

Differences in Participation in Physical Activity and Perceived Health Status by Degree of Visual Impairment: Evidence from the Korean National Disability Sports Survey

Eunsoo Kang and Da Yeon Kang
MICA International Scholars

ABSTRACT

Participation in physical activity is essential for maintaining physical and mental well-being among individuals with visual impairment (VI). Despite national efforts in South Korea to promote inclusive sports environments, disparities persist, particularly according to impairment severity. This study examined differences in physical activity behaviors, perceived health status, and participation-related factors among individuals with severe and mild VI. A total of 1,067 participants were analyzed. Exercise frequency and duration did not differ significantly between groups; however, individuals with severe VI reported lower exercise intensity. Walking or light running was the most common activity in both groups, while differences were observed in preferred activities, exercise settings, and companionship. Individuals with severe VI were more likely to rely on others, whereas those with mild VI tended to exercise independently. Perceived physical and mental health was significantly poorer among individuals with severe VI, including lower ratings of general health and higher depression and anxiety. Motivational factors also differed, with greater reliance on external encouragement in the severe VI group. Support needs differed by severity, particularly in terms of social support and information accessibility. These findings highlight the need for severity-specific interventions addressing differences in independence, support systems, and information access.

KEYWORDS

Visual impairment, Physical activity, Disability, Inclusion

INTRODUCTION

Participation in physical activity is widely recognized as a fundamental component of overall health and well-being (World Health Organization, 2020). Regular engagement in physical activity has been shown to contribute to improved physical functioning, psychological well-being, and overall quality of life. For individuals with disabilities, participation in sports additionally supports rehabilitation, social inclusion, and independence (Ramsden et al., 2023). Individuals with visual impairment (VI) particularly benefit through improved mobility, autonomy, and reduced social isolation. Evidence from broader disability populations suggests that participation in adaptive sports is associated with improved physical and mental quality of life, as well as increased social participation (Isidoro-Cabañas et al., 2023; Sahlin & Lexell, 2015; Yazicioglu et al., 2012). While these studies focus on diverse disability groups rather than exclusively on VI, they provide relevant context for understanding the potential benefits of physical activity among individuals with VI.

However, individuals with VI consistently demonstrate lower participation rates in physical activity compared to those without disabilities (Jaarsma et al., 2014; Tshuma et al., 2022). Commonly reported barriers include limited transportation, lack of accessible facilities, insufficient professional guidance, and fear of injury (Adigun et al., 2014). In addition, recent research highlights that the design and accessibility of physical activity programs play a critical role in facilitating participation among individuals with VI (Choi & Pionke, 2024). These barriers may be further amplified depending on the severity of VI, as individuals with more severe VI often experience greater functional and environmental constraints.

In South Korea, national efforts have been made to promote inclusive physical activity through policy and community-based programs (Ministry of Culture, Sports and Tourism, 2020-2024). Despite these efforts, empirical evidence examining how participation patterns differ by severity of VI remains limited, particularly using nationally representative data. Previous research suggests that participation patterns vary by severity, with differences reported in physical activity levels, accessibility, and support needs between individuals who are blind and those who are partially sighted (Flynn et al., 2024).

Therefore, this study aims to investigate differences in physical activity participation by severity of VI using nationally representative data. Specifically, the study addresses the following research questions: (1) Do exercise behaviors, settings, and companionship differ by severity of VI? (2) How do perceived physical and mental health status vary between the two groups? (3) What motivations and information sources most strongly influence exercise participation among individuals with varying degrees of VI?

By addressing these questions, this study seeks to clarify not only whether differences exist, but also why they emerge, providing a more comprehensive understanding of participation patterns among individuals with VI. These findings may serve as evidence to inform community-based programs and national policy initiatives aimed at promoting equitable and inclusive access to physical activity.

METHODS

Participants

This study utilized data from the 2024 Korean National Disability Sports Survey (National Statistics Approval No. 113020). Among 10,000 surveyed individuals, 1,636 were identified as having VI. Of these, 1,067 participants who reported engaging in physical activity within the past year were included in the analysis. These participants were categorized into severe (grades 1-3, almost or completely blind) and mild (grades 4-6, partially sighted) VI groups. Among 1,067 participants, 175 had severe VI and 892 had mild VI.

Survey methodology

The survey consisted of 69 items assessing physical activity participation, environmental and social conditions, perceived physical and mental health status, preferred types of current and future physical activity, and demographic and disability-related characteristics. Demographic variables included sex, age, age at onset of VI, walking status, marital status, employment status, monthly household income, and region of residence.

Data were collected through face-to-face interviews conducted by trained interviewers who visited each participant individually. For individuals with severe disabilities who were unable to respond directly, proxy interviews were conducted with family members or caregivers.

Data collection and analysis

Descriptive statistics were used to summarize participant characteristics. Chi-square tests were conducted to examine group differences. Statistical analyses were performed using SPSS (version 25.0; IBM Corp., Armonk, NY, USA), with statistical significance set at $p < .05$.

RESULTS

1. Demographic characteristics

Table 1 presents the general characteristics of 1,067 participants by severity of VI, including 175 respondents with severe VI and 892 respondents with mild VI. In both groups, male participants outnumbered female participants. Age distribution indicated that participants in their 60s or older were predominant in both severity categories. Regarding the age at onset of VI, more than half of the participants in both groups reported onset after 20 years of age. Regarding marriage status, the majority were married in both groups. Participants resided across various regions of South Korea, with the largest proportions living in Seoul or Gyeonggi in both groups.

Walking ability differed notably between groups. While most participants with mild VI were independent walkers (91.3%), only 53.1% of those with severe VI were independent, with 30.3% requiring partial assistance and 16.6% requiring full assistance. Employment rates were lower among participants with severe VI (34.9%) compared to those with mild VI (55.8%). In both groups, approximately half or more of participants reported monthly income of 1 to <3 million KRW, with the mild VI group showing a slightly higher proportion earning over 3 million KRW.

Table 1. General characteristics of participants by severity of visual impairment

Category		Severe VI (N = 175)		Mild VI (N = 892)	
		%	N	%	N
Sex	Male	57.7%	101	68.1%	607
	Female	42.3%	74	31.9%	285
Age range	10s	0.6%	1	0.7%	6
	20s	1.7%	3	2.9%	26
	30s	7.4%	13	3.6%	32
	40s	14.9%	26	14.0%	125
	50s	29.7%	52	26.6%	237
	60s	45.7%	80	52.2%	466
Age at onset of visual impairment	Before birth	25.1%	44	9.2%	82
	1-7 yrs	9.7%	17	7.1%	63
	8-13 yrs	8.6%	15	7.4%	66
	14-19 yrs	2.9%	5	7.0%	62
	20 yrs-	53.7%	94	69.4%	619
Walking status	Independent walker	53.1%	93	91.3%	814
	Partially assisted walker	30.3%	53	6.5%	58
	Fully assisted walker	16.6%	29	2.2%	20
Marriage status	Single	22.9%	40	12.0%	107
	Married	65.1%	114	78.9%	704
	Divorced	7.4%	13	5.7%	51
	Widowed	4.6%	8	3.4%	30
Employment status	Employed	34.9%	61	55.8%	498
	Unemployed	65.1%	114	44.2%	394
Monthly household incomes	< 1 million KRW	14.3%	25	13.3%	119
	1 million to <2 million KRW	32.0%	56	22.8%	203
	2 million to <3 million KRW	27.4%	48	27.9%	249
	3 million to <4 million KRW	14.9%	26	18.2%	162

	4 million to <5 million KRW	6.3%	11	10.2%	91
	≥ 5 million KRW	5.1%	9	7.6%	68
Region of residence	Seoul	25.7%	45	15.6%	139
	Busan	4.6%	8	6.3%	56
	Daegu	4.0%	7	4.3%	38
	Incheon	5.1%	9	6.5%	58
	Gwangju	4.0%	7	2.9%	26
	Daejeon	4.0%	7	2.1%	19
	Ulsan	3.4%	6	2.6%	23
	Sejong	0.6%	1	0.6%	5
	Gyeonggi	20.0%	35	24.3%	217
	Gangwon	2.9%	5	3.7%	33
	Chungbuk	2.9%	5	4.1%	37
	Chungnam	3.4%	6	4.8%	43
	Jeonbuk	2.9%	5	4.6%	41
	Jeonnam	3.4%	6	5.0%	45
	Gyeongbuk	4.6%	8	5.4%	48
	Gyeongnam	7.4%	13	5.4%	48
	Jeju	1.1%	2	1.8%	16

2. Exercise behaviors, activity types, settings, and companionship

Exercise behaviors

Table 2 shows exercise behaviors of 1,067 individuals with VI who engaged in physical activities over the past year (severe VI: 175, mild VI: 892). The variables presented in Table 2 include exercise frequency, duration, intensity, activity types, settings, and companionship.

Table 2. Exercise behaviors, activity types, settings, and companionship by severity of visual impairment

		Severe VI (n = 175)	Mild VI (n = 892)	Chi-square (χ^2) test results
Frequency	1. Less than once a month	1.1% (n = 2)	0.8% (n = 7)	$\chi^2(7) = 7.02$, $p > .05$
	2. Two to three times a month	2.3% (n = 4)	1.6% (n = 14)	
	3. Once a week	6.3% (n = 11)	7.8% (n = 70)	
	4. Twice a week	13.1% (n = 23)	15.1% (n = 135)	
	5. Three times a week	30.9% (n = 54)	25.9% (n = 231)	
	6. Four to five times a week	20.0% (n = 35)	23.9% (n = 213)	
	7. Almost every day	23.4% (n = 41)	19.4% (n = 173)	
	8. Does not exercise regularly	2.9% (n = 5)	5.5% (n = 49)	
Average duration per session	1. < 30 minutes	15.4% (n = 27)	10.9% (n = 97)	$\chi^2(4) = 6.28$, $p > .05$
	2. 30 minutes to <1 hour	54.9% (n = 96)	53.4% (n = 476)	
	3. 1 hour to < 1 hour 30 minutes	20.0% (n = 35)	26.2% (n = 234)	
	4. 1 hour 30 minutes to < 2 hours	3.4% (n = 6)	4.8% (n = 43)	
	5. ≥ 2 hours	6.3% (n = 11)	4.7% (n = 42)	
Intensity	1. Low intensity (able to sing while exercising)	60.6% (n = 106)	49.6% (n = 442)	$\chi^2(2) = 9.04$, $p < .05$
	2. Moderate intensity (able to converse while exercising)	38.3% (n = 67)	46.4% (n = 414)	
	3. High intensity (unable to converse while exercising)	1.1% (n = 2)	4.0% (n = 36)	
Current physical activities	1. Walking/light running	67.4% (n=118)	71.2% (n=635)	$\chi^2(8) = 11.51$, $p > .05$
	2. Weight training	10.9% (n=19)	7.8% (n=70)	
	3. Cycling (indoor/outdoor)	7.4% (n=13)	5.0% (n=45)	
	4. Swimming	2.3% (n=4)	3.5% (n=31)	
	5. Bodyweight exercises without equipment	1.7% (n=3)	2.0% (n=18)	
	6. Jump rope	0.6% (n=1)	0.1% (n=1)	
	7. Hiking	0.6% (n=1)	3.3% (n=29)	
	8. Yoga	0.6% (n=1)	1.1% (n=10)	

	9. Others	8.6% (n=15)	5.9% (n=53)	
Preferred future activities (only those selected by >4% of participants are shown)	1. Walking/light running	29.1% (n=51)	31.6% (n=282)	$\chi^2(5) = 51.19$, $p < .05$
	2. Swimming	17.7% (n=31)	15.0% (n=134)	
	3. Yoga	12.0% (n=21)	4.4% (n=39)	
	4. Weight training	5.7% (n=10)	8.2% (n=73)	
	5. Hiking	4.6% (n=8)	4.9% (n=44)	
	6. Cycling	4.0% (n=7)	2.8% (n=25)	
Exercise settings	1. Walking/walking nearby outdoors (trails, parks, etc.)	65.7% (n=115)	73.2% (n=653)	$\chi^2(5) = 18.83$, $p < .05$
	2. Visiting facilities (by individual)	14.3% (n=25)	14.3% (n=128)	
	3. Home training (by individual)	12.6% (n=22)	4.8% (n=43)	
	4. Classes and lectures (including classrooms)	6.3% (n=11)	4.5% (n=40)	
	5. Sports clubs	1.1% (n=2)	2.6% (n=23)	
	6. Others	0% (n=0)	0.6% (n=5)	
Exercise companionship	1. Alone	38.9% (n=68)	66.7% (n=595)	$\chi^2(7) = 176.34$, $p < .05$
	2. Family/relatives	30.9% (n=54)	20.5% (n=183)	
	3. Disability support workers	20.6% (n=36)	0.9% (n=8)	
	4. Friends	3.4% (n=6)	7.4% (n=66)	
	5. Local residents	2.9% (n=5)	2.4% (n=21)	
	6. Physical education instructors	2.3% (n=4)	0.3% (n=3)	
	7. Coworkers	0.6% (n=1)	1.6% (n=14)	
	8. Others	0.6% (n=1)	0.2% (n=2)	

No significant differences were observed between severe and mild VI groups in exercise frequency ($\chi^2(7) = 7.02$, $p > .05$) or average duration per session ($\chi^2(4) = 6.28$, $p > .05$), indicating comparable regularity and duration of physical activity across both groups. Approximately 50% of participants in each group exercised three to five times per week, and fewer than 10% reported exercising less than once a week or not exercising regularly. Most participants reported exercising for “30 minutes to <1 hour” per session (54.9% severe vs. 53.4% mild). Shorter exercise durations (< 30 minutes) were slightly more common among severe VI participants, whereas longer durations (1 to <1.5 hours) were more common among mild VI participants. However, exercise intensity differed significantly by severity ($\chi^2(2) = 9.04$, $p < .05$). Low-intensity activities were most frequent in the severe VI group (60.6%), whereas mild VI participants reported both low-intensity (49.6%) and moderate-intensity (46.4%) activities at comparable levels. High-intensity exercise was rare (< 5%) in both groups. Despite similar frequency and duration, differences in the nature of physical activity participation were observed between groups.

Current and preferred future physical activities

Current physical activities were similar between the groups, with walking/light running being the most commonly performed activity in both groups (67.4% severe vs. 71.2% mild), showing no significant difference ($\chi^2(8) = 11.51$, $p > .05$). Other activities, such as weight training, cycling, swimming, and bodyweight exercises, were less frequently reported. Preferred future physical activities, however, differed significantly between the severe and mild VI groups ($\chi^2(33) = 51.19$, $p < .05$). Walking/light running remained the most preferred activity in both groups (29.1% severe vs. 31.6% mild). Notably, individuals with severe VI showed a greater preference for yoga (12.0%) compared to those with mild VI (4.4%).

Exercise settings and companionship

Exercise settings varied significantly by severity ($\chi^2(5) = 18.83$, $p < .05$). The majority of participants in both groups exercised outdoors (65.7% severe vs. 73.2% mild). However, individuals with severe VI were more likely to exercise at home, whereas those with mild VI showed a stronger preference for outdoor settings. Other settings were reported at substantially lower levels. Exercise companionship also differed significantly by severity ($\chi^2(7) = 176.34$, $p < .05$). Most mild VI participants exercised alone (66.7%), whereas individuals with severe VI were more likely to exercise with family/relatives (30.9%) or support workers (20.6%) rather than alone (38.9%). Other forms of companionship were minimal in both groups.

Overall, while exercise patterns and activity choices are largely similar between severe and mild VI individuals, differences were observed in exercise intensity, preferred future activities, exercise setting, and companionship. This suggests that individuals with more severe VI may need adjustments in the activity type, intensity, or social support. Regardless of severity, walking/light running remains the most popular activity. Mild VI participants were more independent, with over 70% walking outdoors and 67% exercising alone. Severe VI participants also walked outdoors, but a substantial proportion required companions (61.1%).

3. Perceived physical and mental health status

This study examined perceived physical health, including general health, cardiopulmonary fitness, and muscular strength, as well as mental health indicators, such as depression, anxiety, and happiness levels among individuals with severe and mild VI. Table 3 presents the distribution of these perceived health indicators by severity of VI.

Table 3. Perceived physical and mental health status by visual impairment severity

		Severe VI (n = 175)	Mild VI (n = 892)	Chi-square test results
Perceived general health status	1. Very poor	0% (n=0)	0.9% (n=8)	$\chi^2(4) = 12.45, p < .05$
	2. Poor	14.9% (n=26)	9.9% (n=88)	
	3. Fair	46.9% (n=82)	38.3% (n=342)	
	4. Good	34.9% (n=61)	46.0% (n=410)	
	5. Very good	3.4% (n=6)	4.9% (n=44)	
Perceived cardiopulmonary fitness	1. Very poor	0% (n=0)	0.4% (n=4)	$\chi^2(4) = 11.56, p < .05$
	2. Poor	18.3% (n=32)	11.7% (n=104)	
	3. Fair	49.1% (n=86)	43.9% (n=392)	
	4. Good	29.7% (n=52)	38.8% (n=346)	
	5. Very good	2.9% (n=5)	5.2% (n=46)	
Perceived muscular strength	1. Very poor	0.6% (n=1)	1.1% (n=10)	$\chi^2(4) = 15.89, p < .05$
	2. Poor	25.7% (n=45)	14.8% (n=132)	
	3. Fair	42.3% (n=74)	41.6% (n=371)	
	4. Good	29.7% (n=52)	38.8% (n=346)	
	5. Very good	1.7% (n=3)	3.7% (n=33)	
Depression level	1. Felt depressed often	1.7% (n=3)	1.1% (n=10)	$\chi^2(4) = 15.12, p < .05$
	2. Felt slightly depressed	16.6% (n=29)	9.1% (n=81)	
	3. Neutral	32.0% (n=56)	27.8% (n=248)	
	4. Rarely felt depressed	46.3% (n=81)	54.0% (n=482)	
	5. Never felt depressed	3.4% (n=6)	8.0% (n=71)	
Anxiety level	1. Felt anxious often	0.6% (n=1)	0.6% (n=5)	$\chi^2(4) = 17.61, p < .05$
	2. Felt slightly anxious	18.9% (n=33)	9.6% (n=86)	
	3. Neutral	30.9% (n=54)	28.8% (n=257)	
	4. Rarely felt anxious	45.7% (n=80)	51.3% (n=458)	
	5. Never felt anxious	4.0% (n=7)	9.6% (n=86)	
Happiness level during engagement in interesting activities	1. Very poor	6.9% (n=12)	2.9% (n=26)	$\chi^2(4) = 11.23, p < .05$
	2. Poor	22.9% (n=40)	21.2% (n=189)	
	3. Fair	42.3% (n=74)	39.2% (n=350)	
	4. Good	26.3% (n=46)	32.3% (n=288)	
	5. Very good	1.7% (n=3)	4.4% (n=39)	

Perceived physical health status

As shown in Table 3, perceived general health status differed significantly by severity of VI ($\chi^2(4) = 12.45, p < .05$). Although many participants rated their health as “Fair” or “Good,” individuals with severe VI were more likely to report poorer health, whereas those with mild VI more frequently reported “Good” or “Very good” health. Perceived cardiopulmonary fitness also differed significantly ($\chi^2(4) = 11.56, p < .05$), with the severe VI group reporting lower fitness levels overall compared to the mild VI group. Similarly, muscular strength showed a

significant difference ($\chi^2(4) = 15.89, p < .05$), with individuals with severe VI reporting more negative perceptions, while those with mild VI more often rated their strength positively.

Perceived mental health status

Mental health indicators differed significantly by severity of VI. Depression levels varied ($\chi^2(4) = 15.12, p < .05$), with individuals with severe VI more likely to report depressive symptoms, whereas those with mild VI more frequently reported rarely or never feeling depressed.

Anxiety levels also differed significantly ($\chi^2(4) = 17.61, p < .05$), showing a similar pattern, with higher anxiety reported among individuals with severe VI. Happiness during engagement in interesting activities was likewise lower in the severe VI group ($\chi^2(4) = 11.23, p < .05$).

Overall, individuals with mild VI expressed more positive self-assessments of their physical and mental health, whereas those with severe VI tended to report lower confidence in their physical capabilities and mental well-being. These findings indicate that greater severity of VI is associated with poorer perceived physical health and fitness, as well as worse mental health outcomes. This highlights the importance of addressing both physical and psychological dimensions when developing interventions aimed at improving quality of life among individuals with severe VI.

4. Motivations and information sources for sports participation

Motivation and purpose to participate in physical activities

Table 4 presents the motivations for exercise participation, the purposes of engaging in physical activity, and the types of support considered most helpful by individuals with severe and mild VI.

Table 4. Motivation, purpose, and helpful support for exercise participation

	Response	Severe VI (n = 175)	Mild VI (n = 892)	Chi-square (χ^2) test results
Motivation for exercise participation	1. Felt the need voluntarily	57.7% (n=101)	70.4% (n=628)	$\chi^2(6) = 30.28,$ $p < .05$
	2. Encouragement from family/relatives	20.0% (n=35)	13.6% (n=121)	
	3. Interest developed after seeing media advertisements (TV, radio, etc.)	7.4% (n=13)	9.3% (n=83)	
	4. Encouragement from instructors/teachers/acquaintances	8.6% (n=15)	2.8% (n=25)	
	5. Interest developed from internet, SNS, or YouTube content	2.9% (n=5)	2.0% (n=18)	
	6. Interest developed from welfare institutions or public sector promotional materials	2.3% (n=4)	0.3% (n=3)	
	7. Interest developed from newspaper or online articles	1.1% (n=2)	1.6% (n=14)	
Purpose of exercise participation	1. Health and physical fitness management	87.4% (n=153)	88.9% (n=793)	$\chi^2(3) = 6.18,$ $p > .05$
	2. Rehabilitation exercise (excluding treatment purposes)	9.1% (n=16)	5.0% (n=45)	
	3. Leisure activity	2.3% (n=4)	4.4% (n=39)	
	4. Social exchange/friendship activity	1.1% (n=2)	1.7% (n=15)	
Most helpful types of support during exercise	1. Exercise equipment and devices for individuals with disabilities	10.3% (n=18)	15.7% (n=140)	
	2. Sports facilities accessible to individuals with disabilities	11.4% (n=20)	14.8% (n=132)	
	3. Instruction from physical activity specialists for individuals with disabilities	13.7% (n=24)	8.4% (n=75)	

4. Physical activity programs for individuals with disabilities	18.3% (n=32)	15.9% (n=142)	$\chi^2(7) = 44.48,$ $p < .05$
5. Support personnel (e.g., assistants supporting mobility)	16.6% (n=29)	5.5% (n=49)	
6. Financial support for participation	22.9% (n=40)	36.0% (n=321)	
7. Transportation support	5.1% (n=9)	2.8% (n=25)	
8. Others	1.7% (n=3)	0.9% (n=8)	

Motivational factors differed significantly between the two groups ($\chi^2(6) = 30.28, p < .05$). Although voluntary motivation was the most common driver of exercise participation across both groups, it was reported more frequently by individuals with mild VI (70.4%) than those with severe VI (57.7%). Participants with severe VI were more reliant on external encouragement, particularly from family or relatives (20.0%), as well as from instructors, teachers, or acquaintances (8.6%), compared to their mild VI counterparts. Regarding the purpose of exercise participation, no significant group differences were observed ($\chi^2(3) = 6.18, p > .05$). The majority of participants in both groups (about 88%) identified “health and physical fitness management” as their primary purpose for engaging in exercise. Rehabilitation-oriented exercise was reported more frequently by the severe VI group (9.1%) than in the mild VI group (5.0%), whereas leisure and social interaction were rarely reported in both groups (< 5%).

We also examined the types of support perceived as most helpful during exercise. A significant group difference was observed ($\chi^2(7) = 44.48, p < .05$). Mild VI participants most frequently selected financial support (36.0%), whereas a smaller proportion of individuals with severe VI reported the same need (22.9%). Conversely, the severe VI group placed greater importance on support personnel who assist with mobility (16.6%) compared to the mild VI group (5.5%). They also reported slightly higher reliance on instruction from specialists trained to support individuals with disabilities (13.7%). Preferences for disability-accessible sports programs and facilities were similar across the two groups (approximately 14% to 18%). Equipment designed for individuals with disabilities was selected more frequently by mild VI participants (15.7%) than by severe VI participants (10.3%). Transportation support was among the least frequently selected needs but was slightly more reported by individuals with severe VI (5.1%).

Overall, both groups primarily reported health and physical fitness management as their main purpose for exercise. While voluntary motivation was the most common driver across groups, individuals with severe VI showed greater reliance on external encouragement, particularly from family members and instructors.

Information sources for participation in physical activities

Table 5 presents the sources through which individuals with severe and mild VI obtained information on disability sports participation, as well as the types of information they considered most necessary.

Table 5. Information sources for sports participation

	Response	Severe VI (n = 175)	Mild VI (n = 892)	Chi-square (χ^2) test results
Sources of information on disability sports participation	1. Media advertisements (TV, radio, etc.)	45.7% (n=80)	54.7% (n=488)	$\chi^2(9) = 34.69,$ $p < .05$
	2. Disability welfare facilities	11.4% (n=20)	4.7% (n=42)	
	3. Internet sources (portals, SNS, YouTube, etc.)	9.1% (n=16)	17.3% (n=154)	
	4. Family / relatives	8.6% (n=15)	7.5% (n=67)	
	5. Acquaintances	8.6% (n=15)	4.0% (n=36)	
	6. Newspapers / online news articles	8.0% (n=14)	6.8% (n=61)	
	7. Public sector promotional materials	3.4% (n=6)	3.1% (n=28)	
	8. Instructors / teachers	3.4% (n=6)	0.9% (n=8)	
	9. Korean Paralympic Committee website	1.1% (n=2)	0.7% (n=6)	
	10. Others	0.6% (n=1)	0.2% (n=2)	
	1. Supportive systems for disability sports	37.1% (n=65)	45.2% (n=403)	

Most needed information on disability sports	2. Sports program for individuals with disabilities	27.4% (n=48)	21.1% (n=188)	$\chi^2(5) = 22.37$, $p < .05$
	3. Information about sports facilities	19.4% (n=34)	19.1% (n=170)	
	4. Introduction to disability sport events/ types	8.6% (n=15)	11.4% (n=102)	
	5. Information about disability sports instructors	5.1% (n=9)	3.1% (n=28)	
	6. Others	0.6% (n=1)	0.1% (n=1)	

A significant group difference was found in sources of information on disability sports participation ($\chi^2(9) = 34.69$, $p < .05$). Media advertisements (TV and radio) were by far the dominant source of information in both groups (45.7% severe and 54.7% mild), while all other sources were used by substantially smaller proportions of participants. Internet sources were reported less frequently overall (9.1% severe vs. 17.3% mild), although they were relatively more common among individuals with mild VI. Notably, individuals with severe VI showed particularly low reliance on internet-based information. Instead, they more frequently obtained information through disability welfare facilities (11.4%) and instructors or teachers (3.4%) compared to those with mild VI. Only a small proportion of participants reported obtaining information from the Korean Paralympic Committee website, public sector promotional materials, acquaintances, or other sources (all below 10%, with most below 5%).

There was also a significant group difference in the types of disability sports information considered most necessary ($\chi^2(5) = 22.37$, $p < .05$). In both groups, the most frequently identified need was supportive systems for disability sports (37.1% severe vs. 45.2% mild). Information regarding sports programs was also commonly reported, particularly among individuals with severe VI (27.4%) compared to those with mild VI (21.1%). The need for information about sports facilities was reported at similar levels across groups (19.4% severe vs. 19.1% mild). In contrast, mild VI participants showed slightly greater interest in information about disability sport events or types (11.4%) compared to the severe VI group (8.6%). All other categories, including information about disability sports instructors, were reported by relatively small proportions of participants in both groups (all below 6%).

Overall, these findings indicate that while media advertisements serve as the primary source of information for both groups, individuals with severe VI rely more heavily on institutional and interpersonal channels. In addition, both groups expressed substantial needs for information on supportive systems, sports programs, and accessible facilities, highlighting the importance of improving the accessibility and usability of information to support participation.

DISCUSSION

This study examined differences in exercise behaviors, perceived health, and participation-related factors among individuals with severe and mild VI. Overall, while both groups demonstrated similar patterns in exercise frequency and duration, notable differences were observed in exercise intensity, perceived health, motivation, and access to information.

First, although exercise frequency and duration did not differ significantly between groups, individuals with mild VI reported engaging in relatively higher-intensity physical activity compared to those with severe VI. This finding suggests that the severity of VI may be associated with differences in the quality, rather than the quantity, of physical activity. Previous research indicates that individuals with VI often face environmental and safety-related barriers that limit engagement in more vigorous activities, leading to a preference for lower-intensity exercise (Flynn et al., 2024; Powis & Macbeth, 2023). Such constraints may help explain why participants with severe VI more frequently engaged in low-intensity activities despite maintaining regular participation.

Second, significant differences were observed in perceived physical and mental health. Individuals with severe VI consistently reported lower levels of perceived general health, cardiopulmonary fitness, and muscular strength, as well as more frequent experiences of depression and anxiety, as well as lower levels of happiness. These findings are consistent with prior studies demonstrating a strong association between physical activity, functional capacity, and psychological well-being among individuals with disabilities (Kapsal et al., 2019; Isidoro-Cabañas et al., 2023). In addition, previous research using Korean national data has shown that physical activity is positively associated with health-related quality of life among individuals with disabilities (Kim et al., 2022), supporting the patterns observed in this study. Reduced opportunities for independent participation and limited engagement in diverse physical activities may be associated with lower self-perceived health and well-being among individuals with more severe VI.

Third, differences in motivation and support needs highlight the role of social and environmental factors in shaping participation. While intrinsic motivation was the primary driver of exercise participation in both groups, individuals with severe VI were more likely to rely on encouragement from family members, instructors, or support personnel. This finding aligns with previous research suggesting that external support plays a critical role in facilitating physical activity among individuals with greater functional limitations (Martin Ginis et al., 2010; Yazicioglu et al., 2012). The greater reliance on support personnel and structured guidance observed in the severe VI group further emphasizes the importance of social support systems in promoting sustained engagement. These findings are particularly relevant for individuals with VI, as reliance on external support has been identified as a key facilitator of participation in this population (Tshuma et al., 2022).

In addition, access to information and resources emerged as an important factor influencing participation. Although both groups utilized various information sources, individuals with severe VI showed greater reliance on institutional and interpersonal channels, such as disability welfare facilities and instructors, whereas individuals with mild VI more frequently accessed information through media and internet-based platforms. This pattern reflects differences in accessibility and independence, and is consistent with previous findings that identify limited access to tailored information as a barrier to participation in physical activity among individuals with disabilities (Jaarsma et al., 2014; Choi & Pionke, 2024). Furthermore, both groups expressed a strong need for clearer and more detailed information regarding disability sports types, programs, and facilities, highlighting a gap between the availability of resources and their practical accessibility and usability for individuals with varying levels of VI. Recent evidence also suggests that physical activity and perceived health are closely linked to life satisfaction among individuals with disabilities (Alhumaid et al., 2024), further underscoring the importance of improving access to meaningful and usable information.

Taken together, these findings suggest that although individuals with VI are generally engaged in regular physical activity, severity is associated with differences in how participation is experienced, supported, and sustained. Individuals with severe VI may face greater challenges related to exercise intensity, independence, and access to information, which may be associated with both physical and psychological outcomes.

From a practical perspective, these results underscore the need for targeted interventions beyond simply increasing participation rates. Developing accessible exercise environments, providing trained support personnel, and improving the delivery of tailored information are essential strategies for enhancing both engagement and quality of experience. In line with global physical activity recommendations emphasizing inclusivity and accessibility (World Health Organization, 2020), interventions should address both physical and psychosocial dimensions to effectively improve quality of life among individuals with VI.

CONCLUSION

This study identified key differences in physical activity patterns, perceived health, and participation-related factors between individuals with severe and mild VI. Although both groups demonstrated similar levels of participation in terms of frequency and duration, individuals with severe VI engaged in lower-intensity activities and reported poorer physical and mental health. Walking/light running was the most common activity across both groups, but differences were observed in preferred activities, exercise settings, companionship, independence, motivation, and support needs. Individuals with severe VI showed greater reliance on external encouragement and assistance, whereas those with mild VI demonstrated greater independence. Both groups expressed a strong need for accessible and usable information on disability sports programs and facilities.

These findings provide important evidence for the development of targeted policies and intervention strategies that address severity-specific barriers to physical activity participation among individuals with VI.

REFERENCES

- Adigun, K., Oluleye, T. S., Ladipo, M. M., & Olowookere, S. A. (2014). Quality of life in patients with visual impairment in Ibadan: A clinical study in primary care. *Journal of Multidisciplinary Healthcare*, 7, 173–178. <https://doi.org/10.2147/JMDH.S51359>
- Alhumaid, M. M., Said, M. A., Khoo, S. (2024). Life Satisfaction Among Individuals with Physical Disabilities in Saudi Arabia: The Impact of Physical Activity, Self-Perceived Health and Fitness, and Sociodemographic Features. *Medicina (Kaunas)*, 61(1), 31. <https://doi.org/10.3390/medicina61010031>
- Choi, S., & Pionke, J. J. (2024). Characteristics of physical activity interventions for people with visual impairments: A scoping review. *Adapted Physical Activity Quarterly*, 41(3), 450–474. <https://doi.org/10.1123/apaq.2023-0113>
- Flynn, L., Millar, K., Belton, S., O'Connor, N., Meegan, S., Britton, U., & Behan, S. (2024). Investigating physical activity levels in adults who are blind and vision impaired. *Disability and Health Journal*, 17(3), 101594. <https://doi.org/10.1016/j.dhjo.2024.101594>
- Isidoro-Cabañas, E., Soto-Rodríguez, F. J., Morales-Rodríguez, F. M., & Pérez-Mármol, J. M. (2023). Benefits of adaptive sport on physical and mental quality of life in people with physical disabilities: A meta-analysis. *Healthcare (Basel)*, 11(18), 2480. <https://doi.org/10.3390/healthcare11182480>
- Jaarsma, E. A., Dijkstra, P. U., Geertzen, J. H. B., & Dekker, R. (2014). Barriers to and facilitators of sports participation for people with physical disabilities: A systematic review. *Scandinavian Journal of Medicine & Science in Sports*, 24(6), 871–881. <https://doi.org/10.1111/sms.12218>
- Kapsal, N. J., Dicke, T., Morin, A. J. S., Vasconcellos, D., Maïano, C., Lee, J., & Lonsdale, C. (2019). Effects of physical activity on the physical and psychosocial health of youth with intellectual disabilities: A systematic review and meta-analysis. *Journal of Physical Activity & Health*, 16(12), 1187–1195. <https://doi.org/10.1123/jpah.2018-0675>
- Kim, T., Park, S.-Y., & Oh, I.-H. (2022). Exploring the relationship between physical activities and health-related factors in the health-related quality of life among people with disability in Korea. *International Journal of Environmental Research and Public Health*, 19(13), 7839. <https://doi.org/10.3390/ijerph19137839>

Martin Ginis, K. A., Jetha, A., Mack, D. E., Hetz, S. (2010). Physical activity and subjective well-being among people with spinal cord injury: a meta-analysis. *Spinal Cord*, 48(1), 65-72. <https://doi.org/10.1038/sc.2009.87>

Ministry of Culture, Sports and Tourism. (2020). *2020 survey on physical activity among people with disabilities*. Sejong, South Korea: Ministry of Culture, Sports and Tourism.

Ministry of Culture, Sports and Tourism. (2021). *2021 survey on physical activity among people with disabilities*. Sejong, South Korea: Ministry of Culture, Sports and Tourism.

Ministry of Culture, Sports and Tourism. (2022). *2022 survey on physical activity among people with disabilities*. Sejong, South Korea: Ministry of Culture, Sports and Tourism.

Ministry of Culture, Sports and Tourism. (2023). *2023 survey on physical activity among people with disabilities*. Sejong, South Korea: Ministry of Culture, Sports and Tourism.

Ministry of Culture, Sports and Tourism. (2024). *2024 survey on physical activity among people with disabilities*. Sejong, South Korea: Ministry of Culture, Sports and Tourism.

<https://stat.mcst.go.kr/portal/subject/subject05/STBL-1013952/mdss>

Powis, B., Macbeth, J. L. (2023). Running blind: the sensory practices of visually impaired runners. *Qualitative Research in Sport, Exercise and Health*, 16(3), 244–258. <https://doi.org/10.1080/2159676X.2023.2284704>

Ramsden, R., Hayman, R., Potrac, P., & Hettinga, F. J. (2023). Sport participation for people with disabilities: Exploring the potential of reverse integration and inclusion through wheelchair basketball. *International Journal of Environmental Research and Public Health*, 20(3), 2491. <https://doi.org/10.3390/ijerph20032491>

Sahlin, K. B., & Lexell, J. (2015). Impact of organized sports on activity, participation, and quality of life in people with neurologic disabilities. *PM&R*, 7, 1081–1088. <https://doi.org/10.1016/j.pmrj.2015.03.019>

Tshuma, C., Ntombela, N., & van Wijk, H. C. (2022). Challenges and coping strategies of visually impaired adults: A brief exploratory systematic literature review. *Prizren Social Science Journal*, 6(2), 71–80. <https://doi.org/10.32936/pssj.v6i2.301>

World Health Organization. (2020). *Guidelines on physical activity and sedentary behaviour*. World Health Organization. <https://www.who.int/publications/i/item/9789240015128>

Yazicioglu, K., Yavuz, F., Goktepe, A. S., & Tan, A. K. (2012). Influence of adapted sports on quality of life and life satisfaction in sport participants and non-sport participants with physical disabilities. *Disability and Health Journal*, 5, 249–253. <https://doi.org/10.1016/j.dhjo.2012.05.003>