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Corresponding author  
E-mail: [eogus6008@hanmail.net](mailto:eogus6008@hanmail.net)

Peer reviewer  
E-mail: [editor@j-institute.jp](mailto:editor@j-institute.jp)

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## A Study of Changes in Sporting Confidence of JUDO Athletes Following the Extent of Physical Training

Kim Byeong-chan

*Kyungwoon University, Gumi, Republic of Korea*

### Abstract

*The purpose of this study is to provide and utilize basic data to maximize enhancement of Judo performance as a basic data for developing anxiety resolution training program for maintaining optimal state of psychology in order to analyze the differences in the state of sporting confidence according to the extent of physical training of high school Judo athletes.*

*Therefore, the results of this study are as follows.*

*It was to analyze and identify the relationship with the influence of the extent of physical training of the high school Judo athletes on the state of sporting confidence. In addition, when applying such results to the improvement of performance, it was to accurately identify the level of each individual's extent of physical training to control the achievement motive, resolve the anxiety of the state of competition and sporting confidence of high school Judo athletes, while simultaneously presenting to enable appropriate management and guidance. In the state of sporting confidence, the extent of physical training did not demonstrate any statistically significant difference. That is, there was no anxiety related difference in the state of sporting confidence according to the extent of physical training.*

*Furthermore, the extent of physical training turned out to have no effect on the anxiety of the state of competition(state of confidence). That is, there was no factor influencing the state of sporting confidence.*

**[Keywords]** Martial Arts, Judo, Athletes, Sporting Confidence, Physical Training

## 1. Introduction

### 1.1. Need for study

It has developed into one of Korea's most representative martial art sports, and especially in recent years, the world Judo contest has been revitalized to earn much love from the people. Judo is a one-on-one tournament in which weapons are not used. Judo athletes use their hands to hold each other, throw, press, squeeze, bend each other, and harmonize their mental power along with their strength and techniques to most reasonably apply the power of both their body and mind, thereby requiring the physical and mental unity as a martial art and martial art sport, representing an East Asian culture. Currently,

a serious issue facing our elite sports is that the weakening of the athletes' mental strength against the improvement of the physical environment of the athlete, the relative decrease of the athletic performance and the lack of proper ways found to resolve them all indicate the need for changes in the training method for elite athletes[1].

In fact, sports psychology had been focused on research and education until the 1980s, but it would not be unrelated to the diversification of training methods in the rapid growth of the on site support in the aftermath of the 1990s[2]. As an important goals of sports psychology in recent years, there is an increasing tendency to focus on the psychological and emotional coping and

countermeasures to enable athletes to achieve best performance in a tournament situation. Such field centric trend is not an exception in the field of sports psychology in Korea, and so the implementation of the sports psychology counselor qualification of the Korean Society of Sports Psychology and the summer sports psychology counselor training program every year since 2005 is a reflection of the demand in the field[3]. Psychological technique training for improving performance in sporting situations has been conducted from various perspectives and its effectiveness has been tested. Studies of the on site application of psychological technique training are focused on maximizing the performance of the athletes by analyzing and improving various psychological factors of the athletes[4].

The components of the psychological characteristics which influence the performance include types of personality, motivation, level of anxiety, forms of concentration and surrounding, and mental power, and if such factors remain negative, they might operate as restrictive factors for the maximum performance[5][6]. This study intends to examine the level and types of anxiety felt by Judo athletes before the tournament, and a study of the relationship of the state of sporting confidence according to the amount of Judo athlete's training would be quite meaningful, and it is considered that the effort to analyze and understand the level and types of the state of anxiety felt is essential as one of the important issues to be resolved in advance in order to maximize the performance of Judo and performance.

### 1.2. Purpose of study

The purpose of this study is to provide and utilize basic data to maximize enhancement of Judo performance as a basic data for developing anxiety resolution training program

for maintaining optimal state of psychology in order to analyze the differences in the state of sporting confidence according to the extent of physical training of high school Judo athletes.

### 1.3. Hypotheses of study

First, high school Judo athletes will have different sporting confidence according to the intensity of training.

Second, high school Judo athletes will have different sporting confidence according to the training frequency.

Third, high school Judo athletes will have different sporting confidence according to the physical training period.

Fourth, high school Judo athletes will impact sporting confidence according to the extent of physical training(intensity, frequency, and period).

### 1.4. Limitations for study

To achieve the purpose of this study, restrictions have been placed as follows.

First, athletes who play in the national tournaments and who are registered with the Korea Judo Association were selected.

Second, high school Judo athletes' individual environmental factors were not considered.

Third, personality factors of the subjects were not considered.

Fourth, only test forms were used for evaluation without any formalized instrument for evaluating the individuals' psychological state.

Fifth, in terms of the athletes' career, 8 years or less and 13 years or more were applied as 8 years and 13 years each.

## 2. Methods of Study

**Table 1.** Classification of the survey subjects' characteristics and the number of subjects.

Background variables		Classification	Frequency (people)	Percentage(%)
High school	Gender	Male	247	67.1

characteristics	Female		121	32.9
	Grade year	1	Male	108
Female			43	11.7
Total		151	41.0	
2		Male	79	21.5
		Female	34	9.2
Total		113	30.7	
3		Male	60	16.3
		Female	44	12.0
Total		104	28.3	
Training intensity	1 hour		101	27.4
	2 hours		158	42.9
	3 hours		109	29.6
Training frequency	4 days or less		48	13.0
	5 days		90	24.5
	6 days or more		230	62.5
Training period	1 month		112	30.4
	2 months		69	18.8
	3 months		187	50.8
Total			368	100.0

This study intend to examine the relationship between the extent of physical training and the effect of achievement motivation and the anxiety of the state of sport on the state of sporting confidence according to gender and grade level of high school Judo athletes. <Table 1> illustrates specific gender of the study subjects, the subject classification by grade level, and the number of subjects. The number of male athletes turned out to be 247(67.1%), female athletes were 121(32.9%), grade 1 was 151 people(41.0%), grade 2 was 113 people(30.7%), grade 3 was 104 people(28.3% 27.4%), 1 hour of training intensity was 101 people(27.4%), 2 hours was 158 people(42.9%), 3 hours was 109 people(29.6%), training intensity of 4 days or less was 48 people(13.0%), 5 days was 90 people(24.5%), 6 days or more was 230(62.5%), training period of 1 month was 112 people(30.4%), 2 months was 69 people(18.8%) and 3 months was 187 people(50.8%), and after 450 copies of questionnaires were distributed and explained,

they were collected and 10 were not collected, and except for 72 copies of questionnaires which were determined to be inadequate or unreliable, 368 copies available for analysis were surveyed and analyzed.

## 2.2. Survey tool

### 2.2.1. Structure of questionnaire

The questionnaires used to test the research hypotheses of this study were structured as follows. The socio-demographic characteristics of Judo athlete were 1 question for gender, 1 question for each grade level, 3 questions for the extent of physical training(intensity, frequency and duration), and 13 questions for the state of sporting confidence, which were graded based on the Likert's 4 phase and 5 phase scale.

### 2.2.2. Details of questionnaire

As for the tool used in this study, the state of sporting confidence test had revised and

supplemented 13 questions produced by Vecley after obtaining experts' advices[7]. The questionnaires consisted of a total of 13 questions and were scored by Likert's 5 phase

scale. <Table 2> illustrates the contents of the questionnaires which were revised and supplemented for the state of sporting confidence.

**Table 2.** Key structure of the state of sporting confidence questionnaire and the number of questions.

Composition index	Sub-variables	No. of questions
State of sporting confidence	(1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13)	13
Total		13 questions

### 2.2.3. Reliability and validity of questionnaire

#### 2.2.3.1. Reliability test

Reliability refers to the spread of the resulting measurement values when the same concept is repeatedly measured using an independent method. In this study, reliability analysis was conducted by using Cronbach's  $\alpha$  as a method for testing the reliability.

**Table 3.** Reliability coefficient for the state of sporting confidence.

	Cronbach's $\alpha$	Number of items
Confidence	.866	13

The reliability coefficient of the state of sporting confidence for <Table 3> turned out to be .866, which is higher than that of the sporting confidence.

#### 2.2.3.2. Validity test

In order to survey the validity of this study's achievement motivation, as for the factor model of the validity questionnaire, the principle component analysis was performed as a general procedure for the exploratory factor analysis, and the response for each question was set to Likert scale's 5 point scale for use.

**Table 4.** Factor analysis for the state of sporting confidence.

State of sporting confidence	Questions	Factor load quantity	Rotation sum of squares and load value		
			Total	% Dispersion	% Accumulated
State of sporting confidence	Person of state 7	.671	5.006	38.505	38.505
	Person of state 11	.662			
	Person of state 4	.661			
	Person of state 10	.657			

	Person of state 8	.649			
	Person of state 2	.643			
	Person of state 9	.639			
	Person of state 1	.623			
	Person of state 12	.619			
	Person of state 5	.594			
	Person of state 6	.583			
	Person of state 13	.552			
	Person of state 3	.486			
KMO		.915			
Bartlett's sphericity test		1327.423***			

Note: \*\*\* $p < .001$

Examining the factor analysis of the state of sporting confidence factor of <Table 4>, the KMO value turned out to be as high as .915. In addition, Bartlett's sphericity test value, which indicates the suitability of factor analysis, turned out to be  $\chi^2 = 1327.423$  with .000 for the probability of significance, and so the use of factor analysis is appropriate, and it may be said that common factors exist.

### 2.3. Data processing

Following data search, the data determined to be unreliable were excluded from the analysis, after which the data available for analysis by the researcher were individually entered into the computer, after which SPSS Statistics 18.0's program was used to execute the overall statistics according to the purpose of the data analysis.

One-way ANOVA was executed to test the differences in the achievement motivation according to the extent of physical training (frequency, intensity, and duration). A post-hoc test was conducted for the variables with statistically significant differences demonstrated. Path analysis and multiple regression were performed by using the step selection method to identify the extent of physical training's impact on the state of sporting confidence. The significance level of all statistics was set to  $p < .05$ , respectively.

## 3. Results

### 3.1. Analysis of differences between Judo athletes' extent of physical training(intensity) and the state of sporting confidence

**Table 5.** Breakup and analysis of the Judo athletes' extent of physical training(intensity) and the state of sporting confidence.

	Intensity	N	Mean	Standard deviation	F	p	Scheffe's

State of sporting confidence	1 hour(a)	101	3.08149	.444136	.907	.405	
	2 hours(b)	158	3.04232	.585970			
	3 hours or more(c)	109	2.98481	.501694			
	Total	368	3.03603	.525423			

Examining the state of sporting confidence's difference test according to the extent of physical training(intensity) in <Table 5>, the state of sporting confidence did not show a statistically significant difference. That is, there was no difference in anxiety in the state of sporting confidence according to the extent of physical training(intensity).

### 3.2. Analysis of differences between Judo athletes' extent of physical training(frequency) and the state of sporting confidence

**Table 6.** Breakup and analysis of the Judo athletes' extent of physical training(frequency) and the state of sporting confidence.

	Frequency	N	Mean	Standard deviation	F	p	Scheffe's
State of sporting confidence	4 days(a)	48	3.04883	.474037	.111	.895	
	5 days(b)	90	3.01368	.419360			
	6 days or more (c)	230	3.04211	.572450			
	Total	368	3.03603	.525423			

Examining the state of sporting confidence's difference test according to the extent of physical training(frequency) in <Table 6>, the state of sporting confidence did not show a statistically significant difference. That is, there was no difference in anxiety in the state of sporting confidence according to the extent of physical training(frequency).

### 3.3. Analysis of differences between Judo athletes' extent of physical training (period) and the state of sporting confidence

**Table 7.** Breakup and analysis of the Judo athletes' extent of physical training(period) and the state of sporting confidence.

	Period	N	Mean	Standard deviation	F	p	Scheffe's
State of sporting confidence	1 month(a)	112	3.00538	.516505	.275	.760	
	2 moths(b)	69	3.04623	.437963			
	3 months or more (c)	187	3.05063	.560864			
	Total	368	3.03603	.525423			

Examining the state of sporting confidence's difference test according to the extent of physical training(duration) in <Table 7>, the state of sporting confidence did not show a statistically significant difference. That is, there was no difference in anxiety in the state

of sporting confidence according to the extent of physical training(duration).

### 3.4. Impact of the extent of physical training on the state of sporting confidence

**Table 8.** Multiple regression analysis of the extent of physical training on the state of sporting confidence.

Sporting confidence	Non-standardization factor		Standardization factor	t	Probability of significance	Collinearity statistics	
	B	Standard error	Beta			Tolerance limit	VIF
(Constant)	3.079	.225		13.664	.000		
Intensity	-.051	.036	-.074	-1.406	.161	.991	1.009
Frequency	.001	.039	.001	.020	.984	.977	1.024
Period	.026	.032	.043	.810	.419	.969	1.032

$R^2 = .007$ , Adjusted  $R^2 = -.001$ ,  $F = .820^{***}$

Note:  $***p < .001$

Examining the multiple regression analysis of the extent of physical training on the state of sporting confidence in <Table 8>, the coefficient of determination is  $R^2 = .007$ , F value is .820, and the probability of significance is  $p < .001$ , so the sample regression may be said to be statistically significant. However, there were no factors influencing the state of sporting confidence via the extent of physical training.

## 4. Discussion

The purpose of this study is to verify and investigate the anxiety and confidence in instructing Judo athletes in the field by empirically analyzing the relationship between the high school Judo athletes' extent of physical training for each grade level on the state of sporting confidence.

In a previous study, it was reported that in the study of the impact of the high school Judo athletes' achievement and goal oriented tendency and confidence on the competitive anxiety, for 324 subjects of high school Judo athletes, the achievement and goal oriented tendency and competitive anxiety, and confidence were all statistically significant for gen-

der, grade level, weight class and athletic career[8], and in a competitive anxiety study according to the high school Judo athletes' sporting confidence and performance rating, for 230 subjects of high school Judo athletes, the cognitive and physical confidence's cognitive state of anxiety according to paradigm had no significant change, and the physical state of anxiety and confidence were said to be very high before tournament[9], and in a study of the impact of the Judo athletes' sporting confidence level on the attribution type, for 38 subjects of high school, college, and adult Judo athletes, it was reported that special sporting confidence and the state of sporting confidence were attributed to the internal, stable, and controllable factors as for the causes of the tournament results relative to the high group and low group[10].

To improve the sporting confidence, the state of confidence should be strengthened, and it turned out that the cognitive state of anxiety and physical state of anxiety should be weakened to improve the state of sporting confidence. It turned out that there was no factor of impact on the state of sporting confidence for achievement level and gender. It may also be the case that the results may be in disagreement with this study while being

partially consistent with the above researchers. Accordingly, the state of sporting confidence needs much further studies.

## 5. Conclusion

The purpose of this study was to analyze and identify the relationship between the extent of physical training of high school Judo athletes and its impact on the state of sporting confidence. In addition, when applying such results to the improvement of tournament performance, it was necessary to accurately identify the level of each individual's extent of physical training to resolve the achievement motivation and the anxiety of the state of competition and control the sporting confidence of high school Judo athletes, while proposing to appropriately manage and instruct them simultaneously. In the state of sporting confidence, the extent of physical training did not demonstrate any statistically significant difference at all. That is, there was no significant difference in the state of sporting confidence according to the extent of physical training.

In addition, the extent of physical training turned out to have no factor of impact on the anxiety of the state of competition (state of confidence). That is, it turned out that there was no factor impacting the state of sporting confidence.

This study might be able to obtain better information if an empirical analysis is performed for the results according to behaviors by investigating causes in depth via interviewing method rather than indexing the actual conditions by processing statistical data for the relationship between the extent of physical training and confidence in the field of instruction for high school Judo athletes based on the empirical analysis of the relationship of the achievement motivation.

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**Author**

**Kim Byeong-chan** / Kyungwoon University Assistant  
Professor

B.A. Yongin University

M.A. Kwandong University

Ph.D. Seonam University

Research field

- A Study on Changes in the Biorhythm in Guard Duties and CCTV Monitoring Works for Work Duration, Korean Security Science Review, 35 (2013).
- The Impact of Security Major College Students on the Personal Relations and Satisfaction Factors in Martial Art Training, Journal of The Korean Society of Private Security, 13(2) (2014).

Major career

- 2005~present. Judo at Kyungwoon University, Head Coach
- 2010~present. Korea Judo Association, Referee
- 2010~present. Korean University Judo Federation, Director

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Corresponding author  
E-mail: [parkjs@kmu.ac.kr](mailto:parkjs@kmu.ac.kr)

Peer reviewer  
E-mail: [editor@j-institute.jp](mailto:editor@j-institute.jp)

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## Analysis on the Effect of Dahn-TAEKWONDO Training on the Improvement of Juvenile Spinal Asymmetry

Choi Man-gyu<sup>1</sup>

*Dahn Taekwondo Institute, Seoul, Republic of Korea*

Park Ju-sik<sup>2\*</sup>

*Keimyung University, Daegu, Republic of Korea*

### Abstract

The spine is a column of our body and dissymmetry of the spine can cause problems on our health.

In this study, the origin of idiopathic spine dissymmetry among adolescents is explained that physical force does not flow fully so that chilly draft comes into being.

The main purpose of this study is to analyze the effect of the spine dissymmetry improvement program. X-ray examination on the thoracic vertebrae and the lumbar vertebrae was applied before and after 12-week Dahn Taekwondo program to each participant.

In this study, we apply the Dahn-Taekwondo 'Spinal Asymmetry Improvement Program' to 18(9-18 year old) adolescents with spinal asymmetry 3 times per week and 1 hour per 1 day for 12 weeks. The results are as follows.

First, the Dahn-Taekwondo spinal asymmetry improvement program brings significant reduction( $p < .001$ ) of the Cobb's angle of thoracic asymmetry in adolescents.

Second, in the Taekwondo lumbar asymmetry improvement program, the lumbar asymmetry Cobb's angle of adolescents decreased significantly( $p < .001$ ).

These findings indicate that the Dahn Taekwondo spine improvement program is effective for the juveniles with spine dissymmetry and can be recommended to prevent and treat spine dissymmetry among juveniles.

Therefore, Dahn-Taekwondo spinal asymmetry improvement program can be used as a body correcting exercise for young people who do little physical activity and especially sit long time with unstable postures.

**[Keywords]** Juveniles, Dahn Taekwondo, Cobb's Degree, Spine Dissymmetry, Thoracic Vertebrae

## 1. Introduction

Scoliosis which is frequently seen in adolescents among spinal-related diseases refers to a state in which the vertebrae are bent to the right or left side of the vertebra when viewed from the back, which is often referred to as Cobb's angle in clinical practice. Scoliosis was defined as more than 5° in the past, but recently, scoliosis is generally defined as the case that Cobb's angle is larger than 10° [1].

According to a report by the Kyunghyang Shinmun[2], the National Health Insurance Corporation(NHIC) reported that 4 out of 10

people with a spinal column bending back and forth that visited the hospital in 2014 were teenagers. In 2012, 144,413 patients were treated due to bending of the spine(including scoliosis and spinal column with bending back and forth), and women(92,454) were nearly twice as many as men(55,459). By age, teenagers were the most common (53,562, 38.3%). Patients in their 20s(19,885, 13.7%) followed, and 6371(4.4%) children under 9 years accounted for 56.3% of the patients below 20 years old. The number of teenagers was 1183 in 100,000 patients, 4.1 times more than the average(291), and 62% of teenagers were female.

According to the Korean Society of Orthopedic Surgery[3], the types of scoliosis are largely divided into idiopathic, congenital, and muscle neurogenic scoliosis. Of these, 85 to 90% are reported as idiopathic scoliosis with unknown cause. It occurs mainly before puberty, and to female student twice as often as to boys. In previous studies, it is reported that one of the causes of idiopathic scoliosis. About the causes of idiopathic scoliosis, Chae & Lee & Shin & Kim & Lee & Kim[4], suggests the use of computers for a long period of time with mental stress and inappropriate posture related to study, the height of desks and chairs neglecting the physique, heavy backpacks, and lack of exercise. Kang[5] reported that deformation of the vertebrae caused by incorrect posture management in the growing phase progressed to abnormal spinal deformity. In addition, Park & Park[6] stated that it is important to maintain the function of the spine and the spine correctly in order to prevent scoliosis. Kim[7] and Mun[8] also pointed that young people need education and practice for correct posture for spinal health. Therefore, exercise therapy for the treatment of juvenile idiopathic scoliosis is the mostly research attempting to correct the wrong posture into exercise. As exercise therapy, there are Qigong Gymnastic[9], mat exercise[10], lumbar stabilization exercise[11], lumbar stretching[12], gyotonic exercise program[13], exercise with bands[14] jimbol[15] and Pilates[16]. These exercises focus on strengthening muscles and improving flexibility around the spine. However, Lee[17] reported that skeletal or muscular distortion is more than 70% due to organ problems. This is because the organs are the roots supplying energy to the muscles and bones, and they are also acting as the physical centers supporting the human body. Therefore, before correcting the posture of the youth, the belly and organs shall be warmed and removed from the cold. When the warm air enters the lower belly, the muscles around the vertebrae are relaxed smoothly, and the posture would be corrected naturally. In adolescents, spinal scoliosis can be developed if they leave a common spinal asymmetry during the growing season and can become serious problems when they become adults. Therefore, early

screening and proper correction exercise are very important for preventing and early treatment of scoliosis in adolescents. Among the methods for the youth to become the Suseunghwagang(水升火降), we applied the Dahn-Taekwondo training method. Dahn-Taekwondo was born in 2004 to restore the original value of martial arts with the spirit of 'Hongik Human Ewha World' as the core value of the Koreans' core philosophy. The only Taekwondo training in Korea is being carried out, which utilizes the bio energy "氣" in the body, based on the "lead" training, a traditional training program of the Korean people. The purpose of this study is to develop the 'juvenile spinal asymmetry improvement program' based on the principle of Korean lead training represented with Suseunghwagang.

## 2. Method

### 2.1. Subjects

The subjects of this study were 18 Taekwondo trainees from 9 to 16 years old living in S city. The subjects were selected by the visual inspection of the spinal asymmetry. The visual inspection was performed by Adam's forward bending test and X-ray examination was performed in Y hospital orthopedic surgeon to who was judged to be spinal asymmetry at first inspection. Cobb's scoliosis less than 10 ° and asymmetry of thoracic muscle 18 spinal asymmetry(15 males, 3 females) were selected at second examination in the hospital. For the subjects, we explained the study before the experiment fully and they and their parents participated voluntarily in the study. The demographic characteristics of the selected subjects are shown in <Table 1>.

**Table 1.** Demographic characteristics of subjects.

Number	Age(yrs)	Height(cm)	Weight(kg)
n=18	11.8±1.76	149.27±9.12	44.18±9.19

Note: Value are mean ± SD

**Figure 1.** Lower Abdomen Strike



**Figure 2.** Bowel Movement



**Figure 3.** Temple training



**Figure 4.** Wagong Platform



**Figure 5.** Hoop



**Figure 6.** Relax



## 2.2. Dahn-taekwondo ‘juvenile spinal asymmetry improvement program

The subjects of this study participated in Taekwondo Spinal Asymmetry Improvement Program for 1 hour per day for 12 weeks(36 times) three times a week. The contents of training are shown in <Table 2>.

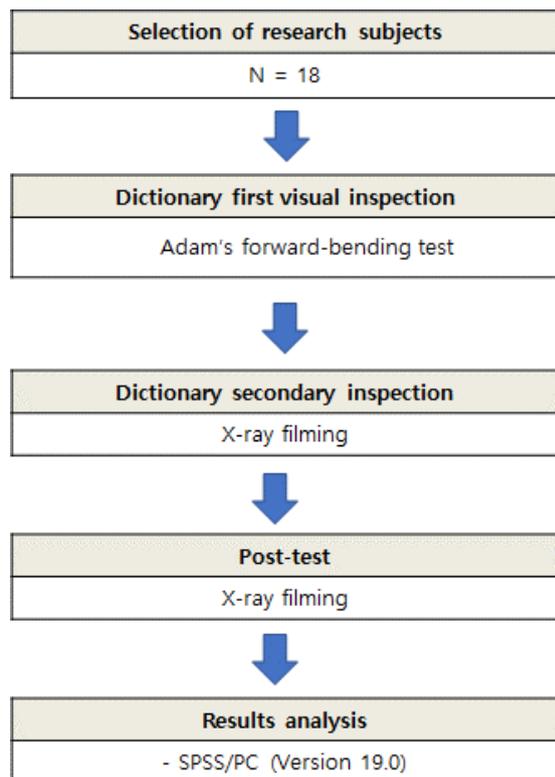
**Table 2.** Dahn-taekwondo ‘juvenile spinal asymmetry improvement program’.

Step	Program	Time	Training effect
Step I	Lower abdomen strike Bowel movement	1,500 times 20 minutes 500 times 20 minutes	Remove cold air by heat arising from relaxing danjeon and bowel
Step II	Temple training Wagong platform	30 times 5minutes 5 minutes	Balance left and right side of spine Strengthen muscles around danjeon and lumbar
Step III	Hoop Relax	5 minutes 5 minutes	Relax left and right muscles of spine Relax the whole body

### 2.3. Research procedure

18 subjects who were classified as spinal asymmetry by first visual inspection and secondary X-ray inspection performed the same test twice before and after the program. This research procedure is shown in <Figure 6>.

Figure 6. Research procedure.



### 2.4. Items and methods to measure

#### 1) Adam's forward-bending test

In the Adam's forward-bending test, two feet are gathered together as shown in <Figure 7>, and the knees shall be bent and brought into close contact with the floor. Afterwards, both hands shall be leaned forward and head shall extended straight over and bow down. At this time, the researchers selected a trainee who had spinal asymmetry for a secondary test(X-ray) by measuring the rib hump and lumbar hump at the same height as the thoracic spine at the back of the subject.

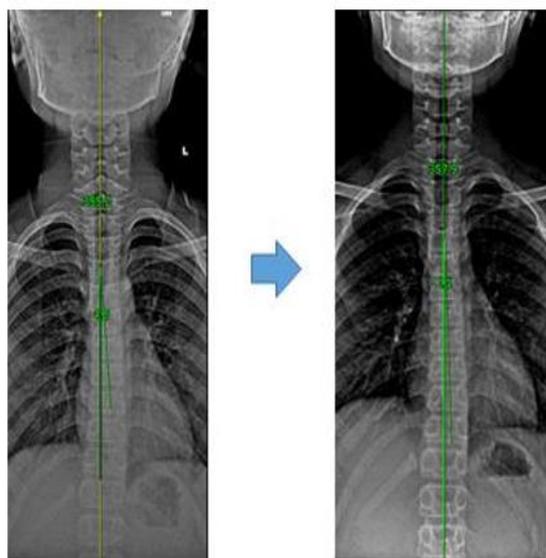
Figure 7. Adam's forward-bending test.



#### 2) Measurement of spinal asymmetry Cobb's angle through X-ray

A X-ray of full-spine(A-P) spine of the trainees who had spinal asymmetry in the Adam's forward-bending test was taken at a standing posture using Digital X-ray(provision 1600C, Korea). Cobb's angle measurement method is as follows: draw a line from the top of the vertebrae which is most curved to the bottom of the curve at the bottom of the vertebra and draw a perpendicular line from angle line at a right angle(90 °) to find the intersected angle. Then this angle is the magnitude of the curvature at Cobb's angle angle[18][19]. In general studies, scoliosis is diagnosed in above method. However, in this studies, the angle of the asymmetry was measured by directly substituting the angle of the vertebrae or lumbar vertebrae with the straight line of the vertebrae in order to judge the direct vertebral asymmetry <Figure 8>.

Figure 8. Measurement of Cobb's spinal asymmetry angle through X-ray.



## 2.5. Data processing

The data collected through X-ray from the subjects participating in Dan-Taekwondo 'Youth Spinal Asymmetry Improvement Program' were analyzed using SPSS Version 19.0. Demographic data of all subjects were subjected to frequency analysis and paired sample t-test was conducted to examine the effect before and after the program. The statistical significance level was 5%.

## 3. Results

### 3.1. The change of thoracic asymmetry angle before and after application of dahn-taekwondo juvenile vertebral asymmetry improvement program

<Table 6> shows the results of the pre- and post-thoracic X-ray examinations for the 12-week Taekwondo program 'Juvenile Spinal Asymmetry Improvement Program'. The Cobb's angle of the thoracic vertebrae was  $7.73 \pm 2.03$  in the pre-test and  $1.59 \pm 0.79$  after the participation in the program to appear statistical significance ( $p < .001$ ).

**Table 6.** The change of asymmetric angle of the thoracic vertebrae before and after application of dahn-taekwondo juvenile asymmetry improvement program (°).

Variables	Pre	Post	t-value	p-value
Thoracic	$7.73 \pm 2.03$	$1.59 \pm 0.79$	7.13	.000***

Note: Value are mean  $\pm$  SD, \*\*\* $p < .001$

### 3.2. The change of asymmetric angle of the lumbar before and after application of dahn-taekwondo juvenile asymmetry improvement program

<Table 7> shows the results of the lumbar spine X-ray before and after the application of the Dahn-Taekwondo 'Juvenile Spinal Asymmetry Improvement Program' for 12 weeks. In the pre-test, Cobb's lumbar angle was  $4.19 \pm 1.62$  and  $1.84 \pm 0.89$  after participating in this program to appear statistical significance ( $p < .001$ ).

**Table 7.** The change of asymmetric angle of the lumbar before and after application of dan-taekwondo juvenile asymmetry improvement program (°).

Variables	Pre	Post	t-value	p-value
Lumbar	$4.19 \pm 1.62$	$1.84 \pm 0.89$	6.19	.000***

Note: Value are mean  $\pm$  SD, \*\*\* $p < .001$

## 4. Discussion

Dahn-Taekwondo 'Juvenile Spinal Asymmetry Improvement Program' is expected to help the research subjects maintain their correct posture and settle it in daily life. For adolescents, neglecting spinal asymmetry which is common during the growing season can lead to scoliosis and lead to serious problems with spinal diseases when they became adults. Spinal deformity caused by erroneous posture management during the growing season causes pain and stiffness in physical activity as well as physical problems, resulting in disruption of daily activities. The difference from advanced studies is that Dan-Taekwondo 's Program for the Improvement of Juvenile Spinal Asymmetry deals with energy in the body. We consider the cause of spinal asymmetry as chilling discomfort, so it is possible to balance the energy by exercising so that it can be healed by oneself. It is also different from other exercises in that it allows the energy of each organs to be turned by using meridians, making the body to be rigid by circulating the cold and unclear energy stagnant in the body. In previous studies on sciatic scoliosis exercise Lee[20] reported that 70% of scoliosis prevention during growth period and 50% of correction is possible as a result of muscle strengthening and pelvic muscle strengthening around the spine.

Chae, et. al.'s[14] reported that the Cobb's angle decreased from  $13^\circ$ (average) to  $6^\circ$ (average) after 5-month(average) stretch of 30-40 minutes four times a week for elementary school students. Moon[21] reported that the Cobb's angle measured after a 12-week, 36-week correction exercise program was reduced from  $13^\circ$ (average) to  $9^\circ$ (average) in the thoracic spine and reduced from  $13^\circ$  to  $6^\circ$  in the lumbar spine. Kwon[22] reported that

the Cobb's angle measured after 30 times of training programs which consisted of stretching, orthodontic treatment and massage for 8 weeks reduced by 8 °(thoracic vertebrae average) from 19°(thoracic vertebrae average) to 11°(thoracic vertebrae average). The results of the 12-week exercise program which is consisted of stretching and thera-band showed that the thoracic Cobb's angle was reduced from  $15.7 \pm 1.1$  to  $8.84 \pm 1.4$  and that of the lumbar Cobb's angle was reduced from  $16.6 \pm 1.0$  to  $11.0 \pm 1.2$ .

In this study, the effectiveness of the Dan-Taekwondo Spinal Asymmetry Improvement Program for 12 weeks for adolescents with vertebral asymmetry before progressing to scoliosis is evaluated. The thoracic Cobb's angle was reduced significantly( $p <.001$ ) from  $7.73 \pm 2.03$  to  $1.59 \pm 0.79$ , and the lumbar Cobb's angle was reduced significantly from  $4.19 \pm 1.62$  to  $1.84 \pm 0.89$ ( $p <.001$ ). The Cobb's angle of the thoracic vertebra was reduced by 6.14 ° and the Cobb's angle of the lumbar vertebra was reduced by 2.35 °. Dan-Taekwondo Spinal Asymmetry Improvement Program can be considered as a practical exercise program for prevention and improvement of scoliosis. Many children who spend most of their time at school and at school can get help against spinal scoliosis by relieving them of extra curricular activities or after school hours. It is more important to prevent and treat with early diagnosis and proper orthodontic treatment than post-diagnosis treatment. Therefore, it is considered that the 'Dan-Taekwondo Spinal Asymmetry Improvement Program' applied in this study will be useful and helpful in this regard.

What significant point in this study is that 12 out of the 18 students who participated in the experiment were the parents who died or were divorced and are raised by the parents or grandparents. 66.7% of the subjects were suffering from instability in the home environment. Therefore, it is necessary to investigate the relationship between the causes of spinal asymmetry and psychological factors. In addition, additional studies shall be conducted on the persistence of changes in Cobb's angle, whether the effect is maintained even after several years, and whether

'Dahn-Taekwondo Spinal Asymmetry Improvement Program' affects Cobb's each scoliosis above 10 ° C.

## 4. Conclusion

In this study, we applied the Dahn-Taekwondo 'Spinal Asymmetry Improvement Program' to 18(9-18 year old) adolescents with spinal asymmetry 3 times per week and 1 hour per 1 day for 12 weeks. The result are as follows.

First, the Dahn-Taekwondo spinal asymmetry improvement program brought significant reduction( $p <.001$ ) of the Cobb's angle of thoracic asymmetry in adolescents. Second, in the Taekwondo lumbar asymmetry improvement program, the lumbar asymmetry Cobb's angle of adolescents decreased significantly( $p <.001$ ).

Therefore, Dahn-Taekwondo spinal asymmetry improvement program can be used as a body correcting exercise for young people who do little physical activity and especially sit long time with unstable postures.

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**Lead Author**

**Choi Man-gyu** / Dahn Taekwondo Institute Researcher  
B.A. Kyunghee University  
M.A. Dankook University  
Ph.D. University of Brain Education

## Research field

- Analysis on the Effect of Dahn-taekwondo Training on the Improvement of Juvenile Spinal Asymmetry, International Journal of Martial Arts, 4(1) (2019).

## Major career

- 2019~present. International Society for Martial Arts, Member

**Corresponding Author**

**Park Ju-sik** / Keimyung University Professor  
B.A. Keimyung University  
M.A. Keimyung University  
Ph.D. Keimyung University

## Research Field

- Anti-inflammatory Effect of Cynanchone a Isolated from Cynanchum Wilfordii in RAW 264.7 Macrophages, International Journal of Sports, 2(1) (2017).  
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## Major Career

- 2005~2014. Gyeongju University, Professor  
- 2015~present. Keimyung University, Professor

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Corresponding author  
E-mail: [csk3697@gw.kmu.ac.kr](mailto:csk3697@gw.kmu.ac.kr)

Peer reviewer  
E-mail: [editor@j-institute.jp](mailto:editor@j-institute.jp)

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## Analysis of and Suggestions for the Formal Adoption Process of MARTIAL ARTS for the Olympic Games

Choi Seong-kon

*Keimyung University, Daegu, Republic of Korea*

### Abstract

*It was Olympia's games which represented the ancient Greek civilization for a millenium from 776 BC until 395 AD. Athletes were respected by the public, and it was believed that the body and mind of man were inherited from God and that training was the finest way to worship God. The ancient Olympic games were mainly consisted of 200m running, 400m, 4800m, pentathlon, wrestling, boxing, pancration, and horse chariot race, which were adopted as official events to compete with the physical strength and skills required for war or combat. The martial art games continued as a means of survival and a way of physical training.*

*The modern Olympic games have been held every 4 years since 1896, and the Olympic games are currently consisted of approximately 400 events for 52 events across 33 areas. For the summer Olympic games, there are some games such as track and field, swimming, fencing, and gymnastics which are maintained as official events from the first game, and there are also the ones which were piloted initially then approved as official events thereafter. Or, there are the ones which were formal events, yet excluded from official events on certain occasions.*

*IOC has established the Olympic Programme Commission and has set 7 standards to enable meeting of the history, tradition, universality, popularity and potential, athlete's health, sports management ability, and sports management costs in order to be more systematic in approaching Olympic games, adjusting Olympic games.*

*In particular, when the modern Olympic games began as martial art games in which result was determined either directly by striking the human body or by overtaking, there are wrestling and boxing, which were adopted as Olympic events, Judo, which was adopted as a formal event at the 18th Tokyo Olympics in 1964, Taekwondo, which was adopted as a pilot event during the 1988 Olympic Games in Seoul and as a formal event at Sydney in 2000, and Karate, which was adopted as a formal event at the Tokyo Olympics in 2020.*

*As such, while martial art games are observing the standards of the Olympic Programme Commission, yet the IOC has allowed the Olympic host cities to decide additional events through the 'Olympic Agenda 2020' thereby increasing their number, and through the Olympic games, host countries are striving to improve their national interests, international stature, and their pride, rather than promoting the understanding of international peace and harmony.*

*Therefore, this study will be helpful for understanding the impact of the martial art games on the Olympic spirit as a sports development and martial arts, and the trends in sports diplomacy through the Olympic games as per the standards of the 'Olympic Programme Commission.'*

**[Keywords]** *Olympics, Wrestling, Judo, Taekwondo, Karate*

### 1. Introduction

The Olympic games are the largest of all festivals held across the world and are also

the largest event in the world in which countries participate and watch hosted by the International Olympic Committee(IOC)[1].

The Olympic games, which are held once every 4 years in the summer and winter since 1896 until the present, are consisted of approximately 400 events from 52 events across 33 categories.

Such Olympic events are managed by the international sports federations approved by the IOC. Thirty five federations were approved by the IOC, and there are also federations which supervise the events which are not official events even after being in receipt of approval. Sports events which were approved by the IOC yet are not Olympic sports events are not adopted as Olympic sports events, but they may be applied to be adopted as official events at the first IOC general assembly held after each Olympic game is held. IOC members who are present at the general assembly must vote, and there must be more than a majority of the total number of members of the IOC until they are selected as the official events through the IOC's general assembly[2]. In addition, at the Summer Olympic games, there are official events such as track and field, swimming, fencing, and gymnastics, which have not been omitted since the first Olympic game. Some were piloted and formalized thereafter. In addition, there are some events which were formal events previously, yet are now omitted from among the official events[3].

In October and November 2004, the IOC founded the Olympic Programme Commission. The 'Olympic Programme Commission' is responsible for reviewing both the Olympic games and non-Olympic events. The goal of this Commission is to decide 7 standards for taking a more systematic approach to the Olympic events, and needs to enable meeting of the history, tradition, universality, popularity and potential, athlete's health, ability to manage federations' sports, and the expenses required for leading sports to be adopted as Olympic games[4].

As such, the martial art games among those adopted as official events include wrestling in 1896, when the modern Olympic games were conceived in Athens, boxing adopted as an official event for the first time at the 23rd ancient Olympic games, Judo,

which was adopted as a formal event at the 18th Tokyo Olympics in 1964, Taekwondo, which was adopted as a pilot event during the 1988 Olympic Games in Seoul and as a formal event at Sydney in 2000, and Karate, which was adopted as a formal event at the Tokyo Olympics in 2020. The standards for being adopted as official events for the Olympic games, when examined, have a different aspect to the martial arts.

Accordingly, this study was conducted to consider and analyze how the martial art games developed through what process until they were adopted as official events for the Olympic games, and in particular, as to how the martial art games of directly striking human body or overtaking could impact the development of sports and the Olympic spirit as martial art sports.

## **2. Analysis of Martial Arts of the Ancient Olympic Games**

The Olympia game, which had been passed down as the Greek mythology, represented the ancient Greek civilization. Athletes were respected by the public, and it was also believed that the body and mind of man were inherited from God and training them was the finest way to worship God[5].

The ancient Olympic Games began with 200M running in 776 B.C., and 400M in 724 B.C., 4800M in 720 B.C., and pentathlon and wrestling in 708 B.C. Boxing game began in 688 B.C., and in 648 B.C., pancration game, which is a mixture of boxing and wrestling, was adopted as an official event. For this event, no restrictions applied. All techniques were allowed except for piercing eyes or biting with mouth. The game continued until the winner was decided without taking a break. In 632 B.C., the boys' wrestling game began, and in 616 B.C., the boys' boxing game was adopted as an ancient Olympic game. In 384 B.C., the four-horse chariot race game was adopted as an official event, where the physical strength and skills required for war or combat were competed[6].

In particular, most interesting to the Romans were such Olympic events as wrestling, boxing, and pancration. The ancient Olympic games ended with the 293rd Olympiad until 393 A.D. It was disappeared in 476 A.D. with the fall of the Eastern Roman Empire. Thereafter, the Olympic games were suspended for almost 15 centuries from the 5th century when the Roman Empire collapsed until the 19th century. However, in 1875, the German archaeologist Curtius and his excavation corps uncovered the grandeur of them, and on November 25, 1892, Couberton gave a speech and suggested resurrection of the Olympic games at the general assembly of the "Athletic Sports Federation" held in Paris. He also claimed to hold international games across all sports for international friendship, development of physical education, and above all, for world peace. On June 23, 1894, a unanimous vote was cast on resurrecting the Olympic games, and the first modern Olympic games were held in Athens on April 6, 1896[7].

**Table 1.** Martial art events of the ancient olympic games[3].

Year held	Event	Remark (Olympiad)
708 BC	Pentathlon, wrestling	18 <sup>th</sup>
688 BC	Boxing	23 <sup>rd</sup>
648 BC	Pancration, equestrian	33 <sup>rd</sup>
632 BC	Boys' division: 200M running, wrestling	
616 BC	Boys' division: boxing	
200 BC	Boys' division: pancration	

### 3. Analysis of the Modern Olympic Games

Thanks to the effort by Pierre de Couberton of France to resurrect the Olympic Games, the modern Olympic games began with the unanimous vote of the representatives from each nation of Europe at the international sports competition held at the University of Sorbonne in Paris on June 23, 1894. Originally, Pierre Couberton intended to foster a new

spirit of courage and enthusiasm for the French youths who had been defeated by the "Prussian War" and help achieve mutual understanding and friendship among the peoples of the world through the Olympic games and achieve world peace[8].

In 1896, the first Olympic games were held in Athens, Greece, with the participation of 311 athletes from 13 countries, which was of a small scale which did not befit the grandiose slogan of the "Festival of Human Peace." It was the 4th Olympic Games in London in 1908 which befitted an international competition. For London, 1,999 athletes from 22 countries participated in 20 events, which dramatically expanded the size of the competition, and each country participated holding their national flag up front for the first time, and they were involved in organizing competition rules, adopting women's sports events full-fledgedly, thereby forming a system.

The founder of the modern Olympic games, Couberton desired that the Olympic games will achieve eternal success, and the beautiful sports spirit will spread all over the world, young people of the world will love peace, dignity of life will be created to complete humanity and achieve world peace as the ideology of the Olympic games.

However, as the years passed, the noble spirit of the Olympic games gradually faded away and discontinued 3 times due to the first and second World Wars, and recently, political issues have been involved in terrorism and boycotting the games[9].

During the 22nd Olympic Games in Moscow, nations of the free world did not participate in protest against the invasion of Afghanistan by the Soviet Union, and during the 23rd Olympic Games in Los Angeles, the Soviet Union and the Eastern bloc reacted and did not participate. However, the 24th Olympic Games in 1988, the site of division due to the Cold War between the East and West, turned out to be a large festivity for all of them except a few countries such as North Korea and Cuba[10].

Over the subsequent games, in modern times, 302 gold medals are vied for across 26

events including swimming(46), archery(4), track and field(47), badminton (5), basketball (2), boxing(13), canoe / kayak(16), cycling(6), equestrian(6), fencing(10), hockey(2), soccer (2), gymnastics(18), handball(2), Judo(14), pentathlon(2), crew(14), yacht(10), shooting (15), table tennis(4), Taekwondo(8), tennis (2), triathlon(2), volleyball(4), weightlifting (15) and wrestling(18).

The 26 events were held in the London Olympic Games in 2012, and 28 events were held in the 31st Rio de Janeiro Olympic Games in 2016 including golf and rugby. Karate, a martial art of the Japanese spirit, is adopted as an official event for the 32nd Tokyo Olympic Games in 2020, and the number of official events grew to 33 including surfing, skateboarding, sports climbing, baseball and softball[11].

#### **4. Analysis of Olympic Games of Martial Art Tournaments**

The martial art games among those adopted as official events of the Olympic games include wrestling in 1896, when the modern Olympic games were conceived in Athens, boxing adopted as an official event for the first time at the 23rd ancient Olympic games, Judo, which was adopted as a formal event at the 18th Tokyo Olympics in 1964, Taekwondo, which was adopted as a pilot event during the 1988 Olympic Games in Seoul and as a formal event at Sydney in 2000, and Karate, which was adopted as a formal event at the Tokyo Olympics in 2020. In particular, the standards for being adopted as official events for the Olympic games, when examined, have a different aspect to the martial arts.

##### **4.1. Wrestling**

In the ancient Olympic games, there were toppling of a 3 rounds and 2 wins system and pancration, which was a mixture of wrestling and boxing which ended at the surrender of a contestant. Entering the Greek-Roman era, they had turned into wrestling, where professional athletes thrived for large amounts of prizes, and the content of the games also

turned barbaric. The Romans applied creativity into the conventional wrestling and established new rules, which became the current Greco-Roman wrestling's prototype.

In Europe, entering the age of the knight system, wrestling was encouraged as one of the essential martial arts that must be mastered by the knights, yet as the gunpower weapons were created in the 16th century, the significance of martial arts for wrestling faded away, and instead, turned into a pure game. Meanwhile, in or about the 11th century, Europe's new wrestling was introduced to England and spread among the people as well as the knights. Among which, the unique form derived from the Lancashire region became the prototype of the present day's free-style, and spread across the world. Free-style was mainly popular in England and the US, and started as a professional sport and was recognized as an amateur sport by the Amateur Sports Association in 1888, and thereafter, was widely practiced as an amateur sport.

As an Olympic game. wrestling was also one of the events in the ancient Olympic games, and it is a game in which contestants strike or flip each other on a round shaped mat, and decide the inner by summing up the scores accordingly. At the Olympic Games in Athens in 1896, the Greco-Roman style(attacking only the upper body beyond waist), which reproduced the ancient game played using only arms and upper body, was introduced, and in the Olympic Games in St. Louis in 1904, a freestyle using the entire body including the feet was newly adopted. In addition, women's freestyle was added to at the Athens Olympic Games in 2004. In particular, the International Olympic Committee's(IOC's) Executive Committee announced in February 2013 that wrestling will be excluded from core events from the 2020 Summer Olympic Games. However, on September 8, 2013, at the 125th IOC general assembly, it was reintroduced as an event for the 2020 Summer Olympic Games.

Freestyle for men's and women's games for each weight class will all be held, while the Greco-Roman style will be held for men only. Until the 2012 London Olympic Games, it was

played in 3 rounds for 2 minutes each, yet from the Rio de Janeiro Olympic Games, it was played in 2 rounds for 3 minutes each. In addition, the set system was overhauled, and the total points system was introduced, while the passive system was modified to turn it into a rather more aggressive game[12].

## 4.2. Boxing

Boxing had already begun 3 millennia ago. During the 23rd ancient Olympic Games, boxing was adopted as an official event for the first time, and the first gold medalist was known to be Smyrne. The boys' boxing began from the 41st Olympic Games, and the left-handed boxer Tisandros won championship 4 times consecutively from 572 through 560 B.C. Thereafter, at the request of the Christians, the Roman emperor Horna banned boxing. Boxing, which had been conducted in the undergrounds, began to resurrect with the fall of the Western Roman Empire. The game began at the official stadium in or around 1000 B.C. and Mercury, a Protestant, first recognized boxing movement as a sport.

In 1719, James Figg became champion, at which time there was no classification of weight class, and he maintained his champion title until 1730. In 1743, Jack Broughton announced the first rule and named it "Broughton." Thereafter, in 1892, Queens Berry's rules were enacted by which, wearing gloves, the 1st round was run for 3 minutes, followed by a minute of break, and if a contestant fails to get back up within 10 seconds from being knocked down, the opponent's victory was recognized. As the modern Olympic Games began in 1896, a boxing federation was formed from around the world and the international exchange began. In 1946, AIBA was launched in London, England, and boxing is now practiced in countries across the globe.

In 1904, the 3rd Summer Olympic Games' boxing was held in St. Louis, the US, with 18 athletes participating from 1 country, conducted in 7 detailed events.

The 4th Summer Olympic Games' boxing was held in London, England, in 1908, with 42 athletes participating from 4 countries[13].

Excluding the 5th Games in 1912, the 6th Games in 1916, the 12th Games in 1940, and the 13th Games in 1944, boxing is adopted as an official event for the Olympic Games until the 32nd Tokyo Olympic Games.

## 4.3. Judo

One of the traditional martial arts of Japan, Judo is a martial art game in which two contestants decide the winner by defeating the opponent using their entire body, such as hand techniques and kicking techniques. Jujitsu from the 16th century was the origin of today's Judo in Japan.

It is well known that, originally, Judo brings about the development of agility and endurance. This also helps to improve the body's ability to control. In responding to the opponent in combat, they grow a strong energy, etiquette, discipline, fairness, and compliance, among other attitudes, which signifies educational effects of Judo. Judo has the characteristics of a sport as a form of martial art, even among the man-to-man sports. That is, in order to take over the opponent, one needs to demonstrate one's best abilities and skills, and one's own techniques alone often could not complete the function.

In particular, a personalized man-to-man function enabling to take over the opponent while paying attention to the movements of the opponent's attacks and defenses is required. In addition, if one is too obsessed with winning or losing, it is very easy to miss the rules or correct actions. Thus, it is required to conduct oneself with a fair attitude while appropriately restraining the fighting will and respecting the opponent. This does not only make one feel the joy of victory concerning the competition of the function, but one should also have the feeling of adapting to the expertise of the skill or responsive measures. That means that it is necessary to have experience in coming in touch with the nature of the humans' behavioral methods.

Judo was adopted as an official event for the first time at the 1964 Summer Olympic Games in Tokyo from October 31st until October 24th. The stadium was the Japanese Budokan. It was excluded in 1968, but was held

at the 1972 Summer Olympic Games from August 31st until September 4th at the Messe-gelende Basket Balhalle Box Hall in West Germany. In 1968, it was excluded from the Olympic Games in Mexico City, but it was re-adopted as an official event after expanding it into 6 weight classes. The 30th Summer Olympic Games were held from July 28th until August 3, 2012 in Excel London, London, England. There are a total of 14 events for 7 events for men and women each. Detailed events include men's 60kg, 66kg, 73kg, 81kg, 90kg, 100kg, 100kg or more and women's 48kg, 52kg, 57kg, 63kg, 70kg, 78kg and 78kg or more[14].

#### 4.4. Taekwondo

As a traditional Korean martial art, Taekwondo was adopted as a pilot event for the 24th Seoul Olympic Games in 1988 and the 25th Barcelona Olympic Games in 1992. It was adopted as an official event for the 2000 Sydney Olympic Games at the 103rd IOC general assembly in Paris on September 4, 1994, at which time the WTF signed up as a quasi member at the Global Association of International Sports Federations for the summer Olympic games. In 1996, the IOC's Executive Committee in Cancun, Mexico decided to extend the number of participants to 100 from 64 for Taekwondo at the 2000 Olympic Games.

In 2000, the IOC's Executive Committee confirmed Taekwondo as the official event for the 2004 Athens Olympic Games.

In 2001, the IOC's Executive Committee decided to expand the number of participants to 124 for the Taekwondo participants at the 2004 Olympic Games, and in 2002, the IOC's Executive Committee included Taekwondo for the 2008 Beijing Olympic Games.

It was decided that Taekwondo will be maintained until the 2012 London Olympic Games, the 2016 Rio de Janeiro Olympic Games, the 2020 Tokyo Olympic Games, and the 2024 Paris Olympic Games.

Detailed events include men's 58kg, 68kg, 80kg, 80kg or more, and women's 49kg, 57kg, 67kg, 67kg or more for weight classification.

#### 4.5. Karate

A traditional Japanese martial art from Okinawa, Karate was first introduced to the mainland Japan in 1917. In 1924, it developed into a Japanese martial arts culture with the founding of Karate Department at Keio University and Waseda University.

Thereafter, Karate has become globalized through the activities of Oyama Masters, and they succeeded in adopting Karate as an official event for the Olympic games with the opportunity being the 32nd Tokyo Olympic Games in 2020. The International Olympic Committee (IOC) designated 25 core events which will not be omitted forever in the Olympic games in its reform plan for the Olympic games. Karate had faced many difficulties until it was adopted for the 2020 Tokyo Olympic Games. On May 30, 2013, the International Olympic Committee's Executive Committee in Strasbourg, Russia, confirmed baseball and softball, which were ousted in 2005, and wrestling and squash, which were ousted in 2013, as candidates for the new events for the 2020 Olympic Games[15].

Karate was disqualified for the similarity with Taekwondo, yet the IOC allowed the hosting city to add an event at the 129th general assembly of the International Olympic Committee held in Rio de Janeiro, Brazil, in December 2014, through the 'Olympic Agenda 2020.' Consequently, the Organizing Committee of the Tokyo Olympic Games in September 2013 nominated additional 5 event candidates to the IOC, which the IOC confirmed following the approval of its Executive Committee in June 2014[16].

**Table 2.** Events of the modern olympic games.

No.	Year	Host city	Event	No. of events
1	1896	Athens, Greece	Wrestling, Shooting, Cycling, Weightlifting, Swimming, Track and Field, Fencing, Gymnastics, Tennis	9

2	1900	Paris, France	Golf, Basque Perrota, Cycling, Rugby, Shooting, Swimming, Equestrian, Sailing, Yacht, Crew, Archery, Track and Field, Tug of War, Gymnastics, Cricket, Soccer, Tennis, Fencing, Polo	19
3	1904	St. Louis, US	Golf, Lacrosse, Lock, Diving, Wrestling, Boxing, Cycling, Archery, Track and Field, Swimming, Weightlifting, Crew, Gymnastics, Soccer, Tennis, Fencing	16
4	1908	London, UK	Racquet, Rugby, Motor Boat, Lacrosse, Wrestling, Boxing, Shooting, Cycling, Swimming, Archery, Track and Field, Yacht, Crew, Soccer, Tug of War, Jude Foam, Gymnastics, Tennis, Fencing, Figure Skating, Polo, Hockey	22
5	1912	Stockholm, Sweden	Pentathlon, Shooting, Swimming, Wrestling, Cycling, Equestrian, Yacht, Crew, Gymnastics, Track and Field, Tug of War, Soccer, Tennis, Fencing	14
6	1916	Berlin, Germany	Not held due to the first World War	0
7	1920	Antwerpen, Belgium	Pentathlon, Wrestling, Shooting, Rugby, Boxing, Cycling, Swimming, Ice Hockey, Weightlifting, Equestrian, Archery, Yacht, Track and Field, Tug of War, Soccer, Crew, Gymnastics, Tennis, Fencing, Figure Skating, Polo, Hockey	22

8	1924	Paris, France	Pentathlon, Wrestling, Shooting, Rugby, Boxing, Cycling, Swimming, Weightlifting, Track and Field, Equestrian, Yacht, Crew, Gymnastics, Tennis, Polo, Soccer, Fencing	17
9	1928	Amsterdam, Netherlands	Pentathlon, Wrestling, Cycling, Diving, Boxing, Water Polo, Swimming, Weightlifting, Track and Field, Equestrian, Yacht, Crew, Gymnastics, Fencing, Soccer, Hockey	16
10	1932	Los Angeles, US	Pentathlon, Boxing, Cycling, Wrestling, Shooting, Swimming, Equestrian, Yacht, Crew, Weightlifting, Track and Field, Gymnastics, Fencing, Hockey	14
11	1936	Berlin, Germany	Pentathlon, Wrestling, Shooting, Basketball, Boxing, Cycling, Swimming, Weightlifting, Track and Field, Equestrian, Yacht, Crew, Gymnastics, Canoe, Polo, Soccer, Fencing, Hockey, Handball	19
12	1940	Helsinki, Finland, changed from Tokyo, Japan	Not held due to the second World War	0
13	1944	London, UK	Not held due to the second World War	0
14	1948	London, UK	Pentathlon, Wrestling, Shooting, Basketball, Boxing, Cycling, Swimming, Weightlifting, Track and Field, Equestrian, Yacht, Crew, Gymnastics, Canoe, Hockey, Soccer,	17

			Fencing	
15	1952	Helsinki, Finland	Pentathlon, Wrestling, Shooting, Basketball, Boxing, Cycling, Swimming, Weightlifting, Track and Field, Equestrian, Yacht, Crew, Gymnastics, Canoe, Hockey, Soccer, Fencing	17
16	1956	Melbourne, Australia	Pentathlon, Diving, Boxing, Basketball, Wrestling, Shooting, Cycling, Swimming, Weightlifting, Water Polo, Equestrian, Yacht, Track and Field, Gymnastics, Canoe, Crew, Soccer, Fencing, Hockey	19
17	1960	Rome, Italy	Pentathlon, Wrestling, Shooting, Basketball, Boxing, Cycling, Swimming, Weightlifting, Track and Field, Equestrian, Yacht, Crew, Gymnastics, Canoe, Hockey, Soccer, Fencing	17
18	1964	Tokyo, Japan	Pentathlon, Wrestling, Boxing, Basketball, Volleyball, Shooting, Cycling, Equestrian, Judo, Swimming, Weightlifting, Track and Field, Crew, Soccer, Fencing, Gymnastics, Canoe, Hockey	19
19	1968	Mexico City, Mexico	Pentathlon, Wrestling, Boxing, Basketball, Volleyball, Shooting, Cycling, Equestrian, Yacht, Swimming, Weightlifting, Track and Field, Crew, Soccer, Fencing, Gymnastics, Canoe, Hockey	18

20	1972	Munich, West Germany	Pentathlon, Wrestling, Boxing, Basketball, Volleyball, Shooting, Cycling, Equestrian, Weightlifting, Swimming, Archery, Yacht, Judo, Crew, Soccer, Track and Field, Gymnastics, Canoe, Fencing, Handball, Hockey	21
21	1976	Montreal, Canada	Pentathlon, Diving, Volleyball, Basketball, Wrestling, Boxing, Shooting, Water Polo, Equestrian, Cycling, Swimming, Archery, Weightlifting, Judo, Crew, Yacht, Track and Field, Gymnastics, Soccer, Fencing, Handball, Canoe, Hockey	23
22	1980	Moscow, Soviet Union	Pentathlon, Wrestling, Boxing, Basketball, Volleyball, Shooting, Cycling, Equestrian, Weightlifting, Swimming, Archery, Yacht, Judo, Crew, Soccer, Track and Field, Gymnastics, Canoe, Fencing, Handball, Hockey	21
23	1984	Los Angeles, US	Pentathlon, Wrestling, Boxing, Basketball, Volleyball, Shooting, Cycling, Equestrian, Weightlifting, Swimming, Archery, Yacht, Judo, Crew, Soccer, Track and Field, Gymnastics, Canoe, Fencing, Handball, Hockey	21
24	1988	Seoul, Republic of Korea	Pentathlon, Diving, Volleyball, Basketball, Wrestling, Boxing, Shooting, Water Polo, Equestrian, Cycling, Swimming, Archery, Weightlifting, Judo, Crew, Yacht, Track and Field, Gymnastics, Soccer, Fencing,	23

			Handball, Canoe, Hockey	
25	1992	Barcelona, Spain	Pentathlon, Diving, Volleyball, Basketball, Wrestling, Boxing, Shooting, Water Polo, Equestrian, Cycling, Swimming, Archery, Weightlifting, Judo, Crew, Yacht, Track and Field, Gymnastics, Soccer, Fencing, Handball, Canoe, Hockey	23
26	1996	Atlanta, USA	Pentathlon, Diving, Volleyball, Basketball, Wrestling, Badminton, Boxing, Cycling, Water Polo, Shooting, Softball, Swimming, Equestrian, Baseball, Weightlifting, Synchronized Swimming, Archery, Yacht, Judo, Crew, Soccer, Track and Field, Gymnastics, Canoe/Kayak, Table Tennis, Fencing, Handball, Tennis, Hockey	29
27	2000	Sydney, Australia	Pentathlon, Wrestling, Badminton, Basketball, Volleyball, Boxing, Shooting, Softball, Equestrian, Cycling, Swimming, Baseball, Archery, Yacht, Track and Field, Weightlifting, Judo, Crew, Gymnastics, Canoe, Taekwondo, Soccer, Table Tennis, Tennis, Triathlon, Hockey, Fencing, Handball	28
28	2004	Athens, Greece	Pentathlon, Wrestling, Badminton, Basketball, Volleyball, Boxing, Shooting, Swimming, Baseball, Cycling, Equestrian, Archery, Weightlifting, Judo, Crew, Yacht, Track and Field, Triathlon,	27

			Gymnastics, Canoe/Kayak, Taekwondo, Soccer, Table Tennis, Tennis, Fencing, Handball, Hockey	
29	2008	Beijing, China	Pentathlon, Wrestling, Badminton, Basketball, Volleyball, Boxing, Shooting, Softball, Equestrian, Cycling, Swimming, Baseball, Archery, Yacht, Track and Field, Weightlifting, Judo, Crew, Gymnastics, Canoe, Taekwondo, Soccer, Table Tennis, Tennis, Triathlon, Hockey, Fencing, Handball	28
30	2012	London, UK	Pentathlon, Diving, Volleyball, Basketball, Wrestling, Badminton, Boxing, Shooting, Swimming, Beach Volleyball, Cycling, Equestrian, Archery, Yacht, Track and Field, Weightlifting, Judo, Crew, Triathlon, Soccer, Table Tennis, Gymnastics, Canoe/Kayak, Taekwondo, Tennis, Hockey, Fencing, Handball	26
31	2016	Rio de Janeiro, Brazil	Golf, Basketball, Rugby, Pentathlon, Diving, Wrestling, Volleyball, Boxing, Cycling, Badminton, Shooting, Swimming, Equestrian, Weightlifting, Judo, Archery, Yacht, Track and Field, Crew, Soccer, Soccer, Table Tennis, Gymnastics, Canoe/Kayak, Taekwondo, Tennis, Hockey, Fencing, Handball	28

32	2020	Tokyo, Japan	Track and Field, Swimming, Archery, Badminton, Baseball/Softball, Basketball, Boxing, Canoe, Cycling, Equestrian, Fencing, Soccer, Golf, Gymnastics, Handball, Hockey, Judo, Karate, Pentathlon, Crew, 7 Men Rugby, Yacht, Shooting, Skateboarding, Sports Climbing, Surfing, Table Tennis, Taekwondo, Tennis, Triathlon, Volleyball, Weightlifting, Wrestling,	33
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## 5. Conclusion

Amidst the changes of the Olympic games, the IOC founded the 'Olympic Programme Commission' in October and November 2004, and to take an even more systematic approach to the Olympic events, set 7 standards requiring the adoption of official events after meeting history, tradition, universality, popularity and potential, athlete's health, sports management ability, and sports management costs.

Accordingly, this study investigated into the process in which martial art games were adopted as the official Olympic games in line with the standards of the 'Olympic Programme Commission.' In particular, this study intends to present the impact of the martial art games, which decide the winner by directly striking the human body or taking over the opponent, on the Olympic spirit as a sports development and martial arts, and the influence of sports diplomacy via the Olympic games.

1)The ancient Olympic games adopted pentathlon, wrestling, boxing, pancration, and horse chariot race as official events to compete the physical strength and techniques required for war or combat.

2)As for the modern Olympic games, the International Olympic Committee(IOC) founded

the 'Olympic Programme Commission,' and spread them across the world in line with the 7 standards of history, tradition, universality, popularity and potential, athlete's health, sports management ability, and sports management costs, while allowing the adoption of only the events in which everyone could participate including men and women alike.

3)While martial art events are in compliance with the standards of the "Olympic Programme Commission," the IOC has allowed hosting cities to add events via the 'Olympic Agenda 2020,' thereby increasing the number of events.

4)There are Judo, which was adopted as an official event at the 18th Tokyo Olympic Games in 1964, Taekwondo, which began as a pilot event at the 1988 Seoul Olympic Games, was adopted as an official event for the 2000 Sydney Olympic Games, and Karate, which was adopted as an official event for the 2020 Tokyo Olympic Games.

As in the above, through the Olympic Games, host countries of the Olympic Games are striving to achieve an effect of elevating their national interests, international stature, and pride rather than promoting the understanding towards international peace and the harmony of humanity.

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**Author**

**Choi Seong-kon**/ Keimyung University Professor  
 B.A. Kyungpook National University  
 M.A. Keimyung University  
 Ph.D. Hiroshima University

Research field

- About the Adverbial Functions of Japanese Onomatopoeia, 日本語文學, 31 (2005).  
 - About Martial Art Education Organization of Korea-Japan School Curriculum Comparative Study, 日本語文學, 53 (2011).

Major career

- 2002~present. Keimyung University, Professor  
 - 2016~present. International Society for Martial Arts, President