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Corresponding author
E-mail: hsb8604@naver.com

Peer reviewer
E-mail: kinesiology@j-institute.jp

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Verification of Mediating Effects of Training Attitude on the Relationship between Motivation for Participation in Security MARTIAL ARTS and Training Flow of Students Majoring in Security Services

Shin Min-chul[1]
Kyungwoon University, Gumi, Republic of Korea
Hong Seong-bong[2*]
Sungkyungwan University, Suwon, Republic of Korea

Abstract

The objective of this study is to understand the motivation for participation in security martial arts, training flow, and training attitude of students majoring in security services, and also to examine the mediating effects of training attitude on the relationship between motivation for participation and training flow. To achieve the objective of this study, this study conducted a survey targeting total 422 students majoring in security services by selecting the samples through the convenience sampling method, and total 415 questionnaires were used as effective samples. Using the SPSS Program Ver. 23.0 Statistics Program for the collected data, this study conducted the frequency analysis, exploratory factor analysis, reliability analysis, analysis of variance, correlation analysis, multiple regression analysis, and the hierarchical regression analysis through the three-step mediating effect process of Soble's Z-test. Through the research methods and procedures above, this study drew the results on the motivation for participation in security martial arts, training flow, and training attitude of students majoring in security services. First, the subfactors of motivation for participation in security martial arts, training flow, and training attitude perceived by students majoring in security services showed partially significant differences between groups in accordance with the characteristics such as sex, event, and experience. Second, the motivation for participation in security martial arts(extrinsic motivation, intrinsic motivation), training flow(cognitive flow, behavioral flow), and training attitude(perceptional attitude, attentive attitude, participatory attitude) of students majoring in security services showed significantly positive(+) effects. Third, the training attitude played partial mediating roles in the relationship between motivation for participation in security martial arts and training flow of students majoring in security services. In summary, the motivation for participation in security martial arts perceived by students majoring in security services directly had effects on the training flow, and it also had indirect effects on it through training attitude.

[Keywords] ***Security Martial Arts, Motivation for Participation, Training Flow, Training Attitude, Security Services***

1. Introduction

1.1. Necessities and objective of research

Since the 1980s, the life quality of people has been improved due to the explosive economic growth and development in Korea. With the appearance of diverse crimes and

many social problems in this process, however, the national safety consciousness and demand for public order have been increased. In order to protect their bodies and minds, people are protecting their families and surroundings by training their own physical strength or even paying money to private security companies.

The hazard elements of the actual security situation are the irregularity and uncertainty in which the opponent cannot be cognized. Contrary to the general martial arts, the security martial arts used in site should be able to block the opponent's attack and also to perfectly overpower the opponent at the same time under the special condition in which the type and range of attack and the number of offenders are not predictable, so that the skills to cope with various situations should be learnt and trained[1].

The roles of diverse professional institutions are important to cultivate excellent security guards, and representatively, the role of college is greatly highlighted. Currently, diverse courses are established and taught to cultivate excellent security guards in the department of security martial arts, and lots of time and efforts are invested to develop the most important martial arts performance ability[2]. Moreover, emphasizing the unique educational values just like mental education and moral education, the martial arts education includes both areas of physical activity and psychological activity to develop/cultivate the inner side. Considering this part, the motivation for correct spirit and goal of students majoring in security services must be important factors.

Actually, the motivation could be defined as the direction and intensity of one's efforts to set up goals and also to practice actions to achieve the goals for meeting the desire[3]. To the students majoring in security services, the future goal or mindset before participating in martial arts training is the most important element. This motivation could have positive effects on the consistent attitude towards participation through learning and experience, and moreover, they could be immersed for the best experience in training body and mind.

However, reviewing the existing researches on the security martial arts, there have been diverse researches such as academic researches on the security martial arts itself like researches by Shin Sang-min & Kim Tae-min(2014), researches on the basis of security martial arts education like researches by Song Yeong-nam & Kim Byeong-chan(2010)[4], and researches on the measures for applying diverse martial arts such as Taekwondo, Judo, Hapkido, Martial Arts for Korean Special Forces, and Kick-Boxing(Kim Do-yeong, Kim Jin-hwan, 2017)[5]. Even though they are necessary for the development and growth of security martial arts, they are not the researches on the concrete training efficiency for achieving the goals of security martial arts. Thus, there should be the researches on the training of security martial arts.

Even though there are not many researches on the training of security martial arts, there are only researches handling each item such as a research on the motivation for participation by Kim Chang-geun & Jeon Ho-moon(2017)[6], a research on the training flow by Choi Woo-chang(2017)[7], and a research on the training attitude by Ham Woo-hyeong, Choi, Dong-jae, & Kim Byeong-tae(2017)[8]. Thus, it would be necessary to have a comprehensive and multilateral research.

Therefore, the objective of this study is to examine the effects of motivation for participation in security martial arts on the training flow of students majoring in security services, and also the mediating effects of training attitude. Through this, the high-level of security martial arts ability could be maintained by examining the relationships of motivation for participation, training flow, and training attitude, and also increasing the training flow.

2. Research Methods

2.1. Research subjects

This study selected total 415 students majoring in security martial arts in Seoul, Gyeonggi, Gyeongbuk, and Daegu regions as research subjects through the purposive sampling method. Excluding seven questionnaires with omitted or biased responses from total 422 collected questionnaires, total 415 questionnaires suitable for this study were used for the final analysis. <Table 1> shows the general characteristics of the subjects participating in this study.

Table 1. General characteristics of research subjects.

Section	Contents	N	%
Sex	Male students	291	70.1
	Female students	124	29.9
Grade	First-year student	146	35.2
	Second-year student	171	41.2
	Third-year student	46	11.1
	Fourth-year student	52	12.5
Training event	Taekwondo	146	35.2
	Judo	171	41.2
	Kendo	46	11.1
	Yongmudo	52	12.5
Training experience	Less than five years	174	41.9
	Less than ten years	134	32.3
	Ten years or more	107	25.8
Number of training	Two times a week or less	146	35.2
	Four times a week or less	101	24.3
	Five times a week or more	168	40.5

2.2. Validity and reliability of measurement tools

The questionnaire used for examining the objective of this study was composed based on preceding researches. All the questionnaire items used the five-point Likert scale including 'not at all(1point)' and 'very much likely(5point)'. To verify the validity of the questionnaire used for this study, the exploratory factor analysis(EFA) was performed, and for the reliability analysis, the Cronbach's α coefficient as a method to evaluate the reliability by the internal consistency was used.

For verifying the construct validity of the measurement variables(motivation for participation, training flow, training attitude), the exploratory factor analysis using the Maximum likelihood method was conducted. On top of judging the suitability of each research sample by using the Kaiser-Meyer-Olikin(KMO) index, this study conducted the Bartlett's unit matrix verification. Also, as a factor rotation method, this study performed the oblique rotation using the direct oblimin considering the correlation of each construct. After extracting only factors with eigenvalue as 1.0 or up, the items were selected on the basis of factor loading as .4 or up, and the matter of double loading to other factors was reviewed. The results of conducting the validity and reliability analysis of each questionnaire are shown as <Table 2>, <Table 3>, and <Table 4>.

1)Scale of Motivation for Participation

For the measurement items of motivation for participation, the questionnaire used by Lee Moo-yeon(2010)[9] by referring to the questionnaire used for a research by Jeong Yong-gak(1997)[10] was used after modifying/complementing it suitable for the objective of this study. Besides this study, it was also used for the researches by Kim Beom-joon & Lee Jae-moo(2019)[11], by considering the characteristics of each subject after modifying/complementing it. The items of motivation for participation in this study were composed of total 17 items including nine items about extrinsic motivation and eight items about intrinsic motivation. Just as

shown in <Table 2>, after removing the items(No. 1, 7, 13, 17) showing the multicollinearity or factor loading as .4 or less from the 17 items about motivation for participation of students majoring in security martial arts, this study finally drew total 13 items for extrinsic motivation(eight items) and intrinsic motivation(five items), and two factors. In the results of analyzing the item internal reliability of two subfactors, the Cronbach's α coefficient was .870~.903, which was exceeding the baseline as .7(Nunnally, 1978).

Table 2. Analysis of validity and reliability of motivation for participation.

Factor item	Factor loading	
	Extrinsic motivation	Intrinsic motivation
Motivation for participation 16	.792	.174
Motivation for participation 5	.775	.306
Motivation for participation 2	.726	.199
Motivation for participation 12	.682	.254
Motivation for participation 9	.672	.350
Motivation for participation 4	.640	.430
Motivation for participation 8	.641	.504
Motivation for participation 15	.610	.550
Motivation for participation 3	.195	.805
Motivation for participation 14	.311	.763
Motivation for participation 11	.230	.747
Motivation for participation 6	.303	.738
Motivation for participation 10	.470	.683
Eigenvalue	4.337	3.894
Explanatory power(%)	33.362	29.950
Cronbach'α	.903	.870

Note: KMO sample suitability measurement =.944, Bartlett sphericity verification =3144.202, df =78, p =.001, Cumulative explanatory power =63.312.

2)Scale of Training Flow

For the measurement items of training flow, the Korean-version scale developed by Csikszennmihalyi(1975)[12] and then adapted by Lee Jong-gil(1992) was used after modifying/complementing it. Besides this study, it was also used for the researches by Choi Woo-chang, Jeon Yong-tae & Kang hyeon(2019)[13], by considering the characteristics of each subject after modifying/complementing it. The items of training flow in this study were composed of total 12 items including eight items about cognitive flow and four items about behavioral flow. Just as shown in <Table 3>, after removing the items(No 1, 12) showing the multicollinearity or factor loading as .4 or less from the 12 items about training flow of students majoring in security martial arts, this study finally drew total 10 items for cognitive flow(seven items) and behavioral flow(three items) and two factors. In the results of analyzing the item internal reliability of two subfactors, the Cronbach's α coefficient was .811~.911.

Table 3. Analysis of validity and reliability of training flow.

Factor item	Factor loading	
	Cognitive flow	Behavioral flow
Training flow 4	.808	.128
Training flow 7	.789	.293
Training flow 5	.768	.366
Training flow 8	.760	.227
Training flow 6	.754	.268
Training flow 3	.751	.341
Training flow 2	.668	.322
Training flow 10	.129	.904
Training flow 9	.416	.678
Training flow 11	.507	.516
Eigenvalue	4.469	2.210
Explanatory power(%)	44.689	21.204

Cronbach'α	.911	.811

Note: KMO sample suitability measurement =.933, Bartlett sphericity verification =2273.935, df =45, p =.001, Cumulative explanatory power =65.894.

3)Training Attitude

For the measurement items of training attitude, the questionnaire used for the researches by Shin Seong-hyeon & Lee Hyeong-il(2019)[14] was used after modifying/complementing it by considering the characteristics of each subject. The items of training attitude in this study were composed of total 12 items including four items about perceptional attitude, four items about participatory attitude, and four items about attentive attitude. Just as shown in <Table 4>, among the 12 items about training attitude of students majoring in security martial arts, there were no items showing the multicollinearity or factor loading as .4 or less, so that this study drew total 12 items for perceptional attitude(four items), participatory attitude(four items), and attentive attitude(four items) and three factors. In the results of analyzing the item internal reliability of subfactors, the Cronbach's α coefficient was .766~.846.

Table 4. Analysis of validity and reliability of training attitude.

Factor item	Factor loading		
	Cognitive flow	Behavioral flow	Attentive attitude
Training attitude 1	.837	.258	.057
Training attitude 2	.740	.364	.087
Training attitude 3	.710	.225	.309
Training attitude 4	.708	.177	.311
Training attitude 10	.168	.785	.219
Training attitude 12	.276	.722	.323
Training attitude 9	.411	.697	.146
Training attitude 11	.259	.696	.362
Training attitude 6	.104	.191	.793
Training attitude 7	.204	.343	.722
Training attitude 5	.398	.331	.574
Training attitude 8	.442	.292	.542
Eigenvalue	3.001	2.946	2.084
Explanatory power(%)	25.009	24.554	17.363
Cronbach'α	.837	.846	.766

Note: KMO sample suitability measurement =.935, Bartlett sphericity verification =2466.745, df =66, p =.001, Cumulative explanatory power =65.894.

2.3. Data processing

Using the SPSS Program Ver. 23.0 Statistics Program, this study conducted the analysis in accordance with the objective of this study. To understand the characteristics of the subjects participating in this study, the frequency analysis was performed. In order to understand the validity and reliability of measurement tool(questionnaire), the exploratory factor analysis and the item internal reliability analysis(Cronbach's α) were conducted. Also, to examine differences between groups in accordance with the individual characteristics of students majoring in security martial arts, the independent t-test and one-way ANOVA were performed. The Scheffe's method was used for the post-test. Also, on top of conducting the correlation analysis to understand the correlation between variables, this study performed the multiple regression analysis and the hierarchical regression analysis through the three-step mediating effect process of Soble's Z-test, in order to verify the relationships between variables, and mediating effects.

3. Research Results

3.1. Correlation analysis

This study conducted the Pearson's correlation analysis to understand the relationships between each factor, and the results are shown as <Table 6>. Concretely, the subfactors of motivation for participation such as extrinsic motivation and intrinsic motivation, subfactors of training flow such as cognitive flow and behavioral flow, and the subfactors of training attitude such as perceptional attitude, attentive attitude, and participatory attitude showed positive(+) correlations in the statistical level of p<.01. As the correlation coefficient between every factor was .80 or less, there was no problem of multicollinearity.

Table 5. Analysis of correlations between factors.

Section	(a)	(b)	(c)	(d)	(e)	(f)	(g)
(a) Extrinsic motivation	1						
(b) Intrinsic motivation	.735**	1					
(c) Cognitive flow	.797**	.622**	1				
(d) Behavioral flow	.624**	.673**	.687**	1			
(e) Perceptional attitude	.679**	.571**	.652**	.536**	1		
(f) Attentive attitude	.578**	.585**	.592**	.669**	.643**	1	
(g) Participatory attitude	.622**	.612**	.642**	.688**	.663**	.742**	1

Note: **p<.01.

3.2. Analysis on the relationships of motivation for participation, training flow, and training attitude

1)Effects of Motivation for Participation and Training Attitude on the Training Flow of Students Majoring in Security Martial Arts

The results of conducting the multiple regression analysis on the effects of motivation for participation and training attitude on the training flow of students majoring in security martial arts, are shown as <Table 6>.

In the results of understanding the effects of motivation for participation on the training flow, the extrinsic motivation(β =.525) and intrinsic motivation(β =.290) in order had positive(+) effects on the training flow in the statistically significant level while the explanatory power of the regression model of motivation for participation and exercise flow was 63.9%(R^2 =.639).

The effects of training attitude on the training flow are shown in the second results of <Table 7>. In the results of the analysis, the participatory attitude(β =.369), attentive attitude(β =.262), and perceptional attitude(β =.220) in order had positive(+) effects on the training flow while the explanatory power of the regression model of training flow and exercise flow was 60.1%(R^2 =.601).

Table 6. Multiple regression analysis of motivation for participation, training attitude, and training flow.

Dependent variable	Independent variable	B	SE	β	t	p
	Constant	.580	.116		4.980	.001
	Extrinsic motivation	.525	.041	.555	12.731	.001
	Intrinsic motivation	.290	.043	.297	6.803	.001
	R^2=.639, Adjusted R^2=.637, F=364.554, p=.001					
	Constant	.384	.131		2.927	.004
	Perceptional attitude	.220	.042	.230	5.266	.001
	Attentive attitude	.262	.050	.254	5.215	.001
	Participatory attitude	.369	.048	.383	7.695	.001
	R^2=.601, Adjusted R^2=.598, F=206.112, p=.001					

2)Verification of Mediating Effects of Training Attitude on the Relationship between Motivation for Participation and Training Flow of Students Majoring in Security Martial Arts

In the results of verifying the mediating effects of training attitude perceived by students majoring in security martial arts, just as shown in <Table 7>, in the step 1 analyzing the effects of independent variable on the mediating variable, the motivation for participation(p <.001) had significant effects on the training attitude. When the motivation for participation was higher(β =.686), the training attitude was high. The motivation for participation could explain the training attitude as much as 54.3%.

In the step 2 analyzing the effects of independent variable on the dependent variable, the motivation for participation(p <.001) had significant effects on the training flow. When the motivation for participation was higher(β =.819), the training flow was high. The motivation for participation could explain the training flow as much as 63.1%.

In the last step 3, the effects of independent variable and mediating variable on the dependent variable were analyzed. The training attitude(p <.001) as a mediating variable had significant effects on the training flow, so that the mediating effects of it were verified. Also, the motivation for participation(p <.001) as an independent variable had significant effects on the training flow, so that the partial mediating effects of it were verified. When the motivation for participation(β =.508) and training attitude(β =.454) were higher, the training flow got increased while they could explain the training flow as much as 70.8%.

Table 7. Verification of mediating effects of training attitude through regression analysis.

		Step1	Step2	Step3
		Training attitude	Training flow	Training flow
	Constant	1.190***	.525***	-.015
Independent variable	Motivation for participation	.686***	.819***	.508***
Mediating variable	Training attitude			.454***
R^2		.543	.631	.708
F		489.755***	706.213***	499.006***

Note: ***p<.001.

<Table 8> shows the results of Sobel test on the mediating effects of training attitude. The Z-test was conducted by using the unstandardized coefficient(β =.686) between motivation for participation as an independent variable and training attitude as a mediating variable, the unstandardized coefficient(β =.454) between training attitude as a mediating variable and training flow as a dependent variable, the standard error(SE=.031) of motivation for participation and training attitude, and the standard error(SE=.044) of training attitude and training flow. When the z-value is bigger than1.96 or smaller than −1.96, the mediating effects are judged to be statistically significant. In the results of the verification(a=.686, b=.454, s_a =.031, s_b =.044), there were the mediating effects of training attitude(Soble z=9.9649, p <.001). When the motivation for participation was higher(β =.686), the training attitude got higher, which was led to the increase of training flow. The indirect effects of motivation for participation on the training flow were .311(β =.686×.454=.311).

Table 8. Sobel test on the mediating effects of training attitude.

	B	*SE*	*z*	*p*
Motivation for participation → Training attitude	.686	.031	9.352	<.001
Training attitude → Training flow	.454	.044		

4. Discussions

This study understood the motivation for participation in security martial arts, training flow, and training attitude of students majoring in security services, and also examined the mediating effects of training attitude on the relationship between motivation for participation and training flow. Based on the results drawn through the verification of hypotheses, the discussions could be made as follows.

First, in the results of analyzing differences in motivation for participation in security martial arts, training flow, and training attitude of students majoring in security services, except for the participatory attitude as a subfactor of training attitude, men showed higher results than women in every factor. Also, regarding the differences in accordance with event, the majors in Yongmudo showed higher results than other majors. Regarding the differences in accordance with experience, the group with more experience showed higher results than the group with less experience. This result is supported by the results of a research by Ye Gi-hoon & Kim Se-jin(2014)[15] reporting that the male students' adaptation was higher than the female students in the cognitive/emotional level during the college life, and a research by Kim Deok-jin & Yang Myeong-hwan(2009)[16] reporting that men felt bigger interest in competition than women, and the male students also showed the higher performance of participatory, perceptional, and attentive attitude than the female students. Also, the group with higher experience of training showed higher motivation for participation, training flow, and training attitude than the group with lower experience of training, which accords with the results of a research by An Jeong-deok & Song Gang-yeong(2009)[17] reporting that the people with more experience as a player showed the excellent exercise attitude and flow based on their self-management and clear goal-orientation.

The motivation for participation in security martial arts and training attitude of students majoring in security services had significant effects on the training flow. Strengthening the intrinsic/extrinsic motivation for participation in security martial arts for training flow, and also strengthening the perceptional, attentive, and participatory attitude for training attitude had positive effects on the training flow. The research by Hong Hee-jeong & Im Sin-ja(2013)[18] reported that the motivation for participation of Taekwondo Poomsae team members had positive effects on the exercise attitude. The research by Jeong Hoon-in(2014)[19] showed the positive effects of motivation for participation of Judo studio members on the training flow, which supports the results of this study.

On the relationship between motivation for participation in security martial arts and training flow of students majoring in security services, the training attitude showed the partial mediating effects. Indirectly reviewing the researches on martial arts training as there have been no direct researches on the mediating effects of training attitude on the relationship between motivation for participation and training flow, a research by Lee Je-hong, Eom Jin-hong, & Seol Jeong-deok(2011)[20] reported the positive effects

of motivation for participation on the training attitude of participants in golf, and the researches by Choi Woo-chang(2017)[21] reported the positive effects of sports attitude on the exercise flow of sports participants and trainees, which supports the results of this study.

As a result, the motivation for participation had positive effects on the training flow and training attitude of students majoring in security services. And when the training attitude was higher, the higher flow was shown. The motivation for participation in martial arts training, training flow, and training attitude must be essential abilities to students majoring in security services.

5. Conclusions and Suggestions

In order to examine the relationships of motivation for participation in security martial arts, training flow, and training attitude of students majoring in security services, this study aims to analyze differences between groups in accordance with the characteristics such as sex, grade, event, and experience, and also to examine the relationships of each factor and mediating effects by using the correlation analysis and regression analysis. Based on such results, this study reached the conclusions as follows.

First, in the results of analyzing differences in accordance with the demographic characteristics such as sex, grade, event, and experience, except for the participatory attitude of training attitude, men showed higher results than women in every factor while there were no huge differences in accordance with grade. Regarding the differences in accordance with event, the majors in Yongmudo showed the highest while the rest Taekwondo, Judo, and Kendo showed similar results. In the differences in accordance with experience, the group with more experience showed higher results than the group with less experience.

Second, the motivation for participation in security martial arts, training flow, and training attitude of students majoring in security services showed significantly positive effects.

Third, on the relationship between motivation for participation in security martial arts and training flow of students majoring in security services, the training attitude played partially mediating roles. The motivation for participation in security martials arts perceived by students majoring in security services had direct effects on the training flow, and it also had indirect effects through training attitude.

In summary, when the motivation for participation of students majoring in security services was higher, the training flow got increased, and this motivation for participation also had effects on the training attitude. As the correct training attitude also had positive effects on the training flow, the motivation for participation, training flow, and training attitude must be essential abilities to students majoring in security services.

This study could make suggestions for follow-up researches as follows.

First, to understand the relationships of motivation for participation in security martial arts, training flow, and training attitude of students majoring in security services, this study used the self-report questionnaire. In order to more deeply research the current status or expertise of students majoring in security services, however, it would be great to use the qualitative research method to support the results of this study for better researches.

Second, this study did not consider the experience and major in security martial arts of students majoring in security services. The existing preceding researches showed differ-

ences in accordance with major and experience. Considering the differences in training method or value in accordance with major, and the increased level and completion of training when reaching a certain degree of experience, it would be necessary to have the researches considering each major and experience.

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Lead Author
Shin Min-chul / Kyungwoon University Professor
B.A. Youngin University
M.A. Youngin University
Ph.D. Sejong University

Research field
- Relationship with Golf Addiction, Self-management and Leisure Satisfaction among Golf Gambling Participants, The Korean Journal of Physical Education, 21(4) (2012).
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Major career
- 2007~2019. Seoil University, Lecture
- 2015~2019. Youngin University, Lecture

Corresponding Author
Hong Seong-bong / Sungkyungkwan University Researcher
B.A. Youngin University
M.A. Yongin University
Ph.D. Sungkyungkwan University

Research field
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- Validation of the Retirement will Measuring Tool for Active College Athletes, Journal of Measurement and Evaluation in Physical Education and Sports Science, 21(4) (2019).

Major career
- 2015~present. Pyeongtaek Univerity, Lecturer
- 2016~present. Yongin University, Lecturer