan holders($3.82\pm.71$) were higher than the non-

promoted trainees($3.77 \pm .75$), and the physical strength of Dan holders($4.05 \pm .71$) was also higher than the non-promoted trainees($3.77 \pm .75$). In terms of personality, it turned out that the Dan holders($3.94 \pm .75$) were higher than the non-promoted trainees($3.84 \pm .75$), and as for the leaders, it turned out that Dan holders($4.07 \pm .79$) were higher than the non-promoted trainees($3.96 \pm .74$). It turned out that there was no statistically significant difference in the training satisfaction of Taekwondo trainees according to the training program according to the presence or absence of Dan(段).

Table 3. Differences in the training satisfaction by gender and the presence or absence of dan.

Background variable	Independent variable	Men / non-promoted trainees	Women / dan holders	t	df	p
Background variable	Independent variable	M \pm SD	M \pm SD	t	df	p
Gender	Taekwondo	3.89 \pm .74	3.66 \pm .68	2.845**	264.535	.005
	Physical strength	4.06 \pm .65	3.89 \pm .76	2.005*	221.831	.046
	Personality	3.95 \pm .76	3.84 \pm .69	1.313	266.227	.190
	Leader	4.09 \pm .77	3.94 \pm .77	1.652	248.082	.100
Presence or absence of dan	Taekwondo	3.77 \pm .75	3.82 \pm .71	-.460	204.013	.646
	Physical strength	3.90 \pm .67	4.05 \pm .71	-1.811	224.962	.072
	Personality	3.84 \pm .75	3.94 \pm .75	-1.153	225.350	.250
	Leader	3.96 \pm .74	4.07 \pm .79	-1.217	226.308	.225

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

The One Way-ANOVA analysis was performed to analyze the differences in the training satisfaction according to the educational background, training period, and the purpose of training, and the results are as illustrated in <Table 4>. First, there turned out to be no statistically significant difference in the training satisfaction according to the educational background in Taekwondo($F=1.948$), physical strength($F=.625$), personality($F=.176$), and leader($F=.383$). Second, as for the difference in the training satisfaction according to the training period, there turned out to be no statistically significant difference in Taekwondo($F=.534$) and physical fitness($F=2.522$). There turned out to be a statistically significant difference in personality($F=3.380$) and leader($F=2.951$) ($p < .05$). As a result of the ex post validation performed to examine and understand it in further detail, it is apparent that the personality and leadership of trainees with over 3 years are higher than those of the trainees with less than 1 year. Third, as for the difference in the training satisfaction according to the purpose of training, there turned out to be no statistically significant difference in Taekwondo($F=.856$), personality($F=1.142$), and leader($F=1.749$), yet in the physical fitness($F=2.903$), there turned out to be a significant difference($p < .05$).

Table 4. Differences in the training satisfaction according to academic background, training period, and purpose of training.

Background variable	Independent variable	Sum of squares	Degree of freedom	Mean square	F	Ex post
Educational background	Taekwondo	2.016	2	1.008	1.948	
	Physical strength	.613	2	.306	.625	

	Personality	.192	2	.096	.176	
	Leader	.457	2	.228	.383	
Training period	Taekwondo	.838	3	.279	.534	
	Physical strength	3.646	3	1.215	2.522	
	Personality	5.357	3	1.786	3.380*	a<d
	Leader	5.165	3	1.722	2.951*	a<d
Purpose of training	Taekwondo	1.339	3	.446	.856	
	Physical strength	4.181	3	1.394	2.903*	c<d
	Personality	1.849	3	.616	1.142	
	Leader	3.098	3	1.033	1.749	
Note: *p<.05. Training period(a: less than 1 year, d: 3 years or longer), purpose of training(c: personality development d: others(athletes, etc.))						

3.2. Differences in the training continuity of taekwondo trainees according to demographic variables

The results of the independent t-test and the One Way-ANOVA analysis performed to analyze the differences in the training continuity of Taekwondo trainees according to the demographic variables of the subjects of this study are as follows.

According to the results of <Table 5> which illustrates the differences in the training continuity according to gender, there turned out to be no statistically significant difference in terms of the difference in the training continuity according to the training program of Taekwondo trainees by gender. Furthermore, the difference in the training continuity according to the training program of Taekwondo trainees according to the presence or absence of Dan(段) turned out to have a statistically significant difference in the intention to orally spread($t=-2.420$) ($p<.05$).

Table 5. Differences in the training continuity according to gender and the presence or absence of dan.

Background variable	Independent variable	Men / non-promoted trainees	Women / dan holders	t	df	p
Gender	Intention to recommend	3.87±.84	3.75±.88	1.154	240.109	.250
	Intention to orally spread	4.03±.82	3.99±.78	.377	257.858	.706
	Intention to re-register	3.93±.83	3.97±.87	-.451	241.344	.652
Presence or absence of dan	Intention to recommend	3.73±.96	3.88±.79	-1.403	182.248	.162
	Intention to orally spread	3.86±.84	4.09±.77	-2.420*	200.292	.016
	Intention to re-register	3.81±.87	4.01±.82	-1.959	203.801	.052

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

The One Way-ANOVA analysis was performed to analyze the differences in the training satisfaction according to the educational background, training period, and the purpose of training, and the results are as illustrated in <Table 6>. First, as for the difference in the training continuity according to the educational background, there turned out to be no statistically significant difference in the intention to recommend($F=.203$), intention to orally spread($F=.445$), and the intention to re-register($F=1.304$). Second, as for the difference in training continuity according to

the training period, there was no statistically significant difference between the intention to recommend($F=1.626$) and the intention to re-register($F=1.972$). There was a statistically significant difference in the intention to orally spread($F=2.563$) ($p<.05$). Third, as for the difference in the training continuity according to the purpose of training, there turned out to be no statistically significant difference in the intention to recommend($F=.686$), intention to orally spread($F=1.290$) and the intention to re-register($F=.418$). Therefore, it is apparent that the purpose of training has no difference between the intention to recommend, intention to orally spread, and the intention to re-register.

Table 6. Differences in the training continuity according to academic background, training period, and purpose of training.

Background variable	Independent variable	Sum of squares	Degree of freedom	Mean square	F	Ex post
Educational background	Intention to recommend	.301	2	.150	.203	
	Intention to orally spread	.574	2	.287	.445	
	Intention to re-register	1.851	2	.926	1.304	
Training period	Intention to recommend	3.560	3	1.187	1.626	
	Intention to orally spread	4.683	3	1.561	2.563*	a<d
	Intention to re-register	4.169	3	1.390	1.972	
Purpose of training	Intention to recommend	1.516	3	.505	.686	
	Intention to orally spread	2.481	3	.827	1.290	
	Intention to re-register	.898	3	.299	.418	

Note: * $p<.05$.

Training period(a: less than 1 year, d: 3 years or longer)

3.3. Effect of the training satisfaction of taekwondo training program on the training continuity

<Table 7> illustrates the results of the linear regression analysis performed to examine and understand the effect of the training satisfaction of the training program of this study on the training continuity.

Table 7. Effect of training satisfaction on the training continuity.

Classification		B	SE	β	t	F	p	R^2
Taekwondo	Constant	1.409	.186		7.588***	58.167	.000	
	Intention to recommend	.225	.053	.267	4.287***		.000	
	Intention to orally spread	.205	.059	.228	3.464***		.001	
	Intention to re-register	.180	.051	.210	3.511***		.001	.367
Physical strength	Constant	1.640	.178		9.221***	61.963	.000	
	Intention to recommend	.238	.050	.292	4.732***		.000	.382

	Intention to orally spread	.216	.057	.248	3.809***	.000	
	Intention to re-register	.146	.049	.177	2.990***	.003	
	Constant	1.612	.195		8.278***	49.210	.000
Personality	Intention to recommend	.206	.055	.240	3.745***	.000	.329
	Intention to orally spread	.280	.062	.306	4.507***	.000	
	Intention to re-register	.096	.054	.110	1.786***	.075	
	Constant	1.295	.190		6.819***	72.603	.000
Leader	Intention to recommend	.240	.054	.267	4.467***	.000	.648
	Intention to orally spread	.283	.061	.294	4.661***	.000	
	Intention to re-register	.174	.052	.190	3.327***	.001	
	Constant						

Note: ***p<.001.

First, as a result of analyzing the effect of Taekwondo on the training continuity, it turned out to have a significant effect at the level of significance. In the order of intention to recommend, intention to orally spread, and intention to re-register, it turned out to have a statistically significant effect towards the positive(+) direction. Second, as a result of analyzing the effect of physical fitness on the training continuation, it turned out that it has a significant effect at the level of significance. In the order of the intention to recommend, intention to orally spread, and the intention to re-register, it turned out to have a statistically significant influence towards the positive(+) direction. Third, as a result of analyzing the effect of personality on the training continuation, it turned out that it has a significant effect at the level of significance. In the order of the intention to orally spread and the intention to recommend, it turned out to have a statistically significant influence towards the positive(+) direction. Fourth, as a result of analyzing the influence of the leader on the training continuation, it turned out that it has a significant effect at the level of significance. In the order of the intention to orally spread, intention to recommend, and the intention to re-register, it turned out that the effect was statistically significant towards the positive(+) direction.

3.4. Relationship between the training satisfaction and the training continuity according to the taekwondo training program

The correlation analysis was performed to examine and understand the relationship between the training satisfaction and the training continuity according to the Taekwondo training program of the Taekwondo center trainees of this study.

Table 8. Correlation between the training satisfaction and the training continuity according to taekwondo training program.

Classification	Taekwondo	Physical strength	Personality	Leader	Intention to recommend	Intention to orally spread	Intention to re-register
Taekwondo	1						
Physical strength	.645***	1					
Personality	.643***	.662***	1				

Leader	.633***	.735***	.665***	1			
Intention to recommend	.531***	.550***	.500***	.562***	1		
Intention to orally spread	.530***	.546***	.529***	.584***	.651***	1	
Intention to re-register	.495***	.488***	.428***	.516***	.547***	.610***	1

Note: ***p<.001.

The results of the study are identical to those of Kim[14] who claimed that the high leader satisfaction and program satisfaction significantly influence the intention to make repurchase among the study results of the effect of service satisfaction on the intention to make repurchase of the center trainees. Furthermore, among the results of the regression analysis of Oh[15] performed for the effects of Taekwondo training environment on the customer satisfaction and the intention to continue training, it turned out that the customer satisfaction has a significant effect on the intention to continue training, which is consistent with the results of this study. Gathering such study results, it may be said to be desirable that, since it is said that increasing the training satisfaction influences the training continuity, frontline leaders ought to develop the subdivided and diversified training programs by giving considerations to the gender, group existence, training period, and the purpose of training.

4. Conclusion and Recommendations

The purpose of this study was to practically analyze the training satisfaction and training continuity of the trainees according to the training program for the trainees who are practicing Taekwondo. The subjects of this study were 305 students of grades 4 through 6, those in middle school, and those in high school who were practicing Taekwondo in Jeollabuk-do, and for the statistical processing, the frequency analysis, independent t-test, one-way analysis of variance, correlation analysis, and the linear regression analysis were performed to reach the following conclusions.

First, the difference in the training satisfaction according to gender turned out to be higher among the men than the women in Taekwondo and physical fitness, respectively(p<.01) and(p<.05). The difference in the training satisfaction according to the training period turned out to be higher for those with over 3 years of training than for those with less than 1 year in terms of personality and leadership(p<.05). The difference in the training satisfaction according to purpose of training turned out to be higher for the physical fitness than the personality development(p<.05)[16][17][18][19][20][21].

Second, the difference in the training continuity according to the presence or absence of Dan(段) turned out to be higher among the Dan holders than the non-promoted trainees in terms of the intention to orally spread(p<.05). The difference in the training duration according to the training period turned out to be higher for over 3 years than for less than 1 year in terms of the intention to orally spread(p<.05).

Third, as a result of examining the correlation between the training satisfaction and the training continuity according to the Taekwondo training program, it turned out that the training satisfaction has a statistically significant effect towards the positive(+) direction on the training continuity(p<.001).

Fourth, the training satisfaction according to the Taekwondo training program turned out to have a significant effect towards the positive(+) direction on all of the sub-variables of Taekwondo and physical strength, and the training continuity of the leader, and the personality turned out to have a significant effect towards the positive(+) direction on the intention to recommend and the intention to orally spread[22][23][24][25].

Based on the conclusions reached in this study, the following recommendations are offered.

First, this study has been limited to the training satisfaction and the training continuity, yet in the subsequent studies, studies of social psychology related fields including personality development, sociality, and school life attitude ought to be conducted concurrently.

Second, in order to appropriately articulate the training satisfaction and training continuity according to the training program of the Taekwondo trainees, multi-directional studies including comparative studies before and after the training of trainees or comparative studies between the trainees and non-trainees ought to be conducted concurrently.

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6. Appendix

6.1. Authors contribution

		Initial name	Contribution
Author	MG		-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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Exploring the Training Program for the Essential Skills of TAEKWONDO Freestyle Poomsae

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Abstract

Purpose: The purpose of this study is to explore essential technical training plans for Taekwondo freestyle Poomsae and present systematic and specialized training plans to instructors. In order to achieve this research purpose, this study was conducted using a qualitative approach.

Method: The purpose of this study is to explore essential technical training plans for Taekwondo freestyle Poomsae and present systematic and specialized training plans to instructors. In order to achieve this research purpose, this study was conducted using a qualitative approach of literature review and in-depth interviews.

Results : First, 1)jump side kick(Leap training using high speed, obstacle crossing training, and repetitive exercise to raise one's leaping foot to the thigh) 2)jump front kick(Training of kicking the first foot at the same time of the leap, the snap kick training in a sitting position, and the training to hit a target) 3)rotating kick(Stride training, holding the axis of rotation training, two-way rotation training) 4)consecutive sparring kick(Step training using a jump rope, repeating knee raising training, and various tactical training in actual sparring competitions) 5)acrobatic movements(Handstand training and training for using the strength of the upper body with push-ups). Second, as training for injury prevention, leap, and landing, strength exercises(squats, conventional deadlift, leg press) to improve posture balance and irregular physical training that changes heart rate to check the heart rate of actual competition situations are to be conducted. Third, efforts should be made to create a stable training environment for freestyle Poomsae training by providing equipment and tools such as air mats and landing mats for the athletes to stably train essential skills of freestyle Poomsae.

Conclusion: For each of the five essential skills of Taekwondo freestyle Poomsae, an efficient training method suitable for the characteristics of the skill is needed. In addition, players and instructors who train freestyle Poomsae need to improve their posture balance through training on high leaps and landing to prevent injuries. In addition, it is important to create a training environment suitable for the characteristics of the event for efficient training of freestyle Poomsae athletes.

[Keywords] Taekwondo, Freestyle Poomsae, Essential Skills, Training Program, Poomsae Players

1. Introduction

Taekwondo is a traditional martial arts of Korea that has been developed with Korean history and is a cultural heritage of Korea that has been recognized for its value and excellence based on its rapid spread around the world[1].

After the Taekwondo Hanmadang event, the Korean Taekwondo Association newly enacted the Poomsae game rules in 2006, and Poomsae was adopted as an official event in the Taekwondo competitions. Since then, Poomsae has begun to be adopted as an official event at international compe-

titions such as the World Taekwondo Poomsae Championships and the Summer Universiade. In addition, there are continuous movements to adopt Taekwondo Poomsae as an official sport in each continent's sports competitions[2].

Free Poomsae was included as a demonstration event at the 6th World Poomsae Championships held in Vladivostok in July 2011. Since then, at the 7th World Poomsae Championships held in December 2012 in Tunja, Colombia, freestyle Poomsae has been adopted as an official event and the game has been held (Jeong Hyeon-do, 2015). Since then, after the Taekwondo Poomsae event was adopted at the 18th Jakarta-Palembang Asian Games, a new freestyle Poomsae with both official Poomsae, competition Poomsae, and freestyle Poomsae with music and creativity was newly introduced[3].

The Taekwondo freestyle Poomsae game time is more than 90 seconds and less than 100 seconds. The scoring criteria are divided into technique (6 points) and performance (4 points). The detailed items of the technical score are the difficulty of the kick, the accuracy of the movement, and the completeness of the Poomsae. There are a total of four detailed items of the performance score, consisting of creativity, coordination, expression, and music and choreography. Essential standing movements are tiger stance, crane stance, and back stance, and they must be included in the performance regardless of the order.

Free Poomsae must follow these rules and demonstrate, and must include jump side kicks, jump front kicks, rotating kicks, consecutive sparring kicks, and acrobatic movements. It belongs to the detailed standard items of technical scores, and 1 point is allocated to each item. Essential techniques should be constructed in the order indicated in the scoring table. Among the essential techniques, the high-level rotating kicks and acrobatic movements have to be demonstrated in the third and fifth order, which is a heavy physical burden to the players. In addition, players are having difficulty training because there are many ambiguous parts in the game rules for essential skills of freestyle Poomsae.

According to the Korea Taekwondo Association's rules of competitions[4], rules on jump front kicks state that in principle, it is necessary to kick above the waist level after a leap, and scores are given according to the number of kicks and accuracy during a leap. However, the waist level referred to in the rules is insufficient to explain whether it is waist level when standing or after taking a leap. In addition, in the case of rotating kicks, due to the ambiguous scoring standard of "angle of rotation," it is unclear whether players should pay more attention to rotating than to the height of the kick and where the rotation begins. Therefore, many players kick by adjusting the starting point of rotation and rotating with less angle of 900 degrees than 720 degrees.

According to Ryu[5], since the existing rotating kick evaluation criteria consist of only accuracy and rotation, it was emphasized that considerations for aerial motion, point deduction, kick height, etc. were insufficient, and specific difficulty classification and clear evaluation criteria for essential techniques should be prepared.

Looking at previous studies on Taekwondo Free Poomsae game rules and scoring regulations, studies on problems and improvements in freestyle Poomsae game and scoring regulations include [2][3][6][7][8][9][10]. Thus, research on the direction of improvement and development of the freestyle Poomsae competition continues, but research on training methods for essential techniques is still very insufficient.

In particular, there are no books or studies suggesting training methods for essential skills for freestyle Poomsae. The essential skills of freestyle Poomsae get high scores and require expertise in various fields such as Taekwondo demonstration skills, sparring, and acrobatic movements, making it difficult for athletes and instructors to train essential skills. Therefore, this study aims to study the systematic training of freestyle Poomsae essential skills to improve players' skills, prevent injuries that may occur in the process of performing high-level skills, and suggest professional and systematic training plans.

2. Research Method

The purpose of this study is to explore essential technical training plans for Taekwondo freestyle Poomsae and present systematic and specialized training plans to instructors. In order to achieve this research purpose, this study was conducted using a qualitative approach.

First, a literature review was conducted on the evaluation and improvement of Taekwondo freestyle Poomsae, and previous studies related to training methods for improving performance, to analyze the freestyle Poomsae evaluation method, improvement method, and to derive efficient training plans.

Second, we visited the study participants directly or conducted in-depth interviews through phone calls. Based on the opinions of freestyle Poomsae players and instructors, the method of qualitative research was used.

2.1. Research participants

As a specific method of selecting the research subjects, purposeful sampling, one of the nonprobability sampling used in qualitative case studies, was used. The purposeful sampling method is to sample subjects who can represent characteristics in situations suitable for research themes and is a method of obtaining in-depth information from research participants who are judged to be suitable for research purposes[11].

Participants in the study were five players with winning experience in the national-scale freestyle Poomsae competition organized by the Korea Taekwondo Association, Kukkiwon, and the World Taekwondo Federation, and five instructors with more than three years of freestyle Poomsae coaching experience. The reason why of choosing them as research participants is that we judged that teaching methods and training methods will be important factors in this study as they are the most representative of freestyle Poomsae essential technical training. It was selected with the advice of a group of experts. Specific personal information of the study participants is shown in <Table 1> and <Table 2> below.

Table 1. Personal background of the study participants <player>.

Name	Gender	Age	Experience
Player A	Male	20's	Won a national competition
Player B	Male	20's	Won a world competition
Player C	Female	20's	Won a national competition
Player D	Male	20's	Won a national competition
Player E	Female	30's	Won a national competition

Table 2. Personal background of the study participants <instructor>.

Name	Gender	Age	Experience
Instructor A	Male	30's	10 years
Instructor B	Female	30's	7 years
Instructor C	Male	20's	5 years
Instructor D	Male	20's	4 years
Instructor E	Female	20's	4 years

2.2. Measuring tool

2.2.1. In-depth interview

This study collected data using the in-depth interview method. Interviews, the most commonly used method for qualitative research, are planned and formalized in advance to induce information and statements of the interviewee. It is divided into various forms according to the structural system,

from structured, semi-structured, and unstructured interviews, and is divided into one-on-one interviews, group interviews, or telephone interviews according to the subject or method[12].

This study consisted of questions that excluded flexibility in the interview using a semi-structured interview method. However, it is being used as a desirable way to elicit a deeper response by using an open question to ask a series of structured and organized questions prepared in advance and then obtain deeper information[13]. The contents collected through in-depth interviews were recorded using a voice recording device after obtaining consent from the study participants, and all the recorded contents were recorded and used in notes.

2.2.2. Questions

The in-depth interview questions were based on questions about essential skill training plans according to the evaluation items of the Taekwondo Free Poomsae competitions and questions about exploring safe training plans for current freestyle Poomsae essential skills. The contents of the question are shown in <Table 3>.

Table 3. Questions.

Area	No.	Questions
Training method	1	What do you think is important during the training for jump side kicks?
	2	What do you think is the training for the leap and accuracy of jump front kicks?
	3	What is the training for the angle of rotation and the height for rotating kicks?
	4	What do you think is the training method to increase the speed and expressiveness of consecutive sparring kicks?
	5	What do you think is the training plan and basic training for high-level technologies such as acrobatic movements?
Injury prevention	6	What do you think is the training and method to prevent injuries during freestyle Poomsae training?

2.3. Data analysis and reliability verification

2.3.1. Transcription

This study went through the process of transcribing data collected through in-depth interviews. Transcription is a process of systematically recording data recorded through in-depth interviews with research participants. The in-depth interview data were recorded using the recording function of the voice recording device, and all contents were transcribed and recorded after recording.

2.3.2. Inductive analysis

This study was analyzed using an inductive content analysis method. Inductive content analysis is a process of inferring certain conclusions through close interpretation of unstructured data and is a method of systematically and objectively identifying the characteristics of data by reinterpreting the characteristics of the message implied by the data[14].

In order to increase the reliability of the research results, triangular verification was conducted to increase the reliability of the recorded contents through a meeting with experts.

2.3.3. Reliability verification

In order to minimize the problem by carefully considering various ethical issues in the process of this study, it was conducted through the following procedure.

First, research participants in this study were selected as subjects who voluntarily expressed their intention to participate.

Second, the purpose and procedure of this study were sufficiently explained to the study participants, and the use of the voice recording device during the interview was explained, and consent was sought, and then carried out.

Third, the personal information of the participants was made anonymous, and all data collected through interviews were promised not to be used except for the purpose of the study.

3. Results and Discussions

3.1. Training method for essential kicks in freestyle poomsae

3.1.1. Jump side kick(jump height improvement training)

According to the Korean Taekwondo Association's rules[4], the jump side kick of the Taekwondo Free Poomsae gives points as much as the height of the jump. The height of the side kick is not accurately stated, but in the end, a high score is given to the player who leaps high and performs the side kick accurately.

"Jump side kick is a leap kick and a kick that requires a high jump to get a high score, so I practice kicking high when I leap, which is the basis of all leap kicks. The speed of running forward is important, so I train to jump up while maintaining the speed of running."(player D).

In interviews with research participants consisting of athletes, they commonly mentioned that as a training method for jump side kicks, training for strengthening muscle strength for a high leap, as well as practicing raising the height of the running foot quickly at the time of a side kick.

"In the case of the jump side kick, I think the side kick, which is the basic kick of Taekwondo, is the most important, so I train a lot of side kicks. After taking a leap, pull up the upper and lower bodies together to secure aerial position, and folding the knee at a high speed to perform a side kick. At the same time, it uses the waist to maximize the expression of the side kick. And a training for a safe and stable landing is also repeated. Athletes usually practice jumping at the right time between the legs that push the ground and the legs that lift up."(instructor A).

Among the interviews with players and instructors, the commonly mentioned content emphasized the importance of muscle training to increase the height of the jump side kick. This is consistent with the study of Heo[15], who reported that training to improve the maximum muscle activity of lower extremity muscles such as squats, conventional deadlift, and leg press and training for Taekwondo freestyle side kick are effective.

The difference between the interviews between the player and the instructor is that the players had little mention of the side kick itself prioritizing the height of the jump side kick, while the instructors emphasized the importance of the kick posture in the air. In addition, the instructors mentioned the timing of raising the height of the running foot when performing a side kick. To summarize the commonalities and differences between players and instructors, there are training to leap forward and training to raise the height of the running foot.

First, it is judged that high leaps with only muscle strength and elasticity can strain the lower body, and it is possible to make high leaps with little force using speed. This is consistent with the research results of Shin[16], who reported that one could make a high leap if one was skilled in converting horizontal energy into vertical energy by running at a high speed. Therefore, for the timing of the moment that leads to running speed and leap, it is important to train to leap at the same time with the foot that pushes the ground.

Second, as a training to raise the height of the running foot, the training is repeated to support the body with the arm to raise the leaping leg fast to the thigh of the kicking leg. Even if one takes a high leap forward, if one fails to raise the lower leg, the height may look low at the moment of the highest body position of the jump side kick. The training method of installing obstacles in front, jumping over, and performing jumping side kicks is also effective. This is consistent with Ahn[9]

claim that training to jump over obstacles and perform jump side kicks is effective in raising the leaping foot.

3.1.2. Jump front kick(the number of kicks)

Jump front kick is a technique in which you run fast toward a target, leap with one foot, and kick forward with the leaping foot. Taekwondo Free Poomsae's jump front kick is scored according to the number of kicks performed above the waist height[4].

"I think speed is the most important part of my jump front kick training. If there is no significant physical difference, I think the aerial position is also similar. So I think raising the speed of the front kick in a similar aerial position is a way to do a jump front kick well. When training for speeding up, I don't stretch my legs, rather kicking them with a snap. I often practice kicking fast while lying down as well."(player C).

In interviews with research participants composed of athletes, it was emphasized that the practice of kicking in a lying position or on the floor, not in the air, was important as a jump front kick training. Regarding the speed of the kick, the importance of snap kicks with folding and stretching knees and kicks on a target to enhance the expressiveness of kicks were mentioned.

"The number of kicks is an important point in scoring, so we practice kicking the first kick at the same time as we leap. If you can kick the first kick at the same time as you leap, you can kick one to two times more than other players, which will be a great advantage to get a better score. As soon as one jumps, one kicks, and secondly, training for snap kicks with the knee fold and stretched while the thigh fixed. It's a front kick snap practice using the straightening force. If you move your thigh, the kick comes out big, but you should be careful because the kick itself slows down and you may feel severe pain in your thigh."(instructor E).

In the interviews with the player and the instructor, the accuracy of the kick was mentioned in common. They said they train to kick with targets to increase the accuracy of kicks. Summarizing the commonalities and differences between players and instructors, it is divided into jump front kick's high leap and accuracy training, training for more kicks after jumps, and training to prevent thigh injuries[17][18].

First, for the high leap of the jump front kick, it is judged that training to rush forward quickly and to jump at the timing of the leg pushing the ground is necessary for a high leap. However, unlike the jump side kick, the body may bend forward due to speed when taking a leap forward using a high speed, so one has to be aware that if the hip falls back, the expressiveness of the kick decreases.

Second, for the accuracy training of the jump front kick, it is necessary to sit on the floor and kick rapidly crossing the feet. In addition, training to jump front kick while supporting the body to learn the sense in the air is also considered effective.

Third, in order to kick more, there is training to kick the first kick at the same time as the leap. When the first kick begins from the peak of the leap, a large number of kicks cannot be made, so it is judged that training is needed to push the ground and do the kick with a snap at the same time as taking a leap.

Fourth, as a training plan against thigh injury, it is judged that the knee should be fixed as much as possible during aerial movements, and the front thigh should be stretched enough before and after jump front kick training to prevent injury.

3.1.3. Rotating kick(the angle of rotation)

Rotating kick is a technique that takes a step in the basic posture and rotates from the leap of a dolgae kick to kick. According to the Korean Taekwondo Association's rules of the competition[4], a score is given depending on the angle of rotation.

"I think the key is how well I'm keeping my balance during the fast rotation. I don't think it's best to practice rotating a lot, but to train focusing on how well you hold the axis of the rotation after jumping. At first, you have to find the step that suits you, and it's good to give similar strength to the leg that pushes the ground. If either side is stronger, the axis collapses. I think I get a lot of injuries that twist my ankle while landing without stopping the rotation."(player B).

Participants in the study, consisting of athletes, said they were training with an emphasis on catching the axis of rotation of the rotating kick among the essential skills of Taekwondo Free Poomsae.

"I train them a lot to hold the axis of the rotation. I don't think kicking in a rotation that doesn't work is not a good training method, so I check each player on the limitations of his or her rotation and let them practice kicking harder in turn or back kicks according to the rotation. Of course, in order to increase rotational power, we use a band to exercise muscle strength using only their shoulders, but since the rotating kick is a kick anyway, they tend to focus on kicking using rotation rather than just turning itself. Next, we train them to land. Both 720 degrees and 900 degrees of spin kicks are techniques that use rotation, so landing without stopping rotation can strain your ankles or knees. So, we train them to control their body after kicking in the air and land accurately." (instructor E).

Among the interviews between the player and the instructor, the common point was training to set the axis of rotation as the top priority. They said that high leaps, rotational power, and kick training are meaningless without holding the axis. On the other hand, the players emphasized training for an easy rotation by practicing a lot on the ground while the instructors emphasized the importance of rotational force, speed and power of kicks, and stable landing.

The commonalities and differences in training between athletes and instructors are divided into training for stride, the axis of rotation, leap, torque, the height of kick, stable landing, and lower body strength.

First, it is considered important to find a stride suitable for the rotation kick for the player. This is consistent with the arguments of Ryu[10], who reported that the stride was large as soon as the rotating foot touched the ground and that the time required for the landing section was long. This means that the distance and posture of the stride should be the most comfortable position for the player to leap forward, and it is important to lighten the allocation of the center so that the rotating foot can strongly push up the ground.

Second, for the rotating kick's rotational power and leap power, training to adjust the timing of rotation with the legs pushing the ground is considered important. It is believed that high leaps and fast rotational power will be obtained through training that takes both leaps and turns at the same time.

Third, as a training plan to increase the expressiveness of the kick, it strengthens the waist rotation just before the kick to create room to twist the hip, and the moment it kicks, it turns the hip upside down and kicks. It is believed that it will increase the expressive power of the kick through training to accelerate the kick using rotational force, not stretching the foot in rotation.

Fourth, it is judged that physical training is important because it is recognized that it is physically difficult at the time of demonstration of a rotational kick in freestyle Poomsae. In addition, it is judged that training preventing injuries of ankles and knees that occur during rotating kicks is necessary to be accompanied by lower extremity muscle exercise and posture balance training.

3.1.4. Consecutive sparring kick

As a training method for the speed and expressiveness of the consecutive sparring kicks, the following is the content of interviews with research participants composed of players.

"I practice a lot for the steps. If you learn various steps such as forward step, backward step, side step, and foot change and practice kicking by connecting them, your expression will improve." (Player A).

Participants in the study, consisting of athletes, mentioned the importance of steps as an important training method for the consecutive sparring kicks of Taekwondo Free Poomsae.

"I make them jump rope a lot. Instead of jumping with two feet, continue to train jumping rope one foot by one foot. By jumping rope, you learn how to understand the steps with your body and make you have a sense of jumping fast and short, so that you can easily train the sparring steps. After that, we train them to practice kicking using mitts." (instructor A).

What the interviews between players and instructors have in common was that they emphasized the importance of steps. Players mentioned training that focuses on step kicks, while instructors mentioned training based on strategies and tactics of actual sparring competitions.

Ahn[9] reported that in the case of sparring kicks, connectivity is important, so they learn practical skills and hitting sense using the target and train. Therefore, training is required to hit targets for connection and accuracy of kicks, strategy based on actual sparring competitions, and tactical kick training to increase the diversity of consecutive sparring kicks, lighten the sparring steps through jump rope, and lay the foundation for faster kick connection.

3.1.5. Acrobatic movements

According to the Taekwondo Free Poomsae rules, acrobatic movements refer to all acrobatic movements used in gymnastics events and must include kicks and score according to the difficulty level[4].

"I usually train to make a strong round-off. If you can't do a round-off, you can't leap and rotate. I train a lot to practice jumping high by pulling my foot hard from the side, and I do kicks when I'm used to it enough. Slowly increase the number from 1 to 5. There was a time when I was in a hurry and couldn't rotate, so I practiced with enough care now."(player C).

Participants in the study emphasized the importance of round-off and training of pulling their feet to do well in acrobatic movements. In addition, in the case of kicks, he said that he would start with 1 kick and up to 5 kicks to practice the accuracy of the kicks. In common, caution was emphasized regarding injuries from landing.

"For the efficient round-off, which is the most important part of the acrobatic leap, we train handstand to push the ground with hands, pull the legs, and stand up in a good posture. The force that raises the upper body and the force of the lower body that pulls meet to make a leap, and if you take that leap and kick in the air, you will get good acrobatic movements. Of course, we practice kicking accurately with snap kicks to express accurate kicks at a high speed. Make sure your upper body rotates to train your eyes to look at the ground. That way, you can land safely. Above all, we need to create an environment where we can practice acrobatic movements safely. Air mats or landing mats must be properly prepared and trained safely so that training players can train without any burden."(instructor A).

What the interviews between players and instructors have in common is that professional training in round-off, which is the basis of acrobatic movements, is necessary. For safety reasons, they emphasized the need for landing mats and air mats to help them leap, and mentioned the need to create an environment where players can train comfortably without worrying about safety issues. On the other hand, it is said that they train with an emphasis on kicks after taking a leap forward.

First, it is judged that posture correction training of round-off for a safe and high leap is necessary. This means that handstand is the basis and training is needed to raise your feet in a straight line so that you can maintain the power to run forward, and it is important to make the best posture to make a high leap by pulling your belly and legs just before jumping[19].

Second, in order to make the leap higher, it is believed that the upper body should be raised through push-up training, which is upper-body reinforcement training, and the leg-pulling force from the handstand position to make a high leap forward to perform acrobatic movements.

Third, for the accuracy and expressiveness of the kick, it is necessary to train the front kick in a lying position. It is also necessary to do core training together so that you can balance your body in the air and kick accurately.

Fourth, it is recognized that balance ability and ankle stability are important to perform safe and perfect Taekwondo movements. This is consistent with a study by Jang and Ahn[20] that high levels of balancing ability are required because leaps and landing movements are repeatedly performed in freestyle Poomsae. Therefore, it means that Taekwondo freestyle acrobatic movements should be trained together with combined exercise(squat, conventional deadlift, and leg press) to improve posture balance skills that help leap and land.

4. Conclusion and Recommendations

The purpose of this study is to explore essential technical training plans for Taekwondo freestyle Poomsae and to present more efficient, stable, and systematic training plans to athletes and instructors. Participants in the study were 5 male/female freestyle Poomsae athletes aged 20 or older and 5 instructors with more than 3 years of freestyle Poomsae coaching experience as subjects of the study, and conducted in-depth interviews through semi-structured questions, and drew the following conclusions.

First, Taekwondo freestyle Poomsae essential skills training plan is as follows. 1)Jump side kick: Leap training using high speed, training to raise the foot together with the jumping foot, training to raise the height of the foot beyond the obstacle, and repeated training to support the body with the arm and then raise the foot to the thigh; 2)jump front kick : Training to kick the first kick at the same time as the leap, training the accuracy of the kick after sitting or holding the rod, repeating the snap kick to speed up the kick, and training the sense of hitting the target; 3)rotating kick : Training to make the legs and body vertical to hold the axis of rotation, training to balance the body by training both directions so that the rotation does not lean in one direction, sensory training using the speed of rotation, and stride training suitable for the player; 4)consecutive sparring kick : Step training in various situations(forward, backward, both sides, diagonal), sensory training of steps using a jump rope, knee lifting repeated training for the speed of kicks, various tactical training in actual competition situations, and kicking targets for the expressiveness of kicks; and 5)acrobatic movements : Handstand training for accurate posture of round-off(training to make a line from arm to leg and push the ground all over the body), pulling the belly and legs from handstand to get the momentum needed for a leap, training to use the upper body's strength in push-ups, and kicking while lying down.

Second, in order to prevent injuries to players and instructors who train freestyle Poomsae, it is necessary to improve their posture balance through training on high leaps and landing after leaps. Muscle exercises according to this include squats, conventional deadlifts, and leg presses. Through physical training, they train at the same heart rate as when they actually participate in a competition through training that changes their heart rate with irregular rhythms rather than a certain pattern, and finish with walking(maintaining a certain heart rate) training during breaks. Massages after training can help blood circulation, relaxingly both body and mind[21].

Third, it is important to create a training environment suitable for the characteristics of the event for efficient training of freestyle Poomsae athletes. First of all, air mats should be equipped to help leap in acrobatic movements that require high leaps, correct posture in the air, learn senses, and compensate for wrong kick posture. It is also important to secure enough space to run in order to train for a high speed and leap during the jump kick training. Taekwondo freestyle Poomsae essential technical training should try to create a training environment where athletes can feel emotional stability in a safe space[22].

This study explored Taekwondo freestyle Poomsae essential skills training plan and conducted research on professional and systematic training plans for athletes and instructors, and based on the results of this study, the following suggestions are made for follow-up research on freestyle Poomsae.

First, as a follow-up study of the results of this study, it is judged that specific research on improving skills and improving performance through essential technical training is necessary.

Second, it is judged that there is a need for research on the systematic use of measures to prevent injuries by Taekwondo freestyle Poomsae athletes.

Third, it is necessary to study how to use the training facilities and equipment of gymnasts for the training of freestyle Poomsae athletes to create a training environment for them.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Lead Author	MS	<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"/>
Corresponding Author*	KJ	<ul style="list-style-type: none">-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 TAEKWONDO Curriculum in the United States

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Abstract

Purpose: This study sought to analyze the American Taekwondo curriculum and standardize the American Taekwondo curriculum to ensure that it can meet the Taekwondo educational goals pursued by Kukkiwon, the world Taekwondo headquarters. The standardized American Taekwondo curriculum will contribute to the educational use of Taekwondo in the United States.

Method: As one of the data collection methods to study social and cultural phenomena, the method of collecting necessary information through existing literature data was selected. This thesis was approached as a qualitative research method that collects data and interprets the meaning of the phenomenon through the intuitive insight of the researcher.

Results: The world Taekwondo headquarters, Kukkiwon dispatches the Kukkiwon masters to 53 countries to teach and evaluate Taekwondo according to the standard curriculum. However, the US does not currently have a Kukkiwon master dispatched. Moving forward, the Kukkiwon masters should be dispatched to supply the standard curriculum relative to the Taekwondo training population. The "Taekwondo Standard Curriculum" presented by Kukkiwon and the Korea Taekwondo Association in 2019 divided the subjects to be completed by the non-Poom-and-Dan-holders and Poom and Dan holders into the mandatory and optional courses.

1) Non-Poom-and-Dan-holders must complete the training period(40 hours x 9 levels = 360 hours) for 40 hours of unit time for each level from level 1 through level 9, respectively.

2) As for 1 Poom and Dan holders, the time of completion for each unit is 80 hours, with the time of completion for the training period(80 hours x 3 units = 240 hours), and as for 2 Poom and Dan holders, the time of completion for each unit is 80 hours, with the time of completion for the training period(80 hours x 6 units = 480 hours), as for 3 Poom and Dan holders, the time of completion for each unit is 80 hours, with the time of completion for the training period(80 hours x 9 units = 720 hours), and as for 4 Poom and Dan holders, the time of completion for each unit is 80 hours, with the time of completion for the training period(80 hours x 12 units = 960 hours) are required, respectively.

Conclusion: That is, for the Taekwondo curriculum, the trainees should not only comply with the period required after the promotion of Poom and Dan, but also should be required to complete the mandatory training time, thereby making it an even more effective approach toward achieving the educational goal of Taekwondo.

[Keywords] Taekwondo, Curriculum, History, Grandmaster, Subject

1. Introduction

Taekwondo is a traditional Korean martial art and has been adopted as an official sport since the 27th Sydney Summer Olympic Games in 2000. Thereafter, it has developed into a

martial arts sport, and as of 2021, a total of 210 national Taekwondo associations are members of Kukkiwon and the World Taekwondo Federation, respectively[1].

The fact that Taekwondo began to undergo popularization in the United States has a deep historical relevance.

On August 15, 1945, Korea was liberated from 36 years of the Japanese colonial rule, and a trusteeship was decided at a meeting of the foreign ministers of the 3 countries of the US, UK, and the Soviet Union in December 1945 in Moscow. On September 12th, the Military Government Office of the U.S. Army entered into the military government, and Korea began to receive aid from the US. Thereafter, as the Korean War broke out on June 25, 1950, the number of war participating countries which supported Korea during the 1,129-day war period was 16 countries which dispatched combat troops, 6 countries which dispatched medical support troops, and a total of 1,957,733 people of the UN troops from 22 countries participated in the war, respectively. Among which, the US suffered the largest damages among the participating countries with 1,789,000 soldiers, navy, and air force participating in the war, 133,996 killed, 33,686 wounded, 3,737 missing in action, and 4,439 taken as prisoners of war, respectively[2].

As a result, the United States became Korea's strongest ally, and the Koreans naturally made exchanges with the United States.

In particular, Taekwondo spread in the United States under the name of Dangsudo as the American soldiers who had experienced Taekwondo under the name of Dangsudo during the Korean War returned to the states. However, the Taekwondo skills of the Americans at the time were not so good.

In 1956, Taekwondo was introduced in Texas by the leaders including master Junkoo Lee. However, given the lack of awareness among the Americans in the early days, it was introduced as Dangsudo or Korean Karate.

Thereafter, the American soldiers who returned to the United States formally requested a Korean master through the Korean Ministry of Foreign Affairs to learn the Dangsudo they had learned in Korea. At the time, upon the approval of the Ministry of Foreign Affairs in 1963, master Sanggyu Shim was dispatched to the United States for the first time as master[3].

Furthermore, the spread of Taekwondo began full fledgedly as many Taekwondo leaders immigrated to the United States after the Vietnam War among the Korean soldiers who participated in the War from September 11, 1964 until April 1966 along with the Korean international students who studied in the states and who practiced Taekwondo[4].

As such, Korea's traditional Taekwondo, the center of Taekwondo, was able to spread rapidly across the United States. Currently, the world Taekwondo population is approximately 60 million, followed by Korea with 5.5 million, US with 3 million, China with 1.5 million, and Iran with 1.2 million, respectively. In September 2021, the number of Dan holders overseas excluding Korea was 1,573,908, and the United States produced the largest number of Dan holders. Among the 13,992 applicants for the overseas Taekwondo Dan promotion review in September, the number of applicants from the Americas posted 2,350, which is the largest number of applicants excluding Korea. However, the American Taekwondo curriculum still does not operate systematically.

Comparing by continent, the largest number of Taekwondo masters is present in the states, yet there is no standard curriculum, and each master's training program has been implemented[5].

The world Taekwondo headquarters, Kukkiwon and the Korea Taekwondo Association published a standard interpretation for Taekwondo in July 2019 to ensure that all Taekwondo officials have the expertise for the Taekwondo curriculum and that a systematic Taekwondo education is implemented.

Many studies have been conducted in connection with Taekwondo. Taekwondo Training[6][7][8][9][10], the management of Taekwondo Clubs[11][12][13][14][15][16][17][18], Taekwondo Competitions[19][20][21][22], and Taekwondo educational Programs[23][24][25] etc., have been carried out. In addition, although the studies on Taekwondo in the United

States have been conducted[26][27][28][29][30][31], researches regarding Taekwondo curriculum in the US is insufficient.

Accordingly, this study sought to analyze the American Taekwondo curriculum and standardize the American Taekwondo curriculum to ensure that it can meet the Taekwondo educational goals pursued by Kukkiwon, the world Taekwondo headquarters. The standardized American Taekwondo curriculum will contribute to the educational use of Taekwondo in the United States.

2. History of the American Taekwondo

As a close historical relationship between Korea and the United States was formed, there was no difficulty in spreading Taekwondo, a Korean bare-handed martial art, to the United States. However, it was very difficult to spread the Korean culture overseas during 36 years of the Japanese colonization. Given such a situation, the spread of Korea's Taekwondo in the United States was delayed compared to China's Kung Fu and Japan's Judo and Karate, which were relatively more advanced economies than Korea.

However, as the spread of Taekwondo began, it accelerated. In particular, the United States, which was Korea's greatest ally, is the most popular country for Koreans to immigrate or study. Taekwondo, which began to spread in this way, was adopted as an official sport for the Sydney Summer Olympic Games in 2000, and as a martial arts sport, and currently has approximately 3 million trainees, which is far more popular than other martial arts.

Examining other martial arts, China's Kung Fu became known unofficially through the workers during the Gold Rush in the United States in 1848, while Judo was first introduced by Japanese Judo master Yoshiaki Yamashita in 1902[32].

Furthermore, Karate was first introduced in Phoenix, Arizona in 1946 by a Caucasian man named Robert Trias, and 6 years later, in 1952, Mas Oyama, the founder of Kyokujin Karate, toured 32 states offering demonstration to the general public, making Karate spread rapidly.

In such a manner, they were introduced before Taekwondo, but currently, they have not secured more popular training population than Taekwondo[33].

Master Sanggyu Shim, the first master officially dispatched to the United States by the Korean Ministry of Foreign Affairs, settled in Detroit, Michigan, decided the numbers for Poomsae 1 through 12 he made on his own, and operated the Taekwondo center under the name of "United Taekwondo"[34].

In 1962, Master Haengwoong Lee received an offer from an American student to open a Taekwondo center in the United States, and went to the states, and In 1976, settled in Little Rock, Arkansas and founded the American Taekwondo Association(ATA). He settled in the states and spread the Korean culture and Taekwondo, a Korean martial art, to the American, who had no knowledge of Taekwondo at all. Master Lee taught Taekwondo to the the ngovernor of Arkansas, and consequently, the National Championships were held in Arkansas every June, where 20,000 Taekwondo practitioners from all over the world come and participate.

Master Joongu Lee first set his foot on the American soil in 1956, and after returning to Korea, then set himself on a journey to study in November 1957, and he then founded Taekwondo Club at the university, and in 1962, he went to Washington, DC, for Taekwondo training for the Pentagon staff and there, he opened a Taekwondo center in Washington, DC[35].

In addition, many Korean Taekwondo leaders settled in the states including Wonjik Park, Gyubong Yim, Jack Hwang, Yujin Kim, Heeyoung Kim, Donggeun Park, Inmok Kim, Youngho Jeon, Hoyoung Jung, Jongchan Lee, Jongwoong Kim, Jaegyu Lee, Sangcheol Lee, Youngjin Yoo, and Minsoo Suh. And now, there are many students of the Korean masters or the leaders who have been taught by the local American masters[36].

In the early phase of Taekwondo in the United States, it spread as a martial art of self defense in which the mysticism of the East and the martial arts spirit were instilled. However, as a martial arts sport today, it has developed into a character education, health, sports, and a leisure activity.

In 2000, when Taekwondo was adopted as an official Olympic sport, frontline leaders began to use the term “Taekwondo” full fledgedly. Furthermore, the leaders of the younger generation used the term “Taekwondo” as a proper noun for the martial art.

In particular, Taekwondo, which developed as a martial arts sport through the Olympic Games, became an official member of the American Sports Association and shaped a system as a professional sports organization.

In particular, as Taekwondo competitions were held across the states, excellent athletes were discovered and selected nationwide to participate in international competitions. As a result, they have achieved excellent results and are contributing to the advancement of the national stature for the states[37].

Table 1. Status of poom and dan registered with kukkiwon[38].

Classification	Total	Poom	Dan
Korea	9,416,726	4,944,677	4,472,049
Overseas	1,573,908	774,360	799,548
Total	10,990,634	5,719,037	5,271,597

Table 2. Status of poom registered with kukkiwon[38].

Classification	1 poom	2 poom	3 poom	4 poom
Korea	2,219,998	1,737,569	794,574	192,536
Overseas	644,946	107,539	19,750	2,125
Total	2,864,944	1,845,108	814,324	194,661

Table 3. Status of dan registered with kukkiwon[38].

Classification	1 dan	2 dan	3 dan	4 dan	5 dan	6 dan	7 dan	8 dan	9 dan
Korea	3,476,048	494,076	310,053	142,833	36,137	7,326	3,188	1,453	935
Overseas	540,505	143,717	65,711	27,743	13,001	5,055	2,858	746	212
Total	4,016,553	637,793	375,764	170,576	49,138	12,381	6,046	2,199	1,147

Table 4. Status of review applicants by continent in september[38].

Continent	Total	Asia	Oceania	Europe	Africa	America
Applicant for review	13,992	10,390	200	698	354	2,350

3. Status of the Taekwondo Curriculum in the United States

Kukkiwon, the world Taekwondo headquarters, has dispatched 53 Taekwondo masters to 53 countries across the globe. The dispatched masters have completed the regular training at Kukkiwon and have also complied with the Taekwondo standard curriculum of Kukkiwon and the Korea Taekwondo Association. The dispatched masters serve as a sample for the dis-

patched country's Taekwondo curriculum while spreading Taekwondo by instructing the dispatched country's national team coach, police, and youth teams.

However, there are currently no Kukkiwon masters dispatched from Kukkiwon, the world Taekwondo headquarters, to the United States.

Comparing by continent, the largest number of Taekwondo masters are active, yet there is no standard curriculum, and each individual master's training program has been implemented.

Table 5. Status of dispatch by country of 53 people to 53 countries(Asia, Africa)[38].

Continent	Country	Name	Continent	Country	Name
Asia	Cambodia	Yongseok Choi	Africa	Tunisia	Hongseong Chang
	Sri Lanka	Gisoo Lee		Kenya	Jaeseok Lee
	Kyrgyzstan	Seunggyu Lee		Botswana	Hyojoo Lee
	Nepal	Youngdal Kwon		Ethiopia	Dojin Kim
	Bangladesh	Joosang Lee		Rwanda	Jiman Jung
	Myanmar	Woongjo Yoo		Madagascar	Jeongwoo Lee
	India	Jeonghee Lee		Egypt	Hyeongwon Ahn
	China	Gibok Kim		Algeria	Seongyong Park
	Malaysia	Byeonghee Lee		Equatorial Guinea	Jinhan Lee
	Indonesia	Youngmin Kwak			
	Uzbekistan	Moonjong Baek			

Table 6. Status of dispatch by country of 53 people to 53 countries(America, Europe)[38].

Continent	Country	Name	Continent	Country	Name
America	Honduras	Hoseok Kim	Europe	Bulgaria	Sanghyeon Park
	Nicaragua	Gwangyoon Jin		Czech Republic	Yeonjae Lee
	Venezuela	Seonghoon Kim		Poland	Cheolin Kang
	Panama	Younghwan Lee		Estonia	Younghoon Jung
	Mexico	Joonshin Kim		Ukraine	Jaesoo Lee
	Bolivia	Joonseok Park		Georgia	Deokhwi Lee
	Brazil	Yeonchoel Yim		France	Woojin Jung
	Peru	Younggi Jeon		Ireland	Dongin Cha
	Guatemala	Jinsoo Kim		Finland	Jeonghyeon Cho
	Chile	Wonho Suh		Belgium	Gyeongun Park
	Columbia	Sangwook Han		Portugal	Jeonghoon Lee

Poom holders and Dan holders have complied with the post Dan promotion period as illustrated in the table below in accordance with the regulations of Kukkiwon.

However, as for the non-Poom-and-Dan-holders, the training period has not been established.

Table 7. Obligatory training period and age limit for promotion[38].

Poom/dan to be promoted	Obligatory training period(years)	Age limit for promotion		Remarks
		1 st dan/up	1 st poom/up	
1 st poom			Below age 15	* All applicants for promotion are subject to the requirements of obligatory training period and age limit. * Those early beginners of taekwondo, who have obtained poom grades, will be given privileges of curtailed age limit up to the 5 th dan promotion.
2 nd poom	1 year		Below age 15	
3 rd poom	2 years		Below age 15	
4 th poom	3 years		Below age 18	
1 st dan		Age 15 and over		
2 nd dan	1 year	Age 16 and over	Age 15 and over	
3 rd dan	2 years	Age 18 and over	Age 15 and over	
4 th dan	3 years	Age 21 and over	Age 18 and over	
5 th dan	4 years	Age 25 and over	Age 22 and over	
6 th dan	5 years	Age 30 and over	Age 30 and over	
7 th dan	6 years	Age 36 and over	Age 36 and over	
8 th dan	8 years	Age 44 and over	Age 44 and over	
9 th dan	9 years	Age 53 and over	Age 53 and over	
10 th dan		Age 60 and over	Age 60 and over	

1) Poom may be granted to a successful trainee who is less than 15 years old, and Dan to a successful trainee who is 15 or more than 15 years old. A Poom grade holder becoming 15 years old equal to a Dan grade holder (If one passes the age of 15, he may ask for the change of certificate from Poom to Dan to the Kukkiwon).

2) If Poom holder who has passed the age of 15 applies for a promotion to a next higher Dan grade, the required period of training shall be calculated from the first day when he obtained the present grade. However, when a third-Poom holder wants to be promoted to be promoted to the 4th Dan, his age shall be over 18[39].

4. Status of the Kukkiwon's Curriculum

Examining the Taekwondo standard curriculum presented by Kukkiwon and the Korea Taekwondo Association, it is divided into the one for the non-Poom-and-Dan-holders and the other for Poom and Dan holders.

1) Non-Poom-and-Dan-holders proceed from level 1 through level 9, and 40 hours(2 months) of training period(2 months x 9 levels = 18 months) is required for each level. It entails 18 months to train 5 days per week.

2) When teaching the mandatory and optional programs of the non-Poom-and-Dan-holders and the Poom and Dan holders, instruction must be provided without exception, including the Taekwondo's movement elements(parts used, ready posture, bending, passing, stepping, jumping, blocking, pushing, withdrawing, standing, grabbing, punching, lunging, axing, kicking, striking, dodging, and special Poom).

3) As for the optional program, at least one of the basic subjects for non-Poom-and-Dan-holders(KTA Taekwon fitness, KTA Taekwon gymnastics, and KTA Taekwondo demonstration) must be practiced.,

However, in the selection process for the non-Poom-and-Dan-holders, it is recommended that selection be made in the order of KTA Taekwon fitness, KTA practical hand skills, and KTA Taekwon gymnastics, and in the selection process for the Poom and Dan, basic courses(KTA Taekwon fitness, KTA Taekwondo demonstration, and KTA gymnastics) be selected with priority.

4) 1 Poom and Dan holder proceed from level 1 through level 14, and 80 hours(4 months) of training period(4 months x 3 levels = 12 months) is required for each level. The Poom and Dan holders must complete 240 hours(12 months) for each Poom. It entails 12 months to train 5 days per week.

5) When the instructions are offered for the Poom and Dan holder's mandatory and optional programs, instructions must be offered without exception, including the Taekwondo's movement elements(parts used, ready posture, bending, skipping, stepping, jumping, blocking, pushing, withdrawing, standing, grabbing, lunging, axing, kicking, striking, dodging, and special Poom).

6) As for the optional program, the basic subjects for Dan holders(poomsae, breaking, sparring, and KTA character) must be completed as mandatory subjects, and the intensive subjects(KTA self defense skills, KTA practical hand skills, and KTA core exercise) must be assigned for the number of hours.

However, it is recommended that the basic subjects(KTA Taekwon fitness, KTA Taekwondo demonstration, KTA Taekwon gymnastics, and martial arts) be selected with priority.

7) 3 Poom and Dan holders proceed from level 1 through level 14, and 80 hours(4 months) of training period(4 months x 9 levels = 36 months) are required for each level. The Poom and Dan holders are required to complete 720 hours(36 months) for each Poom.

It entails 36 months to train 5 days per week.

8) When the instructions are offered for the mandatory and optional programs for the 3 Poom and Dan holders, instructions must be offered without exception, including the Taekwondo's movement elements(parts used, ready posture, bending, skipping, stepping, jumping, blocking, pushing, withdrawing, standing, grabbing, lunging, axing, kicking, striking,

dodging, and special Poom), yet the time required of completion for each unit as presented in the standard curriculum of Taekwondo must be completed [40].

9) As for the optional program, the basic subjects for the Dan holders(poomsae, breaking, sparring, and KTA character) must be completed as mandatory subjects, and the intensive subjects(KTA self defense skills, KTA practical hand skills, and KTA core exercise) must be assigned for the number of hours.

However, it is recommended that the basic subjects(KTA Taekwon fitness, KTA Taekwondo demonstration, KTA Taekwon gymnastics, and martial arts) be selected with priority for the optional program [41].

Dan holder(Poom and Dan) must satisfy 240 hours for 1 Dan, 480 hours for 2 Dan, 720 hours for 3 Dan, 960 hours for 4 Dan, and the training period and the time of completion for 5 Dan through 8 Dan.

Furthermore, since the mandatory program(basic subjects and intensive subjects) and the optional program(basic subjects and intensive subjects) are assigned for each unit, the applicants must complete such subjects and undergo their review, and hence, the items of review and the table of criteria for the review must be prepared in line with the subjects of completion.

5. Conclusions

Based on this study, the following conclusions were reached.

Kukkiwon, the world Taekwondo headquarters, has dispatches the Kukkiwon masters to 53 countries to teach and evaluate Taekwondo according to the standard curriculum. However, there are currently no Kukkiwon masters dispatched to the United States, where standardized Taekwondo education has not rooted. Moving forward, Kukkiwon masters ought to be dispatched to spread the standard curriculum relative to the Taekwondo training population.

The subjects to be completed for the non-Poom-and-Dan-holders and the Poom and Dan holders must be divided into the mandatory and optional programs, whose time of completion for each unit must be completed as follows.

1) The non-Poom-and-Dan-holders must complete the training period(40 hours x 9 levels = 360 hours) for 40 hours of unit time for each level from level 1 through level 9 to complete the time of completion. It entails 18 months if trained for 5 days per week.

2) The 1 Poom and Dan holders must complete 80 hours of the time of completion for each unit and the time of completion for the training period(80 hours x 3 units = 240 hours). It entails 12 months if trained for 5 days per week.

3) The 2 Poom and Dan holders must complete 80 hours of the time of completion for each unit and the time of completion of the training period(80 hours x 6 units = 480 hours). It entails 24 months if trained for 5 days per week.

4) The 3 Poom and Dan holders must complete 80 hours of the time of completion for each unit and the time of completion of the training period(80 hours x 9 units = 720 hours). It entails 36 months if trained for 5 days per week.

5) The 4 Poom and Dan holders must complete 80 hours of time of completion for each unit and the time of completion of the training period(80 hours x 12 units = 960 hours). It entails 48 months if trained for 5 days per week.

That is, for the Taekwondo curriculum, the trainees should not only comply with the period required after the promotion of Poom and Dan, but also should be required to complete the mandatory training time, thereby making it an even more effective approach toward achieving the educational goal of Taekwondo.

Hence, this study will contribute to the educational use of Taekwondo by the American Taekwondo instructors by presenting the standard Taekwondo curriculum by analyzing the American Taekwondo curriculum.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Author	SC	-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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Poomsae Players' Perception and Improvement of TAEKWONDO Freestyle Poomsae Competition

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Abstract

Purpose: The purpose of this study is to find out the perception of the Poomsae competition among the athletes participating in the Free style Poomsae competition and explore future-oriented improvement measures based on this.

Method: Accordingly examine the researchers collected data from the subjects through in-depth interviews, which is a qualitative research method, to achieve the purpose of the research. This led to a comprehensive conclusion.

Results: First, the players said that the Free style Poomsae competition was important for the colorful and difficult acrobatic and technical kicks, which are different from the existing Poomsae. Secondly, the poor scoring of kicks required by the current the Free style Poomsae scoring system is causing difficulties for many players, as they are judged by the judge's subjective judgment on the field. Third, unlike authorized Poomsae because the frame is not set, the Free style Poomsae perform various techniques within the time limit. Fourth, he mentioned that the current international sports Poomsae competition has different directions, and that athletes are practicing skills with a lot of emphasis on acrobatic rather than preparing for two things. Fifth, for the revitalization of the freestyle Poomsae, the competition was the biggest.

Conclusion: By lowering the barriers of scoring technology, the participation rate should be increased by creating the Free style Poomsae stadium culture where players of all ages can easily participate. If you can produce and participate in the competition by utilizing the spirit and traditional movements of Taekwondo, not by kicking, acrobatic, or gymnastic skills, it will greatly affect the participation rate of Poomsae competition.

[Keywords] Taekwondo, Free Style Poomsae, Perception, Improvement, Poomsae Players

1. Introduction

Taekwondo is Korean traditional martial art that has developed into a unique form by breathing together in Korean history and is a Korean cultural heritage that is recognized for its value and excellence as it is spread around the world at a speed incomparable to other martial arts[1]. The name of Poomsae was revised from "Poomse" to "Poomsae" after consultation with the Korean Language Society at the Technical Council of the Kukkiwon on February 22, 1987[2]. In addition, Poomsae is a comprehensive combination of Taekwondo attack and defense techniques within a limited range. It is also designed to effectively and reasonably block the corresponding technique along the Poomsae line when attacked by a virtual enemy and to acquire the techniques to counterattack[3][4].

As Korea's leading brand with more than 80 million trainees from 209 countries around the world and a representative martial arts sport, the Ministry of Culture, Sports and Tourism adopted

Taekwondo as one of Korea's top three intangible cultural brands along with Hangeul and Arirang on February 13, 2014[5]. Amid this interest, it was adopted as an official event for the 2000 Sydney Olympics, and Taekwondo sparring event is also held at the 2018 Jakarta Palembang Asian Games and the 2020 Tokyo Olympics, drawing attention from not only Korea but also from all over the world.

Poomsae events were also quickly played by attracting various competitions based on the approval of domestic and foreign sports organizations and institutions, as well as the great interest in competing events. Starting with the first World Taekwondo Poomsae Championship in 2006, it began to be adopted as an official event at the Summer Universiade and the Asian Championships. Due to the interest and participation of people around the world, it has achieved the feat of being adopted as an official event at the 2018 Jakarta Palembang Asian Games. Furthermore, each organization and institution are actively moving to have Poomsae as an event at the Olympic Games.

As making Poomsae an event progressed rapidly, it attracted various world competitions, but the monotony and boredom of the repetitive movements of the official Poomsae were pointed out as problems. As an alternative, they first introduced and demonstrated creative Poomsae at the 1992 World Taekwondo Hanmadang Competition, but gradually disappeared from the actual competition due to the difficulty of the evaluation criteria and various problems. In addition, although it is currently specified in the competition rules, it is difficult to find creative Poomsae except for a few competitions, including the World Taekwondo Hanmadang. In addition, the Kukkiwon, the World Taekwondo Federation, and the Korea Taekwondo Association demonstrated several times while jointly developing "Bigak" and "Hallyu," which are Poomsae for competitions, to promote creative Poomsae, but failed to popularize them among Taekwondo population[5].

The World Taekwondo Federation adopted freestyle Poomsae as a demonstration event at the 6th Vladivostok World Taekwondo Poomsae Championship and then adopted it as an official event at the 7th World Taekwondo Poomsae Championship in Tunja, Colombia in December 2012. The World Taekwondo Federation did not let Korean national team players participate in the competitions to give athletes from other countries a chance to win. However, in order to prepare for big competitions such as the Asian Games, they participated in the freestyle Poomsae category of the 2018 Taipei World Taekwondo Poomsae Championships, and South Korea raised its status as a Taekwondo leader as a Korean player was selected as the best player of the event.

Unlike official Poomsae and new Poomsae, the freestyle Poomsae is not a Poomsae that is repeatedly performed according to a frame with a fixed number of movements along the fixed performance line, but is a performance that allows the performer to show freestyle expressions such as various kicks and acrobatic techniques using freestyle movements and jumps to music. When looking at the competitions, the players show many skills with high difficulty and a different atmosphere from the official Poomsae competition. South Korean players have consistently continued to take the top spot in freestyle Poomsae competitions as well as official Poomsae events, as they have experienced world competitions such as the Asian Games, Universiade, and Asian Championships.

However, in recent years, when freestyle Poomsae has been played as an event like official Poomsae, the skills of the players have quickly leveled. In addition, the freestyle Poomsae competitions are focused on technique-oriented fancy kicks and acrobatic movements rather than orthodox Taekwondo movements as it is expressed in freestyle movements except for a few essential movements, not designated movements like official Poomsae. According to the 2020 Korea Taekwondo Association's freestyle Poomsae scoring table, it is distributed with 6.0 points for techniques and 4.0 for performance. In the case of technique, 1.0 point is given to each element of kicks performed according to the difficulty of kicks and practicality, including jump side kicks, jump front kicks, rotating kicks, consecutive kicks, acrobatic movements, and basic movements. Scoring is being conducted mainly on kicks for Taekwondo demonstration, not kicks used in existing official Poomsae competitions. In addition, even for Poomsae competitions, the players are not supplementing the basic movements of Taekwondo, but are focusing more on acrobatics, gymnastics, and demonstration kick elements. As a result, the Taekwondo demonstration team members are showing superior skills than the Poomsae team members in Poomsae competitions[6].

As Taekwondo Poomsae is played in competitions, research on the development of the Poomsae competition continues, but research based on Poomsae players' view of the freestyle Poomsae competitions is still insufficient. Therefore, this study aims to find out the players' perceptions of freestyle Poomsae and explore ways to develop the freestyle Poomsae competition. So, the purpose of the research is to provide basic data for the revitalization of the freestyle Poomsae competitions through in-depth research on them.

2. Research Method

In order to achieve the purpose of this study, a literature review was conducted on prior studies related to the Taekwondo official Poomsae competitions and freestyle Poomsae. The researcher visited the research participants in person and conducted an in-depth interview with a semi-structured interview method. Within the last three years, the views of the players who won a number of Taekwondo official Poomsae and freestyle Poomsae competitions were used. The collected data were processed through investigator triangulation method of qualitative research approach to find out the current Poomsae competition and to explore better Poomsae competition development alternatives.

Accordingly, the research subjects and research tools are as follows.

2.1. Research participants

As for the study subject selection method, one of the non-probability sampling methods used in qualitative case studies, the purposeful sampling method was implemented. The purposeful sampling method is a method of sampling subjects who can represent characteristics suitable for research theme and obtaining in-depth information from research participants who are judged to be suited to the research purpose[7].

Based on this, the study plans to select athletes from college and adult division who have won national-scale official Poomsae and freestyle Poomsae competitions approved by the Korea Taekwondo Association[8].

The reason why college and adult players were selected as research subjects was that they were judged to be representative factors in the direction of improving the problems that the players directly feel in the competitions. The characteristics of the study subjects are shown in <Table 1>.

Table 1. Team competition, doubles competition(Korea taekwondo association, 2020).

Division	Qualification
Elementary school(low)	Taegeuk 3·4·5·6·7·8, Koyro
Elementary school(middle)	Taegeuk 4·5·6·7·8, Koyro, Keumgang
Elementary school(high)	Taegeuk 5·6·7·8, Koyro, Keumgang, Taebaek
Middle school	Taegeuk 5·6·7·8, Koyro, Keumgang, Taebaek, Pyongwon
High school	Taegeuk 6·7·8, Koyro, Keumgang, Taebaek, Pyongwon, Sipjin
College	Taegeuk 7·8, Koyro, Keumgang, Taebaek, Pyongwon, Sipjin, Jitae
Adult	Taegeuk 7·8, Koyro, Keumgang, Taebaek, Pyongwon, Sipjin, Jitae
Older adult	Koyro, Keumgang, Taebaek, Pyongwon, Sipjin, Jitae, Chonkwon

2.2. Measuring tool

In order to find out the perception of Poomsae players about the Taekwondo freestyle Poomsae competitions, it is planned to conduct an in-depth interview, which is a representative method of qualitative research, with seven participants selected. The questions are shown in <Table 2>.

Table 2. Evaluation item classification and scoring table(Korea taekwondo association, 2020).

Point	Item	Qualification	Point
4.0	Accuracy	Basic movements	4.0
		Detailed movements for each Poomsae	
		Balance	
6.0	Expression	Speed, strength	2.0
		Coordination(forcefulness and gentleness, force control, rhythm)	2.0
		Expression of energy	2.0

2.3. Data processing

The data collected through the study participants were processed with an expert meeting with an advisor and Taekwondo Poomsae expert to secure the reliability and validity of the study results. In addition, in order to increase the validity of the research results, the triangular verification method, a sub-verification step of qualitative research, was used, and conclusions were drawn through this.

3. Results and Discussions

In order to achieve the purpose of this study, athletes who have won both official Poomsae and freestyle Poomsae competitions were selected as subjects of the study, and an in-depth interview method, one of the qualitative research methods, was conducted to the study participants.

The purpose of this study is to find out the perception of Poomsae athletes about the Taekwondo freestyle Poomsae Competitions and further provide a plan for the development of Poomsae competitions.

3.1. The players' perception of the freestyle Poomsae competitions

The Taekwondo Poomsae competitions are currently divided into freestyle Poomsae competitions and an official Poomsae competition, and is one of the rapidly growing Taekwondo events as it has been adopted in many international competitions.

"In the past, when many people heard the word Taekwondo, what they thought was mostly sparring. However, I think it is good that Poomsae can appeal the diversity of Taekwondo to the public as it is widely known on social media after implementing freestyle Poomsae. However, I think we can lose the essence of Taekwondo if focused too much on fancy skills. If so many players are obsessed with techniques themselves, they will easily be injured and can neglect basic movements. In addition, just as sparring has lost the practicality of Taekwondo due to the introduction of electronic equipment and gears, I think freestyle poomsae is just a fascinating skill for the general public but has no effect as a practical martial art. And I think it is difficult to get everyone's understanding because it is not easy for various age groups to perform freestyle Poomsae properly." <GGG>

The athletes who participated in this study said that in the freestyle Poomsae event of the Poomsae competitions, unlike with the official Poomsae, they showed fancy and stylish skills with music without restrictions on movement. However, in the case of the accuracy of Taekwondo's basic movements as a Poomsae player, rather than practicing the proficiency and expressiveness of Poomsae obtained through training, it focuses on gymnastics, acrobatic movements, and technical kicks. It is said that high-level techniques focused on technical kicks and acrobatics rather than basic movements of

Taekwondo are needed to get good scores, and the freestyle Poomsae currently in effect is far from the traditional concept of Taekwondo Poomsae.

3.2. Players' perception of scoring freestyle Poomsae performance

Recently, many players have been participating in freestyle Poomsae competitions. However, over a long period of time, the Poomsae competition continues to cause many problems due to the judge's subjective judgment and competition rules. Therefore, problems with evaluation standards and ambiguous competition rules that are changing little by little every year should be resolved and clear regulations should be made[7][8].

"Like the official Poomsae, the criteria for scoring freestyle Poomsae are the difficulty of kicks, accuracy, completeness of Poomsae, creativity, and performance, and expression of energy. However, the scoring criteria are not completely clear compared to official Poomsae. Since it is freestyle, it is difficult to judge in what way the player made a mistake. The reference point is also set among the judges, but the score varies depending on the perspective they see, and I think this is the ambiguous part." <EEE>

"Even when performing the existing competition time of 60-70 seconds, it took more time than expected for one person to recover from using all of his/her energy after performing all of the Taekwondo moves, kicks, and acrobatic moves. However, if the time is increased to 90 to 100 seconds, the player's physical strength and concentration will be further reduced, and more injuries will occur when performing the acrobatic movements that must come out at the end. And I think if too much time increases, it will be boring to spectate." <BBB>

Participants in the study are negatively responding to the scoring method required for the freestyle Poomsae competition guidelines, and emphasize that athletes who express their skills with more accurate performance should receive higher scores than those with inaccurate expressions due to high difficulty.

3.3. Perception of changing competition rules

In freestyle Poomsae, the player shows various techniques in the limited time.

"I think the specific rules of the competition are the most urgent issue. I think we should introduce an additional point system, not point deduction system. And I hope that the system will be changed to a total of seven judges, three technical judges, two video judges, and two judges who score artistic quality of the performance. And the reason why we need to introduce an additional point system, not a point deduction system, is that judges just tend to look for mistakes." <GGG>

"From 2020, the time for freestyle Poomsae has increased by 30 seconds from 90 to 100 seconds. I don't think there's a good result in freestyle Poomsae just because the time increased 30 seconds more. Even when it was 60-70 seconds, the players consumed a lot of physical strength and suffered frequent mistakes and injuries. It depends on how players use it, but I think it can get boring because they will spend a lot of time doing hand movements due to increased energy consumption." <CCC>

"Previously, freestyle Poomsae was finished by performing skills and moves a few times rather than basic Taekwondo movements, so I think it's okay because they should incorporate more Taekwondo movements. And I think we should prevent boredom by adding Taekwondo's basic movements, which are more important than the proportion of fancy techniques, as we can utilize a lot of isometric movements and techniques just because we have increased time. Also, it needs to be a freestyle Poomsae, not a freestyle technique competition." <DDD>

Participants in the study say they need more detailed and clear rules for Taekwondo freestyle Poomsae competitions. They emphasized that point deductions are needed for the accuracy and ambiguous movements of hand gestures and stance rather than techniques performed.

3.4. The problem with the preparation process of freestyle Poomsae competitions

Participants in the study said that since official Poomsae and freestyle Poomsae are competitions with different directions, for freestyle Poomsae, they are practicing their skills with a lot of focus on acrobatics rather than preparing the two in detail. The reason for this is believed to be that the technical kicks account for a very high proportion of the technical score[9][10][11].

"Since there is a lot of lack of freestyle Poomsae skills, I mainly focus on practicing skills. As you practice techniques, you lack the skill of the official Poomsae, so you always practice the official Poomsae first during exercise time and then pay attention to preventing injury. I think it is difficult to do both because the muscles and joints used in official Poomsae and freestyle Poomsae are different. When preparing high-level techniques for freestyle Poomsae, you often experience many regrets of giving up the official Poomsae. And I think there's the risk of injury is a big issue too." <GGG>

Participants in the study said that since official Poomsae and freestyle Poomsae are competitions with different directions, for freestyle Poomsae, they are practicing their skills with a lot of focus on acrobatics rather than preparing the two in detail. The reason for this is believed to be that the technical kick part occupies a fairly high proportion of the technical score[8][12]. Although it is a competition to select the national team of Poomsae, the players feel the risk of injuries caused by acrobatic moves and difficulties in high-level techniques.

In addition, as difficult techniques require a lot of physical strength, the risk of injury is increasing and there are many physical and mental difficulties.

3.5. Competition factors

Recently, Poomsae competitions have helped promote Taekwondo a lot. With the adoption of Taekwondo Poomsae events at the World Championships, Universiade, and Asian Games, freestyle Poomsae has attracted a lot of attention from Taekwondo players around the world as well as domestic Taekwondo players. In order to be adopted as an official Olympic event following the Asian Games, a lot of effort must be made in the competition, and continuous attention from Taekwondo organizations is needed[13][14].

"I think freestyle Poomsae is to express yourself with Taekwondo. Free Poomsae has been getting a lot of attention now, but I think accurate deduction points, accurate competition rules, training of judges, and improvements on ambiguous technical expressions should be marked in order to make it more active. Also, rather than demonstrating with too high level of techniques, I think it's better to lower the difficulty a little so that players of all ages can participate."<DDD>

"It is better to score only with high expression and what level of difficulty the skills have been set where they will enter, rather than unconditionally getting good scores by doing a lot of skills in the freestyle Poomsae competition. Also, it would be nice to score how accurately you used the movement and expressed it well in other movements other than that part."<FFF>

"I think the specific rules of the competition are the most urgent issue. I think we should introduce an additional point system, not point deduction system. And I hope that the system will be changed to a total of seven judges, three technical judges, two video judges, and two judges who score artistic quality of the performance. And the reason why we need to introduce an additional point system, not a point deduction system, is that judges just tend to look for mistakes."<GGG>

Participants in the study say they need more detailed and clear rules of the Taekwondo freestyle Poomsae competitions. They emphasized that point deductions are needed for the accuracy and ambiguous movements of hand gestures and stance rather than the current techniques.

They also said that for freestyle Poomsae players can practice skills safely if they are given space to practice because they use all the skills using the whole area. In addition, freestyle Poomsae currently uses high-level techniques, making it difficult for players to participate in competitions. They said that

lowering the barriers to scoring techniques could allow players of various ages to practice freestyle Poomsae[15][16][17].

4. Conclusion and Suggestions

The purpose of this study is to find out the perception on Poomsae competitions held by the players participating in freestyle Poomsae competitions and to explore future-oriented improvement measures based on this. Accordingly, in order to achieve the research purpose, the researcher collected data from the study subjects through in-depth interviews, a qualitative research method. Through this, a comprehensive conclusion was drawn as follows[18].

First, the players said that in freestyle Poomsae competitions fancy kicks and acrobatic moves are important different from existing official Poomsae. This is because high-level techniques must be performed to receive higher scores than the accuracy, proficiency, expression, discipline, and flow of basic movements of Taekwondo Poomsae.

Currently, the reality is that technique-oriented competitions are underway. In addition, the players participating in the competition are also using their hand skills and various movements without even knowing the exact name. If you deduct points for skills that cannot be considered Taekwondo skills and add essential movements as stipulated in the competition rules, the freestyle Poomsae competition will play a big role in the development of the competition without losing its unique appearance[19].

Second, many players are showing difficulties due to the inaccurate allocation of kicks required for the freestyle Poomsae scoring method, as it is evaluated by the judge's subjective judgment on the field. They pointed out that it is necessary to establish clear scoring standards that can be objectively judged by both players and spectators participating in the competition. Based on the exact height and expression of the rotating kick, the number of kicks that accurately folds the knee during aerial kicks, and the additional points for performing movements above the standard acrobatics technique, and there are limitations and improvements to consider introducing cameras and video[20].

Third, unlike official Poomsae, freestyle Poomsae does not have a fixed frame, so various techniques are performed within the limited time. Due to the increased competition time, players can express essential kicks and Taekwondo movements more leisurely and stylishly regardless of time. However, it is said that more practice as much as the increased time can cause physical problems, anxiety about injuries, and limitations in creating movements. It also stresses that the competition schedule can get boring[21][22][23].

Fourth, the official Poomsae and the freestyle Poomsae have different directions for the international comprehensive sports Poomsae competition currently in effect. So, the players mentioned that they are practicing skills with a lot of emphasis on acrobatics rather than preparing for both events. This is because kicks that use high difficulty account for a large portion of the score, and the risk of injury due to difficulties in high-level techniques are mentioned[24].

Fifth, the competition elements were highlighted the most in order to revitalize freestyle Poomsae. It requires a clear scoring method based on point deductions for ambiguous movements and essential hand moves. If that happens, the completeness of the performance will increase without losing the tradition of Poomsae by showing the discipline and flow of Taekwondo, not just requiring the techniques themselves[25].

By lowering the barriers to scoring techniques, the participation rate should be increased by creating a freestyle Poomsae culture where players of all ages can easily participate. If you can produce and participate in the Poomsae competition using the spirit and traditional movements of Taekwondo, not technical kicks, acrobatics, or gymnastics, it will have a great impact on the participation rate of the Poomsae competition[26][27].

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5.1. Journal articles

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Lead Author	KP	-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 Author*	JJ	-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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Status of the Implementation of Spectator's Type TAEKWONDO Operation for Enhanced Interest in Taekwondo Competition: With a Focus on the Analysis of Perception of the KTA Power Taekwondo Premium League

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Abstract

Purpose: The public's perception of the KTA Power Taekwondo Premium League is examined and understood by using the big data analysis techniques to identify status of spectators type Taekwondo

Method: text mining, sentimental analysis, and the semantic network analysis were performed to examine and understand the public's perception of the KTA Power Taekwondo League, which is undergoing promotion and operated to enhance the interest of Taekwondo games by using the big data analysis related techniques.

Results: First, the Korea Taekwondo Association, which is the supervising organization of the KTA Power Taekwondo League, demonstrated the largest frequency and was derived as a primary keyword. Second, as a result of the sentimental analysis performed, the positive ratio(63.37%) turned out to be higher than the negative ratio(36.63%). Third, as a result of the semantic network analysis performed, it was verified that the keywords of the Korea Taekwondo Association, game, holding, power, competition, method, and Protector and scoring system were located at the center of the network and formed a discourse. Firth, as a result of the CONCOR analysis performed, 'KTA Power Taekwondo demonstration,' 'competition holding 1,' 'competition holding 2,' and 'promotion of spectator type competition' were formed into groups. This suggests that the interest and demand for the promotion and holding of the KTA Power

Conclusion: In this study, the public's perception of the KTA Power Taekwondo Premium League is examined by using the big data analysis techniques. That is sought to provide the basic data on how to improve the Taekwondo competition method to increase the interest in Taekwondo.

[Keywords] Big Data, Text Mining, Sentiment Analysis, CONCOR Analysis, Taekwondo

1. Introduction

Taekwondo is a Korean martial art and sport which has succeeded with its globalization. As of 2021, the number of the member countries of the World Taekwondo Federation reached 210[1] and it has been operated as an official game among the Summer Olympic Games, Asian Games, and the World University Games, among others. In particular, the adoption of Taekwondo as an official Olympic event beginning with the 2000 Sydney Summer Olympic Games has contributed largely to the globalization of Taekwondo, and it may be said that it is a leap taken forward demonstrating the potential for development as a sport[2]. As such, the successful competition of Taekwondo may be explained as a key factor in the development and facilitation of Taekwondo.

However, while Taekwondo has achieved excellent results and development via the successful competition, issues including fairness in the judgement of competitions has been raised,

and it was in danger of being expelled from among the official Olympic event. To address this issue, the World Taekwondo Federation improved the transparency of judgement by introducing an electronic protective gear system and video reading.

However, despite such efforts, the problems regarding the interest of the game have constantly been raised. According to the electronic protective gear system, the players were merely focused on the game techniques and strategy for making contacts with the sensor to score points, and the criticism that the original technique of Taekwondo has deformed has continued.

Therefore, the Korea Taekwondo Association(KTA) launched the KTA Power Taekwondo Premium League in 2019 in order to exclude the electronic protective gear related techniques and instead restore the power oriented Taekwondo games. The KTA Power Taekwondo Premium League, supported by the Korean Ministry of Culture, Sports and Tourism, was planned to form an interesting Taekwondo, that is, a spectator type Taekwondo game, and integrated the method of destroying the opponent's gauge with the power generated from applying accurate techniques[3]. Through such gaming method, head and trunk attacks were actively and diversely carried out, and it has been evaluated that a considerable progress has been made in the existing monotonous game operation, which was mainly operated by using soles to score points on the body part[4].

The KTA Power Taekwondo League was launched in 2019 and has been in operation until 2021. This League is grabbing the attention and focus of the media and press and the public as an alternative which can help enhance the interest in the Taekwondo games through the power oriented techniques. At which point, understanding and diagnosing the public's perception of the KTA Power Taekwondo League is determined to be the basic data needed to devise a development plan for making the transition towards the interesting Taekwondo game. Hence, in this study, the perception of 2KTA Power Taekwondo Premium League is sought to be analyzed.

Big data means the size of the data which exceed the capacity of existing databases to collect, store, manage, and analyze the data[5]. The trend analysis of the times can be performed through the big data analysis, and based on which, it is possible to cope with social changes [6]. Furthermore, the new latent variables may be derived and future predictions are possible, and it is an appropriate analysis method for understanding and examining the various social phenomena[7][8][9]. Hence, the various fields for research by using the big data have been conducted[10][11][12][13][14][15][16][17][18][19]. In addition, numerous studies using the big data analysis techniques have been conducted for the fields of sports[20][21][22][23][24][25] as well as Taekwondo[26][27][28][29][30][31]. Such studies have derived the new latent variables by analyzing unstructured data, which were difficult to formulate in the past [8], and the basic data needed for the relevant matters were presented thereby.

Hence, in this study, the public's perception of the KTA Power Taekwondo Premium League is examined and understood by using the big data analysis techniques. Based on which, it is sought to provide the basic data on how to improve the Taekwondo gaming method to increase the interest in Taekwondo.

2. Research Method

2.1. Research subjects

This study analyzed the blogs, news, cafes, and Jishikin provided by Naver and Daum, the representative portal sites of Korea. The keyword for the data collection was selected to be "KTA Power Taekwondo," and the period of data collection ran from October 7, 2019, when the KTA Power Taekwondo League was launched and public notices were begun to be made, until September 30, 2021, the point of progress of the current study. The analytical data information is as illustrated in <Table 1>.

Table 1. Analytical data information.

Classification	Details
Scope of collection	Naver(blog, news, cafe, and jishikin) Daum(blog, cafe, and news)
Period of collection	10/07/2019-09/30/2021
Tool of collection	TEXTOM
Search word	KTA power taekwondo
Analytical tool	Ucinet 6.0, NetDraw

2.2. Tool of measurement

2.2.1. Text mining

Text mining is a technique with which one uses the natural language processing technology to derive the useful words from the collected unstructured texts, and discover their frequency, etc., and find meanings in the overall context[32]. In this study, stop words were removed and refined from the collected data. Furthermore, 50 high frequency words were selected, and the word Cloud was visualized.

2.2.2. Sentimentality analysis

The sentimentality analysis means the technology which transforms vocabularies into objective data by analyzing the vocabularies distributed in the text by using an advance manufactured sentimental vocabulary dictionary, and by identifying and quantifying the emotions, attitudes, and opinions expressed in the text[33]. In this study, the sentimental analysis was performed to examine the opinions such as positive and negative about the KTA Power Taekwondo League and related sentimental keywords.

2.2.3. Semantic network analysis

The semantic network analysis is a method which applies the social network analysis stressing on the relationship between the actors when understanding the structure of a social system to the communication messages[34] and the frequency and importance of keywords are visualized as a spatial structure via a network methodology to understand the meaning of the entire text. That is, the frequency and importance of keywords are visualized as the spatial structure via a network methodology to examine and understand the overall meaning of the text (references). In this study, the connection structure between the related words extracted from the keyword of 'KTA Power Taekwondo' was examined and understood.

2.2.4. Convergence of iterated correlations(CONCOR) analysis

The CONCOR analysis is a method used to classify the groups of similarity at an appropriate level by repeatedly performing the correlation analysis[35]. In this study, the CONCOR analysis was performed to visually derive and cluster the connections within the network.

2.3. Data processing

For the data collection and analysis of this study, the data were collected and refined via Textom, a big data analysis solution, and the keyword frequency, centrality of connection ex-

tent, and and sentimental analysis were performed. Furthermore, Ucinet6 and Netdraw were used to visualize the connection structure between the keywords.

3. Research Results

3.1. Results of the data collection

During the entire survey period, a total of 1,753 documents were collected with the keywords of KTA Power Taekwondo. The results of data collection are as illustrated in <Table 2>.

Table 2. Results of the data collection.

Classification	Section	Quantity of collection(cases)
Naver	Web document	1,500
	Blog	28
	News	42
	Cafe	10
	Jishikin	1
Daum	Web document	94
	Blog	42
	New	32
	Cafe	4
Total		1,753

3.2. Results of the analysis of keyword frequency

The frequency analysis is basically used among the big data analysis methods, and the extent of interest in the relevant subject matter is analyzed via the total amount of document expression for each channel including the keyword of interest[36]. As a result of the keyword frequency analysis performed, Korea Taekwondo Association(KTA) (180), game(153), holding(143), demonstration(102), competition(80), Chuncheon(78), season(66), method(64), and athlete(55), etc., were turned out in their respective order. The results of the frequency analysis and word cloud visualization analysis are as illustrated in <Table 3> and <Figure 1>.

Table 3. Results of the frequency analysis.

Rank	Word	Frequency	Rank	Word	Frequency
1	KTA	180	26	Fun	22
2	Game	153	27	Sports	22
3	Hold	143	28	Individual match	21
4	Demonstration	102	29	Team match	21
5	Competition	80	30	Changshin Choi	20
6	Chuncheon	78	31	Holding	19

3.3. Results of the connection extent centrality analysis

The centrality of the connection extent indicates the extent to which the keywords in the network are directly connected, and the more the keywords are connected, the higher the centrality, and it is also determined to be an important [37]. As a result of the centrality analysis of the extent of connection, the Korea Taekwondo Association, game, holding, competition, demonstration, game, Taekwondo center, method, athlete, and Chuncheon turned out in their respective order. <Table 4> illustrates the results of analysis of the extent of centrality of the KTA Power Taekwondo keywords.

Table 4. Results of the centrality analysis of the extent of connection.

Rank	Word	Frequency	Rank	Word	Frequency
1	KTA	0.0594	26	Broadcast	0.0069
2	Game	0.0437	27	Technology	0.0065
3	Holding	0.0423	28	Team match	0.0065
4	Competition	0.0291	29	Approval	0.0065
5	Demonstration	0.0266	30	Male	0.0065
6	Game	0.0222	31	Event	0.0065
7	Taekwondo center	0.0186	32	Watch	0.0065
8	Method	0.0178	33	Individual match	0.0062
8	Athlete	0.0167	34	Jinbang Yang	0.0062
10	Chuncheon	0.0160	35	Supplement	0.0058
11	Seoul	0.0145	36	Korea	0.0058
12	Season	0.0134	37	Taekwondowon	0.0058
13	Sports	0.0120	38	Gauge	0.0058
14	Video	0.0094	39	Referee	0.0058
15	Olympic	0.0091	40	Operation	0.0058
16	Qualifiers	0.0083	41	Game mode	0.0058
17	Protector & scoring system	0.0080	42	Changshin Choi	0.0058
18	Kukkiwon	0.0076	43	World taekwondo	0.0054
19	Interest	0.0076	44	Iron fist	0.0054
20	Support	0.0076	45	Public	0.0054
21	Fun	0.0072	46	Training	0.0054

22	Championship	0.0072	47	Brand	0.0054
23	Power	0.0069	48	Attraction	0.0051
24	Performance	0.0069	49	Score	0.0051
25	Hyunseung Kim	0.0069	50	Success	0.0051

3.4. Results of the sentimental analysis

The sentimental analysis is intended to analyze the vocabularies distributed in the text using an advance manufactured sentimental vocabulary related dictionary to determine the attitude or opinion expressed in the text[36]. As a result of the sentimental analysis performed for the KTA Power Taekwondo, the positive ratio(63.37%) turned out to be higher than the negative ratio(36.63%). As for the positive keywords, fond(100), interest(83), and joy(20) turned out in their respective order. As for the negative keywords, such keywords as repulsion(36), fear(19), and sadness(20), etc., were derived. The results of the sentimental analysis are as illustrated in <Table 5> and <Table 6>.

Table 5. Analytical results of the sentimental frequency and ratio.

Classification	Frequency	Ratio
Positive	203	63.37%
Negative	114	36.63%

Table 6. Analytical results of the detailed sentimental keywords.

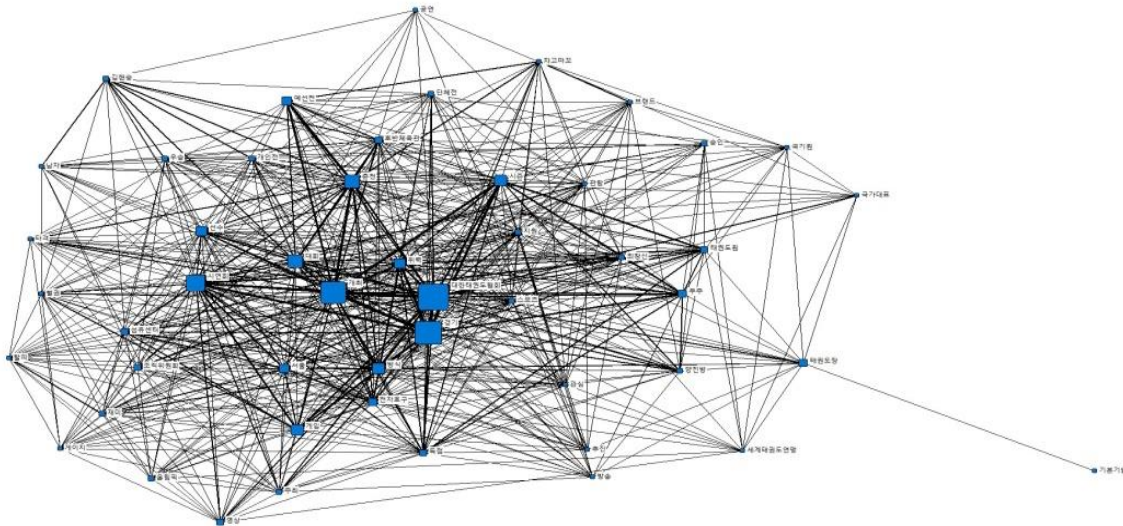
Classification	Frequency
Interest	83
Fond	100
Joy	20
Surprise	29
Repulsion	36
Rage	19
Sadness	20
Pain	6
Fear	4
Total	317

3.5. Results of the semantic network analysis

The semantic network analysis was conducted to examine and understand the structure of connections between the high frequency words derived via text mining. It turned out that the larger the size of the node in the network, the greater the frequency of occurrence of the corresponding word. As a result of the network visualization analysis of the KTA Power Taekwondo keywords, it may be verified that the keywords of the Korea Taekwondo Association, game, holding, power, competition, method, and electronic protection are located at the

center of the network and that they form a discourse. The results of the semantic network analysis are as illustrated on <Figure 2>.

Figure 2. Results of the semantic network analysis.

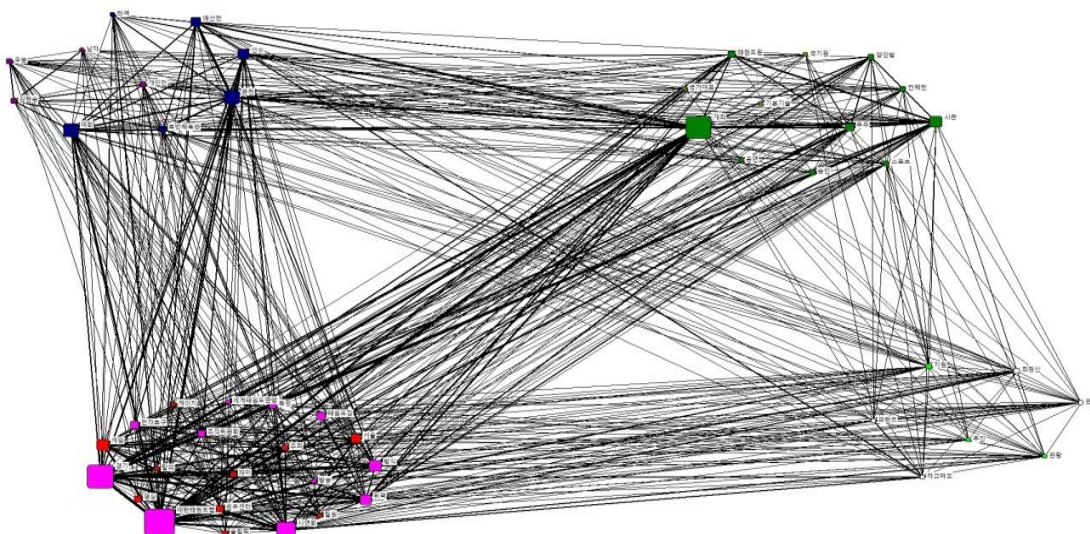


3.6. Results of the CONCOR analysis

The CONCOR analysis was performed to derive similar clusters between the keywords.

First, such keywords as the Korea Taekwondo Association, match, demonstration, holding, and game, etc., were formed into groups, and this group was named as the 'KTA Power Taekwondo Demonstration.' Second, such words as competition, athlete, preliminary round, strike, and championship, etc., were formed into groups, and this was named as 'contest holding 1.' Third, such keywords as holding, season, approval, sports, and performance, etc., were formed into groups, and this group was named as 'contest holding 2.' Fourth, such keywords as support, brand, promotion, view, and interest, etc., were formed into groups, and this was named as the 'promotion of spectator type competition.' The results of the CONCOR analysis are as illustrated in <Figure 3>.

Figure 3. Results of the CONCOR analysis.



4. Conclusions and Recommendations

In this study, text mining, sentimental analysis, and the semantic network analysis were performed to examine and understand the public's perception of the KTA Power Taekwondo League, which is undergoing promotion and operated to enhance the interest of Taekwondo games by using the big data analysis related techniques. The main conclusions reached from this study are as follows.

First, as a result of the keyword frequency analysis performed, the Korea Taekwondo Association, which is the supervising organization of the KTA Fire Taekwondo League, demonstrated the largest frequency and was derived as a primary keyword. Furthermore, the keywords related to the holding of and the operation of competitions, such as game, holding, demonstration, competition, and season, demonstrated a large frequency.

Second, as a result of the analysis of the centrality of extent of connection performed, such keywords as the Korea Taekwondo Association, game, holding, competition, and demonstration, etc., demonstrated a high centrality and also demonstrated the results similar to those of the frequency analysis.

Third, as a result of the sentimental analysis performed, the positive ratio(63.37%) turned out to be higher than the negative ratio(36.63%), and the positive keywords were derived such as like, interest, and joy. Based on such results, it was possible to verify the overall positive perception of the KTA Power Taekwondo League, and learn about the expectations of and demand for the related game method.

Fourth, as a result of the semantic network analysis performed, it was verified that the keywords of the Korea Taekwondo Association, game, holding, power, competition, method, and electronic protective gear were located at the center of the network and formed a discourse.

Fifth, as a result of the CONCOR analysis performed, 'KTA Power Taekwondo demonstration,' 'competition holding 1,' 'competition holding 2,' and 'promotion of spectator type competition' were formed into groups. This suggests that the interest and demand for the promotion and holding of the KTA Power Taekwondo League, which is currently undergoing promotion and operated to enhance the interest of the Taekwondo competition.

This study has examined the perception of the KTA Power Taekwondo League via the big data analysis related techniques, yet failed to present issues and development plans. Hence, in the follow-up studies, it would be necessary to conduct those which present specific development plans to enhance the interest of the Taekwondo game via a research method which includes the interviews with a target group consisted of the sports experts and the social welfare experts.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Lead Author	HO	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
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Analysis of the Use of Defense Techniques of Korean JUDO Athletes According to their Gender and Grade

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Abstract

Purpose: This study aims to prepare academic foundations and evidence for judo and explore changes in judo technique use according to middle school, high school, and college judo athletes' winning experience and experience of being selected as representative athletes.

Method: In order to achieve the purpose of this study, frequency analysis was conducted to identify the general characteristics of the study subjects, and Cronbach's α coefficient was calculated to obtain the reliability value of the survey. In addition, t-test and One Way ANOVA were conducted to find out the difference in defense techniques according to the player's gender and grade.

Results: As a result of the study, there was no difference in gender in judo defense techniques, and there was a significant difference in hand technique, hip technique, foot technique, and defense technique according to the player's grade.

Conclusion: As a result of this study, considering the difference in judo defense technique according to grade, hand technique and hip technique are evenly distributed in grade, and in the case of foot technique, the higher the grade, the difference in perception of defense technique appeared.

[Keywords] Judo, Defense Techniques, Age, Grade, Utilization Analysis

1. Introduction

Judo is a world-class sport and representative martial arts sport that utilizes various technological systems using our entire body[1]. Judo originated in the background of Eastern culture and has been practiced in the form of martial arts for hundreds of years. It was a traditional Korean martial art in terms of physical education, but as a modern sport, it was systematized by Kano Jigoro in Japan in 1882, and later changed to a form of modern sports[2][3].

It takes a lot of time and effort to fully utilize technique through judo training. For this reason, compared to other general sports, the general public has low accessibility and has professional characteristics[4]. In addition, Judo's technical system resembles the form of other martial arts, which overpowers the other person and protects oneself by using various body parts, such as hands, hip, and feet. However, it has a unique system that reverses the strength of the opponent and various factors such as height, weight, habit, and shape. In addition, as a representative elite sport, judo techniques and performance are measured in the form of competitions in the country, region, or even a stadium or studio[5][6][7].

Most of the research on judo focuses on performance-oriented college athletes and athletes participating in international sports events. In the case of research on middle and high school students who are actually introduced to judo, it is conducted as a study related to satisfaction according to the environment or training content of the judo studio and continuity of training

directly due to the operation of the studio. In addition, a number of studies are being conducted in practical and economic aspects centered on studio operation[8][9].

Research on judo techniques also aims to verify the effectiveness of the game by measuring the basic physical strength of the players, psychological state[10][11][12], defeat factors[13][14], and frequency of preferred techniques in the game[15][16][17]. In addition, various studies are being conducted to achieve the results of the game. Through this, efforts such as improving the techniques of athletes by life cycle and further developing and providing systematic training and appropriate educational programs are continuing[18][19][20][21]. Therefore, in order to provide basic data for the systematic development of judo, this study attempted to study the technique perception of defense technique among judo technic by gender and grade by exploring the changes in judo technique according to middle school, high school, and college judo players' experience of winning an event and being selected as representative player.

2. Methods

2.1. Research subjects and sampling method

In this study, 200 people were surveyed by convenience sampling with judo athletes from Daegu and Gyeongbuk province as a population. A survey was conducted using the self-administration method. Among the 200 collected questionnaires, 198 questionnaires were used as valid samples, excluding data whose responses were unfaithful or some of the survey contents were omitted.

Table 1. General characteristics of the subjects.

	Description	N(%)	Total
Gender	Male	119(60.1)	198
	Female	79(39.9)	
Grade	The first grade in middle school	18(9.1)	198
	The second grade in middle school	20(10.1)	
	The third grade in middle school	22(11.1)	
	The first grade in high school	17(8.6)	
	The second grade in high school	24(12.1)	
	The third grade in high school	22(11.1)	
	The first year in college	19(9.6)	
	The second year in college	13(6.6)	
	The third year in college	27(13.6)	
	The fourth year in college	16(8.1)	
Experience as judo athlete	2 years or less	52(26.3)	198
	3 years – 5 years or more	48(24.2)	
	6 years or more	98(49.5)	
Experience of winning a competition	Yes	148(74.7)	198
	No	50(25.3)	
Experience of being a representative player	Yes	118(59.6)	198
	No	80(40.4)	

The general characteristics of the study subjects were divided into five categories: gender, grade, athlete experience, award-winning experience, and representative player experience. In terms of gender, there were more men than women. In the grade, the number of respondents

was the highest in the order of college, high school, and middle school. It was followed by third grade in college, second grade in high school, third grade in middle school, second grade in middle school, first grade in college, first grade in middle school, first grade in high school, fourth grade in college, and second grade in college. In terms of player experience, more than six years were the most, followed by less than two years and more than three years and less than five years. 'Yes' accounted for most of the winning experience, and 'Yes' was more than 'No' for the experience of being selected as a representative player.

2.2. Measuring instrument

A questionnaire was used as a survey tool to achieve the purpose of this study. The method of composition of the questionnaire consisted of attack techniques(hand techniques, hip techniques, foot techniques) and defense techniques(hand techniques, hip techniques, and foot techniques) by drafting a survey based on judo rules, discussing them with judo coaches and players.

Table 2. The composition of the questionnaire.

	Defense technique
Hand technique	Ryote-seoinage-gaeshi
	Katate-seoinage-gaeshi
	Tai-otoshi-gaeshi
	Kata-guruma-gaeshi
	Yama-arashi-gaeshi
Hip technique	Harai-goshi-gaeshi
	Uki-goshi-gaeshi
	O-goshi-gaeshi
	Tsuri-komi-goshi-gaeshi
	Tsuri-goshi-gaeshi
Foot technique	Uchi-mata-gaeshi
	Okuri-ashi-barai-gaeshi
	Ko-uchi-gari-gaeshi
	O-soto-gari-gaeshi
	O-uchi-gari-gaeshi

In order to adopt a questionnaire suitable for the purpose of this study, the validity of the contents was secured through meetings and consultations with experts in the related research field.

Reliability is the degree to which an individual's score appears consistently when the same test or isomorphic test is repeated. Reliability is related to stability and consistency in establishing research methods. It is a question of whether the manipulated definition or indicator is consistently and reliably measured the object of measurement. Therefore, since it is one of the most important factors, this study verified the reliability based on the results of the questionnaire and obtained Cronbach's α coefficient of .930.

2.3. Data processing and analysis method

The data processing method of this study is as follows. After collecting the distributed questionnaire, data judged to be poor or unreliable in response were excluded from the study. After individually inputting analytical data into the computer, statistical verification was conducted as follows according to the purpose of the research hypothesis and data analysis with the statistical package program of SPSS 23.0.

First, frequency analysis was conducted to identify general characteristics using the SPSS/PC+23.0 program.

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

Third, a t-test was conducted to find out the difference between attack and defense techniques according to gender.

Fourth, One Way ANOVA was conducted to find out the difference between attack and defense techniques according to grade.

3. Result

3.1. Differences in defense technic according to age

Table 3. Result of differences in defense technic according to age.

Technique		Gender	Average (M)	Standard deviation	t-value	Sig
Hand technique	Ryote-seoinage-gaeshi	Male	3.0000	1.39612	-.129	.898
Hand technique	Ryote-seoinage-gaeshi	Female	3.0253	1.29074	-.129	.898
Hand technique	Katate-seoinage-gaeshi	Male	3.1765	1.79286	-.347	.729
Hand technique	Katate-seoinage-gaeshi	Female	3.2658	1.74465	-.347	.729
Hand technique	Tai-otoshi-gaeshi	Male	2.1597	1.46127	-.370	.712
Hand technique	Tai-otoshi-gaeshi	Female	2.2405	1.57069	-.370	.712
Hand technique	Kata-guruma-gaeshi	Male	1.7227	1.37732	-.180	.858
Hand technique	Kata-guruma-gaeshi	Female	1.7595	1.46073	-.180	.858
Hand technique	Yama-arashi-gaeshi	Male	1.6303	1.35837	-.076	.939
Hand technique	Yama-arashi-gaeshi	Female	1.6456	1.42359	-.076	.939
Hip technique	Harai-goshi-gaeshi	Male	1.6471	1.09381	-.390	.697
Hip technique	Harai-goshi-gaeshi	Female	1.7089	1.08783	-.390	.697
Hip technique	Uki-goshi-gaeshi	Male	1.5378	.77885	-1.701	.090
Hip technique	Uki-goshi-gaeshi	Female	1.7595	1.05265	-1.701	.090
Hip technique	O-goshi-gaeshi	Male	1.4034	.66790	.256	.798
Hip technique	O-goshi-gaeshi	Female	1.3797	.58406	.256	.798
Hip technique	Tsuri-komi-goshi-gaeshi	Male	1.4706	1.00695	.568	.571
Hip technique	Tsuri-komi-goshi-gaeshi	Female	1.3924	.85362	.568	.571

Hip technique	Tsuri-goshi-gaeshi	Male	1.2521	.72741	1.234	.219
Hip technique	Tsuri-goshi-gaeshi	Female	1.1392	.44532	1.234	.219
Foot technique	Uchi-mata-gaeshi	Male	2.2521	1.01027	.077	.938
Foot technique	Uchi-mata-gaeshi	Female	2.2405	1.06476	.077	.938
Foot technique	Okuri-ashi-barai-gaeshi	Male	1.3950	.88508	1.787	.076
Foot technique	Okuri-ashi-barai-gaeshi	Female	1.1899	.62174	1.787	.076
Foot technique	Ko-uchi-gari-gaeshi	Male	1.7731	1.10804	-.385	.701
Foot technique	Ko-uchi-gari-gaeshi	Female	1.8354	1.12581	-.385	.701
Foot technique	O-soto-gari-gaeshi	Male	1.3613	.84102	-.553	.581
Foot technique	O-soto-gari-gaeshi	Female	1.4304	.88699	-.553	.581
Foot technique	O-uchi-gari-gaeshi	Male	1.5966	1.09946	.678	.498
Foot technique	O-uchi-gari-gaeshi	Female	1.4937	.95908	.678	.498

<Table 3> shows the results of differences in defense techniques according to gender, and there were no statistically significant differences in all questions.

Looking at the mean(M) and standard deviation(SD) of hand technique, women showed higher defense technique than men in Ryote-seoinage-gaeshi, Katate-seoinage-gaeshi, Tai-otoshi-gaeshi, and Kata-guruma-gaeshi, and Yama-arashi-gaeshi.

Looking at the mean(M) and standard deviation(SD) of hip technique, women were found to be higher than men in Harai-goshi-gaeshi and Uki-goshi-gaeshi while men showed a higher use than women in O-goshi-gaeshi, Tsuru-komi-goshi-gaeshi, and Tsuru-goshi-gaeshi.

The mean(M) and standard deviation(SD) of foot technique showed that men were higher than women in Uchi-mata-gaeshi, Okuri-ashi-barai-gaeshi, and O-uchi-gari-gaeshi. In Ko-uchi-gari-gaeshi and O-soto-gari-gaeshi, women were found to be higher than men.

In Ryote-seoinage-gaeshi, first, second, third grade in high school and first to fourth year in college were higher in use than the first to third year of in middle school, and the third and fourth year at college showed higher than the first year in high school.

In Katate-seoinage-gaeshi, it was found that the first-third year in high school and the first to fourth-year college students were higher than the first to third-year middle school students. In addition, the first grade of high school was higher than the first to third grade of middle school. The 2nd and 3rd graders in high school and the 1st year in college were higher than the 1st graders in high school.

In Tai-otoshi-gaeshi, it was found that the first to fourth year of college were higher than the first to third year of middle school. The second to fourth year in college were higher than first graders in high school. The third and fourth year in college were higher than second graders in high school. The second and third year of college were higher than the third year of high school.

In Kata-guruma-gaeshi, the second and fourth year of college were higher than the first to third year of middle school and the first to third year of high school. The third year in college were higher than first to third grade in middle school, the first to third year in high school, and the first year in college.

In Yama-arashi-gaeshi, the second and third year of college were higher than the first to third

year in middle school and the first and second year of high school.

3.2. Differences in defense technic according to grade

3.2.1 Differences in defense technic of hand according to grade

Table 4. Result of differences in defense technic of hand according to grade.

		N	M	SD	F	sig	post hot
Ryote-seoinage-gaeshi	The first grade in middle school	18	1.5000	.78591	25.762	.000	D,E,F,G,H,I,J>A,B,C I,J>D
	The second grade in middle school	20	1.3500	.48936			
	The third grade in middle school	22	1.8182	1.05272			
	The first grade in high school	17	2.8824	1.11144			
	The second grade in high school	24	3.4167	.88055			
	The third grade in high school	22	3.5455	.59580			
	The first year in college	19	3.7895	.71328			
	The second year in college	13	3.8462	1.28103			
	The third year in college	27	3.9630	1.01835			
	The fourth year in college	16	4.0000	1.21106			
Katate-seoinage-gaeshi	The first grade in middle school	18	1.2778	.57451	25.446	.000	D,E,F,G,H,I,J>A,B,C E,F,G>D
	The second grade in middle school	20	1.1500	.36635			
	The third grade in middle school	22	1.5000	1.01183			
	The first grade in high school	17	2.9412	1.51948			
	The second grade in high school	24	4.2500	1.22474			
	The third grade in high school	22	4.5000	1.05785			
	The first year in college	19	4.2632	1.24017			
	The second year in college	13	3.7692	1.64083			
	The third year in college	27	4.1111	1.47631			
	The fourth year in college	16	4.0625	1.56924			
Tai-otoshi-gaeshi	The first grade in middle school	18	1.0556	.23570	10.791	.000	G,H,I,J>A,B,C H,I,J>D I,J>E H,I>F
	The second grade in middle school	20	1.1500	.36635			
	The third grade in middle school	22	1.3182	.94548			

	The first grade in high school	17	1.6471	1.32009			
	The second grade in high school	24	2.0833	1.31601			
	The third grade in high school	22	1.9545	1.21409			
	The first year in college	19	2.9474	1.50826			
	The second year in college	13	3.3846	1.55662			
	The third year in college	27	3.4074	1.47438			
	The fourth year in college	16	3.1250	1.74642			
Kata-guruma-gaeshi	The first grade in middle school	18	1.1111	.32338	12.216	.000	A,B,C,D,E,F<H,J A,B,C,D,E,F,G<I
	The second grade in middle school	20	1.1000	.30779			
	The third grade in middle school	22	1.0455	.21320			
	The first grade in high school	17	1.1176	.48507			
	The second grade in high school	24	1.1667	.56466			
	The third grade in high school	22	1.2727	.93513			
	The first year in college	19	1.7368	1.48482			
	The second year in college	13	2.8462	1.81871			
	The third year in college	27	3.2593	1.81007			
	The fourth year in college	16	2.8750	1.78419			
Yama-arashi-gaeshi	The first grade in middle school	18	1.0556	.23570	5.056	.000	A,B,C,D,E<H,I
	The second grade in middle school	20	1.0500	.22361			
	The third grade in middle school	22	1.1364	.46756			
	The first grade in high school	17	1.0000	.00000			
	The second grade in high school	24	1.3333	1.12932			
	The third grade in high school	22	1.7273	1.57908			
	The first year in college	19	1.6316	1.49854			
	The second year in college	13	2.7692	2.00640			
	The third year in college	27	2.5556	1.71718			
	The fourth year in college	16	2.2500	1.80739			

Note: A: The first grade in middle school, B: The second grade in middle school, C: The third grade in middle school, D: The first grade in high school, E: The second grade in high school, F: The third grade in high school, G: The first year in college, H: The second year in college, I: The third year in college, J: The fourth year in college.

<Table 4> is the result of differences in defensive hand techniques according to grades. Ryote-seoinage-gaeshi($F=25.762$, $\text{sig}=.000$), Katate-seoinage-gaeshi($F=25.446$, $\text{sig}=.000$), Tai-otoshi-gaeshi($F=10.791$, $\text{sig}=.000$), Kata-guruma-gaeshi($F=12.216$, $\text{sig}=.000$), and Yama-arashi-gaeshi($F=5.056$, $\text{sig}=.000$) all showed significant results.

In Ryote-seoinage-gaeshi, it was found that the first to third graders in high school and the first to fourth year of college were higher than the first to third graders of middle school. It was found that the third and fourth year in college were higher than the first year in high school.

In Katate-seoinage-gaeshi, it was found that first to third graders in high school and the first to fourth year in college were higher than the first to third graders in middle school. The first year of high school was higher than the first to third grade in middle school. The second and third year of high school and the first year of college were higher than the first year of high school.

In Tai-otoshi-gaeshi, it was found that the first to fourth year of college were higher than the first to third year of middle school. The second to fourth year in college were higher than first graders in high school. The third and fourth year in college were higher than second graders in high school. It was higher in the second and third year of college than in the third year of high school.

In Kata-guruma-gaeshi, the second and fourth year of college were higher than the first to third year of middle school and the first to third year of high school. The third year of college was higher than the first to third grade of middle school, the first to third grade of high school, and the first grade of college.

In Yama-arashi-gaeshi, the second and third year of college were higher than the first to third year of middle school and the first and second year of high school.

3.2.2. Differences in defense technic of hip according to grade

Table 5. Result of differences in defense technic of hip according to grade.

		N	M	SD	F	sig	post hot
Harai-goshi-gaeshi	The first grade in middle school	18	1.2222	.54832	5.594	.000	A,B,C,D,E,I>F G>C
	The second grade in middle school	20	1.3000	.73270			
	The third grade in middle school	22	1.1364	.35125			
	The first grade in high school	17	1.2353	.43724			
	The second grade in high school	24	1.4167	.88055			
	The third grade in high school	22	2.6818	1.72892			
	The first year in college	19	2.1579	1.21395			
	The second year in college	13	2.1538	1.28103			
	The third year in college	27	1.5926	.93064			
	The fourth year in college	16	2.0000	.96609			
Uki-goshi-gaeshi	The first grade in middle school	18	1.2222	.42779	2.095	.052	
	The second grade in middle school	20	1.3000	.47016			

	The third grade in middle school	22	1.3636	.49237			
	The first grade in high school	17	1.7647	.90342			
	The second grade in high school	24	1.5417	.72106			
	The third grade in high school	22	2.0455	1.52682			
	The first year in college	19	1.6316	1.01163			
	The second year in college	13	2.0769	1.11516			
	The third year in college	27	1.8148	.73574			
	The fourth year in college	16	1.5625	.89209			
O-goshi-gaeshi	The first grade in middle school	18	1.4444	1.04162	.958	.477	
	The second grade in middle school	20	1.2500	.55012			
	The third grade in middle school	22	1.3636	.58109			
	The first grade in high school	17	1.5882	.87026			
	The second grade in high school	24	1.5000	.65938			
	The third grade in high school	22	1.4091	.50324			
	The first year in college	19	1.2632	.45241			
	The second year in college	13	1.6923	.63043			
	The third year in college	27	1.2593	.44658			
	The fourth year in college	16	1.3125	.47871			
Tsuru-komi-goshi-gaeshi	The first grade in middle school	18	1.5000	.85749	1.954	.057	
	The second grade in middle school	20	1.6000	1.09545			
	The third grade in middle school	22	1.2727	.45584			
	The first grade in high school	17	1.7647	1.09141			
	The second grade in high school	24	1.4167	.71728			
	The third grade in high school	22	1.7727	1.47783			
	The first year in college	19	1.7895	1.43678			
	The second year in college	13	1.0000	.00000			
	The third year in college	27	1.1852	.55726			
	The fourth year in college	16	1.0000	.00000			

Tsurigoshi-gaeshi	The first grade in middle school	18	1.5000	1.04319	2.526	.009	D>I
	The second grade in middle school	20	1.3500	.98809			
	The third grade in middle school	22	1.2273	.42893			
	The first grade in high school	17	1.6471	1.11474			
	The second grade in high school	24	1.2500	.44233			
	The third grade in high school	22	1.0455	.21320			
	The first year in college	19	1.1053	.45883			
	The second year in college	13	1.0000	.00000			
	The third year in college	27	1.0000	.00000			
	The fourth year in college	16	1.0000	.00000			

Note: A: The first grade in middle school, B: The second grade in middle school, C: The third grade in middle school, D: The first grade in high school, E: The second grade in high school, F: The third grade in high school, G: The first year in college, H: The second year in college, I: The third year in college, J: The fourth year in college.

<Table 5> is the result of differences in defensive hip techniques according to grades. Harai-goshi-gaeshi($F=5.594$, $\text{sig}=.000$) and Tsurigoshi-gaeshi($F=2.526$, $\text{sig}=.009$) showed a significant difference.

In Harai-goshi-gaeshi, the third grade of high school was higher than that of the first to third grade of middle school and the first to third grade of high school. The first year of college was higher than the third year of middle school.

In Tsurigoshi-gaeshi, the first year of high school was higher than the third year of college.

3.2.3. Differences in defense technic of leg according to grade

Table 6. Result of differences in defense technic of leg according to grade.

		N	M	SD	F	sig	post hot
Uchi-mata-gaeshi	The first grade in middle school	18	1.6667	.48507	4.224	.000	F>A,I,J G>A,J
	The second grade in middle school	20	2.4000	.75394			
	The third grade in middle school	22	2.4545	.96250			
	The first grade in high school	17	2.0588	.96635			
	The second grade in high school	24	2.1667	.63702			
	The third grade in high school	22	2.9091	.97145			
	The first year in college	19	2.8421	1.25889			
	The second year in college	13	2.3846	1.19293			
	The third year in college	27	1.9259	1.10683			
	The fourth year in college	16	1.5625	1.09354			

Okuri-ashi-barai-gaeshi	The first grade in middle school	18	1.4444	.70479	3.040	.002	H>D,E,G
	The second grade in middle school	20	1.6500	.93330			
	The third grade in middle school	22	1.2727	.70250			
	The first grade in high school	17	1.0000	.00000			
	The second grade in high school	24	1.0000	.00000			
	The third grade in high school	22	1.1818	.66450			
	The first year in college	19	1.0526	.22942			
	The second year in college	13	2.0000	1.22474			
	The third year in college	27	1.5185	1.18874			
	The fourth year in college	16	1.1875	.75000			
Ko-uchi-gari-gaeshi	The first grade in middle school	18	1.3889	.69780	1.860	.060	
	The second grade in middle school	20	1.3000	.65695			
	The third grade in middle school	22	1.6364	.78954			
	The first grade in high school	17	2.0000	1.22474			
	The second grade in high school	24	1.6667	.96309			
	The third grade in high school	22	1.7273	.98473			
	The first year in college	19	2.1579	1.30227			
	The second year in college	13	1.6154	1.12090			
	The third year in college	27	2.2222	1.31071			
	The fourth year in college	16	2.1875	1.60078			
O-soto-gari-gaeshi	The first grade in middle school	18	1.1667	.38348	5.290	.000	I>A,B,C,D,E,F,G
	The second grade in middle school	20	1.2000	.41039			
	The third grade in middle school	22	1.0455	.21320			
	The first grade in high school	17	1.1176	.33211			
	The second grade in high school	24	1.0833	.28233			
	The third grade in high school	22	1.1818	.39477			
	The first year in college	19	1.4211	.96124			
	The second year in college	13	1.6154	.86972			
	The third year in college	27	2.1852	1.46857			
	The fourth year in college	16	1.8125	1.16726			

O-uchi-gari-gaeshi	The first grade in middle school	18	1.1111	.32338	10.481	.000	H>A,B,C,D,E I,J>A,B,C,D,E,F,G
	The second grade in middle school	20	1.1000	.30779			
	The third grade in middle school	22	1.0909	.29424			
	The first grade in high school	17	1.0000	.00000			
	The second grade in high school	24	1.1667	.63702			
	The third grade in high school	22	1.4545	1.10096			
	The first year in college	19	1.3684	1.01163			
	The second year in college	13	2.2308	1.36344			
	The third year in college	27	2.4815	1.28214			
	The fourth year in college	16	2.6875	1.13835			

Note: A: The first grade in middle school, B: The second grade in middle school, C: The third grade in middle school, D: The first grade in high school, E: The second grade in high school, F: The third grade in high school, G: The first year in college, H: The second year in college, I: The third year in college, J: The fourth year in college.

<Table 6> is the result of differences in defense foot techniques according to grade. Uchi-mata-gaeshi($F=4.224$, $\text{sig}=.000$), Okuri-ashi-barai-gaeshi($F=3.040$, $\text{sig}=.002$), O-soto-gari-gaeshi($F=5.290$, $\text{sig}=.000$), O-uchi-gari-gaeshi($F=10.481$, $\text{sig}=.000$) showed a significant difference. However, there was no statistically significant difference in Ko-uchi-gari-gaeshi.

In Uchi-mata-gaeshi, the second year of high school was higher than the first year of middle school and the third and fourth year of college. The first year of college was higher than the first year of middle school and the fourth year of college.

In Okuri-ashi-barai-gaeshi, the second year of college was higher than the first and second year of high school and the first year of college.

In O-soto-gari-gaeshi, the third year in college were higher than first to third graders in middle school, the first to third graders in high school, and the first year in college.

In O-uchi-gari-gaeshi, the second year of college was higher than the first to third year of middle school and the second and third year of high school. The third and fourth year in college were higher than the first to third year of middle school, the first to third year of high school, and the first year of college.

4. Conclusion

This study conducted a survey to find out the difference according to gender and grade, focusing on defense technique, among the use of judo technique according to the experience of winning a competition and being selected as representative players of high school and college judo players.

First, there was no significant difference in hand, hip, and foot techniques among defense techniques in terms of gender differences.

Next, in terms of differences according to grades, all significant factors of Ryote-seoinage-gaeshi, Katate-seoinage-gaeshi, Tai-otoshi-gaeshi, and Kata-guruma-gaeshi and Yama-arashi-gaeshi were shown in the case of hand technique among defense techniques. In the case of Ryote-seoinage-gaeshi and Katate-seoinage-gaeshi, the higher the grade, the higher the awareness of defense technique. The awareness of defense technique for Kata-guruma-gaeshi and Yama-arashi-gaeshi was higher in middle and high school students than in college students. These results can be seen as the higher the grade, the more the opponent tries to defend the

score based on basic techniques among hand techniques during a match. In addition, in the case of middle and high school students, techniques such as Kata-guruma-gaeshi and Yama-arashi-gaeshi are not common techniques during competitions, which can be seen as raising defense awareness to avoid being caught off guard.

The following was a significant difference in Harai-goshi-gaeshi and Tsurigoshi-gaeshi factors as a result of differences in hip technique among defense techniques according to grade. Harai-goshi-gaeshi is frequently used in competitions as students during the entrance examination period of college freshmen from high school, and Tsurigoshi-gaeshi is a technique used in high school competitions and can be seen as having a high awareness of defense.

Finally, among the differences in defense techniques according to grade, significant differences were found in Uchi-mata-gaeshi, Okuri-ashi-barai-gaeshi, O-soto-gari-gaeshi, and O-uchi-gari-gaeshi.

In the case of foot technique, the higher the grade, the higher the awareness of defense technique.

When summarizing the differences in judo defense techniques according to grades, hand and hip techniques are evenly distributed in grades, and in the case of foot techniques, the higher the grade, the difference in perception of defense techniques appeared.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Lead Author	CL	-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*	JK	-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
Co-Author	SJ	-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 Youth TAEKWONDO Revitalization Plana

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Abstract

Purpose: The growing number of youth Taekwondo practitioners gives them the opportunity to live a mentally and physically healthy life by learning not only the techniques of Taekwondo, but also the theory and the mind. The goal of this study is to look into ways to expand and revitalize the youth Taekwondo training population, as well as to provide basic data.

Method: The electronic literature platform search was used for the research method and data collection method used to achieve the purpose of this study. After reconfirming the title and summary of each literature, the literature judged to be highly relevant to this study was finally chosen, and its validity as data was verified using triangulation with a peer expert group.

Results: To revitalize youth Taekwondo, a year must be set aside to actively and extensively promote "interesting and fun Taekwondo" for youth, educate leaders about current youth popular culture, develop instructional methods, and hold Taekwondo competitions. Various competitions are held in accordance with the sports policy, including group exhibitions for underprivileged youth and women's group competitions, so it should be reviewed on a long-term basis in accordance with the understanding of sociality and the flow of popular culture. 'Forgery' is the conduct of fabricating non-existing data or research outcome and recording or reporting them as true and existing.

Conclusion: It is critical to continue to focus on the vitalization of youth Taekwondo, and understanding and accepting youth popular culture will aid in revitalizing youth Taekwondo. It is interpreted as a problem of acceptance and convergence, and it is thought that efforts should be made to support it, develop a Taekwondo training program, and nurture professional leaders, according to the flow of popular culture.

[Keywords] Youth, Taekwondo, Sports, Pop Culture, Activation

1. Introduction

Along with physical changes, adolescents struggle to make concrete decisions among the diversity of their thoughts about the self, their future prospects, their expectations of autonomy and independence, and their personal and social values[1]. In addition, while experiencing the conflict to establish a sense of identity, they face questions like what meaning and value his life has as a unique being, and tries to find an answer[2]. Because of the aforementioned difficulties, as well as the university entrance-centered infusion education form and the practice of prior learning, Korean adolescents are particularly vulnerable to severe stressful situations. additionally, there is The number of youth in crisis in Korea is estimated to be over 830,000, accounting for 17.2 percent of all students[3]. Furthermore, according to a National Statistical Office survey, suicide was the leading cause of death for teenagers aged 10 to 19 in Korea in 2016, with approximately 30% of those who died making an extreme choice. It was unfortunate that his illness was only discovered through a posthumous 'psychological

autopsy'[4]. It can be seen that a lack of ability to cope with sudden psychological changes caused by impulsive tendencies is a typical feature of adolescence.

As previously stated, psychological factors that cause youth problem behaviors are caused by various stresses, and it is critical to develop appropriate stress coping skills. Stress coping ability affects an individual's physical, psychological, social well-being or adaptation, and can be said to respond to stress[5]. Recently, it can be seen that students' subjective happiness not only works in a specific direction due to frequent use of smartphones, but also depends on the way people use it[6]. By providing emotional and functional exercise as a preventive exercise program to about 11,000 domestic taekwondo gyms or health-related after-school programs run by schools to induce change, awareness of the importance of health management among students has increased, so prevention and improvement measures is being trained with[7]. In addition, youth through sports are greatly influenced by family, friends, and teachers, and can feel happiness through positive relationships with them[8], and youth who receive sufficient social support have more positive expectations for their future. It is possible to feel happiness through certainty about the future[9]. Looking at previous studies [10][11][12][13] it was found that when the perceived social support of adolescents was high, the happiness index increased.

Furthermore, it is possible to develop physical and mental growth and development in adolescents through various experiential activities that focus on accepting different cultures, caring for others, understanding and fusion in local community relationships, and experiencing various themes in adolescence. Growth through activities, self-identity, emotional development, community cultural consciousness establishment, moral development, and character development[14][15], formation of new and positive human relationships and cultivation of social values. Many of the experiences occur in the context of youth group activities. Youth group activities are comprised of voluntary selection and participation, and by emphasizing young people's initiative, they have opportunities to acquire various roles and participate in society, which is an important opportunity and growth for the formation of social capital[16]. The social capital formed through these group activities increases the possibility of self-reliance by acquiring useful life skills for young people to grow into adults and engage in healthy and affluent social activities, and to improve their career development capabilities, communication, and social emotions. influence[17].

In addition, it was confirmed that student athletes' confidence increased through Taekwondo training and competitions among sports[18], and by continuing to participate, maintaining optimism through mental and physical health, improving and affecting social adaptation and social well-being[19], it can be seen that by continuing Taekwondo training, social factors, emotional factors, self-understanding factors, and leadership factors, which are the spirit of community, influence[20], and the experience of various sports activities is related to interpersonal relationships, leadership, group life, and rational thinking. They learn social respect values, such as social order, and naturally learn a sense of community to achieve a common goal, which is social order. Based on these policies at a point in time, this study has so far observed that sports activities are not limited to formal training programs or leisure time to enjoy rest, but comprehensively observed specialized education, so that the physical, mental, and social health programs of adolescents can be treated as national martial arts. It is a complex movement of the muscles and joints of the feet or the whole body, and as a means of contributing to the vitality of the body, a Taekwondo program that trains the formation of a holistic personality is necessary.

As such, it is expected that youths will be able to activate and develop sports activities, and by understanding and fusing the popular culture of youth according to the times, it will be reexamined focusing on the fundamental ideas and spirits of Taekwondo, which will draw out the meaning and problems of Taekwondo among sports activities, and seek for the developmental tasks of Taekwondo for youth. The purpose of this study is to provide basic data necessary for expanding and activating the youth Taekwondo training population, which can be provided to the youth population, subjective health evaluation of youth, desire to participate in youth activities, and implementation status, and can be a Taekwondo that can be done together without any alienated class by the balanced structure

of Taekwondo trainees.

2. Method of Research

2.1. Literature review

The Electronic literature search was used as a literature review for the research method and data collection method used to achieve the purpose of this study. Therefore, literature databases for literature search and collection are among the electronic literature platforms available in Korea: Korean Studies Information Service System(KISS), Research Information Sharing Service(RISS), Nuri Media(DBPIA), Earticle, KOREA SCHOLAR, Korean Database, KSDC. Data from DB, MOAZINE, and Korea Science websites were used.

2.2. Document selection process

To select the literature to be used as the final data to meet the purpose of this study, documents with overlapping or similar themes and contents were excluded from the collected data. The literature judged to be high was finally selected. Therefore, in this selection process, the validity of the data was verified using a peer group of experts and triangulation.

2.3. Data processing method

Documents that were finally selected were organized to identify commonalities through systematic content analysis, and to classify and discuss and explain the contents of the analysis when the results were derived. In this process, researchers and a group of fellow experts tried to increase the reliability of the collected data and analyzed contents through repeated review and verification.

2.4. Authenticity of data

This study was conducted throughout the entire process and procedure of multi-faceted discussions with a pre-configured group of peer experts and peer-to-peer consultations throughout the research process to avoid revealing subjectivity due to bias that may occur during the research process.

3. Literature Review

3.1. Youth population

The youth population(9-24 years old) in 2021 will be 8,306,000, or 16.0% of the total population. In terms of gender composition, males were 51.9% and females 48.1%, 3.8%p more males[21].

Table 1. Population trend of adolescents(9-24 years old).

(Unit: thousand people, %)

	Total population	Youth population (9-24 years old)1)	Composition ratio		Man		Woman	
1990	42,869	13,553	31.6		5,987	52.1	5,514	47.9
2000	47,008	11,501	24.5		5,987	52.1	5,514	47.9
2010	49,554	10,370	20.9		5,468	52.7	4,902	47.3
2020	51,781	8,542	16.5		4,448	52.1	4,094	47.9
2021	51,822	8,306	16		4,315	51.9	3,991	48.1

3.2. Adolescent subjective health assessment

In 2020, 97.3% of 13-18 year olds perceived themselves as healthy physically and 97.7% mentally, and “I am physically healthy”. The percentage of respondents who answered ‘yes’ to the question ‘yes’ decreased by 0.5%p compared to ‘17, saying, “I am mentally healthy”. The percentage of respondents who answered ‘yes’ to the question ‘yes’ increased by 0.7%p compared to ‘17[22].

Table 2. Health assessment.

(unit: %)

	Physical health						Mental health					
	Yes			Not like that			Yes			Not like that		
	Very much	It's like that		It's not like that	Not at all		Very much	It's like that		It's not like that	Not at all	
2017	97.8	48.2	49.6	2.2	2.1	0.1	97	45.7	51.3	3.1	3	0.1
2020	97.3	49	48.3	2.7	2.6	0.1	97.7	42.4	55.3	2.3	2.2	0.1
In-crease	-0.5	0.8	-1.3	0.5	0.5	0	0.7	-3.3	4	-0.8	-0.8	0

3.3. Youth activity participation needs and fulfillment status

Adolescents feel the most participation in cultural and artistic activities among various types of activities, and especially among adolescents, youths show a greater desire to participate in all types of activities than general adolescents. However, the youth's desire to participate in any activity is not satisfied in their daily lives, and cultural and artistic activities were chosen as the activities that contributed the most to the promotion of youth happiness [23].

Table 3. Adolescents desire to participate in activities and their tatus.

Contents	Sports activity	Culture and example activities	Learning and training activities	Economic activity	Social and social activities	Volunteer activities
Desire to participate	2.89	3.07	2.87	2.96	2.96	2.93
The past between needs and satisfactions	0.37	0.57	0.29	0.66	0.43	0.43
Degree of daily sufficiency	2.52	2.51	2.58	2.30	2.53	2.50

3.4. Current status and problems of youth taekwondo training

3.4.1. Youth participation in sports

Youth participation in sports was the highest among teenagers in Taekwondo(40.8%), swimming(35.1%), soccer/futsal(18.4%), and yoga, Pilates and Pilates in their 20s. Taebo(33.2%), swimming(25.5%), and taekwondo(21.5%) were in the order of 'Taekwondo(52.8%) in male teens, Bobby Building(40.5%) in 20s, and swimming(40.5%) in female teens(40.4%), followed by yoga, Pilates, and Taebo(57.9%) in their 20s[24].

Table 4. Adolescent sports participation status outside of school physical education classes and classes.

Division	Swim- ming	Body- building	Yoga- pilates- taebo	Golf	Tae kwondo	Aero- bic	Soccer- futsal	Tennis	Ping- pong	Dance sports	
All	32.6	22.7	19.9	10.5	8.5	6.8	3.6	3.5	3.4	3.3	
Age	10's	35.1	7.6	6.3	0.2	40.8	0.4	18.4	1.4	3.6	0.6
	20's	25.5	25.9	33.2	2.8	12.0	1.9	3.3	3.7	3.4	1.3
Gen- der	Male 10's	30.7	7.1	0.0	0.0	52.8	0.8	30.9	0.4	3.3	0.0
	Male 20's	26.2	40.5	0.5	4.4	21.5	0.0	7.7	4.8	7.2	0.0
	Female 10's	40.4	8.3	13.7	0.5	26.8	0.0	3.6	2.5	3.9	1.3
	Female 20's	25.0	14.9	57.9	1.6	4.9	3.4	0.0	2.9	0.5	2.3

3.4.2. Study on the problems of youth taekwondo training

Korean adolescents are at increased risk of academic stress due to excessive academic competition and exposure to harmful media such as PC, smartphone app, music, mass media, and SNS, which are harmful media, including violence, sensationalism, and inappropriate language[25], the share of eating with parents three or four times a week or more was the lowest in the OECD at 57.4% due to a decrease

in family ties and supportive relationships, and the frequency of conversations with parents three or four times a week was 44.7%, which is the lowest in the OECD. As of 2015, the number of single-parent households is steadily increasing to 1,783,000 households, which is about 9.5% of the total households. It can be seen that middle school students account for the most at 22.2%[\[26\]](#). As such, the average importance of adolescents is the highest compared to other social problems (physical health, morality, etc.) There were many opinions[\[27\]](#). To this end, all organizations related to Taekwondo have made efforts, but they are facing many limitations in developing youth programs, and the problems of youth Taekwondo training are as follows.

First, setting goals and establishing a plan in practicing Taekwondo is a problem because it is operated mainly for play and fun enjoyed by infants and young children, rather than training that emphasizes martial arts and spirit, which are the most basic and intrinsic values of Taekwondo[\[28\]](#).

In the past, the Taekwondo program was a program that put the spirit of self-denial, patience, and indomitable spirit based on the spirit of martial arts based on strong mental power centered on martial arts. This is because the number of taekwondo practitioners is continuously decreasing due to the low birth rate and aging population, and most of the trainees are operated mainly by children and low-grade trainees. In order for Taekwondo to develop into a martial arts and sport that can be practiced by all age groups as a daily sport, it is necessary to present and educate the appropriate educational contents according to age, gender, and degree of physical development[\[29\]](#), in the study The detailed domains of the fun factors that appeared were communication/friendship/interpersonal relations together with exercise/collaboration, cultural exchange/experience, and competition/fighting factors. It is believed that communicating and having fun in a game is considered.

Second, no taekwondo training program can motivate and interest young people, and there aren't enough professional instructors to guide them[\[30\]](#).

Third, Kukkiwon, Taekwondowon, the World Taekwondo Association, the Korea Taekwondo Association, and provincial and provincial associations do not have specific alternatives for promoting Taekwondo to young people. Although the Central Association requires a Taekwondo training program environment for teenagers, the majority of them are focused on school-based athlete development. This is not enough[\[31\]](#).

Fourth, as the number of various programs in the personal hobbies and leisure environment of adolescents increases, entry into the Taekwondo training program is narrowing. It can be seen that it is difficult for the current youth to access the Taekwondo training program considering the academic and entrance exam-oriented education.

Fifth, if we look at the preceding papers on the problem of youth Taekwondo training, Kukkiwon Taekwondo Research(2), Electronic Communication Trend Analysis(1), Movement Philosophy(1), Journal of the Korean Sports Association(1), Korea Sports Research(1), Gyeongnam If we look at the preceding papers on physical education research(1) and youth sports culture, 267 Nuri Media(87), Korea Citation Index(87), Korean Studies Information Service System(76), SCHOLAR (30), Article(24), As a result of network visualization of Research Information Sharing Service(25), KIST(14), and KOREASCHOLAR(6), local community, training, education type, difficulty, service, education, expansion, class, sports facility, research, physical, Function, school, management, policy, program, diversification, sports, development, leisure activities, analysis, culture and psychology are also insufficient settings.

Table 5. Problem network visualization.

Division	Research	Network visualization
Youth taekwondo activation problem	Research kukkiwon(2) Electronics and telecommunications trends(1) Philosophy of movement(1), Korea journal of sport(1) Korea sport research(1) Gyeongnam sports research(1)	Community, training, and education types difficulty, service, education, expansion classes, gym facilities, research, functions physical, school, administration, policy program, diversification
Problems of youth sports culture	DBpia(87), KCI(87), KISS(76) scholar(30) EArticle(24), RISS(25) KISTI(14) KOREASCHOLAR(6)	Development, program, training, analytics leisure activities, students, activities, research, sports, culture, training society, community, diversification, psychology

Considering that youth Taekwondo training is based on the physical and mental focus of the current youth pop culture, the training itself should find the educational potential that can change the intrinsic value of the trainee and suggest a program.

4. Discuss

The purpose of this study is to find a way to revitalize youth Taekwondo, and to draw out problems focusing on the current status of youth Taekwondo training and previous papers related to youth sports, and how to apply Taekwondo training to revitalize youth Taekwondo in the field I would like to discuss.

First, for the vitalization of youth Taekwondo, the World Taekwondo Association, Kukkiwon, Taekwondowon, Korea Taekwondo Association, and the government insist that a year should be made to actively promote 'interesting and fun Taekwondo' for youth[32], and also It can be seen that if various instructional methods learned about 'understanding popular culture and youth culture' of the current address, rather than a form of instructional method, are continuously developed and conducted, it can contribute to the vitalization and popularization of youth Taekwondo, as shown in[28] It is considered that it is necessary to develop and promote programs for youth, adults, and the elderly, rather than running a dojo centered on low-grade students.

Second, for the vitalization of youth Taekwondo, as in other countries, amateur Taekwondo competitions of the student department are held in group competitions according to recent sports policies, and group competitions that women-oriented and underprivileged multicultural families, low-income families, defector families, and young people from the next lower classes can also participate in. Coordination and understanding by forming a group culture of youth with a focus on fun[29] and communicating in good competition and winning through mutual exchanges with various people during exercise, consideration, respect and help in the development of individuals and groups, and in connection with the university entrance exam, you can combine theoretical knowledge and practical skills as a professional Taekwondo leader. It is thought that activating the linked program can help youth employment difficulties by producing excellent Taekwondo masters at the time of employment.

Third, as the popular culture market becomes the center of the digital content market, the consumer group who utilizes and uses popular culture is high, and according to statistics as of 2014, music, webtoon, video streaming and 40% of paid users of representative pop culture contents such as download services account for 40% of the total size of the Korean pop culture contents industry, including the game industry and the video industry, reaching 100 trillion won. The fact that teenagers account for a large proportion of teenagers indicates that they have established themselves as major consumers of the market, not just consuming pop culture to find a break or to relieve stress. Compared to the

past when the right to freely enjoy culture was not guaranteed, it is encouraging that the tastes and tastes of youth are reflected and content that sensitively reflects them is produced. In order to secure the Taekwondo program[31], in 2012, the Seoul Choir's <Exciting Concert> was conducted at the Grand Theater of the Sejong Center for the Performing Arts. It is an interesting meeting of tradition and modernity, created by combining the high-quality performance of MB Crew' and the special sound of 'Ajak', a talented Nanta team imagining all sounds in the world. In particular, splendid and diverse performances such as Taekwondo demonstration, B-boy, and Nanta were harmonized on one stage and delivered with a differentiated freshness as well as a pleasant sensation[33], 2013 Taekwondo, B-boy, Samulnori, In a collaboration with Nanta, East and West dances, martial arts, and musical instruments harmonized into one to create a great and beautiful harmony. In the 8th year of the Sydney Korean Festival, under the theme of 'Spice up your life', more than 10,000 people visited Darling Harbor Tumborong Park on Saturday, April 6th. This year's festival was held with great success, hosted by the Hoham Culture and Arts Foundation and sponsored by the Korean Cultural Center in Sydney, the Korea Foundation, the Korea Tourism Organization Sydney Branch, the Korean Association of Sydney, and Yeongdong-gun. In addition to the performances of the champion B-boy team Fusion MC and the traditional Korean traditional music group Dongrak Yeonhui Troupe, the Nangye Gugak Troupe performed the stage in a splendid way, and the stage was splendidly performed with a variety of performances such as a K-pop dance contest, providing a pleasant sight to many spectators and local youths who visited the event[34].

As such, the Taekwondo cultural content form for revitalizing youth Taekwondo understands the popular culture of youth, and Taekwondo embraces the popular culture. Mime, B-boy, Nanta, and Samulnori will generate fun and interest in a convergence form, and will develop rapidly, heavier, hotter, and beyond the limits of Taekwondo as a performance that combines technology and art. is expected to be helpful.

5. Conclusion and Suggestions

The purpose of this study is to provide basic data for the expansion of the market for Taekwondo due to the decrease in the number of Taekwondo youth trainees and to revitalize the management thereof, and to find a strategic plan for revitalizing the participation of young people in Taekwondo. is still an incomplete point. The research method for this purpose was to understand the popular culture of youth and to use it in literature search, case studies, and similar forms.

First, for the revitalization of youth Taekwondo, the central association and the government related to Taekwondo should actively promote 'interesting and fun Taekwondo' for youth, and create a year to promote it on a large scale. To help youth taekwondo's vitalization, it is suggested that education, follow-up instructional methods, and continuous research should be conducted.

Second, for the vitalization of youth Taekwondo, by holding amateur Taekwondo competitions for youth following the sports policy, group competitions including youth from underprivileged groups, women's team competitions, the group competition division, the group exhibition free Poomsae division, and the group competition-free break division, the participating youths can develop social skills It is presented to help students with job difficulties by cultivating professional leaders by connecting with university entrance exams, and cultivating excellent taekwondo players in connection with the Central Association when graduating and finding employment.

Third, as the pop culture market becomes the center of the digital content market, the main consumer group of pop culture is mostly teenagers, 40% of representative pop culture content paid users, the main consumer group in the high-tech content industry, and people who want to take a break or relieve stress. It does not stop at consuming popular culture as a target but is positioned as a major consumer in the market. Through the development of taekwondo cultural contents, we understand the popular culture of youth, and Taekwondo embraces the popular culture. The performance section" was newly established to generate fun and interest in youth with a fusion of mime, b-boy, nanta, and samulnori centered on taekwondo. It will be developed as a taekwondo program, and it is presented to help promote Taekwondo for youth.

Therefore, it is necessary to continue to pay attention to revitalizing youth Taekwondo in the future, and understanding and accepting youth popular culture will help revitalize youth Taekwondo. It is interpreted as a problem of cultural acceptance and convergence, and according to the flow of popular culture, it should be reviewed at a long-term level.

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7. Appendix

7.1. Authors contribution

Initial name		Contribution
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"/>
		-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"/>