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The Effect of Blind People's Golf Activity Participation Motivation on Quality of Life: Focusing on the Additive Multiple Moderating Effect of Income and Self-Efficacy*

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Abstract

Purpose: The purpose of this study is to find a way to improve the quality of life of the blind by confirming the effect of the motivation of the blind to participate in golf activities and the effect of income and self-efficacy in these relationships. **Research design, data, and methodology:** This study conducted a survey of 30 visually impaired people, and simple regression analysis, additive multiple moderating effect analysis were conducted using SPSS and PROCESS macro. **Results:** First, it was confirmed that the motivation to participate in golf activities is an important factor in improving the quality of life. Second, it was confirmed that income has a positive effect on the quality of life rather than the motivation to participate in golf activities, but self-efficacy negatively affects the quality of life. Third, it was confirmed that the interaction between participation motivation and income level negatively affects the quality of life, but the interaction between participation motivation and self-efficacy improves the quality of life. **Conclusions:** It suggests that organizations, golf courses, local governments, and volunteers who support the blind's outdoor activities, especially golf activities, need to establish a support system and take a careful approach to overcome these factors.

Keywords : The visually impaired, Motivation to participate in golf, Life satisfaction, Income, Self-efficacy

JEL Classification Code : I10, I12, I31, M19.

1. Introduction

According to the current status of the disabled in Korea registered in the National Statistical Portal (KOSIS), it has increased from 2.511 million in 2012 to 2.645 million in 2021. This reason seems to be due to the increase in chronic diseases due to aging of the population

and the increase in various accidents due to industrialization (Cho et al., 2022). It is known that the disabled have a poor health condition and a higher prevalence of chronic diseases than the non-disabled (Korea Institute for the Disabled, 2017). The reason why this phenomenon is reported to be complex and multi-layered is that people with disabilities are likely to miss out on opportunities for early treatment due to the vulnerability to health maintenance and

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preventive activities and in the event of a disease or accident, treatment may be more complicated and prolonged. (Cho et al., 2022). In the case of visually impaired people interested in this study, it is reported that there is no significant change from 252,000 in 2012, and 92.6% of the cases of blindness occur after the first birthday, indicating the majority of the visually impaired population (Ye & Lee, 2016). Unlike those born with impaired vision, the acquired disabled people who lose their eyesight will experience a serious shock when blindness is experienced in adolescence that forms identity or in adulthood when social activities should be vigorous. (Kim & Kim, 2008), and experience stress-induced social maladaptation, depression, and a suicidal impulse more frequently than non-disabled people. Even after overcoming this adversity, the acquired blind people have difficulty going through the complex social processes in certain groups in the blind society again (Kim & Kim, 2008). They have already acquired or fulfilled various social roles as the non-blind (McPherson, 1981). Recently, the perspective on physical activity of the disabled has changed, and it has been revealed that physical activity of the disabled is a major factor that can satisfy individual basic psychological needs such as self-realization, social integration, and quality of life as well as physical improvement, maintenance and rehabilitation (Shephard, 1990; Sherill et al., 1986). However, despite various studies showing that physical activity provides health and emotional benefits regardless of gender, age, race, or disability, disabled people have been alienated from opportunities to participate in physical activity due to their disabilities (Kim & Kim, 2008). In particular, when the blind participates in sports activities, the quality of participation is more limited than that of other types of the disabled, and the characteristics of golf restrict them even more. For this reason, visually impaired people not only have very low levels of physical activity than non-disabled people (Kozub & Oh, 2004), but also maintain inactive lifestyles as they get older, resulting in poor quality of life and facing various serious physical and mental health threats (Hagele & Porretta, 2015; Hagele & Zhu, 2019).

This study attempted to confirm the effect of the motivation for blind people to participate in golf activities on self-efficacy and quality of life which are necessary to solve many problems they face while leading their lives. This is because golf is a representative sport with the characteristics of play and sports with the sense of social bonds while enjoying psychological stability in an environment in harmony with nature as awareness and interest in health and well-being expands (Son et al., 2011). In particular, golf participation is an appropriate exercise for the visually impaired as leisure and sports activities because there is no physical contact, intense activity nor physical strain. This study also pays attention to how the income difference affects the participation in golf activities as it is

known that the active participation type among the disabled participating in leisure activities to improve the quality of life is relatively high in income and educational background (Shin & Hong, 2022).

The purpose of this study is to confirm whether the visually impaired people's participation in golf activities can improve their quality of life by checking the effect of the motivation of participation on the quality of life and the effect of income and self-efficacy on these relationships. To this end, in this study, a survey was conducted on blind people who participated in golf competitions and analyzed through Process macro to verify the additive multiple moderating effect of income and self-efficacy.

The results of this study are expected to provide measures to improve the quality of life for the blind and other disabled who do not participate in leisure activities, as well as to give data for more blind people to participate in golf activities without discrimination by getting rid of prejudice. In addition, if the positive meaning of leisure activities for the disabled is derived through this study, it will serve as a clue to the establishment of various policies to support not only golf but also leisure activities for the disabled in support groups for the disabled, local governments, and the government.

2. Literature Review

2.1. Status of Golf Participation for the Visually Impaired

The participation of blind people in Korea began in early January 2007 at the Imperial Golf Academy in Wangsimni, Seoul. The coach and the supporter were Lee Jung-Ki and the late Kim Deok-Sang (golf columnist) respectively. The first completion was 'Daishin Securities Cup Visually Impaired Golf Competition' held on October 1 of that year. In 2012, the Korea Blind Golf Association was registered and holds five to nine competitions every year (the website of the Korea Blind Golf Association) and continues its steady activities such as sending players to the Blind Japan Open Golf Tournament, Blind World Cup Golf Tournament, and US Blind Open. As a domestic competition, the Bear Creek Cup Korea Blind Golf Tournament has been held since 2007, and the Konyang University of Medicine KimAnGua Cup Korea Blind Golf Tournament has been held since 2009. In 2013, the first Ecolian Blind Golf Tournament was held under the auspices of the National Sports Promotion Foundation. The PGA Cup Blind Golf Tournament has been held every year since 2016, and the Together Korea Blind Golf Tournament has been held under the auspices of Lee Sung-Hwan. Recently, MBN visually impaired golf competitions have been held since 2021 under

the auspices of MBN and Seowon Hills Golf Course, and intermittent competitions have been held under the auspices of the Korea Visual Sports Federation, the Seoul Gomduri Sports Center, and etc. The number of participants in each competition is about 10 to 20 in the B1 (completely blind) and about 30 to 50 in the B2 (amblyopia).

2.2. Motivation to Participate in Golf Activities

Participating in leisure activities or sports for daily life is recognized as the most efficient way to utilize leisure time to maintain basic physical strength and health to lead social life as well as to improve the overall quality of life (Kim et al., 2012).

Motivation is defined as the inner state and conditions of desire, reason, and expectation that induce, promote, and influence the intensity and direction of the destination-oriented behavior (Boz & Palaz, 2007; Huitt, 2001; Kang et al., 2010; Klinginna & Klinginna, 1981). For this reason, motivation can be said to be psychological energy to operate an action with human internal force, set a direction, maintain and sustain the action (Steers & Porter, 1991). Motivation is generally divided into external motivation, intrinsic motivation, and non-motivation (Ryan & Deci, 2000). Looking at the type of motivation, external motivation acting under external pressure or compensation is result-oriented and is not self-determining, while intrinsic motivation, an internal factor that induces behavior such as pleasure, challenge, and self-satisfaction, has autonomous and self-determining characteristics (Jeong, 2021). On the other hand, motivation refers to a state in which one lacks the will to act without connecting one's actions with the consequences of the actions (Ryan & Deci, 2000).

Motivation for participation in sports and leisure activities can be classified according to the goals and circumstances of the participants. Iso-Ahola (1980) classified them into 'escape' and 'pursuit'. Escape is to get out of the familiar environment through leisure activities, and pursuit is to obtain psychological rewards through leisure activities (Jung, 2021). From this point of view, the participation of the blind in golf activities is not only part of an effort to escape from a familiar environment but is also likely to have overlapping goals to obtain psychological rewards that they are not different from non-disabled people, which is considered an important factor to improve the quality of life. Therefore, in this study, the motivation to participate in golf activities was defined as "psychological compensation willingness for the visually impaired to escape from a familiar environment through golf activities and to be satisfied through pleasure and challenge consciousness."

2.3. Quality of Life

An individual's quality of life can be seen as a comprehensive and multidimensional concept that specifically expresses the degree of human well-being and welfare and has been variously defined and studied as subjective well-being, psychological happiness, and subjective happiness. For example, Brown et al. (1981) and Spilker (1996) define quality of life as a dimension of each individual's perceived subjective well-being in the physical, mental, and socio-economic domains.

And as an objective indicator of quality of life, a welfare index is related to housing, health, child rearing, financial situation, friends, neighbors, education, leisure, government, etc. related to material conditions or economic conditions.

As a subjective indicator, a pleasure index presents aesthetic and intellectual satisfaction and the realization of the desires of respect and love (Brown et al., 1981; Spilker, 1996).

As such, previous studies states quality of life is the ultimate goal of life that human beings unconsciously desire at birth, and it means a positive state both cognitively and emotionally (Jeong, 2021; Seong & Yoon, 2020; Yang, 1998).

On the other hand, the quality of life defined in the field of sports psychology is generally that participants who participate in pleasant and active physical activities feel psychological satisfaction through positive emotional states such as pleasure and refreshment after participating in physical activity (Yang, 1998) and it can be said that it is a state of emotional well-being in which an individual can tolerate mental stress or tension well and feel that his or her life is basically happy (Kim, 2004).

Therefore, the perception of quality of life contains a lot of subjective aspects of the individual, so it is necessary to judge whether one feels happy or feels happy emotional feelings in one's life (Jung & Kim, 2009).

Individuals feel freedom, self-development, and have the opportunity to demonstrate their creative abilities through sports activities (Jeong, 2021).

Therefore, people with regular exercise habits generally maintain a positive thinking and attitude, so the quality of life is relatively high (Lee, 1992; Lee et al., 2002). Referring to this, the quality of life is highly likely to improve if the blind participates in golf activities.

In this study, based on the studies of Brown et al. (1981) and Spilker (1996), the quality of life perceived by the visually impaired was defined "the degree of subjective well-being perceived by each individual in physical, mental, and social and economic domain"

2.4. Income

In general, income is a basic factor for human economic life. Therefore, the income gap not only negatively affects the quality of life of members of society, but also acts as a negative factor that aggravates social anxiety (Lee, 2019). It is generally known that households with disabilities have lower income levels and higher poverty rates than non-disabled households (Lee, 2009; Kim, 2010; Yoo, 2007; Yoon & Kim, 2009), and some previous studies reported that the level of inequality among the group of the disabled is higher (Cho, 2014). In addition, according to Lee (2021), who studied the income gap between the disabled and the non-disabled using panel data, property income and private transfer income did not widen the income gap, but public transfer income mitigated the widening trend of the income gap. It has proven that the gap between extreme poverty and extreme poverty between the disabled and non-disabled has been reduced and argued that the income security system should be strengthened (Lee, 2021). Meanwhile, Shin & Hong (2022) argued that the disabled who actively participate in leisure activities earn higher incomes than the disabled who do not participate.

The reason for paying attention to income in this study is that when blind people get an opportunity to participate in golf activities through various support from the government, local governments, support organizations, and golf courses, in the case of the visually impaired with low income, just being able to participate itself may have a positive effect, but in the case of high income, it can have both positive and negative sides. This is because even economically relaxed blind people may perceive that their financial freedom is rather an obstacle due to their disability because it is difficult to play golf without a companion or golf course-related support system when they participate in the actual round, not practice. In this study, income was defined as "the degree of financial freedom held by the visually impaired."

2.4. Self-efficacy

Self-efficacy is a belief in one's ability to achieve a given outcome and is related to perceived ability (Bandura, 1997; Bandura, 2006). Bandura (1978) defined self-efficacy as a belief that he can successfully perform the actions necessary to generate results and suggested four factors that form and reinforce self-efficacy: achievement of performance, proxy experience, social persuasion, and psychological and emotional state (Bandura, 1986; Kim et al., 2021). Concretely, achievement is one's own experience of success or failure, proxy experience is the experience of observing the success or failure behavior of others, social persuasion means praise, coaching, persuasion, etc. which can influence them.

In the field of sports psychology, physical self-efficacy is suggested as one of the important factors affecting the quality of life (Jeong, 2021). In other words, physical self-efficacy is a perceived confidence related to sports or physical activity, the ability to use one's competencies more efficiently (Yoon et al., 2015), and is a personal confidence that one can successfully perform the actions required to produce desirable results (Choi & Kwak, 2020). Physical self-efficacy refers to an individual's perceived ability level related to physical tasks and is divided into physical self-expression confidence and perceived physical ability (Ryckman et al, 1982). In this respect, the self-efficacy of the visually impaired is also very likely to have ambivalence along with income. This is because the level of one's ability may be limited depending on the goal of the performance of the blind participating in golf activities. In other words, if a person has the same level of goal as a non-disabled person, social persuasion such as proxy experience or praise for doing well contradicts his or her level of achievement, a high level of self-efficacy is likely to degrade the quality of life.

In this study, the self-efficacy of the visually impaired was defined as "personal confidence that they can successfully perform the actions required in golf activities" based on the research of Choi and Kwak (2020).

3. Research Methods and Materials

3.1. Research Model and Hypothesis

This study aims to confirm whether golf activity participation can improve the blind's quality of life by investigating the effect of the motivation on their quality of life and the effect of income and self-efficacy in these relationships. To this end, the following structured research model was constructed.

A structured research model including the above hypotheses is presented in <Figure 1>.

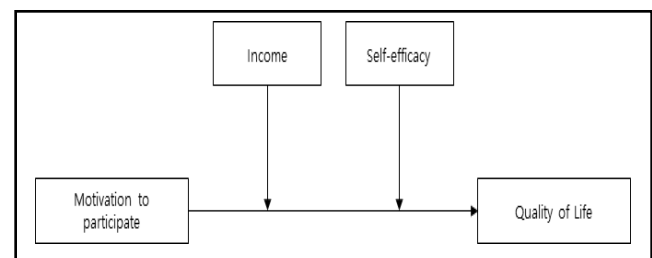


Figure 1: Research Model

Participation motivation is an important factor in predicting participation in leisure activities (Iso-Ahola, 1980; Raghheb, 1980). Leisure activities not only differ in

participation rate or degree of activity depending on the motivation to participation, but also depend on the level of motivation. Participation in leisure activities contributes to improving happiness and life satisfaction and lowering depression (Jeong, 2021). Also, Kang et al. (2010) reported that volunteer's task satisfaction and willingness to continue are affected by social motivation, rising motivation, and value motivation among volunteers' motivation to participate. Kim (2020) said that motivation and internal motivation among the disabled's tourism motives have a positive effect on travel intention, and Bae and Seo (2020) demonstrated that participation motivation of rock bowling field participants improves the quality of life and physical self-efficacy. Park and Kim (2021) stated that college students' motivation to participate in sports positively affects life satisfaction, and self-efficacy mediates in these relationships. Jung (2021) said that participation motivation and physical self-efficacy have a positive effect on psychological happiness through a study on the influence of Pilates participant participation motivation on psychological happiness and mediating effect of physical self-efficacy. In addition, studies have been reported that motivation has a positive effect on improving the quality of life in various sports fields (Jung & Oh, 2018; Kim et al., 2020; Lim & Lee, 2010; Shin, et al., 2018). Studies on the visually impaired were insignificant, and the direct research on the visually impaired have been hardly found. Examples of studies related to the visually impaired are as follows. Through a phenomenological approach, Jung and Jung (2012) said that the golf experience of visually impaired golfers was found to be motivational factors such as confidence, achievement, goal setting, happiness, life desire, vitality, pleasure, social relations, family effort, and consideration. In a study on the motivation of volunteers to participate in leisure activities of blind golfers, Lee (2018) reported that the volunteers' mental and physical satisfaction were improved by helping the blind to improve their golf performance and physical ability. As a result of confirming through previous studies, the motivation for blind people to participate in golf activities is very likely to have a positive effect on the quality of life. Therefore, the following hypothesis was established.

H1: The motivation for the blind to participate in golf activities will have a positive (+) effect on the quality of life.

Research on the moderating effect of income between participation motivation and quality of life could not be confirmed, but Cho (2021) said that personal income and household income adjust in the relationship between life satisfaction and donation behavior. In the analysis of the influence relationship between leisure attitude, leisure

consumption, and leisure satisfaction of single-person households, Choi (2021) showed a stronger effect on leisure time satisfaction in the relationship between leisure consumption and satisfaction. Yoon et al. (2022), who studied the effect of the burden of support on depression and willingness to enter facilities, said that income level controls the relationship between emotional burden and depression. These results suggest that the income level is highly likely to moderate the motivation for participation in golf activities and the quality of life of the visually impaired. Therefore, the following hypothesis was established.

H2: Income level will moderate between the motivation for the blind to participate in golf activities and the quality of life.

The reason that self-efficacy is set as parameters that promote preceding variables such as motivation in many studies on self-efficacy (e.g., Cho & Lee, 2021; Kim, 2022; Lim & Lee, 2020), seems to be related to the characteristics of self-efficacy. Through a study on the relationship between sports participation motivation, self-efficacy, and life satisfaction of the disabled, Do et al. (2022) said that only pleasure among the sub-factors of participation motivation has a positive effect on self-efficacy and that enjoyment and socializing among the motivation of participation has a positive effect on life satisfaction, and that self-efficacy also has a positive effect on life satisfaction. Park and Cha (2022) reported that cooperative self-efficacy has the greatest influence on task continuous behavior in the online learning community. Kim (2018) said that the self-regulated learning ability has a negative direct effect on cognitive control and motivational control while cooperative efficacy has a positive indirect effect for college students in learning using social media. Meanwhile, Kim and Park (2022) found that, self-efficacy in career decision-making had a moderating effect in the relationship between career stress and lack of job information, lack of self-clarity and lack of awareness of necessity among the sub-variables of career barriers. These results mean that self-efficacy has a potential for moderating effects as well as mediating roles. Therefore, the following hypothesis was established.

H3: Self-efficacy will moderate between the motivation for the blind to participate in golf activities and the quality of life.

3.2. Data Collection and Utilization Measures

For the analysis of this study, a survey was conducted from May 30 to July 29, 2022, on 30 blind people participating in golf activities with the help of the Blind Association and used for analysis.

Based on Ko (2008)'s study, 18 questions such as 'I have social exchanges with others through golf' and 'Golf rounds allow me to take a break in life' were measured on a Likert 5-point scale (5 points very yes, 1 point not at all). The income level was measured using a 5-step interval scale of less than 3 million won per month, 3 million won to 4 million won, 4 million won to 5 million won, 5 million won to 7 million won, and more than 7 million won. Self-efficacy was measured on a Likert 5-point scale for six questions, such as "I can't withstand stress (reverse question)" among the physical self-efficacy measures developed by Rycman et al. (1982). As for quality of life, based on a study by Kim (2002), 11 questions, such as "I am currently living a satisfactory life due to my golf activities," were measured on a Likert 5-point.

4. Results and Discussion

4.1. Demographic Characteristics

The average age of the respondents was 56 years old (SD: 9.584), with 26 males (86.7%) and 4 females (13.3%). The measured demographic characteristics are presented in <Table 1>.

Table 1: Demographic Characteristics

Class		Freq.	%
Gender	Male	26	86.7
	Female	4	13.3
Age	50 or younger	8	26.7
	50~54	7	23.3
	55~59	5	16.7
	60 or older	10	33.3
Class of Visual Disability	B1	6	20.0
	B2	21	70.0
	B3	3	10.0
Time of Disability	Congenital	7	23.3
	Acquired	23	76.7
Income	Less than 3 million Won	10	33.3
	3~4	7	23.3
	4~5	7	23.3
	5~7	4	13.3
	More than 7 Million Won	2	6.7
Education	High School	9	30.0
	College	2	6.7
	University	15	50.0
	Postgraduate or Higher	3	10.0
	Other	1	3.3

4.2. Reliability, Validity and Correlation Analysis

To verify the validity of each variable except income, concept reliability and mean variance extraction index (AVE) were checked using AMOS 24.0, and internal consistency was confirmed with Cronbach's α coefficient for each item of the variable using SPSS 24.0. Only the average variance

extraction index (AVE) value of self- efficacy was 0.452, although analyzed through bootstrapping for validity verification, which was judged to be acceptable as the sample was not enough. And the Cronbach's coefficient of other variables was 0.805 to 0.947, and conceptual reliability was 0.829 to 0.967. It was concluded that reliability and validity had been secured.

Table 2: Reliability and Validity

Variables	Item	Construct Reliability	AVE	Cronbach's α
Motivation to participate	18	0.967	0.625	0.947
Quality of life	11	0.948	0.625	0.924
Self-efficacy	6	0.829	0.452	0.805

Note: AVE-Average Variance Extracted

As a result of a correlation analysis assuming the income level a continuous scale although it was composed of an equal scale, only between participation motivation and quality of life ($r = .795, p < .01$) was found to have a statistically significant positive (+) relationship while the relationship between other variables was not statistically significant.

Table 3: Correlation Analysis Result (n=30)

Variables	1	2	3	4
1. Motivation to participate	(.625)			
2. Income	-.335	-		
3. Quality of life	.795**	-.227	(.625)	
4. Self-efficacy	.158	-.019	.032	(.452)
Mean	4.08	2.37	3.93	3.53
Standard Deviation	0.59	1.27	0.64	0.68

Note: ** $p < .01$, () presents the AVE.

4.3. Results of Hypothesis Verification

For the test of <Hypothesis 1> related to the relationship between the motivation for the blind to participate in golf activities and the quality of life, a simple regression analysis was conducted after controlling gender, age, income, education, and disability grade using SPSS 24.0. As a result of the analysis, the motivation for visually impaired people to participate in golf activities ($\beta = .774, p < .01$) was confirmed to have a positive effect on the quality of life. These results are the same as previous studies (ISO-Ahola, 1980; Jeong, 2021; Jung & Jung, 2012; Raghheb, 1980) that leisure activities such as golf activities improve the quality of life. Therefore, <Hypothesis 1> was adopted.

Moderation effect analysis is to check when the independent variable affects the dependent variable by

introducing the moderating variable and is verified by inputting the interaction variable multiplied by the independent variable and the moderator variable in addition to the independent variable and the moderator variable. So far, many studies have verified each moderating effect when there are two or more moderating effects as shown in the research model in <Figure 1>. In other words, it tested whether participation motivation and income have a moderating effect, and whether self-efficacy has a moderating effect, respectively. For this reason, previous studies showed that high income and high self-efficacy have the potential to improve quality of life, but it was not possible to confirm whether income and self-efficacy had a common effect on the constraint relationship between participation motivation and quality of life.

Therefore, to verify the additive multiple moderating effect of income and self-efficacy on the relationship between the participation motivation and quality of life of visually impaired people, Hayes (2017)'s PROCESS macro for SPSS model 2 (bootstrap sample size = 5,000) was used. The PROCESS macro program has the advantage of simultaneously analyzing the additional multi-regulation effect with two regulatory variables, and it is possible to verify causality through bootstrapping even if the respondents are small and does not require a normal distribution assumption (Hayes, 2017; Lee, 2020). For analysis, income was classified as a dichotomous variable by re-coding into less than 3 million won (33.3%) and 3 million won or more (66.7%).

As a result of verifying the additive multiple moderating effect using the PROCESS macro, participation motivation (coeff. = .07, $p = .892$) was found as an independent variable, confirming that participation motivation is not a factor that directly increases the quality of life. This implies that income and self-efficacy may play a role. It was confirmed that income (coeff. = 1.15, $p < .01$) has a positive effect on the quality of life but self-efficacy related to golf (coeff. = -1.83, $p < .01$) rather has a negative effect on the quality of life. It is estimated that both sides of the self-efficacy concerned earlier worked. In other words, even if the blind believe that they can play golf by participating in golf activities, there may be a dark side that can lower the quality of life because they are likely to recognize the actions of other obstacles.

The interaction between participation motivation and income (coeff. = -0.27, $p < .01$) showed a statistically significant negative (-) effect, and the R^2 change was 0.07 ($F=8.45$, $p=.007$) accounted for 7% of the total model explanatory power. These results mean that participating in golf activities may be a burden if the income is low, but rather, it can be interpreted that there are side effects that may occur if the blind with high income is limited to participate in golf activities. This is interpreted that even if

the motivation to participate is expressed, participation itself becomes difficult if a support system for them is not prepared at a golf course or a practice range, so they can have a negative thought about the quality of life.

The interaction between participation motivation and self-efficacy (coeff. = 0.43, $p < .01$) was found to have a positive (+) effect, and the R^2 change was 0.10 ($F = 12.67$, $p = .001$) accounted for 10% of the total model explanatory power. These results mean that if motivation to participate in golf activities and self-efficacy work at the same time, the quality of life can be improved, and compared to the previous results, belief in one's golf ability can be a factor that improves the quality of life as far as golf is concerned, surpassing other negative factors. The explanatory power of the additive multiple control model had an R^2 change of 0.15 ($F = 9.42$, $p = .001$), accounting for 15% of the explanatory power of the entire model. Therefore, both <Hypothesis 2> and <Hypothesis 3> were accepted.

Table 4: Analysis of the Moderating Effect and Additional Multiple Moderating Effect (n=30)

Variables	Coefficient	S.E	t-value	p-value	R2 Change	F(p)
(Constant)	3.70	1.92	1.93	0.065		
Motivation to participate (A)	0.07	0.48	0.13	0.892		
Income (B)	1.15	0.38	2.99	0.006		
Self-efficacy ©	-1.83	0.48	-3.79	0.009		
A × B	-0.27	0.09	-2.91	0.007	0.07	8.45 (.007)
A × C	0.43	0.12	3.56	0.001	0.10	12.67 (.001)
Both					0.15	9.42 (.001)
R=0.89, R ² =0.80, F=19.23, p<.001						

Note: Both: A×B+A×C

5. Conclusions

This study focuses on the leisure activities of the disabled and determines whether leisure activities such as participation in golf activities can improve their quality of life by examining the effects of the blind's participation in golf activities on their quality of life, and the effects of income and self-efficacy as a moderator in these relationships. The analysis results and implications are as follows. First, it was confirmed that the motivation for the blind to participate in golf activities is an important factor in improving the quality of life. These results support the arguments of many studies (ISO-Ahola, 1980; Jeong, 2021; Jung & Jung, 2012; Raghheb, 1980) which argued that

participation motivation predicts leisure activity participation behavior. Besides, as Lee (2018) found in his study, it means that participation in leisure activities such as golf by the visually impaired can act as a virtuous cycle as a positive stimulus for volunteers who support it when watching the visually impaired golfers' performance improves. Second, as a result of verifying the additive multiple moderating effect, it was found that participation motivation was not a factor that directly improved the quality of life. These results mean that there may be a role of income and self-efficacy set as moderating effect variables in this study.

Income is a positive factor affecting the quality of life as confirmed in previous studies (Cho, 2014; Kim, 2010; Lee, 2009; Yoo, 2007; Yoon & Kim, 2009), supporting Lee (2021)'s claim that the income security system for the disabled should be strengthened. Self-efficacy was found to have a negative effect on quality of life, which could infer that there may be a negative role along with the ambivalence of the belief that the visually impaired can perceive. This means that even if the blind believe that they can play golf by participating in golf activities, they may be frustrated by the actions of other obstacles, and if they perceive the gap between ideals and reality, they may undermine the quality of life. Therefore, volunteers related to golf activities or organizations for the visually impaired need to approach them carefully so that they can positively grow and improve their self-efficacy through golf activities. Third, in the additive multiple moderating effect test, the interaction between participation motivation and income has statistically significant negative effect, which can be interpreted in the same context as the research results of Shin and Hong (2022) which argued that disabled people who actively participate in leisure activities earn higher. This is because compared to other leisure activities, golf activities are relatively costly, not only for practice and rounds, but also for purchasing equipment such as golf clubs, and because they seem hardly able to enjoy it if there is not support system for them at golf courses or practice ranges. Therefore, golf clubs and support organizations that support golf activities for the visually impaired need to come up with support measures to alleviate this burden.

It was confirmed that the interaction between participation motivation and self-efficacy had a positive effect on improving the quality of life. These results mean that if the motivation to participate in golf activities and the self-efficacy for golf work at the same time, they can improve the quality of life, which is different from the negative effect of self-efficacy on improving the quality of life. In other words, this means that the belief that they can do about golf ability overcomes other negative factors and can be a factor that improves the quality of life when limited to golf. Therefore, instructors (coaches, etc.) and volunteers

who provide education or training related to golf activities for the blind need to take these points into account when they carry out education and volunteer activities.

Interested in golf activities for the blind, this study was academically meaningful as the first approach and application of the analysis method by examining the effect of participation motivation on quality of life and the effect of additive multiple moderating effect of income and self-efficacy in these relationships and also derived the implications presented above. Still there are several limitations that need to be supplemented in future studies. First, because the respondents were visually impaired, it was difficult to obtain the questionnaire and the number of respondents was insufficient. In future research, it is necessary to apply the oral questionnaire and to allow more people to respond. Second, it was insufficient to derive more specific clues on improving quality of life by classifying the participation motivation into sub-factors using PCA (principal component analysis method). This is also related to the number of respondents; more respondents should be secured in future studies. Third, because income was recorded as a dichotomous variable and analyzed, the conditional effect that should be additionally performed in the additive multiple moderating effect model analysis using the PROCESS macro was not analyzed. In future research, it is necessary to analyze the related variables preferably as continuous variables or various groups by direct entry. In addition, the limitations of self-report questionnaires should be improved in future studies.

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