# Relationship among Participation Motivation, Immersion on Game, and Exercise Performance of Golf Players

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## Abstract

**Objectives:** This study was conducted to clarify the relationship among participation motivation, game immersion, and exercise performance for golf players and to provide fundamental resources that are helpful in improving performance by maximizing game immersion and exercising performance. Methods/Statistical Analysis: Frequency analysis, factor analysis, reliability verification, correlation analysis, and multiple regression analysis were conducted on 225 golf players and the following conclusions were drawn. Findings: First of all, participation motivation for golf players was positively correlated with cognitive immersion and behavioral immersion as sub-variables of game immersion. In addition, participation motivation was positively correlated with personal performance, team performance, and ability utilization as sub-variables of exercising performance. Secondly, according to the identification of the influence of participation motivation on cognitive immersion and behavioral immersion, internal satisfaction, social recognition, and adding values had positive influences on the two variables. Third, according to the identification of the influence of participation motivation on personal performance, team performance, and ability utilization, internal satisfaction, social recognition, and adding values had positive influences. Application/Improvement: Considering the limitations of this study, a followup study is recommended to evaluate more developmental outcomes. First of all, this study was limited in scope to college golf players. Therefore, a follow-up study is expected to include golf players in middle/high school and college and also adult players. Secondly, seeing as how there has recently been an increase in the number of golf players, a follow-up study is expected to include potential user classes.

Keywords: Ability Utilization, Exercise Performance, Game Immersion, Internal Satisfaction, Participation Motivation

# 1. Introduction

Korean golf is one of the sports that the public initially found difficult to play due to the lack of commercialization in addition to the poor facilities and environment in Korea. However, there has been an increasing interest in golf along with rapid economic development after the last half of the 1990s, due to industrialization and informatization. Especially, Seri Park's win in the US Women's Open brought nothing but hope to us that Koreans were able to win the competition on the global stage. Afterwards, Korean golf players including Jiae Shin, Nayun Choi, and Soyun Yoo have improved the international reputation of Korean golf. This is how the public perspective on golf began to evolve. Changing from a sport mostly watched by people to one played by the public, golf has become a sport beloved by the public<sup>1</sup>.

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The outstanding performance of Korean professional golf players has contributed to the publicization of golf in Korea and has become an aspiration for young generations dreaming of being golf players. Therefore, the cultivation of junior golf players has been actively undertaken while establishing a foundation for more systematic and scientific players. Golf players receive training to improve their golf skills and physical strength but also for psychological factors as well as psychological skills at the same time.

People play golf in the natural environment. Therefore, it is a sport in which psychological factors are applied when playing<sup>2</sup>. In order for amateur golf players to become superior professional players, physiological, dynamic, and training-related factors must be controlled in addition to psychological factors. The players are expected to deliver their highest level of performance when the aforementioned factors are well-balanced. In<sup>3</sup> indicated that people play golf according to their judgement on the skill difficulty and hence are sensitive to changes in the environment. Therefore, a significant amount of stress is involved from the social perspective.

Golf is one of the representative closed games in which the psychological aspects are very important for self-control, and psychological skills are estimated to have up to 80 to 90 % of influence on performance<sup>4.5</sup>. Psychological skills are highly correlated with an optimal level of golf performance and with various variables related to golf players<sup>6-8</sup>. Since its establishment in 1984, the Korean College Golf Federation has been attempting to improve the performance of players, cultivate elite players to expand the scope of the foundation and to develop golf. The Korean College Golf Federation plays the role of a bridge, helping players who participate in competitions become national representative players or part of the national reserve force<sup>2</sup>. Furthermore, they grant many special privileges including exemptions from individual taxes at golf ranges and scholarships in private or group competitions. They also provide opportunities for golf players at the highest advanced education institutions and colleges to participate in the game.

Most of the players that advance on to college with a specialty in golf have gone through intense training with high hopes and expectations and ended up attending college based on their performance in competitions<sup>10</sup>. These are the students admitted into college based on their performance and qualifications as players regardless of their GPA or college entrance examination results. Students

with a specialty in sports focus on their performance and scores during their middle and high school years with the aim of attending college based on their performance. They are not called student athletes but rather, students who are good at sports. Therefore, they tend to spend most of their time in training at school to improve their performance<sup>11</sup>. Not only golf players but also other athletes perform as student athletes after advancing on to college. However, they spend most of their time focusing on improving their performance instead of academic studies<sup>12</sup>.

Golf players need to exert more effort to be successful in their sport and find it difficult to survive in a competitive society since they need to practice and study at the same time. Therefore, they tend to place higher priority on practice over academic studies. Since they are required to play in the field after practicing at the range, they spend most of their time in the golf field or range. Motivations in the field are divided into internal and external motivation. Internal motivation is summarized as pleasure in one word. Internal motivation refers to how people undertake certain actions due to internal desire and self-decision<sup>13</sup>. External motivation comes from external uncertainty that one is unable to control or decide such as values that arise not from internal or natural motivation, attitude, or values in social phenomena<sup>14</sup>. Participation motivation in the sport reflects how much an individual would prefer to participate in certain types of sports.

Participation motivation plays an important role in the factors that affect sport behavior. Participation motivation inspires people in one way or another while representing a unique value. There are forces that promote certain behaviors in humans and organize the behavior in a particular direction. These forces might be incentives or needs and may include instinct<sup>15</sup>. As for golf players, participation motivation serves as a criterion for pursuing personal goals such as the selection of an academic path or career.

Optimal performance and maximizing playing skill are the common objectives of both instructors and players. The highest level of performance and skills can be explosively achieved when physical, skill-related, social, and psychological factors are well-harmonized. Among these, strong will power in players is an important factor necessary to perform well in the game<sup>16</sup>. The performance of golf players is a result of physical factors and mental exercise performance. Therefore, it is a comprehensive ability that includes skills in the field and objective exercise performance recognized by players<sup>17</sup>. Satisfaction for athletes comes from successful performance and an optimal level of physical fitness. Therefore, instructors including coaches often attempt to improve the physical fitness of players<sup>18</sup>. This is to identify the potential of individual players and develop them and also for meaningful utilization in training and education courses. Satisfaction for players can be defined as fulfillment, desire, or personal recognition of achievement in group sport activities. This involves a certain degree of subjective evaluation for how much they expect from and recognize the performance of members in the group, social relationships with other members, and the behavior of instructors<sup>19</sup>.

Satisfaction with exercise performance is the result of achievement while participating in exercise. Therefore, it is an important topic when training or educating athletes. It is very important to consider the concept of exercise performance and the immersion resulting from participation motivation, and also clarify the relationship between them when training and educating college golf players to facilitate efficient performance and satisfaction.

Previous studies by<sup>20,21</sup> address the motivation and immersion of athletes. In these two studies, the relationships among participation motivation, the degree of motivation, exercise performance, intention for continuance, and physical self-concept were revealed. Other than these studies, many studies also address the relationship between motivation and immersion or between immersion and performance<sup>22,23</sup>. However, there has not been a previous study that clarified the influence of participation motivation, game immersion, and exercise performance. Especially, there has been no study on this topic involving golf players.

Even though participation motivation is an important element for determining game immersion and exercise performance, there has not been much research on the topic. This study aims to provide fundamental resources that are helpful to instructors and players through practical research on participation motivation, game immersion, and the exercise performance of golf players.

# 2. Research Method

#### 2.1 Subjects of the Research

Subjects of the research were selected from college golf players who were registered as golf players in 2015.

Convenience sampling was used with the non-probability sample extraction method. A total of 250 survey copies were distributed, and 25 with incomplete or missing responses were excluded. Therefore, a total of 225 copies were used for the analysis. The general characteristics of the research subjects are as shown in Table 1.

Variables	Classification	Frequency (n)	Percentage (%)
Gender	Male Female	109 116	48.4 51.6
Grade	1st grader 2nd grader 3rd grader 4th grader	75 86 41 23	33.3 38.2 18.2 10.2
History of awards	Pro-tour experience Award from national competition Participation in national competition	42 98 85	18.7 43.6 37.7
Total		225	100

Table 1. General characteristics of research subjects

#### 2.2 Research Tools

A survey was used as the research tool to clarify the research hypothesis. Questionnaires were created by modifying and re-organizing a survey proven to have reliability and validity in previous studies. The demographic characteristics used in this study were comprised of one question about gender, one question about grade, and one question about the history of awards. Grades were classified into first, second, third, and fourth graders. The history of awards was classified into pro-tour experience, award from national competition, and participation in national competition. Each of the questions were scored with a Likert scale and included the options 'score 5 for strongly agree,' 'score 4 for agree,' 'score 3 for neutral,' 'score 2 for disagree,' and 'score 1 for strongly disagree'.

#### 2.2.1 Participation Motivation

The criteria for participation motivation were selected with variables that were appropriate to the objective of study from a survey translated by<sup>24</sup> from the Korean version (KSMS-27) of the Sports Motivation Scale (SMS) proposed by<sup>25</sup>. The criteria were classified into internal motivation, external motivation, and non-motivation. Four sub-variables of participation motivation were utilized including eight questions about internal motivation, four questions on non-motivation, four questions on adding values, and three questions about social recognition.

#### 2.2.2 Game Immersion

The criteria for game immersion included variables that were appropriate for the objective of this study from the survey used by<sup>26</sup> and the criteria for personal immersion were selected according to the sport circumstances as defined by<sup>27</sup>. The two sub-variables of game immersion comprised of six questions about cognitive immersion and four questions about behavioral immersion.

#### 2.2.3 Exercise Performance

The criteria for exercise performance included variables that were appropriate for the objective of this study from the survey translated and used by<sup>28</sup> from the Athlete Satisfaction Questionnaires (ASQ) developed by<sup>29</sup>. The three sub-variables were comprised of four questions about personal performance, three questions about team performance, and three questions about ability utilization.

## 2.3 Validity and Reliability of Survey

For the verification of validity, the conceptual validity verification method was used. In this study, exploratory factor analysis was used for the conceptual validity verification. Exploratory factor analysis utilized the orthogonal rotation (varimax) method and only the questions with higher than .40 for factor loading were selected. As for reliability analysis, Cronbach's  $\alpha$  coefficient was used and only the questions with higher than .06 were used.

The validity of participation motivation in this study was extracted for four factors, namely, internal motivation, social recognition, adding value, and non-motivation, and they had the explanatory power of 63.376% for all the variables. The unit matrix of Bartlett was 5220.106 (p<.001), and KMO standard appropriateness was .949. Therefore, the selection of variables was appropriate. For the internal consistency, the significance level (Cronbach's a) was .899 for internal motivation followed by .894 for social recognition, .928 for adding values, and .867 for non-motivation. The validity of immersion in the game used in this study was extracted for two factors, namely, recognition immersion and behavioral immersion, and the explanation power was 62.815% for all the variables. The unit matrix of Bartlett was 1928.034 (p<.001), and KMO standard appropriateness was .910. Therefore, the selection of variables was appropriate. According to the result for identifying the internal consistency, the significance level (Cronbach's a) was .906 for recognition immersion and .778 for behavioral immersion.

The validity of exercise performance used in this study was extracted for three factors, namely, personal performance, team performance, and ability utilization. The unit matrix of Bartlett was 2350.778 (p<.001), and KMO standard appropriateness was .923. Therefore, the selection of variables was appropriate. According to the internal consistency, the significance level (Cronbach's a) was .906 for personal performance followed by .894 for team performance, and .855 for ability utilization.

## 2.4 Research Method

This study was conducted by collecting data from a survey. Data collection was performed by visiting college students at four-year universities that cultivated golf players. Upon visiting the relevant school, we explained the intention and goal of the study to the subjects and asked for their consent to collect data prior to distributing the copies of the survey. Prior to completing the survey, notes were distributed to the subjects with instructions. The self-administration method was used for completing the survey, and completed copies of the survey were immediately collected in the field.

#### 2.5 Data Process

The data collected for the study turned out to be 225 copies of the survey after excluding copies with incomplete responses that were inappropriate for the research. SPSS 20.0 was used on the collected data while performing descriptive statistical analysis, exploratory factor analysis, and reliability analysis. The statistical significance level in each of the analyses was maintained at p<.05, and correlation analysis was conducted to identify the relationship among variables. Multiple regression analysis was also conducted to identify the causal relationship among variables.

# 3. Results

# 3.1 Correlation among Participation Motivation, Game Immersion and Exercise Performance

According to the results of correlation analysis among variables as shown in Table 2, participation motivation and game immersion for golf players were positively correlated with behavioral immersion (.526) and cognition immersion (.503) under the category of internal satisfaction (p<.001). Social recognition was positively correlated with behavioral immersion (.603) and cognition immersion (.565) in order (p<.001). Adding value was positively correlated with cognition immersion (.553) and behavioral immersion (.502) (p<.001). Non-motivation was positively correlated with cognition immersion (.629) and behavioral immersion (.600) in order (p<.001). Participation motivation and exercise performance for golf players were positively correlated with ability utilization (.689), personal performance (.646), and team

performance (.634) under the category of internal satisfaction (p<.001).

Social recognition was positively correlated with personal performance (.594), ability utilization (.581), and team performance (.540) in order (p<.001). Adding value was positively correlated with ability utilization (.623), team performance (.589), and personal performance (.550) in order. Non-motivation was positively correlated with personal performance (.559), ability utilization (.527), and team performance (.497) in order (p<.001). In other words, participation motivation for golf players was positively correlated with game immersion and exercise performance.

## 3.2 Relationships of Participation Motivation and Game Immersion

# 3.2.1 Relationship between Participation Motivation and Cognition Immersion

According to the results of multiple regression analysis in Table 3, participation motivation statistically and

Variables	Internal satisfaction	Social recognition	Adding values	Non- motivation	Cognitive immersion	Behavioral imme -rsion	Personal perfor -mance	Team perfor -mance	Ability utilization
А	-								
В	.659***	-							
С	.509***	.559***	-						
D	.633***	.680***	.733***	-					
Е	.503***	.565***	.553***	.629***	-				
F	.526***	.603***	.502***	.600***	.751***	-			
G	.646***	.594***	.550***	.559***	.649***	.639***	-		
Н	.634***	.540***	.589***	.497***	.639***	.577***	.675***	-	
Ι	.689***	.581***	.623***	.527***	.660***	643***	.694***	.665***	-

Table 2. Correlation analysis among participation motivation, game immersion, and exercise performance

\*\*\**p*<.001

Table 3. Relationship between participation motivation and cognition immersion

	В	SE	Beta	t	F	R <sup>2</sup>
(Constant)	.994	.184		5.409***	78.103***	.447
Internal satisfaction	.333	.068	.320	4.869***	78.103***	.447
Social recognition	.211	.060	.200	3.526***	78.103***	.447
Adding values	.143	.049	.163	2.902***	78.103***	.447
Non motivation	.095	.059	.086	1.610	78.103***	.447

\*\*\*p<.001

significantly influences cognitive immersion (F = 78.103, p<.001), and the explanatory power encompassed about 44.7% (R<sup>2</sup> = .447) of all variables. According to the Beta value for the relative influential power of participation motivation on cognitive immersion, there is also a positive influence on internal satisfaction ( $\beta$  = .320, p<.001), social recognition ( $\beta$  = .200, p<.001), and adding value ( $\beta$  = .163, p<.001).

## 3.2.2 Relationship between Participation Motivation and Behavioral Immersion

According to the results of multiple regression analysis in Table 4, participation motivation statistically and significantly influences behavioral immersion (F = 76.386, p<.001), and the explanation power encompassed about 44.2% (R<sup>2</sup> = .442) of all variables. According to the Beta value for the relative influential power of participation motivation on behavioral immersion, there is a positive influence on internal satisfaction ( $\beta$  = .124, p<.05), social recognition ( $\beta$  = .300, p<.001), and adding value ( $\beta$  = .258, p<.001).

## **3.3 Relationship between Participation** Motivation and Exercise Performance

## 3.3.1 Relationship between Participation Motivation and Personal Performance

According to the results of multiple regression analysis in Table 5, participation motivation statistically and significantly influences personal performance (F = 90.016, p<.001), and the explanatory power encompasses about 48.3% (R<sup>2</sup> = .483) of all variables. According to the Beta value for the relative influential power of participation motivation on personal performance, there is a positive influence on internal satisfaction ( $\beta$  = .164, p<.01), social recognition ( $\beta$  = .205, p<.001), and adding value ( $\beta$  = .123, p<.01).

## 3.3.2 Relationship between Participation Motivation and Team Performance

According to the results of multiple regression analysis shown in Table 6, participation motivation statistically and significantly influences team performance (F = 80.717, p<.001), and the explanatory power encompassed about 45.5% (R<sup>2</sup> = .455) of all variables. According to the Beta value for the relative influential power of participation motivation on team performance, there is a positive influence on internal satisfaction ( $\beta$  = .137, p<.001), social recognition ( $\beta$  = .241, p<.001), and adding values ( $\beta$  = .308, p<.001).

## 3.3.3 Relationship between Participation Motivation and Ability Utilization

According to the results of multiple regression analysis shown in Table 7, participation motivation statistically and significantly influences ability utilization (F = 5.904, p<.001), and the explanatory power encompasses about 10.0% ( $R^2 = .100$ ) of all variables. According to the Beta

	В	SE	Beta	t	F	<b>R</b> <sup>2</sup>
(Constant)	1.088	.181		6.018***	76.386***	.442
Internal satisfaction	.134	.058	.124	2.301*	76.386***	.442
Social recognition	.310	.059	.300	5.261***	76.386***	.442
Adding values	.263	.067	.258	3.909***	76.386***	.442
Non motivation	.071	.048	.082	1.463	76.386***	.442

Table 4. Relationship between participation motivation and behavioral immersion

\*\*\**p*<.001

 Table 5. Relationship between participation motivation and personal performance

	5E	Beta	t	F	R <sup>2</sup>
.173	.147		8.007***	90.016***	.483
150	.047	.164	3.174**	90.016***	.483
178	.048	.205	3.730***	90.016***	.483
089	.039	.123	2.271**	90.016***	.483
.094	.116	069	838	90.016***	.483
12 12 08	173       50       78       39       094	173       .147         50       .047         78       .048         89       .039         094       .116	173     .147       50     .047     .164       78     .048     .205       89     .039     .123       194     .116    069	173     .147     8.007***       50     .047     .164     3.174**       78     .048     .205     3.730***       89     .039     .123     2.271**       094     .116    069    838	173       .147       8.007***       90.016***         50       .047       .164       3.174**       90.016***         78       .048       .205       3.730***       90.016***         89       .039       .123       2.271**       90.016***         104       .116      069      838       90.016***

\*p<.001, \*\*\*p<.001

value for the relative influential power of participation motivation on ability utilization, there is a positive influence on internal satisfaction ( $\beta$  = .150, p<.01), social recognition ( $\beta$  = .229, p<.001), and adding values ( $\beta$  = .370, p<.001).

# 4. Discussion

This study was conducted to clarify the relationship among participation motivation, game immersion, and exercise performance and to provide fundamental resources that can help in the improvement of performance by maximizing game immersion and exercise performance.

In<sup>30</sup> classified internal motivation as the acquisition of knowledge, achievement, and the experience of stimulation. Internal motivation for acquiring knowledge can be described as making an effort to learn and explore something new and attempt to understand it while pursuing pleasure and joy in the activity. Internal motivation for achievement is the desire for accomplishment. Internal motivation for stimulation experience is the wish to experience a desirable moment. Non-motivation is similar to the concept of lethargy in learning and refers to the loss of motivation due to a belief that personal behaviors are not helpful in accomplishing the desirable outcome<sup>31</sup>. In other words, non-motivation indicates a lack of internal motivation.

According to the identification of the influence of participation motivation on game immersion in this study, cognitive immersion and behavioral immersion from game immersion positively influence internal satisfaction, social recognition, and adding values. In addition, according to the identification of the influence of participation motivation on exercise performance, personal performance, team performance, and ability utilization positively influence internal satisfaction, social recognition, and adding values. These results are similar to the results obtained by<sup>25</sup>, who insisted that unified behaviors in sports reinforced internal motivation, and that the reinforced internal motivation subsequently influenced immersion, concentration, and positive emotion. In<sup>32</sup> reported that the higher the pleasure of ski club members was, the more immersed they were in cognition and behaviors. In<sup>33</sup> reported in his study that skill development, pleasure, health condition, physical strength, and entertainment factors increased exercise immersion.

In<sup>34,35</sup> indicated that internal motivation factors for swimming participants and dance sports trainees significantly influenced cognitive immersion and behavioral immersion. Therefore, the results of this study support those of previous studies regarding how participation motivation influences game immersion.

Participation motivation in the sports field not only improves the promotion and performance of exercise in addition to motivating exercise performance, it also affects satisfaction in team performance. In<sup>36</sup> indicated that participation motivation in sports influenced the satisfaction of activities, similar to this study. Finally, we confirmed that the higher internal satisfaction, social recognition, and adding values were for players, the higher

	В	SE	Beta	t	F	R <sup>2</sup>
(Constant)	.836	.185		4.514***	80.717***	.455
Internal satisfaction	.148	.060	.137	2.443***	80.717***	.455
Social recognition	.214	.050	.241	4.319***	80.717***	.455
Adding values	.325	.069	.308	4.724***	80.717***	.455
Non motivation	.101	.060	.089	1.685	80.717***	.455

Table 6. Relationship between participation motivation and team performance

\*\*\**p*<.001

 Table 7. Relationship between participation motivation and ability utilization

	В	SE	Beta	t	F	<b>R</b> <sup>2</sup>
(Constant)	.530	.176		3.016**	5.904***	.100
Internal satisfaction	.164	.057	.150	2.851**	5.904***	.100
Social recognition	.207	.047	.229	4.400***	5.904***	.100
Adding values	.398	.065	.370	6.086***	5.904***	.100
Non motivation	.089	.057	.077	1.561	5.904***	.100
** 01 *** 001						

<sup>\*\*</sup>*p*<.01, <sup>\*\*\*</sup>*p*<.001

their cognitive and behavioral level turned out to be. In addition, internal satisfaction, social recognition, and adding values positively predicted the behavioral expression of immersion in exercise. In other words, internal satisfaction, social recognition, and adding values positively increased game immersion and exercising ability for golf players.

# 5. Conclusion and Suggestion

This study was conducted to clarify the relationship among participation motivation, game immersion, and exercise performance for golf players and to provide fundamental resources that are helpful in improving performance by maximizing game immersion and exercising performance. Frequency analysis, factor analysis, reliability verification, correlation analysis, and multiple regression analysis were conducted on 225 golf players and the following conclusions were drawn. First of all, participation motivation for golf players was positively correlated with cognitive immersion and behavioral immersion as sub-variables of game immersion. In addition, participation motivation was positively correlated with personal performance, team performance, and ability utilization as sub-variables of exercising performance. Secondly, according to the identification of the influence of participation motivation on cognitive immersion and behavioral immersion, internal satisfaction, social recognition, and adding values had positive influences on the two variables. Third, according to the identification of the influence of participation motivation on personal performance, team performance, and ability utilization, internal satisfaction, social recognition, and adding values had positive influences. Considering the limitations of this study, a follow-up study is recommended to evaluate more developmental outcomes. First of all, this study was limited in scope to college golf players. Therefore, a follow-up study is expected to include golf players in middle/high school and college and also adult players. Secondly, seeing as how there has recently been an increase in the number of golf players, a follow-up study is expected to include potential user classes.

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