

Relationships among Participation Motivation, Involvement, Leisure Benefits, and Behavioral Intention in Nordic Walking

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Abstract

This study examined the relationships among participation motivation, involvement, leisure benefits, and behavioral intention among Nordic Walking participants. A total of 210 valid questionnaires were analyzed. Exploratory factor analysis (EFA) was first conducted to identify the underlying dimensions of participation motivation, followed by confirmatory factor analysis (CFA) and structural equation modeling (SEM) to test the measurement model and the hypothesized structural relationships.

The results indicated that participation motivation—comprising self-achievement, health promotion, and performance—significantly influenced both involvement and leisure benefits. Crucially, involvement fully mediated the relationship between participation motivation and behavioral intention, whereas leisure benefits did not significantly predict behavioral intention.

These findings suggest that sustained participation is driven not merely by perceived benefits, but by psychological involvement. Accordingly, promotional strategies should shift from a function-oriented approach toward experiential engagement to foster long-term behavioral loyalty.

Keywords: Nordic Walking, Participation Motivation, Involvement, Leisure Benefits, Behavioral Intention.

Introduction

As Taiwan officially entered a super-aged society in 2025, promoting healthy aging and enhancing quality of life have become critical public health priorities. National surveys on sports participation (2023–2025) consistently indicate that walking-related activities are the most prevalent form of exercise among Taiwanese adults, with participation rates approaching 60%. However, a critical misconception persists: strolling, walking, and brisk walking are often treated as equivalent forms of physical activity, despite substantial differences in exercise intensity and physiological outcomes. According to the *Compendium of Physical Activities* (Herrmann et al., 2024), strolling is classified as light-intensity activity (< 2.8 METs), whereas Nordic Walking (NW) reaches moderate-to-vigorous intensity (4.8–7.0 METs). Misinterpretation of these distinctions may lead individuals to overestimate the health benefits of low-intensity activity, thereby limiting the effectiveness of exercise-based health promotion.

Falls represent another major health concern among older adults. Beyond physical injury, falls often lead to fear of falling (FoF), which may trigger activity restriction and functional decline. Nordic Walking addresses these challenges by incorporating specially designed poles to engage both upper and lower body musculature, thereby enhancing gait stability, balance, and energy expenditure while maintaining low joint impact (Tschentscher et al., 2013). Despite its well-documented physiological benefits, existing research has primarily focused on physical outcomes, with limited attention given to the psychosocial mechanisms underlying sustained participation. Therefore, this study aims to examine the relationships among participation motivation, involvement, leisure benefits, and behavioral intention, in order to provide a more comprehensive understanding of the psychological pathways that support sustained exercise participation.

Literature Review

Participation Motivation

Participation motivation is widely recognized as a key determinant of exercise behavior. According to Self-Determination Theory (SDT) (Deci & Ryan, 2000), autonomous motivation plays a critical role in sustaining long-term participation, and empirical evidence supports its positive association with exercise adherence (Teixeira et al., 2012). Individuals with higher levels of intrinsic motivation are more likely to engage in and maintain physical activity over time.

Leisure Involvement

Leisure involvement reflects the degree of personal relevance and psychological engagement in an activity (Kyle & Chick, 2002). Previous studies suggest that participation motivation positively influences involvement, as motivated individuals tend to develop stronger emotional and cognitive connections with the activity. In turn, higher levels of involvement have been associated with stronger behavioral intention and continued participation (Alexandris et al., 2011).

Leisure Benefits

Leisure benefits, defined as the positive outcomes derived from participation (Driver, 1991), are identified as important predictors of continued engagement. Participation motivation has been shown to enhance individuals' perception of benefits; those who perceive greater physical, psychological, and social benefits are more likely to maintain participation over time.

Behavioral Intention and Intention–Behavior Gap

Behavioral intention refers to an individual's subjective willingness to continue participating in an activity and is regarded as the most proximal predictor of actual behavior within the Theory of Planned Behavior (TPB) (Ajzen, 1991; Pashapoor et al., 2025). In leisure research, it is commonly operationalized through three dimensions: re-participation intention, recommendation intention, and loyalty (Baker & Crompton, 2000; Yoon & Uysal, 2005). However, prior research has identified the presence of an intention–behavior gap, indicating that strong intention does not necessarily lead to sustained participation (Rhodes & de Bruijn, 2013). This gap highlights the importance of examining deeper psychological mechanisms—such as emotional involvement—in understanding how stable behavioral commitment is formed.

Proposed Research Framework

Based on the synthesis of the aforementioned literature, behavioral intention is understood as a multifaceted construct shaped by the interplay of initial motivation, psychological involvement, and perceived outcomes. To address the dynamics of sustained exercise participation, this study proposes an integrated structural framework (as illustrated in Figure 1). Specifically, this framework examines the mediating roles of leisure involvement and leisure benefits in the relationship between participation motivation and behavioral intention within the context of Nordic Walking.

Research Objectives

This study aims to examine the relationships among participation motivation, involvement, leisure benefits, and behavioral intention in the context of Nordic Walking. Specifically, this study aims to:

1. Examine differences in participation motivation, involvement, leisure benefits, and behavioral intention across demographic characteristics.
2. Analyze the structural relationships among these variables.
3. Investigate the mediating roles of involvement and leisure benefits in the relationship between participation motivation and behavioral intention.

Hypotheses

Based on the proposed theoretical framework, the following hypotheses are developed:

- **H1:** Demographic variables are significantly associated with differences in participation motivation, involvement, leisure benefits, and behavioral intention.
- **H2:** Participation motivation has a significant positive effect on involvement.
- **H3:** Participation motivation has a significant positive effect on leisure benefits.
- **H4:** Involvement has a significant positive effect on behavioral intention.
- **H5:** Leisure benefits have a significant positive effect on behavioral intention.
- **H6:** Involvement mediates the relationship between participation motivation and behavioral intention.
- **H7:** Leisure benefits mediate the relationship between participation motivation and behavioral intention.

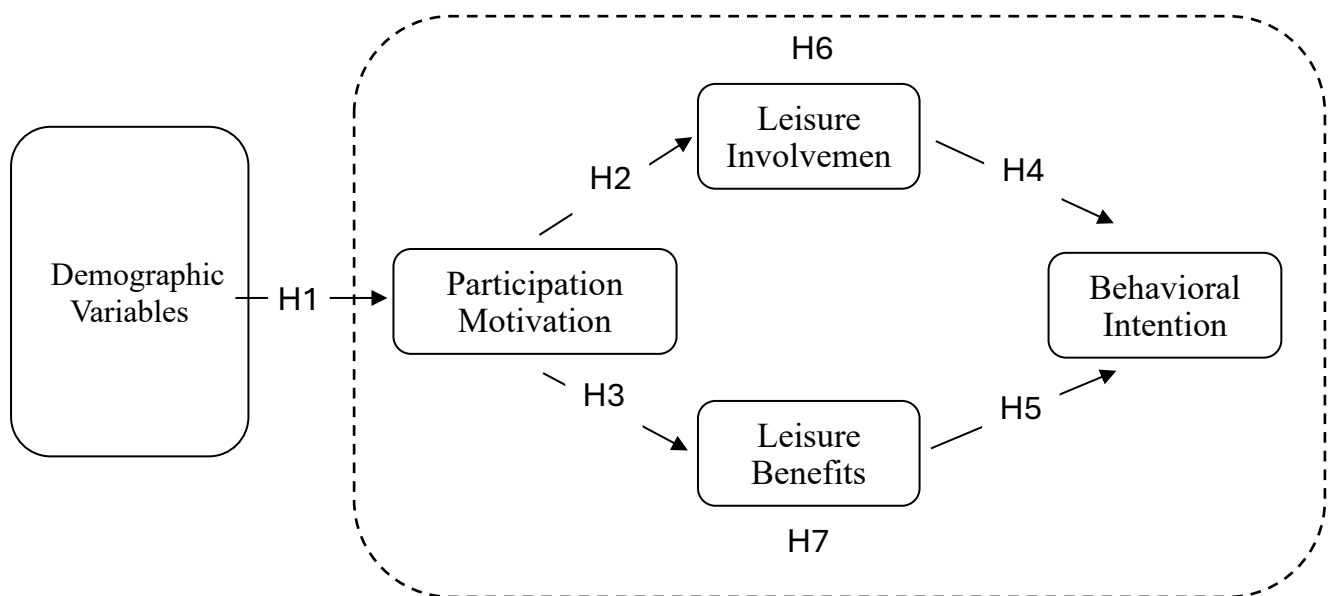


Figure 1. *Conceptual framework of the study*

Research Methods

Participants and Data Collection

The participants of this study were Nordic Walking (NW) practitioners in Taiwan. A snowball sampling method was employed, with participants recruited through professional coaching networks and various field settings, including community centers, institutional organizations, and campus groups where NW programs are actively implemented. To ensure appropriate age classification, this study integrated both functional age and policy-defined age frameworks, drawing on clinical evidence related to sarcopenia (Volpi et al., 2004) and osteoarthritis prevalence (GBD 2021). Data were collected through an online survey conducted in June 2025. A total of 210 valid responses were obtained.

Research Instrument

A structured questionnaire was used, comprising four constructs: participation motivation, involvement, leisure benefits, and behavioral intention. The participation motivation scale was adapted from the Leisure Motivation Scale (LMS) developed by Beard and Ragheb (1983), which categorizes motives into intellectual, social, competence-mastery, and stimulus-avoidance components. All items were measured using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). Content validity was established through expert review. A pilot test ($n = 50$) demonstrated excellent internal consistency, with Cronbach's α values for all constructs exceeding .93.

Measurement Model Assessment

Confirmatory factor analysis (CFA) was conducted using AMOS 24.0 (IBM SPSS AMOS) to evaluate the measurement model. Reliability and validity were assessed through standardized factor loadings ($\geq .50$), composite reliability (CR), and average variance extracted (AVE). Cronbach's α coefficients were also calculated to assess internal consistency. All factor loadings were statistically significant ($p < .001$), indicating satisfactory reliability and construct validity.

Structural Model and Hypothesis Testing

Structural equation modeling (SEM) with maximum likelihood estimation was employed to test the hypothesized relationships among variables. Model fit was evaluated using multiple indices, including the chi-square to degrees of freedom ratio (χ^2/df), root mean square error of approximation (RMSEA), and comparative fit index (CFI), following the recommendations of Hair et al. (2019). SEM was applied to examine the structural relationships among participation motivation, involvement, leisure benefits, and behavioral intention (H2–H5).

Mediation Analysis

To examine the mediating effects of involvement and leisure benefits (H6–H7), bootstrapping procedures were conducted with 2,000 resamples and a 95% confidence interval. Indirect effects were considered statistically significant when the confidence interval did not include zero.

Additional Statistical Analysis

Descriptive statistics were used to summarize demographic characteristics. Independent samples t-test and one-way ANOVA were conducted to examine group differences (H1).

Results

Sample Characteristics

A total of 210 valid responses were analyzed to describe the demographic and participation characteristics of Nordic Walking (NW) practitioners. Regarding demographic characteristics, the majority of participants were female (75.2%) and aged between 51 and 64 years (43.8%). Most respondents were married (69.5%) and had attained at least a university-level education (64.7%). Retirees constituted the largest occupational group (29.0%), followed by fitness coaches or promoters (16.7%). The sample was predominantly Taiwanese (99.0%), with a majority residing in Northern Taiwan (58.6%).

In terms of participation characteristics, most respondents identified as learners in NW programs (63.3%), and approximately half had 1–2 years of experience (50.5%). Participants generally reported low financial investment in NW activities, with 38.1% spending less than NTD 500 per month. Social participation was common, with 58.6% engaging in NW with friends or colleagues, typically in small groups. In addition, most participants (60.5%) obtained NW-related information through professional coaches or structured programs.

Measurement Model Assessment

Confirmatory factor analysis (CFA) was conducted to assess the reliability and validity of the measurement model. To improve model parsimony and overall fit, model modifications were performed based on statistical indicators and theoretical considerations. Specifically, several indicators were removed due to insufficient factor loadings or conceptual redundancy, including items for leisure benefits (CC5, CC6, and CC8), leisure involvement (BB1, BB9, and BB10), and behavioral intention (DD2 and DD4).

Following these refinements, the standardized factor loadings for the remaining items ranged from 0.576 to 0.947 for participation motivation, 0.699 to 0.939 for leisure involvement, 0.787 to 0.918 for leisure benefits, and 0.754 to 0.926 for behavioral intention, indicating acceptable indicator reliability. The composite reliability (CR) values for all constructs ranged from 0.864 to 0.950, exceeding the recommended threshold of 0.70 (Table 1). The average variance extracted (AVE) values ranged from 0.561 to 0.905, exceeding the recommended threshold of 0.50 and demonstrating satisfactory convergent validity. Discriminant validity was also established, as the square root of the AVE for each construct exceeded the corresponding inter-construct correlations. Overall, the results indicate that the measurement model exhibited adequate reliability and validity.

Table 1. Confirmatory Factor Analysis Results for the Measurement Model

Construct	Items	Factor Loadings	CR
Participation Motivation	19	0.576-0.947	0.864-0.925
Leisure Involvement	11	0.699-0.939	0.867-0.943
Leisure Benefits	11	0.787-0.918	0.887-0.916
Behavioral Intention	8	0.754-0.926	0.869-0.950

Note: CR = Composite Reliability.

Structural Model Assessment

Following the validation of the measurement model, structural equation modeling (SEM) was performed to examine the proposed conceptual framework. As illustrated in Figure 2, the initial structural model (a) was compared with the revised model (b). Model refinement was conducted based on statistical indicators and theoretical considerations, including the examination of standardized residuals and modification indices. Specifically, the removal of indicator DD1 resulted in an improved model fit. After model refinement, the model fit improved, with χ^2/df and RMSEA reaching acceptable levels, while some fit indices remained marginal. Overall, the revised model was considered adequate for further path analysis.

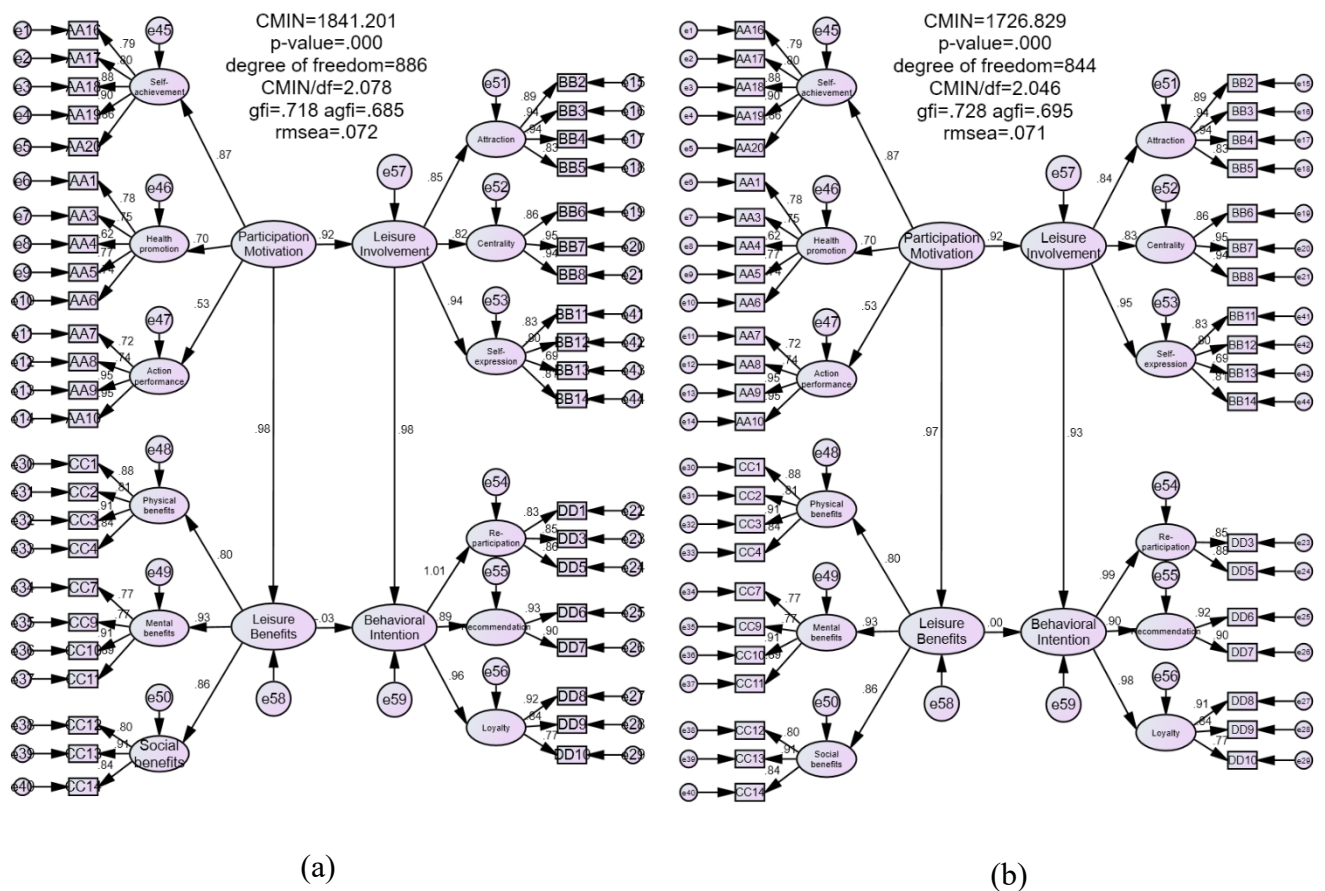


Figure 2. Comparison of the Initial (a) and Revised (b) Structural Models

Table 2. Model Fit Indices for Initial and Revised Structural Models

Fit Index	Threshold	Initial Model (a)	Revised Model (b)
χ^2/df	1-3	2.078	2.046
GFI	> .80	0.718	0.728
AGFI	> .80	0.685	0.695
CFI	> .90	0.894	0.899
RMSEA	< .08	0.072	0.071
PNFI	> .50	0.764	0.767

Hypothesis Testing and Path Analysis

Based on the revised structural model, the path coefficients were examined to test the proposed hypotheses. The results are presented in Table 3. Participation motivation had a significant positive effect on leisure involvement ($\beta = 0.919, p < .001$) and leisure benefits ($\beta = 0.973, p < .001$), supporting **H2** and **H3**. In addition, leisure involvement had a significant positive effect on behavioral intention ($\beta = 0.932, p < .001$), supporting **H4**. However, the effect of leisure benefits on behavioral intention was not significant ($\beta = -0.001, p > .05$), and therefore **H5** was not supported.

Table 3. Results of Path Analysis and Hypothesis Testing

Hypothesis	Path	β	T (C.R.)
H2	Motivation → Involvement	0.919	10.083***
H3	Motivation → Benefits	0.973	9.823***
H4	Involvement → Intention	0.932	5.982***
H5	Benefits → Intention	-0.001	-0.007

Note: *** $p < .001$; β = Standardized regression weight.

Table 4. Mediation Effects of Involvement and Leisure Benefits

Indirect Paths: Motivation (X) → Involvement / Benefits (M ₁ / M ₂) → Intention (Y)				
X → M → Y	Estimate	BC / PC 95% CI		
		p-value	BC	PC
Mot → Inv → Int (H6)	1.137	< .001	[0.946, 1.337]	[0.919, 1.297]
Mot → Ben → Int (H7)	0.000	Not significant.	[0.000, 0.000]	[0.000, 0.000]

Note: CI = Confidence Interval; BC = Bias-Corrected; PC = Percentile; p-values less than .001 are reported as $p < .001$. Values are rounded to three decimal places.

Mediation Analysis

The mediation effects were examined using bootstrapping procedures, and the results are presented in Table 4. The indirect effect of participation motivation on behavioral intention through leisure involvement was significant (estimate = 1.137, 95% bias-corrected confidence interval [0.946, 1.337]), supporting H6. In contrast, the indirect effect through leisure benefits was not significant, indicating that H7 was not supported.

Furthermore, the direct effect of participation motivation on behavioral intention was non-significant after including the mediators, suggesting that leisure involvement fully mediated the relationship between participation motivation and behavioral intention.

Conclusion and Discussion

This study provides several important insights into Nordic Walking (NW) participation. The findings indicate that NW participants in Taiwan are predominantly middle-aged females (51–64 years old). This demographic aligns with Laslett's (1987) concept of the "Third Age," a life stage characterized by retirement, personal achievement, and the pursuit of a healthy lifestyle after the primary responsibilities of career and child-rearing have concluded. Participants also exhibited high educational backgrounds and a strong reliance on professional instruction. This suggests that NW is a structured and skill-based activity that is more accessible to individuals with higher health awareness and learning motivation.

Participation motivation was found to significantly enhance both leisure involvement and perceived leisure benefits. Among the motivation dimensions, self-achievement emerged as a key psychological driver, indicating that participants are not only motivated by health but also by personal growth and mastery.

Most importantly, leisure involvement was found to fully mediate the relationship between participation motivation and behavioral intention. This suggests that motivation alone does not directly translate into sustained participation. Instead, individuals must develop a deeper psychological connection with the activity—such as attraction, centrality, and self-expression—to form stable behavioral intention. This finding supports involvement theory (Havitz & Dimanche, 1997) and highlights the importance of experiential engagement.

In contrast, leisure benefits did not significantly influence behavioral intention, nor did they serve as a mediator. This result reflects the intention–behavior gap (Rhodes & de Bruijn, 2013), suggesting that recognizing the benefits of an activity is insufficient to sustain long-term participation. Emotional engagement appears to play a more critical role than rational evaluation. From a practical perspective, these findings suggest that NW programs should shift from a health-focused approach to an experience-oriented approach. Enhancing enjoyment, social interaction, and skill progression may strengthen participants' involvement and support long-term adherence.

Suggestions

Based on the empirical findings, several practical implications are proposed for the promotion and implementation of Nordic Walking.

First, for instructors and practitioners, enhancing participants' psychological involvement should be prioritized. Given that leisure involvement was identified as a full mediator, training programs should incorporate interactive and engaging elements, such as group-based activities and situational challenges, to strengthen participants' sense of attraction, self-expression, and emotional connection to the activity.

In addition, instructors are encouraged to integrate professional knowledge into practice by emphasizing the biomechanical and physiological benefits of Nordic Walking, such as reduced joint loading and improved movement efficiency. Providing scientifically grounded explanations may enhance participants' perceived competence and trust in the activity, thereby facilitating deeper psychological engagement.

Second, for promoters and community organizations, optimizing participation experiences and strengthening social support systems is essential. Establishing structured group programs and peer support networks may enhance participants' sense of belonging and social connection, thereby increasing their level of involvement.

Furthermore, promotion strategies should shift from a purely function-oriented approach to an experience-oriented approach. As leisure benefits were not found to directly influence behavioral intention, emphasizing only health outcomes may be insufficient. Instead, highlighting enjoyment, personal growth, and meaningful experiences may be more effective in sustaining long-term participation.

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