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Exploring the Motives of College TAEKWONDO Poomsae Athletes for Participating in the Poomsae Competitions

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Abstract

The study was conducted with the aim of exploring the motives of college Taekwondo poomsae athletes for participating in the poomsae competitions. To achieve the goal of the study, closed and open type surveys were conducted on 136 college athletes registered with the Korea Taekwondo Association across the country, and the results of analyzing the data collected through the survey are as follows. First, the first time college Taekwondo poomsae athletes participated in a poomsae competition was, 41.91% when they were in high school, 24.26% in middle school, 20.59% in elementary school, and 13.24% in college. Second, they have participated in poomsae competitions 30 or more times(30.88%), 20 or more times(19.12%), 10 or more times(13.24%), 25 or more(11.76%), five or more times(10.29%), 3 or more times(7.35%). Third, the motivational factors for college Taekwondo poomsae athletes to participate in the poomsae competitions were structured into 36 areas, which are grouped into 8 general areas: personal achievements(196), performance improvement(118), personal growth(100), fun(75), recommendation/environment(72), psychological enhancement(69), ability/relationship(52), and no-particular motives(10). Of the 8 general areas, personal achievements were shown at the highest rate. Based on the results of the research so far, I would like to suggest follow-up research as follows. First, the motivation for university taekwondo poomsae athletes to participate in the competition was only expected to be natural, but there were more factors than winning. If we understand these diverse motivations well, we will be able to conduct strategic research to promote the competition. Second, although the study was conducted only on university poomsae players, it is believed that comparative analysis of the motivation for participation in competitions between ages would be possible if the study was conducted on taekwondo fighters and other age groups. In particular, meaningful research could be done because the sport of poomsae has the special characteristics of athletes of all ages, from college students to those in their 60s or older. Third, if research is done to find ways to solve difficulties and difficulties in participating in the competition, rather than the motivation for college taekwondo poomsae athletes, an effective alternative to mid-life or retirement could be made.

[Keywords] ***Martial Arts, Taekwondo, Poomsae Competition, Motives for Participation, College Taekwondo Poomsae Athletes***

1. Introduction

Taekwondo is largely divided into sparring, poomsae, and breaking. In 1962, the Korea Taesoodo Association(the former entity of the Korea Taekwondo Association) joined the Korea Olympic Committee. Since then, Taekwondo sparring competition has been adopted as a demonstration sport at the 43rd National Sports Festival, as an official event at the 44th National Sports Festival, as a demonstration sport at the 1988 Seoul Olympics and the 1992 Barcelona Olympics, and as an official sport from the 2000 Sydney Olympics through the 1994 general meeting of International Olympic Committee(IOC)[1]. Since then, it continues to the 2004

Athens Olympics, the 2008 Beijing Olympics, the 2012 London Olympics, the 2016 Rio Olympics, and the 2020 Tokyo Olympics[2]. The Taekwondo poomsae competitions have recently become as active as the sparring competitions.

Taekwondo is a form of martial arts training that involves a series of attacks and defensive moves with various purposes[3]. Since its start at the Taekwondo Hanmadang competition in 1992, a number of domestic poomsae competitions have been held, including at college and federation levels. Unlike the sparring competitions, the poomsae competitions are judged for accuracy and expression based on different rules from those of the sparring competitions[4].

As the poomsae competition rules were established in January 2006, Taekwondo practitioners from all over the world began to pay attention to poomsae. In addition, the World Taekwondo Federation held the 2nd World Taekwondo poomsae Championship in Incheon in 2007, the 3rd in Turkey in 2008, and the 4th in Egypt in 2009, and it was adopted as an official sport at the 25th Summer universiade in 2009 and in the 19th Asian Taekwondo Championship and the 11th World University Championship in 2010. Since then, the World Taekwondo poomsae Championships have been held every year, and in 2018, the poomsae competition was adopted as an official sport at the Jakarta-Palembang Asian Games. In particular, the Asian Taekwondo Federation developed new poomsaes through the "Poomsae Globalization Project" from 2016 to 2018 and applied them to the Jakarta-Palembang Asian Games[5]. It is also expected to be included as a demonstration sport for the 101st National Sports Festival in Gyeongbuk province in 2020[6].

As such, the poomsae competition is developing into one that is recognized both domestically and internationally. The reason for the rapid development of the competition is that it does not involve direct hits as in the sparring competitions and is not classified into weight classes, but into age categories. Such a style of competition has been a driving force for the poomsae competition to develop into one where men and women and the elderly can participate as the participants can compete based on their training regardless of age or weight class.

The Korea Taekwondo Association[7] hosts the poomsae competition with divisions of elementary schools, middle schools, high schools, colleges, Geumgang, Taebaek, Jitae, Cheongwon, Hansoo divisions, while the World Taekwondo Federation[2] has the lower youth(12 - 14 years old), upper youth(15 - 17 years old), under 30 years old, under 40 years old, under 60 years old, under 65 years old, and over 65 years old divisions. As mentioned earlier, the poomsae competition is open to all age groups from elementary school students to those in their 60s. While the biggest reason for the participants of all age groups would be to win the competition, but there are also differences in their motives by age groups.

Motivation occurs to satisfy the state of wanting something and the individual's needs[8][9][10]. The general motive for participating in sports competitions would be to win, but there are differences by sports and age of participants. Jeong Yong-gak and Oh Seong-gi[11] began to ask questions about why runners run, explored the factors behind their motives for participation, and found out the factors of fitness, mood, stress relief, sense of accomplishment, social motives, and no-particular motives. Yoo Byeong-yeol and Shim Gyu-seong[12] found that the cyclists' motives were physical and mental health, social networking, recommendation from others, and leisure. Choi Jae-won[13] found out the reasons for teenagers' participation in leisure and sports: achievement/approval, psychological benefit, health/fitness, friendship, fun/pleasure, physical conditioning, and good use of leisure.

Several studies on the motivation have also been conducted in the case of Taekwondo, most of which have been conducted in quantitative analyses that reveal the relation between the participating motives and other factors[14][15][16][17][18]. On the other hand, Kim Jong-soo and Choi Gwang-geun[19] found that through qualitative analysis rather than a study on the

relation among the factors, the reason why college poomsae athletes are participating in the competition(World Taekwondo Hanmadang) were to improve their team status, personal growth, the distinct characteristics of the competition, fun, and other factors. As such, considering the results of preceding studies on the motives for participation, there would also be differences among athletes participating in numerous Taekwondo competitions. In particular, there would certainly be differences in motives for participating in the poomsae competition, in which all age groups participate. There is a need to look at the motives behind the participation of college athletes(the largest number of the Taekwondo poomsae athletes) before finding out the differences by the age groups.

Therefore, the study aims to find out what factors make college Taekwondo poomsae athletes participate in the poomsae competitions. Based on the results of exploring and analyzing the motives behind the participation of college poomsae athletes participating in the Taekwondo poomsae competition, it will be a foundational material that will guide the direction in which the Taekwondo poomsae competition should move forward.

2. Research Method

2.1. Research subjects

Participants in the study are college poomsae athletes competing in poomsae competitions selected as "purposive quota sampling" at colleges across Korea. They are registered as athletes with the Korea Taekwondo Association, and among them, 136 were selected and closed and open surveys were conducted. The general characteristics of the study participants are shown in <Table 1>.

Table 1. The general characteristics of the study participants.

Description	College poomsae athletes(persons)		Percentage(%)
Age	21.29±1.10		
Sex	Male	69	50.74
	Female	67	49.26
Length of career	Less than 1 year	12	8.82
	1 – 2(less)	18	13.24
	2 – 3(less)	21	15.44
	3 – 4(less)	15	11.03
	4 – 5(less)	30	22.06
	More than 5 years	40	29.41
Total		136	100.0

2.2. Date collection

The study conducted an open survey of college athletes on what caused them to participate in the poomsae competition. Open questionnaires are an effective way to identify subjective opinions from the participants[20][21]. They also collected data by conducting closed surveys on characteristics related to the poomsae competitions. In the process of collecting, analyzing, and producing results, a meeting of experts was held to minimize the biased subjective interpretation of the researchers because their experience in qualitative research would directly affect the topic. Based on the preceding research of open questionnaire[19][22][23], the questionnaire was produced and conducted as shown in <Table 2>.

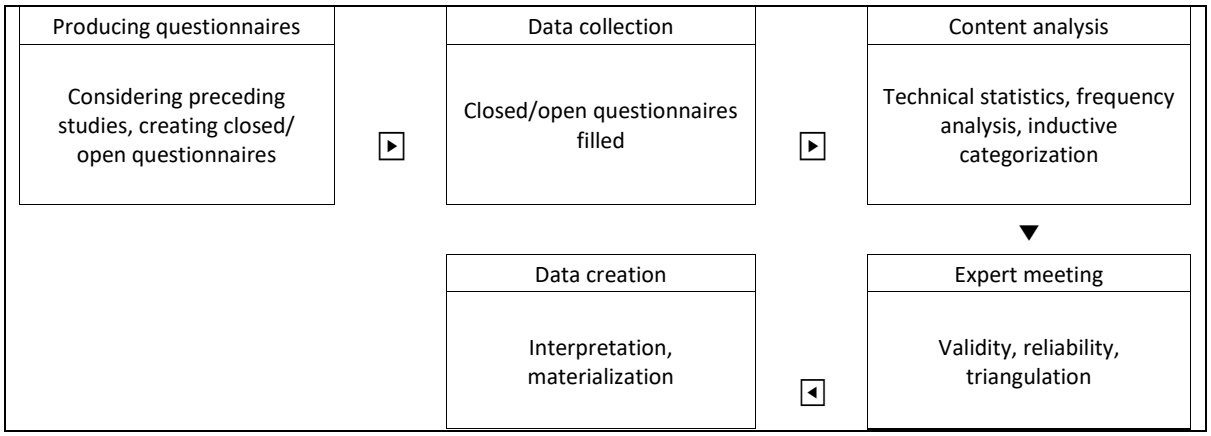
Table 2. Questionnaire structure.

Description	Questions
Closed type	Sex – age - career
	The first participation – Elementary/middle/high school, college
	Number of participation in national level poomsae competition
	Participating poomsae event
Open type	Motives/factors for the participation in the competitions

2.3. Research procedure

The study conducted a closed and open survey of college poomsae athletes to explore factors for participating in the poomsae competitions. Among the data collected from the survey, the closed-type survey was technical statistics and frequency analyses, while the open-type survey divided the contents of the responded raw materials into similar areas. In addition, the data were categorized through inductive content analysis, which accumulated the frequency of duplicate contents. To prevent the bias of researchers in the inductive content analysis process, the team has secured reliability and validity through triangulation through a meeting of related experts from Taekwondo, sports psychology, Taekwondo poomsae, qualitative research, and the researchers of this study. Based on the results of the inductive content analysis, we explored the meaning of the factors of participation in the Taekwondo poomsae competitions and generated data to materialize it. The research procedure is shown in <Figure 1>.

Figure 1. Research procedure.



2.4. Data analysis

In this study, data collected through closed and open surveys were compiled and analyzed through the SPSS 23.0 and Hangeul 2014 program. The data on closed questionnaires were processed by the SPSS program for technical statistics and frequency analysis, and the data on open questionnaires were repeatedly read and inductive contents analysis was conducted, which was divided and organized according to a similar meaning of the content. In the process of inductive content analysis, the raw material was classified into detailed areas and the detailed areas into general areas, and the frequency and percentage of the contents were calculated and specified.

3. Result and Discussion

3.1. Time and number of times to participate in taekwondo poomsae competitions

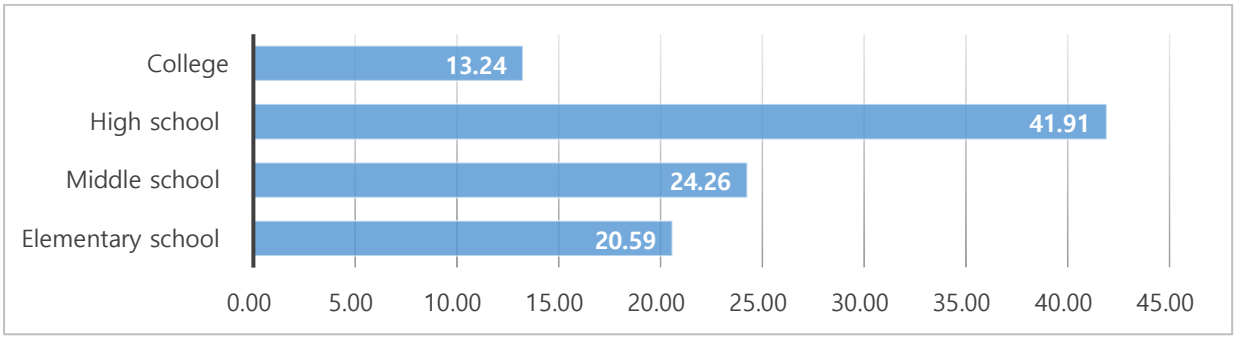
3.1.1. Time to participate in taekwondo poomsae competitions

The results of the analysis of the responses from college Taekwondo poomsae athletes to start the sport and participate in the competition for the first time since the registration with the Korea Taekwondo Association are as shown in <Table 3>. According to the analysis, it shows 41.91% for high school, 24.26% for middle school, 20.59% for elementary school and 13.24% for college. According to the results of the analysis, a lot of college Taekwondo poomsae athletes were registered as athletes and participated in a poomsae competition for the first time when they were in high school. And the percentage of first participating as a college athlete was the lowest. The result is the same as the beginning of the Taekwondo poomsae competition, and the result of the study[24] shows that many high school students began the career as a poomsae athlete to enter college when they were in high school.

Table 3. Time of the first participation in poomsae competition.

Description		Persons	Percentage(%)
Time of the first participation in poomsae competition	Elementary school	28	20.59
	Middle school	33	24.26
	High school	57	41.91
	College	18	13.24
Total		136	100

Figure 2. Time of the first participation in poomsae competition.



3.1.2. Time to participate in taekwondo poomsae competitions

The results of the analysis of the number of times college Taekwondo poomsae athletes started Taekwondo and participated in the poomsae competition after registering as a member of the Korea Taekwondo Association are as shown in <Table 4>.

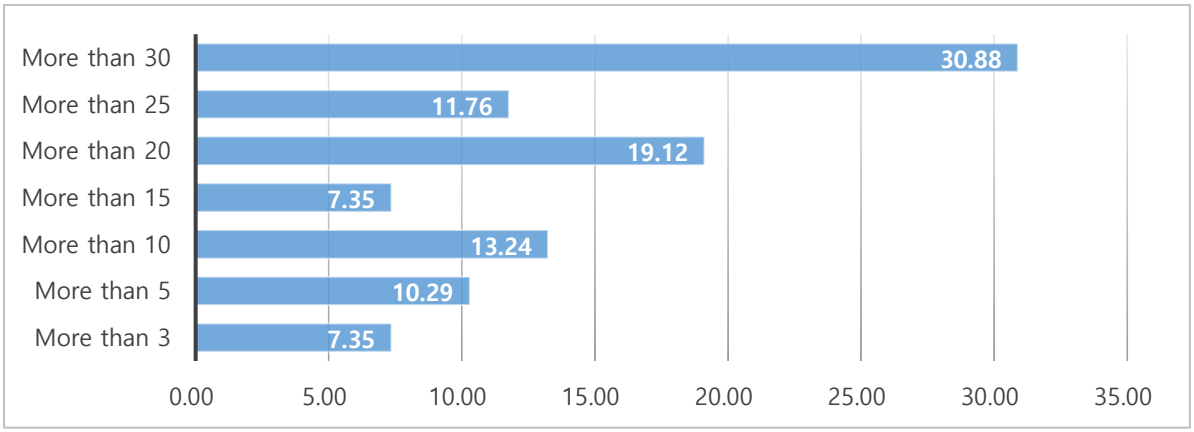
Table 4. Number of participation in poomsae competitions.

Description		Persons	Percentage(%)
Number of participation in poomsae competitions	More than 3	10	7.35
	More than 5	14	10.29
	More than 10	18	13.24
	More than 15	10	7.35
	More than 20	26	19.12
	More than 25	16	11.76
	More than 30	42	30.88

Total	136	100.00

According to the analysis, the highest number is 30 or more times(30.88%). It was followed by 20 or more(19.12%) and 10 or more(13.24%) and 25 or more(11.76%) and 5 or more(10.29%) and 3 or more(7.35%). The result shows that one can participate more than 20 times as the number of competition approved by the Korea Taekwondo Association is more than 20 a year. It suggests that more than 30 participation times may not be a large number if one participates in competitions during high school annually. It is also the result of confirming that there are so many competitions.

Figure 3. Number of participation in poomsae competitions.



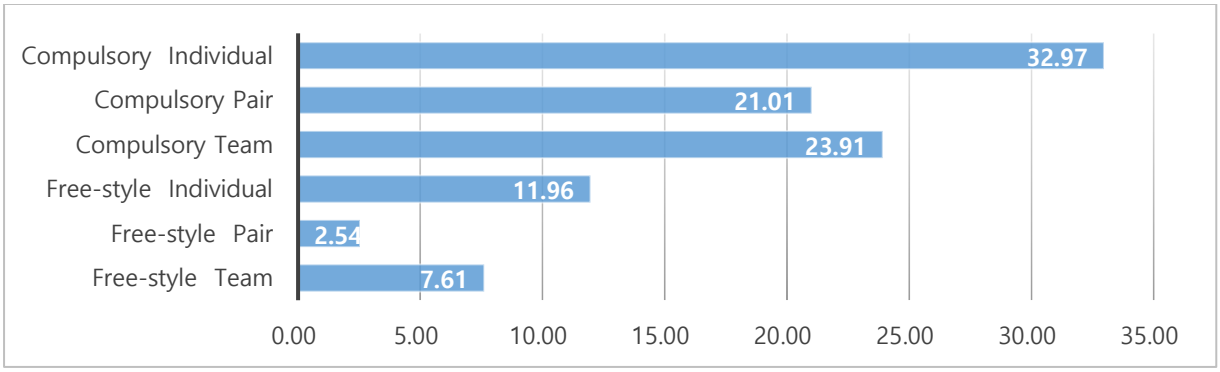
3.2. Percentage of events to participate in poomsae competitions

The results of analyzing the responses of college poomsae athletes to the events they participated in are as shown in <Table 5>. The analysis shows, for the Compulsory poomsae event, 32.97% for individual, 23.91% for team, and 21.01% for pair, and for the free-style poomsae event, 11.96% for individual, 11.96% for team, and 7.61% for pair event. These results show that winning in the individual event is most prioritized. However, the higher proportion of team event than pair event can be interpreted as the choice of the coaches and athletes who want to win more prizes for college entrance.

Table 5. Percentage of events to participate in poomsae competitions.

Description (incl. participation in multiple events)		Persons	Percentage(%)
Division	Compulsory poomsae	Individual	91	32.97
		Pair	58	21.01
		Team	66	23.91
	Free-style poomsae	Individual	33	11.96
		Pair	7	2.54
		Team	21	7.61
Total			276	100

Figure 4. Percentage of events to participate in poomsae competitions.



3.3. College poomsae athletes' motives to participate in the competitions

A total of 692 cases of raw materials were collected after an open survey of 136 college Taekwondo poomsae athletes to explore their motives to participate in the poomsae competitions. Inductive content analysis was conducted to classify the collected data according to a similar meaning, and the results of the inductive analysis through the expert meeting are shown in <Table 6>.

Table 6. Inductive categorization result for motives of participation in taekwondo poomsae competitions.

Detailed areas(36)	Frequency at the raw data	General areas (frequency/ratio)
Award record	63	Personal achievement (196) 28.32%
College entrance	52	
Selected in the national team	36	
Future preparation	20	
Achieving goals	15	
Victory/honor	10	
Personal ability improvement	43	Performance improvement (118) 17.05%
Personal ability evaluation	34	
Analysis of outstanding athletes	19	
Showing personal ability	12	
Checking the atmosphere of the competition	10	
Personal-growth	32	personal growth (100) 14.45%
Challenge to one's limit	22	
Self-reflection	19	
Experience as an athlete	16	
Improvement of coaching skills	6	
Sports conversion	5	
Fun	33	Fun (75) 10.84%
Hobby	18	
Interest	14	
Friendship	10	
Recommendation from the coach	25	Recommendation/environment (72) 10.40%
Environmental factors	20	
Recommendation from the team	15	

Recommendation from family members and friends	7	
Importance of the competition	5	
To improve confidence	20	Psychological enhancement (69) 9.97%
To overcome tension	17	
To improve focus	14	
To enhance willpower	13	
Self-management	5	
Self-contentment	22	Ability/relationship+) 7.51%
Sense of achievement	13	
Sense of obligation	10	
Sense of belonging	7	
No-particular motives	10	No-particular motives(10) 1.45%

Motivational factors for participating in the competition for college poomsae athletes were structured into 36 detailed areas, while 36 detailed areas were grouped into 8 general areas: personal achievement(196), performance improvement(118), personal growth(100), fun(75), recommendation/environment(72), psychological enhancement(69), ability/relationship(52), and no-particular motives(10). Among the 8 general areas, personal achievement(28.32%) was at the highest rate, followed by performance improvement(17.05%), personal growth(14.45%), fun(10.84%), recommendation/environment(10.40%), psychological enhancement(9.97%), ability/relationship(7.51%) and no-particular motives(1.45%).

In the general areas, the detailed areas of the individual achievement factor were award records(63), college entrance(52), the selection as a member of the national team(36), the preparation for the future(20), the accomplishment of a goal(15), and victory/honor(10). The individual achievement factors are ones that illustrate the characteristics of competitive sports events, and although poomsae has yet to be approved as an official event for the Olympics, it is held as the official event of the Universiade and the Asian Games[25]. In 2020, corporate poomsae teams are expected to be form as with Sparring teams as it will be held as a demonstration event at the 101st National Sports Festival in Gyeongbuk province[6]. In a way, it is natural that the biggest motives for college Taekwondo poomsae athletes to compete in the competitions is to win the competition, build their career, prepare for the future as a player for the national team, and individual honor.

The details of the factors for improving performance were personal improvement(43), personal performance evaluation(34), analysis of outstanding players(19), individual performance(12), and determination of the atmosphere of the competition(10). Competitiveness is the athletic ability to perform best in the competition[26][27][28]. In order to improve their performance, university athletes are expected to improve their skills, evaluate their training skills, and learn and train from the analysis of the outstanding athletes who participated in the competition to display their skills.

The detailed areas of the personal growth factor were personal growth(32), challenge to one's limit(22), personal reflection(19), experience as an athlete(16), improvement of leadership(6), and conversion of sports(5). The results support those of Kim Jong-soo and Choi Gwanggeun[19] that the college demonstration team is participating in the Taekwondo Hanmadang competition for personal growth and gaining experience. College poomsae athletes can challenge their limits, reflect on themselves, and have opportunities to improve their performance by moving from sparring or demonstration to poomsae event through their participation experiences, and the results of Lee Won-mi and Lee Jong-yeong's[29] study of achieving performance excellence through movement from rhythmic gymnastics to aerobics supports this approach.

And many athletes are participating in the competitions thinking that the experience in participating in the competition could improve his leadership skills when they later become Taekwondo coaches. The details of the fun factor were shown in the order of enjoyment(33), hobby(18), interest(14), and friendship(10). In the field of psychology, it was not long before the research was conducted with interest in the issue of fun[30].

Many happiness-related studies have been conducted in Korea, but there is still a lack of researches on the theme of fun[31]. But clearly, athletes need to have fun to participate in sports and competitions. The study by Choi Jae-won[13] and Yoo Byeong-yeol and Shim Gyu-seong[12] showed that young people participate in sports and bicycle athletes participate in competitions because they feel fun, and this research also shows that hobby, interest, and meeting with friends are factors that make athletes participate in the poomsae competitions.

The details of the recommendation/environmental factors were shown in the following order: recommendation from coaches, environmental conditions(20), recommendation from the team(15), recommendations from family members and friends(7), and the importance of the competition(5). Recommendations and environmental factors refer to the participation in the competition on the recommendation of coaches, team, family members, and friends in the process of starting Taekwondo and participating in the competition. These results are consistent with the results of the preceding study, which analyzed the factors of the motives of the golf participants[32], senior participants[33], dance majors[34], and Taekwondo demonstration team members[19], and showed that it is a common motive for most sports. Also, it showed that some of the athletes just naturally participated in the competition just because they practiced Taekwondo, without specific reason. This suggests that environmental conditions, such as the location of Taekwondo gym nearby, also affect participation in the competition to some extent.

The details of psychological reinforcement factors were shown in the following order: confidence improvement(20), overcoming tension(17), focus improvement(14), willpower enhancement(13), and self-management(5). The psychological reinforcement factor is directly related to the improvement of performance, but in this study, the content was categorized differently. During the content analysis process, it was shown that the meaning of psychological training to improve personal psychological factors[35] was more important than the meaning of psychological training to improve competition performance. The athletes were participating in the competition as an opportunity to overcome the tension and increase one's confidence and focus. It is also thought to be using it as a trigger to endure tough times ahead of the competition, build up willpower, and manage one’s body[36].

The details of the ability/relationship factors were shown in the order of self-contentment(22), sense of achievement(13), sense of obligation(10), and sense of belonging(7). The ability/relationship factors were categorized for the desire to connect to others and to be recognized for one's ability[37][38]. The results confirmed that college Taekwondo poomsae athletes are participating in the competitions for self-contentment, sense of achievement/obligation/belonging, and to confirm the value of their existence. This means that while the meaning of participating in the competition is important, it eventually implies a desire to confirm that one exists and is alive[39][40][41].

And there was also "no-particular motives" factor(10) with those participating in the competition without any specific reason or purpose. It is a state that one acts without any self-determination[42][43][44]. This is a result of showing that some of the college poomsae athletes participate in the competition just for the participation-sake without much meaning or purpose, regardless of their decision-making.

4. Contribution and Suggestions

The study was conducted with the aim of exploring the motives of college Taekwondo poomsae athletes for participating in the poomsae competitions. To achieve the goal of the study, closed and open type surveys were conducted on 136 college athletes registered with the Korea Taekwondo Association across the country, and the results of analyzing the data collected through the survey are as follows.

First, the first time college Taekwondo poomsae athletes participated in a poomsae competition was, 41.91% when they were in high school, 24.26% in middle school, 20.59% in elementary school, and 13.24% in college.

Second, they have participated in poomsae competitions 30 or more times(30.88%), 20 or more times(19.12%), 10 or more times(13.24%), 25 or more(11.76%), five or more times(10.29%), 3 or more times(7.35%).

Third, the motivational factors for college Taekwondo poomsae athletes to participate in the poomsae competitions were structured into 36 areas, which are grouped into 8 general areas: personal achievements(196), performance improvement(118), personal growth(100), fun(75), recommendation/environment(72), psychological enhancement(69), ability/relationship(52), and no-particular motives(10). Of the 8 general areas, personal achievements were shown at the highest rate.

Based on the contents of the research results so far, the following suggestions are made for follow-up research.

First, the motives for college Taekwondo poomsae athletes to participate in the competitions were expected only to win the competition, but more diverse factors were found. If we understood these diverse factors, strategic research will be possible to revitalize the poomsae competitions.

Second, the study was conducted on only college athletes, but it is believed that a comparative analysis of the motives for participating in poomsae competitions between ages would be possible if the study was conducted on different age groups of the athletes. In particular, meaningful research could be done as athletes of all ages, from college students to those in their 60s and older, participate in the competition.

Third, if a study is made to explore the difficulties and problems in participating in the poomsae competitions, and not just the motives, effective alternatives for the dropout or retired poomsae athletes could be created.

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6. Contribution

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A Study on the Application Changes of JUDO Techniques Depending on the Winning Experience and being Selected Experience as a Representative Player

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Abstract

In order to explore changes in the use of judo techniques(Waza) depending on the experience of winning competitions and being selected as representative players of judo players at elementary, middle, and high schools and universities, a survey of self-administration method on the judo player population of Daegu and Gyeongbuk province as of 2020 based on convenience sampling was conducted, and the following conclusions were reached with 198 surveys as valid samples except for responses that were incomplete or missing among 200 questionnaires retrieved.

First, differences in offensive techniques depending on the experience of winning competitions were shown as follows. For Te-waza(hand techniques), players with the experience of winning competitions used Tai-otoshi(Body drop), Kata-guruma(Shoulder), and Yama-arashi(Mountain storm) more than those without the experience. For Koshi-waza(hip techniques), players without the experience used O-goshi(Large hip) and Tsuri-goshi(Life-pull hip) more than those with the experience. For Ashi-waza(foot techniques), players with the experience used O-soto-gari(Large outer reaping) and O-uchi-gari(Large inner reaping) more than those without the experience.

Second, differences in defensive techniques depending on the experience of winning competitions were shown as follows. For Te-waza(hand techniques), players with the experience used Ryoude-seoi-nage-gaeshi(Both arm shoulder throw counter), Kataude-seoi-nage-gaeshi(one arm shoulder throw counter), Tai-otoshi-gaeshi(Body drop counter), Kata-guruma-gaeshi(Shoulder counter), and Yama-arashi-gaeshi(Mountain storm counter) more than those without the experience. For Koshi-waza(hip techniques), players with the experience used Harai-goshi-gaeshi(Hip sweeping counter), Uki-goshi-gaeshi(Floating hip counter), and Tsuri-goshi-gaeshi(Life-pull hip counter) more than those without the experience. For Ashi-waza(foot techniques), players with the experience used O-soto-gari-gaeshi(Large outer reaping counter) and O-uchi-gari-gaeshi(Large inner reaping counter) more than those without the experience.

Third, differences in offensive techniques depending on the experience of being selected as representative players were shown as follows. For Te-waza(hand techniques), players with the experience of being selected as representative players used Tai-otoshi(Body drop), Kata-guruma(Shoulder), and Yama-arashi(Mountain storm) more than those without the experience. For Koshi-waza(hip techniques), players without the experience of being representative players used O-goshi(Large hip) and Tsuri-goshi(Life-pull hip) more than those with the experience. For Ashi-waza(foot techniques), players with the experience used O-soto-gari(Large outer reaping) and O-uchi-gari(Large inner reaping) more than those without the experience.

Fourth, differences in defensive techniques depending on the experience of being selected as representative players were shown as follows. For Te-waza(hand techniques), players with the experience used Ryoude-seoi-nage-gaeshi(Both arm shoulder throw counter), Kataude-seoi-nage-gaeshi(one arm shoulder throw counter), Tai-otoshi-gaeshi(Body drop counter), Kata-guruma-gaeshi(Shoulder counter), and Yama-arashi-gaeshi(Mountain storm counter) more than those without the experience. For Koshi-waza(hip techniques), players with the experience used Uki-goshi-gaeshi(Floating hip counter) and Tsuri-goshi-gaeshi(Life-pull hip counter) more than those without the experience. For Ashi-waza(foot techniques), players with the experience used O-soto-gari-

gaeshi(Large outer reaping counter) and O-uchi-gari-gaeshi(Large inner reaping counter) more than those without the experience.

[Keywords] ***Martial Arts, Judo Techniques, Middle School, High School, University***

1. The Necessity of the Research

Sports rules are being revised at the end of the quadrennial Olympic Games by considering the reactions of viewers and spectators in the respective sports federations, and the rules of the sport are changing as the times change.

Since the 2016 Rio Olympics, the International Judo Federation(IJF) has changed its rules to target the 2020 Tokyo Olympics. The rules have been revised to raise the audience's interest, making the sport more aggressive and easy for anyone to distinguish winners from losers. How do judo coaches understand the changing rules of the IJF?

The rules for judo competitions have pursued the international consistency upon the establishment of the IJF and are being revised to this day since the rules became global in 1954.

The IJF has been analyzing visual and technical aspects since the 2012 London Olympics, and the rules have recently changed since the 2016 Rio Olympics to emphasize the dynamism of the sport, thus increasing the outcomes determined by its techniques.

The recently changed rules can be largely divided into points and fouls, and the game time was changed from 5 minutes for men and 4 minutes for women in 2016 to 4 minutes for both men and women in 2017 and it remains the same until now in 2020.

The rules of the judo competition are changing for the visual dynamism, but the changes have a decisive effect on the strategies for the competition, so the coaches who guide the players should better understand the rules that have changed and teach them accordingly.

The key to the recent change in score rules is that the scoring system, which had been Yuko, Waza-ari, and Ippon, has been changed to Waza-ari and Ippon. In the first year of 2017, the number of Waza-ari was changed to unlimited, and even if Waza-ari was scored several times, one could be defeated by Ippon.

To solve this problem, starting in 2018, two Waza-ari are counted as Ippon, making the game time shorter and the game more thrilling. Also, the time for Katame-waza was changed too. For example, previously, 10 seconds of Osaekomi-waza were counted as Yuko, 15 seconds Waza-ari, and 20 seconds or longer Ippon, but now 10 seconds or more is counted as Waza-ari and 20 seconds or more is Ippon.

There is another changed rule, which was previously not a score, but now a score since 2017. When the opponent was lying on one's stomach to take a Katame-waza stance and the attacker's attempt to use Sutemi-waza was considered Katame-waza and not a score. It has been changed after 2017 that such an attempt can lead to a score.

This change has reduced intentionally prolonged defense and increased the cases of scoring through offensive attempts. In addition, the game time has been shortened, from 5 minutes for men and 4 minutes for women to 4 minutes for both genders. This change has made the male competitions more aggressive.

Most may feel confused by the changing rules every year. All sports events are constantly changing the rules of the game to make it more interesting for spectators and viewers watching through the media, but such changes will require corresponding coaching strategies.

Without thorough preparation for the changed rules of the competition, the players will not be able to understand the rules properly, so they will not be able to perform to the fullest.

This is because it takes a long period of practice and effort to produce one's specialty, but if the rules of the game change and the specialty becomes unavailable, the players affected by the new rules would be unable to fully display their abilities. So new coaching strategies of judo coaches are needed, which have a significant impact on judo players' performance[1].

Therefore, this study seeks to find out what are the main offensive and defensive skills of judo players individually and to provide them with basic data to prepare for changes in the rules of the competition.

2. Research Method

2.1. Research target and sampling method

A survey of self-administration method on the judo player population of Daegu and Gyeongbuk province as of 2020 based on convenience sampling was conducted, and the following conclusions were reached with 198 surveys as valid samples except for responses that were incomplete or missing among 200 retrieved questionnaires.

Table 1. Common characteristics of research subjects.

	Description	N (%)	Total
Gender	Male	119(60.1)	198
	Female	79(39.9)	
Grade	Middle school 1st	18(9.1)	198
	Middle school 2nd	20(10.1)	
	Middle school 3rd	22(11.1)	
	High school 1st	17(8.6)	
	High school 2nd	24(12.1)	
	High school 3rd	22(11.1)	
	University 1st	19(9.6)	
	University 2nd	13(6.6)	
	University 3rd	27(13.6)	
	University 4th	16(8.1)	
Athletic career	2 years or less	52(26.3)	198
	3-5 years	48(24.2)	
	6 years or longer	98(49.5)	
Won a competition	Yes	148(74.7)	198
	No	50(25.3)	
Being a representative player	Yes	118(59.6)	198
	No	80(40.4)	

2.2. Research tool

2.2.1. Contents of survey

Questionnaires were used as the survey tool to meet the objectives of this study, and the composition of the questionnaire was drafted based on judo competition rules and modified and supplemented by the judo coaches and players to constitute offensive and defensive techniques(Te-waza, Koshi-waza, and Ashi-waza) as follows.

Table 2. Composition of the questionnaire.

	Offensive techniques	Defensive techniques
Te-waza	Ryoude-seoi-nage(Both arm shoulder throw)	Ryoude-seoi-nage-gaeshi(Both arm shoulder throw counter)
	Kataude-seoi-nage(One arm shoulder throw)	Kataude-seoi-nage-gaeshi(One arm shoulder throw counter)
	Tai-otoshi(Body drop)	Tai-otoshi-gaeshi(Body drop counter)
	Kata-guruma(Shoulder)	Kata-guruma-gaeshi(Shoulder counter)
	Yama-arashi(Mountain storm)	Yama-arashi-gaeshi(Mountain storm counter)
Koshi-waza	Harai-goshi(Hip sweeping)	Harai-goshi-gaeshi(Hip-sweeping counter)
	Uki-goshi(Floating hip)	Uki-goshi-gaeshi(Floating hip counter)
	O-goshi(Large hip)	O-goshi-gaeshi(Large hip counter)
	Tsuri-komi-goshi(Life-pull hip)	Tsuri-komi-goshi-gaeshi(Life-pull hip counter)
	Tsuri-goshi(Life-pull hip)	Tsuri-goshi-gaeshi(Life-pull hip counter)
Ashi-waza	Uchi-mata(Inner thigh reaping)	Uchi-mata-gaeshi(Inner thigh reaping counter)
	Okuri-ashi-barai(Sweeping ankle throw)	Okuri-ashi-barai-gaeshi(Sweeping ankle throw counter)
	Ko-uchi-gari(Small inner reaping ankle throw)	Ko-uchi-gari-gaeshi(Small inner reaping ankle throw counter)
	O-soto-gari(Large outer reaping)	O-soto-gari-gaeshi(Large outer reaping counter)
	O-uchi-gari(Large inner reaping)	O-uchi-gari-gaeshi(Large inner reaping counter)

2.2.2. The validity and reliability of the questionnaire

In this study, appropriate methods were chosen for each verification method to increase the content validity and to verify the construct validity of the questionnaire. Content validity was secured through consultation with experts in the relevant research fields to adopt questionnaire suitable for the purpose of this study.

Reliability is the degree to which an individual's scores appear consistent when repeated tests of the same test or tests of the same type are performed. Reliability is one of the most important factors in establishing a research method, as it relates to stability and consistency, and it is a question of whether a manipulated definition or indicator measured the measurement object consistently and reliably. Therefore, the reliability was verified based on the results of the questionnaire and was analyzed using the Cronbach's α coefficient.

2.2.3. Method of data processing and statistics

The data processing of this study excluded data that were deemed to be poor or unreliable from the research list after collecting the distributed questionnaire and individually entered the analyzed data into the computer, and conducted statistical verification according to the purpose of the study and analysis using the SPSS 23.0 Program.

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

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

Third, a t-test was conducted to find out the differences between offensive and defensive techniques depending on the experience of winning competitions and being selected as representative players.

3. Results

Table 3. Differences in offensive techniques depending on the experience of winning competitions.

Judo techniques		Winning competitions	Mean	Standard deviation	t-value	Sig
Te-waza	Ryoude-seoi-nage (Shoulder throw)	Yes	3.4054	1.46077	-1.302	.194
		No	3.7200	1.52583		
	Kataude-seoi-nage (Shoulder throw)	Yes	3.7770	1.64470	-.011	.991
		No	3.7800	1.70581		
	Tai-otoshi (Body drop)	Yes	1.9257	1.41945	3.549	.000
		No	1.2000	.45175		
	Kata-guruma (Shoulder)	Yes	1.8243	1.53736	3.785	.000
		No	1.0000	.00000		
	Yama-arashi (Mountain storm)	Yes	1.9865	1.52524	4.566	.000
		No	1.0000	.00000		
Koshi-waza	Harai-goshi (Hip sweeping)	Yes	2.1149	1.58446	1.560	.120
		No	1.7200	1.42914		
	Uki-goshi (Floating hip)	Yes	1.8986	1.21072	.193	.847
		No	1.8600	1.26184		
	O-goshi (Large hip)	Yes	1.4730	.74181	-2.398	.017
		No	1.8400	1.36067		
	Tsuri-komi-goshi (Life-pull hip)	Yes	1.5068	1.12181	-1.737	.084
		No	1.8400	1.31491		
	Tsuri-goshi (Life-pull hip)	Yes	1.1824	.67044	-3.776	.000
		No	1.7400	1.38225		
Ashi-waza	Uchi-mata (Inner thigh reaping)	Yes	2.3041	1.08583	1.206	.229
		No	2.1000	.86307		
	Okuri-ashi-barai (Sweeping ankle throw)	Yes	1.2973	.84483	-1.028	.305
		No	1.4400	.86094		
	Ko-uchi-gari (Small inner reaping ankle throw)	Yes	2.0135	1.45212	1.615	.108
		No	1.6600	.91718		
	O-soto-gari (Large outer reaping)	Yes	1.5068	1.05944	2.400	.017
		No	1.1400	.35051		
	O-uchi-gari (Large inner reaping)	Yes	1.7500	1.21708	3.976	.000
		No	1.0600	.23990		

<Table 3> shows the result of verification of differences in offensive techniques depending on the experience of winning competitions. In Te-waza, players with the winning experience have a significance level of 0.1% above players without the experience in Tai-otoshi(Body drop)(1.9257±1.41945), Kata-guruma(Shoulder)(1.8243±1.53736), and Yama-arashi(Mountain storm)(1.9865±1.52524). For Koshi-waza, players without the experience have a significance level of 5% and 0.1%, respectively, above those with the experience in O-goshi(Large hip)(1.8400±1.36067) and Tsuri-goshi(Life-pull hip)(1.7400±1.38225).

For Ashi-waza, players with the experience have a significance level of 5% and 0.1%, respectively, above those without the experience in O-soto-gari(Large outer reaping)(1.5068±1.05944) and O-uchi-gari(Large inner reaping)(1.7500±1.21708).

Table 4. Differences in defensive techniques depending on the experience of winning competitions.

Judo techniques		Winning competitions	Mean	Standard deviation	t-value	Sig
Te-waza	Ryoude-seoi-nage-gaeshi(Both arm shoulder throw counter)	Yes	3.4189	1.18387	8.560	.000
		No	1.8000	1.06904		
	Kataude-seoi-nage-gaeshi (One arm shoulder throw counter)	Yes	3.7635	1.60086	8.920	.000
		No	1.5800	1.12649		
	Tai-otoshi-gaeshi (Body drop counter)	Yes	2.4797	1.56261	4.901	.000
		No	1.3400	.87155		
	Kata-guruma-gaeshi (Shoulder counter)	Yes	1.9595	1.56004	3.959	.000
		No	1.0800	.27405		
	Yama-arashi-gaeshi (Mountain storm counter)	Yes	1.8108	1.52240	3.125	.002
		No	1.1200	.59385		
Koshi-waza	Harai-goshi-gaeshi (Hip-sweeping counter)	Yes	1.7905	1.17949	2.683	.008
		No	1.3200	.65278		
	Uki-goshi-gaeshi (Floating hip counter)	Yes	1.7162	.96919	2.444	.015
		No	1.3600	.59796		
	O-goshi-gaeshi (Large hip counter)	Yes	1.3919	.56707	-.078	.938
		No	1.4000	.80812		
	Tsuri-komi-goshi-gaeshi (Life-pull hip counter)	Yes	1.4189	.96195	-.522	.602
		No	1.5000	.90914		
	Tsuri-goshi-gaeshi (Life-pull hip counter)	Yes	1.1351	.47593	-2.806	.006
		No	1.4200	.92780		
Ashi-waza	Uchi-mata-gaeshi (Inner thigh reaping counter)	Yes	2.3041	1.08583	1.333	.184
		No	2.0800	.82906		
	Okuri-ashi-barai-gaeshi (Sweeping ankle throw counter)	Yes	1.2838	.80846	-.893	.373
		No	1.4000	.75593		
	Ko-uchi-gari-gaeshi (Small inner reaping ankle throw counter)	Yes	1.8649	1.18177	1.459	.146
		No	1.6000	.85714		
	O-soto-gari-gaeshi (Large outer reaping counter)	Yes	1.4730	.95793	2.401	.017
		No	1.1400	.35051		
	O-uchi-gari-gaeshi (Large inner reaping counter)	Yes	1.7230	1.15365	4.028	.000
		No	1.0600	.23990		

<Table 4> shows the result of verification of differences in defensive techniques depending on the experience of winning competitions. In Te-waza, players with the winning experience have a significance level of 0.1% above players without the experience in Ryoude-seoi-nage-gaeshi (3.4189±1.18387), Kataude-seoi-nage-gaeshi(3.7635±1.60086), Tai-otoshi-gaeshi(2.4797±1.56261), Kata-guruma-gaeshi(1.9595±1.56004), and Yama-arashi-gaeshi(1.8108±1.52240.). For Koshi-waza, players with the experience have a significance level of 1%, 5%, and 1%, respectively, above those without the experience in Harai-goshi-gaeshi(1.7905±1.17949), Uki-goshi-gaeshi(1.7162±.96919), and Tsuri-goshi-gaeshi(1.4200±.92780).

For Ashi-waza, players with the experience have a significance level of 5% and 0.1%, respectively, above those without the experience in O-soto-gari-gaeshi(1.4730±1.15365) and O-uchi-gari-gaeshi(1.7230±1.15365).

Table 5. Differences in offensive techniques depending on the experience of being representative players.

Judo techniques		Being representative player	Mean	Standard deviation	t-value	Sig
Te-waza	Ryoude-seoi-nage (Shoulder throw)	Yes	3.3475	1.46979	-1.593	.113
		No	3.6875	1.48062		
	Kataude-seoi-nage (Shoulder throw)	Yes	3.7119	1.67486	-.679	.498
		No	3.8750	1.63332		
	Tai-otoshi (Body drop)	Yes	2.0000	1.42625	3.520	.001
		No	1.3625	.93109		
	Kata-guruma (Shoulder)	Yes	1.9915	1.65119	4.931	.000
		No	1.0625	.40075		
	Yama-arashi (Mountain storm)	Yes	2.1695	1.60823	5.745	.000
		No	1.1000	.51803		
Koshi-waza	Harai-goshi (Hip sweeping)	Yes	2.1695	1.58144	1.707	.089
		No	1.7875	1.49000		
	Uki-goshi	Yes	1.9068	1.21941	.250	.803
		No	1.8625	1.22984		
	O-goshi (Large hip)	Yes	1.4322	.72181	-2.439	.016
		No	1.7625	1.18261		
	Tsuri-komi-goshi	Yes	1.5000	1.16758	-1.320	.188
		No	1.7250	1.19042		
	Tsuri-goshi (Life-pull hip)	Yes	1.1525	.63552	-3.201	.002
		No	1.5750	1.20940		
Ashi-waza	Uchi-mata (Inner thigh reaping)	Yes	2.2881	1.11786	.587	.558
		No	2.2000	.90568		
	Okuri-ashi-barai (Sweeping ankle throw)	Yes	1.3475	.91872	.284	.777
		No	1.3125	.73938		
	Ko-uchi-gari (Small inner reaping ankle throw)	Yes	2.0424	1.45234	1.507	.133
		No	1.7500	1.15287		
	O-soto-gari (Large outer reaping)	Yes	1.5678	1.12834	2.827	.005
		No	1.1875	.50551		
	O-uchi-gari	Yes	1.8644	1.27377	4.721	.000

	(Large inner reaping)	No	1.1500	.55347		

<Table 5> shows the result of verification of differences in offensive techniques depending on the experience of being selected as representative players. In Te-waza, players with the experience have a significance level of 5% and 1%, respectively, above players without the experience in Tai-otoshi(2.0000±1.42625), Kata-guruma(1.9915±1.65119), and Yama-arashi(2.1695±1.60823). For Ko-shi-waza, players without the experience have a significance level of 5% and 1%, respectively, above those with the experience in O-goshi(1.7625±1.18261) and Tsuri-goshi(1.5750±1.20940). For Ashi-waza, players with the experience have a significance level of 5% and 1%, respectively, above those without the experience in O-soto-gari(1.5678±1.12834) and O-uchi-gari(1.8644±.55347).

Table 6. Differences in defensive techniques depending on the experience of being representative players.

Judo techniques		Being representative player	Mean	Standard deviation	t-value	Sig
Te-waza	Ryoude-seoi-nage-gaeshi (Both arm shoulder throw counter)	Yes	3.6017	1.14085	8.816	.000
		No	2.1375	1.15555		
	Kataude-seoi-nage-gaeshi (One arm shoulder throw counter)	Yes	3.9153	1.53910	7.737	.000
		No	2.1750	1.57331		
	Tai-otoshi-gaeshi (Body drop counter)	Yes	2.6102	1.61210	5.044	.000
		No	1.5750	1.06468		
	Kata-guruma-gaeshi (Shoulder counter)	Yes	2.0763	1.62332	4.293	.000
		No	1.2375	.78343		
	Yama-arashi-gaeshi (Mountain storm counter)	Yes	1.8983	1.59266	3.323	.001
		No	1.2500	.86420		
Koshi-waza	Harai-goshi-gaeshi (Hip-sweeping counter)	Yes	1.7881	1.15360	1.838	.068
		No	1.5000	.96784		
	Uki-goshi-gaeshi (Floating hip counter)	Yes	1.7458	.95350	2.288	.023
		No	1.4500	.79396		
	O-goshi-gaeshi (Large hip counter)	Yes	1.3983	.55685	.117	.907
		No	1.3875	.73766		
	Tsuri-komi-goshi-gaeshi (Life-pull hip counter)	Yes	1.4068	.98915	-.587	.558
		No	1.4875	.88581		
	Tsuri-goshi-gaeshi (Life-pull hip counter)	Yes	1.1017	.33050	-2.906	.004
		No	1.3625	.88937		
Ashi-waza	Uchi-mata-gaeshi (Inner thigh reaping counter)	Yes	2.2881	1.11786	.674	.501
		No	2.1875	.88723		
	Okuri-ashi-barai-gaeshi (Sweeping ankle throw counter)	Yes	1.3305	.87759	.373	.710
		No	1.2875	.65976		
	Ko-uchi-gari-gaeshi (Small inner reaping ankle throw counter)	Yes	1.8983	1.19393	1.546	.124
		No	1.6500	.96914		
	O-soto-gari-gaeshi (Large outer reaping counter)	Yes	1.5254	1.01030	2.765	.006
		No	1.1875	.50551		
	O-uchi-gari-gaeshi (Large inner reaping counter)	Yes	1.8305	1.20046	4.738	.000
		No	1.1500	.55347		

<Table 6> shows the result of verification of differences in defensive techniques depending on the experience of being selected as representative players. In Te-waza, players with the experience have a significance level of 0.1% above players without the experience in Ryoude-seoi-nage-gaeshi (3.6017±1.14085), Kataude-seoi-nage-gaeshi(3.9153±1.53910), Tai-otoshi-gaeshi(2.6102±1.61210), and Kata-guruma-gaeshi(2.0763±1.62332)(Yama-arashi-gaeshi(1.8983±1.59266): significance level of 1%).

For Koshi-waza, players with the experience have a significance level of 5% above players without the experience in Uki-goshi-gaeshi-gaeshi(1.7458±.95350) and Tsuri-goshi-gaeshi(1.3625±.88937).

For Ashi-waza, players with the experience have a significance level of 1% and 0.1%, respectively, above those without the experience in O-soto-gari-gaeshi(1.5254±1.01030) and O-uchi-gari-gaeshi(1.8305±1.20046).

4. Conclusion

First, differences in offensive techniques depending on the experience of winning competitions were shown as follows. For Te-waza(hand techniques), players with the experience of winning competitions used Tai-otoshi(Body drop), Kata-guruma(Shoulder), and Yama-arashi(Mountain storm) more than those without the experience. For Koshi-waza(hip techniques), players without the experience used O-goshi(Large hip) and Tsuri-goshi(Life-pull hip) more than those with the experience. For Ashi-waza(foot techniques), players with the experience used O-soto-gari(Large outer reaping) and O-uchi-gari(Large inner reaping) more than those without the experience.

Second, differences in defensive techniques depending on the experience of winning competitions were shown as follows. For Te-waza(hand techniques), players with the experience used Ryoude-seoi-nage-gaeshi(Both arm shoulder throw counter), Kataude-seoi-nage-gaeshi(one arm shoulder throw counter), Tai-otoshi-gaeshi(Body drop counter), Kata-guruma-gaeshi(Shoulder counter), and Yama-arashi-gaeshi(Mountain storm counter) more than those without the experience. For Koshi-waza(hip techniques), players with the experience used Harai-goshi-gaeshi(Hip sweeping counter), Uki-goshi-gaeshi(Floating hip counter), and Tsuri-goshi-gaeshi(Life-pull hip counter) more than those without the experience. For Ashi-waza(foot techniques), players with the experience used O-soto-gari-gaeshi(Large outer reaping counter) and O-uchi-gari-gaeshi(Large inner reaping counter) more than those without the experience.

Third, differences in offensive techniques depending on the experience of being selected as representative players were shown as follows. For Te-waza(hand techniques), players with the experience of being selected as representative players used Tai-otoshi(Body drop), Kata-guruma(Shoulder), and Yama-arashi(Mountain storm) more than those without the experience. For Koshi-waza (hip techniques), players without the experience of being representative players used O-goshi(Large hip) and Tsuri-goshi(Life-pull hip) more than those with the experience. For Ashi-waza(foot techniques), players with the experience used O-soto-gari(Large outer reaping) and O-uchi-gari(Large inner reaping) more than those without the experience.

Fourth, differences in defensive techniques depending on the experience of being selected as representative players were shown as follows. For Te-waza(hand techniques), players with the experience used Ryoude-seoi-nage-gaeshi(Both arm shoulder throw counter), Kataude-seoi-nage-gaeshi(one arm shoulder throw counter), Tai-otoshi-gaeshi(Body drop counter), Kata-guruma-gaeshi(Shoulder counter), and Yama-arashi-gaeshi(Mountain storm counter) more than those without the experience. For Koshi-waza(hip techniques), players with the experience used Uki-goshi-gaeshi(Floating hip counter) and Tsuri-goshi-gaeshi(Life-pull hip counter) more than those without the experience. For Ashi-waza(foot techniques), players with the experience used O-soto-gari-

gaeshi(Large outer reaping counter) and O-uchi-gari-gaeshi(Large inner reaping counter) more than those without the experience.

5. Discussion and Suggestion

5.1. Improved aggression

The coaches must be able to guide the strategy to the judo player for the best performance in accordance with the changes in the rules. The changes in scoring rules changed the players to play more aggressively in matches. Therefore, in line with these changed rules, the coaches must guide different coaching strategies and set up different strategies for each player. This is because when you score first in a game, you can take the lead and proceed with the rest of the game.

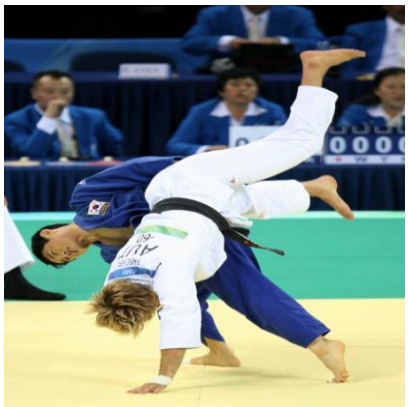
Essentially, the change in score structure from Yuko, Waza-ari, and Ippon to Waza-ari and Ippon and in the game time from 5 minutes to 4 minutes is an important rule change that made the game more aggressive from the start. The reduced physical burden and a minute less game time can be used as the coaching strategy for aggressive management of the game from the outset by the coaches using rule changes strategically.

5.2. Improvement of defensive techniques

If the attacker has an intention to attack, it is considered an attack and a point may be given even if the defensive player is on the ground. This is in contrast to the fact that the game was suspended with Matte when a player was on one's stomach before the rule change. These changes in rule not only allowed the attacker in the competition to continue the flow of offense, but also gave one the opportunity to use Sutemi-waza on the purposely defensive opponent.

The changes in these judo rules are thought to have begun after South Korea's Choi Min-ho used Sukui-nage against Austria's Ludwig Paischer at the men's 60kg judo final at the 2008 Beijing Olympics.

Figure 1. 2008 Beijing Olympic Judo Men's 60kg Final[2].



Note: Choi Min-ho, who won South Korea's first gold medal at the 2008 Beijing Olympics, beat Ludwig Fischer of Austria with Sukui-nage at the men's 60kg judo final match at the Beijing University of Science and Technology Gymnasium on the 9th.

5.3. Judo as an international sport

Today's judo competitions have been developed from school judo competitions in Japan, and the International Judo Federation was founded in 1952, the first World Judo Championships was held in Tokyo in 1956, and the 1960 Rome Olympic Games General Assembly decided judo as an Olympic optional event.

Accordingly, judo has developed into a common sport of the world, not just of Japan. Due to the systematic content of the competition, judo was adopted as a formal event at the 18th Tokyo Olympics in 1964 and has developed into an international competitive sport today.

The internationalization of judo has changed in many ways from the way when it was founded in the past. The original purpose of judo was to be classified into three categories: physical education, competition, and self-discipline, but today, it has become a competition-oriented sport. In addition, various studies have been conducted on the competition and training, and the question of the nature of judo considering excessive competitive spirit has been raised in the process of the changing judo competition.

After all, today's judo continues with a variety of changes and assertions ranging from Japanese-centered educational judo to international sports-driven judo.

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6.1. Thesis degree

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7. Contribution

7.1. Authors contribution

	Initial name	Contribution
Lead Author	JSG	-Set of concepts ☑ -Design ☑ -Getting results ☑ -Analysis ☑ -Make a significant contribution to collection ☑ -Final approval of the paper ☑
Corresponding Author*	CHS	-Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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Research field

- A Research for Judo Usability as a Martial Art in the Security Service Organization in Republic of Korea: Concentrating upon Te-Waza and Koshi-Waza, International Journal of Sport, 1(2) (2016).
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The Application of Cognitive-Behavior Therapy Program for Improving the Performance Strategy of TAEKWONDO Demonstration

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Abstract

The purpose of this study is to verify the effects by developing and applying a cognitive behavior therapy program for improvement of Taekwondo demonstration performance strategies. To achieve the purpose of this study, a program for improvement of Taekwondo demonstration performance strategies is developed through literature review. 9 people voluntarily expressing an intention of participating in this program among demonstration members of the national team acting in Korean Taekwondo Association were formed as an experimental group, and 10 people were sampled and formed as a control group. Total 10 times of the developed program were applied to the experimental group during 90 minutes ~100 minutes. However, this program was not applied to the control group.

As a result of analyzing a difference between the experimental group and the control group to verify the effects of applying a cognitive behavior therapy program, first, there is a statistically meaningful difference between groups in pre and post tests for sports performance strategy test between the experimental group and the control group. After implementation of the program, it showed that condition regulation, setup of image and purpose, easing the tension, and the ability of affect regulation were related to cognitive variable increase in sports performance strategies. Second, there is a statistically meaningful difference between groups in pre and post tests for an automatic thinking(negative) test between the experimental group and the control group. Especially, negative automatic thinking decreased in the experimental group a cognitive behavior therapy program was conducted, and this experimental group also showed a statistically meaningful difference. Third, there is a statistically meaningful difference between groups in pre and post tests of a dysfunctional beliefs test between the experimental group and the control group. After implementation of a cognitive behavior therapy program, all variables of dysfunctional beliefs decreased in the experimental group, and the experimental group also showed a statistically meaningful difference.

[Keywords] ***Cognitive Behavior Therapy, Cognitive Behavior Therapy Program, Taekwondo Demonstration, Performance Strategies, Martial Arts***

1. Introduction

The principal agent in sports is athletes, who indeed are human. In sporting events, athletes, undoubtedly, have a high desire to win and want to be good. Such excessive desire causes psychological problems such as anxiety, tension and stress, and the occurrence of these negative emotions is a hindrance to athletic performance. As athletes with a high-performance level are also human, it is not easy to get good results in every game due to the

*This Paper Summarizes Kim Jong-soo 's Korea National Sport University Doctoral Thesis.

negative emotions they get during a match. Consequently, coaches, athletes and sports scientists have been working hard together to improve athletes' performance on sports courts. In fact, research developing and applying Psychological Skills Training(PST) to strengthen the psychology factor among the athletic performance ability composed of technique, strength, strategy and psychology has been conducted by many sports psychologists[1][2][3][4][5][6][7][8][9][10].

Applying previous studies on sports psychology techniques for improving athletic performance to various individual and group sports demonstrated that regulating and controlling psychological problems of athletes is effective in improving performance[11][12][13][14][15]. Sports psychologists have tried to improve the performance of athletes from various fields and assisted national players of gymnastics[16], taekwondo[17], table tennis[18], shooting[19], archery[20] and badminton[21].

However, Gardner and Moore[22] pointed out that psychological skills training is widely used in sports, even though it has not been proven to significantly improve athletes' athletic performance or effectively reduce negative thoughts and emotions. In domestic research, Kim Yong-seung, Lee Han-kyu, Shin Dong-sung and Baek Dong-ki[23] brought up a similar problem, underlining that psychological skills training is not to emphasize the results to improve athletic performance but to analyze and present solutions for the underlying causes that obstruct athletes' performance. In addition, even though psychological skills training improves athletes' performance and results in positive psychological effects, it is difficult for athletes to continue psychological skills training on their own[24], with the limitation of not spending time on psychological skills training[25]. Psychological skills training has such limitations because it focuses on solving the apparent psychological problems without making a problem-solving approach that controls and regulates the psychological problems that athletes experience in specific situations.

The attempts to apply cognitive-behavioral approach as an alternative to the psychological skills training in the field of sports psychology in Korea have been gradually made and Rational Emotive Behavior Therapy(REBT) to correct athletes' irrational belief system has been studied[26][27][28][29][30][31][32][33][34].

Cognitive Behavior Therapy(CBT) is a process of finding negative notions or dysfunctional thoughts and correcting negative emotions and behaviors[35]. In order to improve athlete's performance, Kim Jong-soo and Jang Deok-seon[36] made an attempt to promote the growth of personal characters as a whole by increasing athletes' self-esteem by enabling them to understand their own psychological problems through the cognitive behavior therapy program[37][38]. In fact, cognitive behavior therapy has been proven to be effective for various psychological problems such as anxiety and depression[39][40] and the effects of cognitive behavior therapy were also found among athletes who reported to have psychological problems, such as depression, due to anxiety, mood swing, low athletic performance level and excessive training[41].

It is necessary to for the athletes to build the ability to find the root causes of psychological problems on their own by approaching psychological problems, such as anxiety, based on cognitive behavior therapy before approaching the problems from the perspective of psychological skills training which only temporarily regulates and controls such problems[36]. However, approaches based on cognitive behavior therapy and relevant programs to improve the athletic performance strategies has not yet been developed in domestic sports courts. Therefore, this study seeks to develop and apply a program based on cognitive behavior therapy to improve athletic performance strategies.

Correspondingly, the purpose of this study is to develop a cognitive behavior therapy program for the improvement of taekwondo demonstration performance strategy and verify the effect

by applying the developed program to the demonstration members. Furthermore, it is expected that the positive effects of the cognitive behavior therapy program will not only lead to an improved demonstration performance of the demonstration team, but also result in the development of holistic development of personal characters with improved understanding and receptive attitudes towards themselves.

2. Research Method

2.1. Research subjects

This study was conducted to develop and apply a cognitive behavior therapy program to improve the performance of taekwondo demonstration members. For the purpose of this study, members of the National Taekwondo Demonstration Team under the Korea Taekwondo Association, who are specialized in Taekwondo demonstration were selected as the study subjects through purposive sampling. 10 of the members who expressed the intention to participate were selected for the experimental groups. However, 1 person was not able to complete the participation due to injury and the program continued with a total of 9 participants. For the control group, random sampling method was applied to those members who did not express the intention to participate. The general characteristics of the study subjects are as shown in below <Table 1>.

Table 1. Research subjects.

Group	# of participants	Age	Demonstration experience(Yr.)
Experiment group	9	22.5±0.72	5.2±2.94
Control group	10	23.4±1.77	3.4±1.57
Total	19	23.0±1.41	4.2±2.44

2.2. Research designs

This study is consisted of control group pretest-posttest design, including pre-test and post-test. A cognitive behavior therapy program was applied to the experimental group applied while no program was provided to the control group. The two groups were evaluated before(pre) treatment and after(post) treatment using the same method. The difference between the experimental group and the control group can be interpreted as the result of the treatment in this experiment[42].

Table 2. Research design.

Group	Before	Treatment	After
Experimental group	O_1	X	O_2
Control group	O_3		O_4

Note: O_1, O_3: Pre-test
O_2, O_4: Post-test
X: Cognitive behavior therapy program.

2.3. Research tools

In order to verify the objective effects of applying the cognitive behavior therapy program, data are collected before and after using the following test sheets and questionnaires.

2.3.1. Korean test of performance strategies(TOPS)

Test of Performance Strategies(TOPS), developed by Thomas, Murphy & Hardy[43], and the questionnaire items of Korean Test of Performance Strategies, developed by Kim Byung-jun and Oh Su-hak[44], were referenced and modified to determine the effects of the application of cognitive behavior therapy program on the performance strategies of taekwondo demonstration members before and after the application. Korean Test of Performance Strategies include a total of 24 question items in 5 domains composed of 4 question items of soliloquy, 7 question items of adjusting physical condition, 5 question items of state of mind and goal setting, 4 question items of relieving stress and 4 question items of emotion control. In this study, the internal consistency reliability coefficient(Cronbach 's α) by factor was .89 for soliloquy, .72 for adjusting physical condition, .82 for state of mind and goal setting, .76 for relieving stress and .73 for emotion control.

2.3.2. Automatic thoughts questionnaire-negative(ATQ-N)

An automatic thoughts scale was used to identify changes in automatic negative notions among taekwondo demonstration members before and after the application of cognitive behavior therapy. The Korean version of Automatic Thoughts Questionnaire-Negative(ATQ-N), a self-report scale developed by Hollon and Kendall[45] to assess how individuals think negatively in their daily lives, revised by Kwon Seok-man and Yoon Ho-gun[46] was used. Automatic Thoughts Questionnaire-Negative(ATQ-N) includes 30 question items in 3 domains composed of 14 question items of dissatisfaction with the reality and desire for change and 11 question items of negative self-evaluation and 5 question items of lethargic and despairing attitude. The subjects were asked to respond to the specified negative thoughts based on a five-point scale ranging from 'never' to 'always' to see how often they had such thoughts during the past week. The study carried out by the authors of ATQ-N examined overseas university students and showed .97 split-half reliability and .96 internal consistency reliability coefficient[45]. In this study, the internal consistency reliability coefficient(Cronbach's *α*) by factor was .87 for negative self-evaluation, .78 for dissatisfaction with the reality and desire for change and .79 for lethargic and despairing attitude.

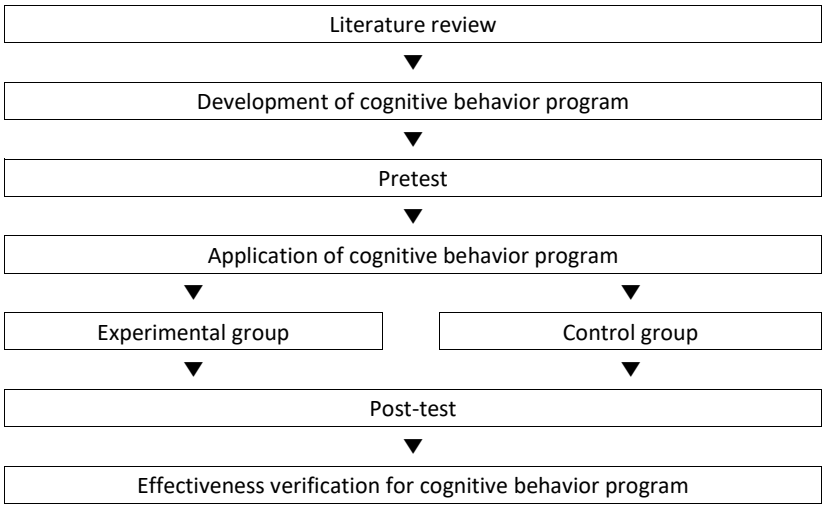
2.3.3. Dysfunctional beliefs test sheet(abridged)

Dysfunctional Beliefs Test sheet was used to identify changes in dysfunctional beliefs of taekwondo demonstration members before and after the application of cognitive behavior therapy program. Dysfunctional beliefs test sheet abridged by Hong Sae-hee and Cho Yong-rae[47] was used for the test. The abridged six-point scale, showing more appropriate results than the original seven-point scale is composed of 36 six-point scale question items, including 12 question items in each of the 3 domains of negative concept of social self, excessive desire to be recognized by others and negative belief in the relationship with others and society(1 point: Not at all, 6 points: absolutely). In this study, the internal consistency reliability coefficient(Cronbach's *α*) by factor was .93 for negative concept of social self, .76 for excessive desire to be recognized by others and .71 for negative belief in the relationship with others and society.

2.4. Research procedure

This study developed a cognitive behavior therapy program through literature review and applied the developed program to the study subjects. Before the application, the experimental group and the control group were pretested. The developed cognitive behavior therapy program was applied only to the experimental group and no treatment was provided to the control group. After the application of the cognitive behavioral therapy program, the experimental group and the control group were verified through post-test to verify the effectiveness of the program. <Figure 1> shows the details of the procedure.

Figure 1. Research procedure.



2.5. Data analysis

In order to verify the effects of the cognitive behavior therapy program application, psychological test was conducted before and after the program. Data collected from the test sheets and questionnaires were analyzed through SPSS 20.0 to examine the differences between the experimental and control groups as well as among the members within each group before and after the program. In doing so, independent sample t-verification was performed to verify homogeneity of the experimental and control groups before the program.

The skewness and kurtosis were calculated to confirm the normal distribution of each group. According to Kline[48], the absolute skewness value of 3 or less and absolute kurtosis value of 10 or less are the criteria for normality. The verification showed that all variables meet the requirements of normal distribution. To analyze the difference between the experimental group and the control group, a repeated measurement ANOVA, which can confirm the significance between the groups with repeated measurements, was performed. The significance level of all statistics was set to .05.

3. Results and Discussion

3.1. Development of cognitive-behavior therapy program

The development of cognitive behavior therapy program consisted of five stages: literature review, program design, preliminary implementation and evaluation of the program, program revision and supplementation and finalization. The developed final program is summarized in below <Table 3>.

Table 3. Developed cognitive behavior therapy program.

Phase	Session	Topic	Description
Exploration	1	Pretest orientation	-Fill out the consent form -Pretest(test sheets and questionnaires) -Psychological education -Cognitive behavior therapy model education -Search for major appealed issues
	2	Automatic identification of thoughts	-Automatic thoughts record sheet(3 sections) -Distinguish thoughts from feelings -Automatic thoughts identification -Recognize emotional changes
	3	Automatic handling of thoughts 1	-Automatic thoughts record sheet(5 sections)

			-Automatic thoughts identification -Find cognitive errors -Correct dysfunctional automatic thoughts -Find reasonable alternatives -Recognize emotional changes
	4	Automatic handling of thoughts 2	-Automatic thoughts record sheet(7 sections) -Find cognitive errors -Evidence verification(supporting and disproving evidence) -Raise socratic questions -Create alternative thoughts -Recognize emotional changes
Discernment	5	Handing intermediary beliefs 1	-Cognitive conceptualization drawing 1 -Identify intermediate beliefs(find assumptions and rules) -Complete sentences(if ...) -Top-down arrow technique
	6	Handing intermediary beliefs 2	-Complete cognitive conceptualization drawing -Top-down arrow technique -Correct intermediate beliefs(make new beliefs)
	7	Handing core beliefs	-Identify core beliefs -Explore childhood data from past -Correct core beliefs(core belief worksheets, brainstorming)
Implementation	8	Implement behavioral techniques 1	-Troubleshooting worksheet -Make decisions
	9	Implement behavioral techniques 2	-Stop thinking -Defocus
	10	Post-test Finish	-Share program feedback -Post-test(test sheets and questionnaires)

3.2. Verification of cognitive-behavior therapy program effectiveness

3.2.1. Homogeneity test for pretest of experimental and control groups

An independent sample t-test was performed on each scale of all factors to verify that there was no difference between the experimental group and the control group in the pretest carried out for the cognitive behavior therapy program. As illustrated in <Table 4>, the comparison of pretest scores between the experimental group and the control group showed no significant difference and confirmed homogeneity. In addition, there was no statistically significant difference between the groups in all factors.

Table 4. Differences in pretest between the experimental and control groups.

Category		Group	*N*	*M*	*SD*	*t*	*p*
Sports performance strategy	Soliloquy	Experimental	9	3.11	1.26	-1.083	.294
		Control	10	3.60	.63		
	Adjusting physical condition	Experimental	9	3.72	.59	.052	.959
		Control	10	3.71	.48		
	State of mind and goal setting	Experimental	9	3.75	.81	-.146	.885
		Control	10	3.80	.48		
	Relieving stress	Experimental	9	2.80	.60	-.952	.354
		Control	10	3.02	.38		
	Emotion control	Experimental	9	3.08	.57	-1.533	.144
		Control	10	3.52	.67		
Automatic thoughts (negative)	Negative self-evaluation	Experimental	9	1.37	.37	.097	.924
		Control	10	1.35	.51		
	Dissatisfaction with reality and desire for change	Experimental	9	2.30	.45	-1.513	.149
		Control	10	2.62	.48		
	Lethargic and despairing attitude	Experimental	9	1.62	.63	-.068	.947
		Control	10	1.64	.50		
Dysfunctional beliefs	Negative concept	Experimental	9	2.30	.96	-.704	.491
		Control	10	2.59	.81		
	Excessive desire	Experimental	9	4.32	.31	1.769	.095
		Control	10	3.98	.49		
	Negative beliefs	Experimental	9	2.65	.59	-1.255	.227

	Control	10	2.97	.50	

Note: *p<.05

3.2.2. Changes before and after the application of cognitive-behavior therapy program

The results of repeated measurement ANOVA performed among the group(experimental group / control group) × measurement period(pre/post) in order to analyze the effects of cognitive behavior therapy on performance strategy are shown in <Table 5> and <Table 6>. The total score on sports performance strategies before and after the application of cognitive behavior therapy program increased by .56 points, from pretest(*M*=3.37) to post-test(*M*=3.93), in the experimental group but decreased by .17 scores, from pretest(*M*=3.57) to post-test(*M*=3.40), in the control group. The total score on automatic thoughts(negative) decreased by .27 scores, from pretest(*M*=1.85) to post-test(*M*=1.58), in the experimental group and decreased by .01 scores, from pretest(*M*=2.00) to post-test(*M*=1.99) in the control group. Similarly, the total score on dysfunctional beliefs decreased by .45 scores, from pre-test(*M*=3.10) to post-test(*M*=2.64), in the experimental group and decreased by .10 scores, from pretest(*M*=3.19) to post-test(*M*=3.09) in the control group.

Table 5. Changes between pre & post cognitive behavior therapy program application tests.

Variable	Group	*N*	Pretest *M(SD)*	Post-test *M(SD)*	Change
Sports performance strategies	Experimental	9	3.37(.63)	3.93(.36)	.56
	Control	10	3.57(.36)	3.40(.43)	-.17
Automatic thoughts questionnaire-negative(ATQ-N)	Experimental	9	1.85(0.40)	1.58(0.38)	-.27
	Control	10	2.00(0.46)	1.99(0.62)	-.01
Dysfunctional beliefs test	Experimental	9	3.10(0.48)	2.64(061)	-.45
	Control	10	3.19(0.45)	3.09(0.67)	-.10

Table 6. Changes between pre & post cognitive behavior therapy program application tests.

Variable	Variable source	Sum of squares *(SS)*	Degree of freedom *(df)*	Mean sum of squares *(MS)*	*F*	*p*
Sports performance strategies	Factors between participants					
	Group(experimental/control)	.278	1	.278	.794	.385
	Error	5.950	17	.350		
	Factors within participants					
	Test period(pre/post)	.365	1	.365	5.392*	.033
	Test period × group	1.277	1	1.277	18.891***	.001
	Error(test period)	1.149	17	.068		
Automatic thoughts questionnaire-negative (ATQ-N)	Factors between participants					
	Group(experimental/control)	.752	1	.752	1.781	.200
	Error	7.176	17	.422		
	Factors within participants					
	Test period(pre/post)	.177	1	.177	4.713*	.044
	Test period × group	.172	1	.172	4.576*	.047
	Error(test period)	.637	17	.037		
Dysfunctional beliefs test	Factors between participants					
	Group(experimental/control)	.681	1	.681	1.411	.251
	Error	8.203	17	.483		
	Factors within participants					
	Test period(pre/post)	.715	1	.715	5.099*	.037
	Test period × group	.302	1	.302	2.158	.160
	Error(test period)	2.383	17	.140		

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

The results of pre and post variance analyses between the experimental group and the control group, which the cognitive behavior therapy program was only applied to the former, conducted to verify the difference between the two groups in terms of the changes in the score on performance strategies, demonstrated that the test period and interaction between the groups have a significant difference, showing a difference in the changes of sports performance strategies between the experimental and control groups(F=18.891, p=.001). It was found that abilities related to cognitive variables of adjusting physical condition, state of mind and goal setting, relieving stress and emotion control are increased after the program. It is consistent with the findings of previous studies[2][3][4][6][11][12][13][14][15] which presented positive effects of cognitive behavior therapy program on cognitive variables such as anxiety control, confidence, positive thinking and vigilance through taring psychological skills. It also indicates the assertion that cognitive behavior therapy programs, which have continuous effects even after a short-period of treatment[49][50], are more effective than psychological skills training programs, with the limitation[24] of short-lasting effects and difficulty of not spending time[25], has high cogency. In regard to the necessity of psychological skills training to analyze and provide solutions for root causes[23], the cognitive behavior therapy is deemed as a solution for the limitations of psychological skills training which only focuses on apparent psychological problems.

As a result of investigating the differences in the changes of the scores on automatic thoughts(negative), a significant difference in the test period and interaction between the groups was observed. It was found that there was a difference between the experimental group and the control group in the change of automatic thoughts(negative)(F = 4.576, p = .047). It can be interpreted as a result of correcting and transforming negative thoughts into more functional thoughts through cognitive behavior therapy programs. In fact, it is consistent with the previous studies in which the effectiveness of cognitive behavior therapy has been proved[51][52][53][54][55][56][57] and other studies[58] showing that cognitive behavior therapy is effective in changing negative thoughts and reducing anxiety in anxiety-provoking situations. Above findings suggest that the correcting negative thoughts is closely related to the improvement of athletic performance strategy. In other words, sports performance, from the standpoint of cognitive behavior therapy programs with the cognitive behavior therapy theory that automatic negative thoughts, intermediate beliefs and core beliefs create emotions and behaviors, can positively affect athletic performance by modifying negative thoughts into positive thoughts.

The results of verifying the difference between the experimental and control groups in the changes of scores on dysfunctional beliefs showed that no significant difference was observed in the interaction between the groups(F=2.158, p=.160) but a significant difference was found in the test period(F=5.099, p=.037). For automatic negative thoughts, dissatisfaction with life and desire for change has decreased with a statistically significant difference in the experiment group while no significant difference was observed in the control group. It is consistent with the positive influences demonstrated in the study conducted by Kwon Jung-hye and Lee Jae-woo[51] in which finding and correcting dysfunctional thoughts was found to bring vitality to daily life. The result showing positive changes of dysfunctional beliefs and negative thoughts, following the cognitive-behavior therapy program, is in line with the previous studies[32][59][60] which found rational changes in beliefs through changing irrational beliefs by modifying the perceptions and behaviors of athletes via counseling techniques of rational emotion-behavior therapy on sports courts. Therefore, cognitive behavior therapy can improve athletic performance by positively transforming dysfunctional beliefs and thoughts.

4. Conclusion and Suggestions

This study developed a program to improve the performance strategy of taekwondo through literature review. The developed program was only applied to the experimental group and not to the control group. In order to verify the effectiveness of the cognitive behavior therapy program, the difference between the experimental group and the control group were compared and analyzed as follows.

First, the cognitive behavior therapy program showed a statistically significant difference between the experimental group and the control group in the pre and post tests on the sports performance strategy. It was found that cognitive variables of adjustment of physical condition, state of mind and goal setting, relieving stress and emotion control ability related to sports performance strategies are increased after the program.

Second, the cognitive behavior therapy program showed a statistically significant difference between the experimental and control groups in pre and post automatic thoughts(negative) tests. In particular, automatic negative thoughts were reduced in the experimental group participated in the cognitive behavior therapy program, showing a statistically significant difference.

Third, the cognitive behavior therapy program showed a statistically significant difference between the experimental and control groups in pre and post dysfunctional beliefs tests. In fact, all variables of dysfunctional beliefs were reduced in the experimental group participated in the cognitive behavior therapy program, showing a statistically significant difference.

This study developed and applied cognitive behavior therapy program to improve the performance strategy of taekwondo. Based on the procedures and findings of this study, the followings are suggested for further research.

First, in this study, cognitive behavior therapy program was applied to a group of 9 and not to individuals. As a limitation of working in a group, individuals' inmost perceptions could not be explored. For the wholesome growth of whole each individual, growth, future studies should be conducted on the basis of individuals or small groups to understand more in-depth. It will also be meaningful to conduct case studies of counseling for personal growth.

Second, this study developed and applied cognitive behavior therapy program suitable for sports field. In sports psychological counseling, it is also necessary to find and solve the root causes of counselees by continuously studying cognitive behavior therapy. In addition, psychological counseling, wider in scope, with applied cognitive behavior therapy should be conducted to improve athletes' performance in taekwondo demonstration field as well as in various sports fields.

Third, this study developed the cognitive behavior therapy program to which the participants adapted; however, developing and applying personalized cognitive behavior programs for each individual can be more effective.

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6. Contribution

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Corresponding Author	CDS	-Corresponding ☑ -Play a decisive role in modification ☑ -Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑ -Participants in Drafting and Revising Papers ☑ -Someone who can explain all aspects of the paper ☑

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The Effects of TAEKWONDO Training on the Leadership Skills and Community Spirit of Middle School Girls

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Abstract

The purpose of this study was to identify the effects of Taekwondo training on leadership and the relationship between the leadership of girl's middle school students and community spirit and to provide basic materials for various educational program development to nurture leadership that can be used in Taekwondo Gym. In this study, preliminary survey was made on the parents of Taekwondo Gym. This study was performed according to the following study procedures. First, on 250 girl's middle school students of the students who have been trained in Taekwondo Gym. in Daegu for more than six months were selected through Convenience Sampling and were asked to answer the survey in self-administration method. Among the 250 returned answers, 238 answers excluding insincere or incomplete ones were analyzed as valid samples. Second, statistical verification was made according to the purpose of material analysis using SPSS Program 23.0. General characteristics were identified by frequency analysis and for the reliability verification cronbach's α coefficient was calculated. Taekwondo training factors, leadership skill factors and community spirit factors were analyzed for the factor analysis, while the effects of Taekwondo training factors on the leadership and community spirit factors were analyzed by multi regression analysis. The following conclusions were made according to the above research methods and material analysis methods. First, in the effects of Taekwondo training on leadership skill, emotional factors, living attitude factors influenced decision making factors, and emotional factors, social factors, physical factors and living attitude factors influenced self-understanding factors. Second, in the effects of Taekwondo training on community spirit, social factors and living attitude factors of Taekwondo training influenced altruism factors and emotional factors and social factors influenced social responsibility factors. Third, in the effects of leadership skill on community spirit, self-understanding factors and leadership factors influenced altruism and self-understanding factors influenced significantly on social responsibility factors. As such, it was found that Taekonwdo training influenced leadership skill and community spirit.

[Keywords] ***Girl's Middle School Students, Taekwondo, Taekwondo Training Leadership, Community Spirit, Martial Arts***

1. Introduction

Taekwondo plays a significant role in improving the strength of mental and physical health of adolescents who often make inadequate rational judgment thorough etiquette, leadership, cooperation, patience, self-sacrifice, observance of rules and volunteer works included in the spirit of taekwondo which contains behavioral philosophy helpful for character training, such as realization of justice, respect for life and sense of responsibility, accompanied by the strength and technical aspects necessary for the function of self-preservation. Despite such benefits of taekwondo, the inharmoniousness between traditional Korean values and Western ethics, rapid

social changes, and weakened function of upbringing along with the increasing number of incidences of juvenile crime and wrongdoings such as drinking alcohol, smoking tobacco and use of hallucinogenic substances have gradually increased and become a serious social problem[1].

In Korea, emphasis in only on the education of knowledge with exam-oriented education, while passively dealing with personality education. In addition, the weight of upbringing at homes is decreasing in the socio-economic reality in which both parents need to work for economic reasons[2]. Due to such social characteristics, the leadership that plays a role in leading community values such as politics, economy, society, culture, education, religion and sports has been in the limelight[3]. In particular, leadership-related education should include communication in terms of exchanging individuals' ideas, messages and information, decision-making to alternatively select one from various opposing patterns of behavior and interpersonal skills. Learning the leadership skills in real life can help young children succeed in their personal, family, school and social life.

It is important for organizations in charge of taekwondo education to provide educational programs helpful for making appropriate perception towards leadership and encourage the trainees to exercise leadership in their daily lives as well as to develop and promote the leadership skills that the trainees have.

Therefore, this study carries a great significance in that it provide fundamental data for effective taekwondo education and solutions for social problems of the youth by identifying the effects of improving leadership skills through participating in taekwondo with regard to leadership which has emerged as an effective solution for everyday problems found in the daily life of the youth on the community spirit

2. Method

2.1. Subjects

In this study, 350 female middle school students in Daegu who learn taekwondo were surveyed through a convenient sampling method. Self-administration method was adopted for the respondents to check the questionnaire and place a check mark in the corresponding answer box. Among the surveys collected, 238 questionnaires, excluding unfaithful or partially missing responses, were selected as a valid sample.

2.2. Measurement method

The method of constructing the questionnaire in this study is as follows.

First, the questionnaires used in the study of Chung Hee-chul(2009) and Choi Hyung-kyu(2009) were modified and supplemented to be used in line with the purpose of this study[4][5].

Second, the leadership skills used in the study of Morris(1996) and Dormody & Seevers(1994) were modified and supplemented according to the purpose of this study[6][7].
Third, the questionnaires used in the study of Penner, Fritsche, Craiger & Freifeld(1995) were modified and supplemented to suit the purpose of this study[8].

2.3. Validity and reliability of the questionnaire, correlation

In this study, factor analysis was performed to determine the construct validity of the measurement tools. Maximum likelihood method was used as the factor extraction method used and the eigen value was set to 1.0 or above. Varimax rotation method among the orthogonal rotation methods was selected as the factor rotation method with a loading value based on ± 0.4 or above. In addition, reliability in this study was verified by calculating Cronbach's α coefficient.

2.4. Analysis of data

The SPSS program 23.0 was used for statistical analysis according to the purpose of data analysis as follows.

First, frequency analysis was conducted for general characteristics.

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

Third, factor analysis was conducted to classify taekwondo training factors, leadership skill factors and community spirit factors.

Fourth, correlation analysis was conducted to examine the relationship between each variable.

Fifth, multiple regression analysis was used to investigate the effects of taekwondo training factors on the leadership skills and community spirit factors, with a statistical significance level of P <.05 for verification.

3. Results

3.1. Impact of taekwondo training on leadership skills

Table 1. Impact of taekwondo training on decision-making.

Dependent variable / Independent variable	Decision making			
	b	Std.E	β	t
Emotional	.347	.086	.312	4.358***
Social	.235	.099	.267	1.874**
Physical	.021	.072	.015	.344
Living attitude	.242	.089	.188	2.665**
R^2	.366			
F	48.2768***			

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

<Table 1> shows that the emotional(β = .312), social(β = .267) and living attitude(β = .188) of taekwondo training significantly influence decision making, with coefficient of determination R^2=.366 or 36.6% of explanatory power.

Table 2. Impact of taekwondo training on self-understanding.

Dependent variable / Independent variable	Self-understanding			
	b	Std.E	β	t
Emotional	.183	.058	.196	3.3479**
Social	.328	.063	.321	4.661***

Physical	.166	.051	.167	2.653**
Living attitude	.173	.056	.159	2.472**
R^2	.347			
F	57.196***			

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

<Table 2> shows that the emotional(β = .196), social(β = .321) , physical(β=.167) and living attitude(β = .159) of taekwondo training have a significant impact on self-understanding, with coefficient of determination R^2=.347 or 34.7% of explanatory power.

Table 3. Impact of taekwondo training on leadership.

Dependent variable / Independent variable	Leadership			
	b	Std.E	β	t
Emotional	.139	.088	.125	1.314
Social	.351	.093	.289	3.679***
Physical	.198	.072	.156	2.476*
Living attitude	.218	.081	.187	2.553
R^2	.287			
F	55.264***			

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

<Table 3> indicates that social(β = .289), physical(β = .156) and living attitude(β = .187) of taekwondo training significantly influence leadership with coefficient of determination R^2 = .287, or 28.7% explanatory power

3.2. Impact of taekwondo training on community spirit

Table 4. Impact of taekwondo training on altruism.

Dependent variable / Independent variable	Altruism			
	b	Std.E	β	t
Emotional	.065	.056	.063	1.267
Social	.446	.062	.447	5.642***
Physical	.087	.049	.134	2.176*

Living attitude	.235	.055	.256	4.247***
R^2	.437			
F	61.552***			

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

<Table 4> illustrates that social(β = .447), physical(β = .134) and living attitude(β = .256) of taekwondo training have a significant impact on altruism with coefficient of determination R^2 = .437, or 43.7% explanatory power.

Table 5. Impact of taekwondo training on social responsibility.

Dependent variable / Independent variable	Social responsibility			
	b	Std.E	β	t
Emotional	.265	.068	.230	3.347**
Social	.346	.079	.355	4.215***
Physical	.097	.063	.096	1.125
Living attitude	.149	.067	.138	1.461
R^2	.405			
F	61.324***			

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

<Table 5> shows that emotional(β = .230) and social(β = .355) variables of taekwondo training have a significant influence on social responsibility with coefficient of determination R^2 = .405, or 40.5% explanatory power.

3.3. Impact of leadership skills on community spirit

Table 6. Impact of leadership skills on altruism.

Dependent variable / Independent variable	Altruism			
	b	Std.E	β	t
Decision making	.018	.053	.028	.276
Self-understanding	.498	.060	.452	6.064***
Leadership	.199	.047	.263	4.715***
R^2	.438			

F	75.109***

Note: ***p<.001

<Table 6> shows that self-understanding(β=.452) and leadership(β = .263) of leadership skills have a significant effect on altruismwith coefficient of determination R^2 = .438, or 43.8% explanatory power.

Table 7. Impact of leadership skills on social responsibility.

Dependent variable / Independent variable	Social responsibility			
	b	Std.E	β	t
Decision making	.072	.058	.128	1.564
Self-understanding	.356	.067	.351	4.239***
Leadership	.054	.051	.050	.786
R^2	.352			
F	46.158***			

Note: ***p<.001

<Table 7> demonstrates that self-understanding of leadership skills(β = .351) has a significant effect on social responsibility, showing coefficient of determination R^2 = .352 or 35.2% explanatory power.

4. Discussion

Boyd, Herring & Brier(1992) argued that leadership is influenced by degree of activity participation, and Morris(1996) found that the participation of the youth in school activities show a significant impact on the leadership among the youth[9][10].

Hersey & Blanchard(1982) stated that leadership is a process that affects individual or group activities as a part of efforts to accomplish a goal[11]. In fact, Lord & Maher(1993) demonstrated that being recognized as a leader, rather than becoming a leader, is more important in leadership, which involves a process by which an individual is recognized as a leader by others and a certain position[12].

In the study of Jang Jin-woo(2005), there was a significant difference in community spirit, that is, both the altruism and social responsibility sub-factors. In addition[13], Lee Han-ju(2005) found that the group of elementary school students practicing in taekwondo training shows a superior level of living attitude, establishment of self-awareness, filial piety and community spirit compared to their counterpart[14].

MaClver(1924) stated that communities are formed by a common interest and willingness to pursue common interest[15]. In addition, Kanter(1972) argued that all human beings in a community interact with each other from a holistic perspective, resulting in comprehensive ties and equality among all members and enhancing the independence and cohesion of the group.

Furthermore, harmony such as brotherhood in a community, with members clearly recognized roles of their own, strengthens internal relations and promote collaborative efforts[16].

Therefore, middle school students' participation in taekwondo training makes them excited and interested. Especially, taekwondo, as a martial art underlining not only physical training but also cultivation of mental strength, has educational effects and values that enhance the qualifications for democratic citizens and focus on personality development and self-education. Moreover, taekwondo training enables the trainees to accept and perform socially approved behaviors and roles in peer groups, helping them to maintain good relationships with others by making them to be recognized and accepted by other members while recognizing and accepting other members simultaneously. Such phenomena have influenced the group consciousness formed based on common sense of unity, fellowship and group motivation.

5. Conclusion

First, taekwondo training affects leadership skills.

Second, taekwondo training has an impact on community spirit.

Third, leadership skills affect community spirit.

Taken together, it can be concluded that taekwondo training affects leadership skills and community spirit. At taekwondo studios, where most of the taekwondo practitioners are young children, it is important to provide sound education programs related not only to taekwondo exercises, but also to leadership, for the students to develop leadership skills for their cultivation of healthy life skills of leadership and exercise of leadership in their daily life.

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7. Contribution

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